



2018 Annual Groundwater Monitoring and Corrective Action Report

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

Submitted to:

Ameren Missouri

1901 Chouteau Avenue
St. Louis, Missouri 63103

Submitted by:

Golder Associates Inc.

13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021
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Project No. 153-1406

January 31, 2019

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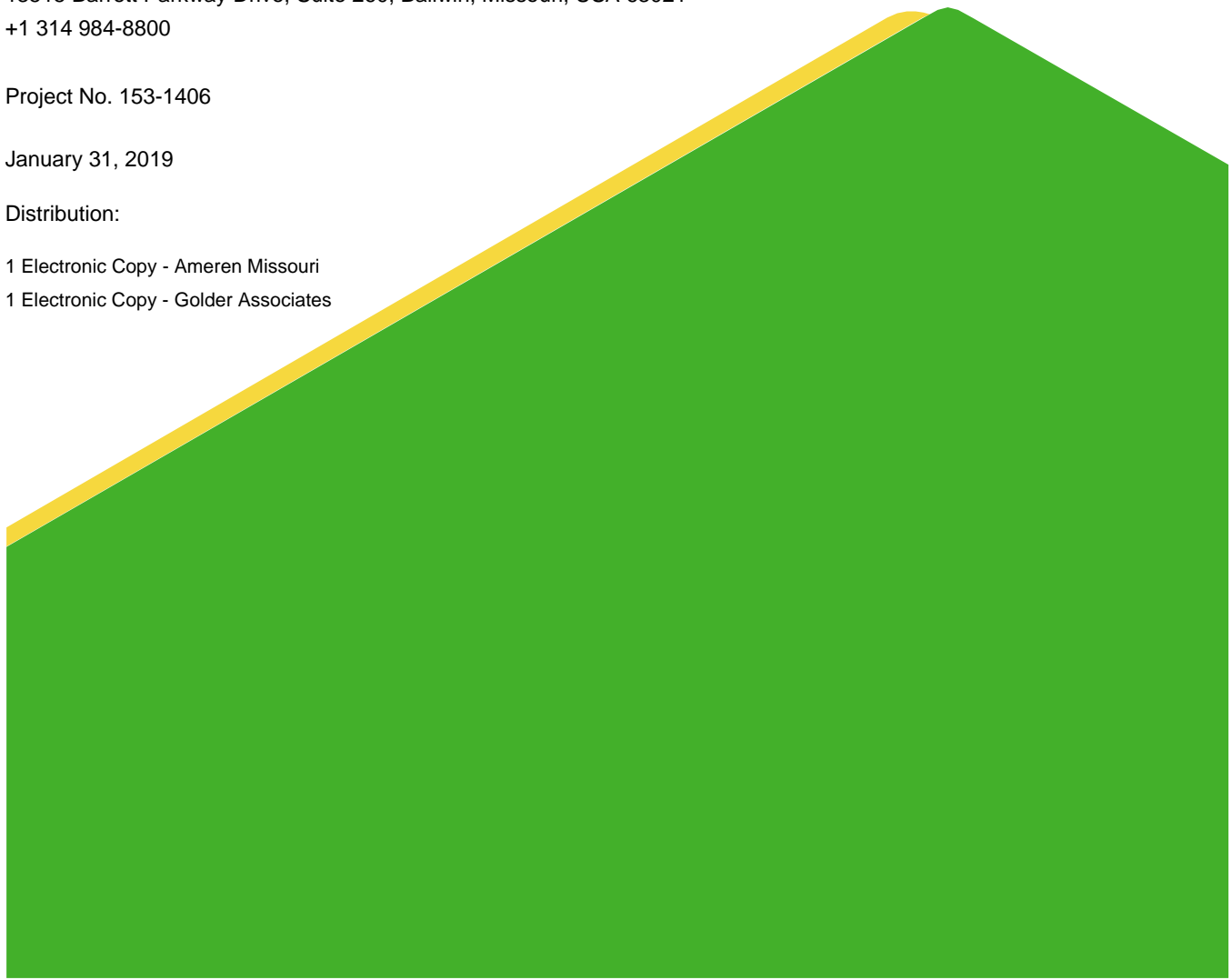


Table of Contents

1.0 INTRODUCTION	1
2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS	1
3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION	1
3.1 Detection Monitoring Program	2
3.2 Groundwater Elevation, Flow Rate and Direction	2
4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM	3
4.1 Sampling Issues	3
5.0 ACTIVITIES PLANNED FOR 2019	3

TABLES

Table 1 - Summary of Groundwater Sampling Dates

Table 2 - November 2017 Detection Monitoring Results

Table 3 - May 2018 Detection Monitoring Results

Table 4 - November 2018 Detection Monitoring Results

FIGURES

Figure 1 - Site Location Aerial Map and Monitoring Well Locations

Figure 2 - LCPB Potentiometric Surface Map - May 21, 2018

Figure 3 - LCPB Potentiometric Surface Map - November 7, 2018

APPENDICES

APPENDIX A

Laboratory Analytical Data

APPENDIX B

Alternative Source Demonstration – November 2017 Sampling Event

APPENDIX C

Alternative Source Demonstration – May 2018 Sampling Event

APPENDIX D

Well Construction Diagram

1.0 INTRODUCTION

This annual report was developed to meet the requirements of United States Environmental Protection Agency (USEPA) 40 CFR Part 257 “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule” (the CCR Rule). The CCR Rule requires owners or operators of existing CCR units to produce an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) each year (§§ 257.90(e)). Ameren Missouri (Ameren) has determined that the LCPB Coal Combustion Residuals (CCR) Surface Impoundment at the Labadie Energy Center (LEC) is subject to the requirements of the CCR Rule. This Annual Report for the LCPB describes CCR Rule groundwater monitoring activities from January 1, 2018 through December 31, 2018.

2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the LCPB. The groundwater monitoring system consists of ten (10) monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2018 as a part of the CCR Rule monitoring program for the LCPB. For more information on the groundwater monitoring network, see the 2017 Annual Groundwater Monitoring Report for the LCPB.

3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections review the sampling events completed for the LCPB CCR Unit in 2018. **Table 1** below provides a summary of the samples collected in 2018 including the number of groundwater samples that were collected, the date of sample collection, and the monitoring program.

Table 1 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells										Monitoring Program
	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S	
	Date of Sample Collection										
January 2018 Verification Sampling	-	-	1/4/2018	1/5/2018	1/5/2018	1/5/2018	-	1/4/2018	1/4/2018	1/4/2018	Detection
May 2018 Detection Monitoring	5/21/2018	5/21/2018	5/22/2018	5/22/2018	5/22/2018	5/23/2018	5/23/2018	5/23/2018	5/22/2018	5/22/2018	Detection
July 2018 Verification Sampling	-	-	7/2/2018	-	7/2/2018	7/2/2018	-	-	7/2/2018	7/2/2018	Detection
November 2018 Detection Monitoring	11/7/2018	11/7/2018	11/7/2018	11/8/2018	11/7/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	Detection
Total Number of Samples Collected	2	2	4	3	4	4	2	3	4	4	NA

Notes:

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

3.1 Detection Monitoring Program

The first Detection Monitoring event was completed November 7-8, 2017. Verification Sampling and the Statistical Analysis to evaluate for Statistically Significant Increases (SSI) for the November 2017 event were not completed until 2018 and are included in this report. Detections of Appendix III analytes triggered a verification sampling event, which was completed on January 4-5, 2018 and verified SSIs. A table summarizing the results of the statistical analysis of the first Detection Monitoring event is provided in **Table 2** 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 Alternative Source Demonstration (ASD) was completed for these SSIs and is provided in **Appendix B**. This ASD demonstrates that SSIs at the monitoring wells around LCPB are not caused by the LCPB CCR unit and the LCPB CCR unit remains in Detection Monitoring.

A Detection Monitoring event was completed May 21-23, 2018, and testing was completed for all Appendix III analytes. Statistical analysis of these data determined that there were SSIs. A table summarizing the results of the statistical analysis of the May 2018 Detection Monitoring event is provided in **Table 3** and laboratory analytical data are provided in **Appendix A**. As with the first sampling event, SSIs in the monitoring well network are not caused by the LCPB CCR unit and an ASD for this is provided in **Appendix C**.

A Detection Monitoring event was completed November 7-8, 2018, and testing was performed for all Appendix III analytes. Statistical analyses to evaluate for SSIs in the November 2018 data were not completed in 2018. Results of the statistical evaluation will be included in the 2019 annual report. A table summarizing the results of the November 2018 Detection Monitoring event is provided in **Table 4** 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 on **Figure 2** and **Figure 3**. 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 as a result 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 gradient were estimated for the downgradient CCR monitoring wells using the USEPA's On-line Tool for Site Assessment Calculation for Hydraulic Gradient (Magnitude and Direction) (USEPA, 2016). Results from this assessment indicate that while groundwater flow direction is variable, the overall net groundwater flow at the LCPB is generally toward the northeast, flowing from the bluffs towards the river.

Horizontal gradients calculated by the program range from 0.0003 to 0.0009 feet/foot with an estimated net annual groundwater velocity of approximately 21 feet per year.

4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM

The LCPB remains in detection monitoring. Section 5.0 provides a discussion of the activities planned for 2018.

4.1 Sampling Issues

On July 24, 2018, LMW-4S was hit by a lawn mower which caused damage to the protective cover and the PVC riser near the surface. In October 2018, the damaged PVC riser pipe and protective cover were replaced, the monitoring well was re-developed, and the well was surveyed for groundwater elevation measurements.

Appendix D provides an updated well construction diagram for LMW-4S that reflects the new survey results.

5.0 ACTIVITIES PLANNED FOR 2019

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2019. Statistical analysis of the November 2018 Detection Monitoring data will be completed in 2019 and included in the 2019 Annual Report.

Tables

Table 2
November 2017 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
November 2017 Detection Monitoring Event												
DATE	NA	NA	11/7/2017	11/7/2017	11/8/2017	11/7/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017
pH	SU	6.072-7.483	6.77	7.11	6.85	9.51	7.54	7.19	7.22	6.69	6.73	6.95
BORON, TOTAL	µg/L	122	100	46.3 J	4,570	6,350	5,350	9,160	108	843	3,690	4,430
CALCIUM, TOTAL	µg/L	219000	197,000	120,000	178,000	62,200	74,100	139,000	131,000	167,000	179,000	173,000
CHLORIDE, TOTAL	mg/L	13.75	4.6	21.2	5.4	21.0	20.3	22.6	3.6	3.0	11.5	15.0
FLUORIDE, TOTAL	mg/L	0.2507	0.18 J	0.18 J	0.16 J	0.18 J	0.42	0.22	0.19 J	0.17 J	0.14 J	0.22
SULFATE, TOTAL	mg/L	65.3	157	246	49.1 J	232	255	250	13.3	51.2	139	191
TOTAL DISSOLVED SOLIDS	mg/L	780	653	414	703	428	632	780	427	605	734	731
January 2018 Verification Sampling												
DATE	NA	NA			1/4/2018	1/5/2018	1/5/2018	1/5/2018		1/4/2018	1/4/2018	1/4/2018
pH	SU	6.072-7.483				9.32	7.16					
BORON, TOTAL	µg/L	122			4,080	5,500	5,590	8,870		595	695	3,760
CALCIUM, TOTAL	µg/L	219000										
CHLORIDE, TOTAL	mg/L	13.75				20.5	21.0	22.6				9.8
FLUORIDE, TOTAL	mg/L	0.2507					0.49					
SULFATE, TOTAL	mg/L	65.3				249	277	249			52.7	152
TOTAL DISSOLVED SOLIDS	mg/L	780										

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

Prepared By: JSI
Checked By: RJF
Reviewed By: MNH

Table 3
May 2018 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
May 2018 Detection Monitoring Event												
DATE	NA	NA	5/21/2018	5/21/2018	5/22/2018	5/22/2018	5/22/2018	5/23/2018	5/23/2018	5/23/2018	5/22/2018	5/22/2018
pH	SU	6.072-7.483	6.81	7.03	7.12	9.50	7.74	7.07	6.70	6.64	6.71	7.04
BORON, TOTAL	µg/L	122	128	55.7 J	3,780	5,060	4,220	9,160	74.9 J	3,170	2,100	7,180
CALCIUM, TOTAL	µg/L	219000	196,000	120,000	162,000 J	54,200	62,200	93,100	134,000	160,000	186,000	159,000
CHLORIDE, TOTAL	mg/L	13.75	6.7	2.6	4.7	20.4	21.5	24.1	4.4	7.7	8.4	20.0
FLUORIDE, TOTAL	mg/L	0.2507	0.18 J	0.20 J	0.18 J	0.20 J	0.39	0.33	0.17 J	0.18 J	0.19 J	0.31
SULFATE, TOTAL	mg/L	65.3	57.0	25.0	135	227	271	227	19.2	81.7	103	376
TOTAL DISSOLVED SOLIDS	mg/L	780	784	437	664	428	546	701	495	671	769	927
July 2018 Verification Sampling												
DATE	NA	NA			7/2/2018		7/2/2018	7/2/2018			7/2/2018	7/2/2018
pH	SU	6.072-7.483			6.76		7.30	7.17			6.67	7.05
BORON, TOTAL	µg/L	122										6,790
CALCIUM, TOTAL	µg/L	219000										
CHLORIDE, TOTAL	mg/L	13.75										18.9
FLUORIDE, TOTAL	mg/L	0.2507						0.38				0.34
SULFATE, TOTAL	mg/L	65.3			133						86.6	321
TOTAL DISSOLVED SOLIDS	mg/L	780										894

NOTES:

1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
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6. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.
7. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
8. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
9. Only analytes/wells that were detected above the prediction limit and that had not already been verified were tested during Verification Sampling.

Prepared By: JSI
Checked By: JS/RJF
Reviewed By: MNH

Table 4
November 2018 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

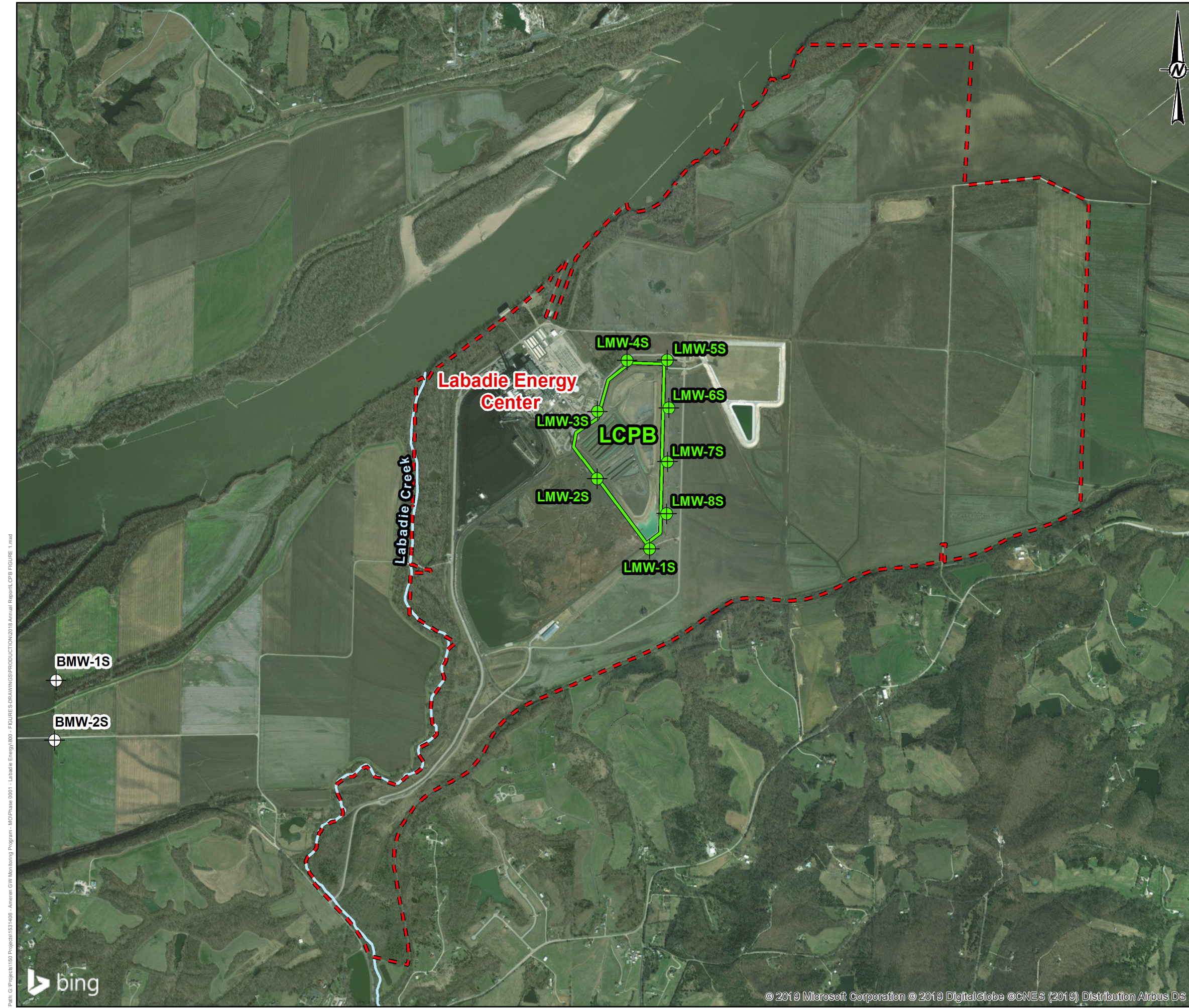
ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
		BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
November 2018 Detection Monitoring Event											
DATE	NA	11/7/2018	11/7/2018	11/7/2018	11/8/2018	11/7/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
pH	SU	6.83	7.12	7.22	9.82	7.52	7.46	7.48	7.28	7.40	7.48
BORON, TOTAL	µg/L	151	84.8 J	13,900	4,210	3,840	9,450	97.2 J	3,760	6,620	6,970
CALCIUM, TOTAL	µg/L	201,000	128,000	301,000	55,100	58,200	132,000	153,000	182,000	149,000	167,000
CHLORIDE, TOTAL	mg/L	5.6	1.3 J	16.4	22.8	20.9	23.8	4.0	12.2	19.3	19.5 J
FLUORIDE, TOTAL	mg/L	ND	ND	ND	0.23	0.46	0.23	ND	0.20	0.20	0.35 J
SULFATE, TOTAL	mg/L	36.7	28.4	982	222	263	270	12.1	122	257	334 J
TOTAL DISSOLVED SOLIDS	mg/L	751	958 J	1,580	420	496	757	473	740	734	867

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) and is considered a non-detect. Values displayed as ND.
4. NA - Not applicable.

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

Figures

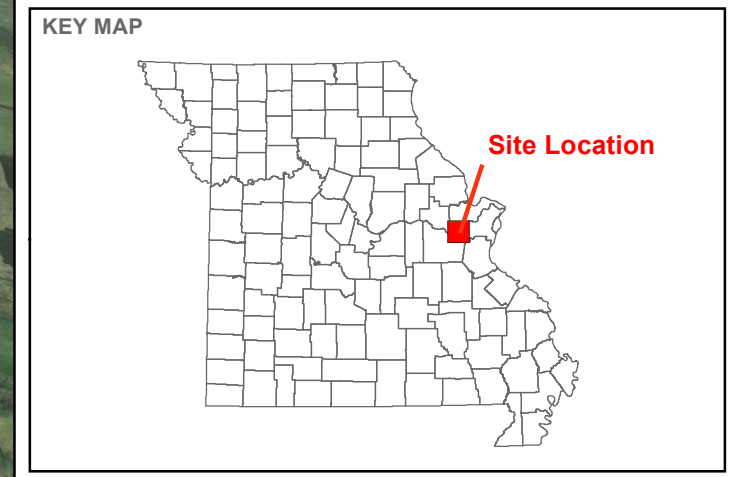


LEGEND

- Labadie Energy Center Property Boundary
- LCPB - Fly Ash Surface Impoundment

Ground/Surface Water Measurement Locations

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



NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS SURVEYED BY ZAHNER AND ASSOCIATES, INC.

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.



CLIENT
 AMEREN MISSOURI
 LABADIE ENERGY CENTER



PROJECT
 GROUNDWATER MONITORING PROGRAM

TITLE
SITE LOCATION AERIAL MAP AND MONITORING WELL LOCATIONS

CONSULTANT	YYYY-MM-DD	2018-12-07
	PREPARED	JSI
	DESIGN	JSI
	REVIEW	RJF
	APPROVED	MNH

PROJECT No. 153-1406 PHASE 0001 FIGURE 1

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MOC\Phase 0001 - Labadie Energy\800 - FIGURES\DRAWINGS\PRODUCTION\2018 Annual Report CPB FIGURE 1.mxd



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



LEGEND

- Labadie Energy Center Property Boundary
- LCPB - Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill (UWL) Cell 1

Groundwater Elevation Contours

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

Ground/Surface Water Measurement Locations

- LCPB Fly Ash Surface Impoundment Monitoring Well
- Background Monitoring Well
- LCL1 Monitoring Well
- Missouri River Gauge
- Groundwater Flow Direction

NOTES

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2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDR.
3. GROUNDWATER MONITORING WELLS (EXCEPT TMW-1 AND MW-26) SURVEYED BY ZAHNER AND ASSOCIATES, INC.
4. GROUNDWATER MONITORING WELLS TMW-1 AND MW-26 INSTALLED BY RIETZ & JENS, INC. AND SURVEYED BY KDG INC.
5. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
6. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
7. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.

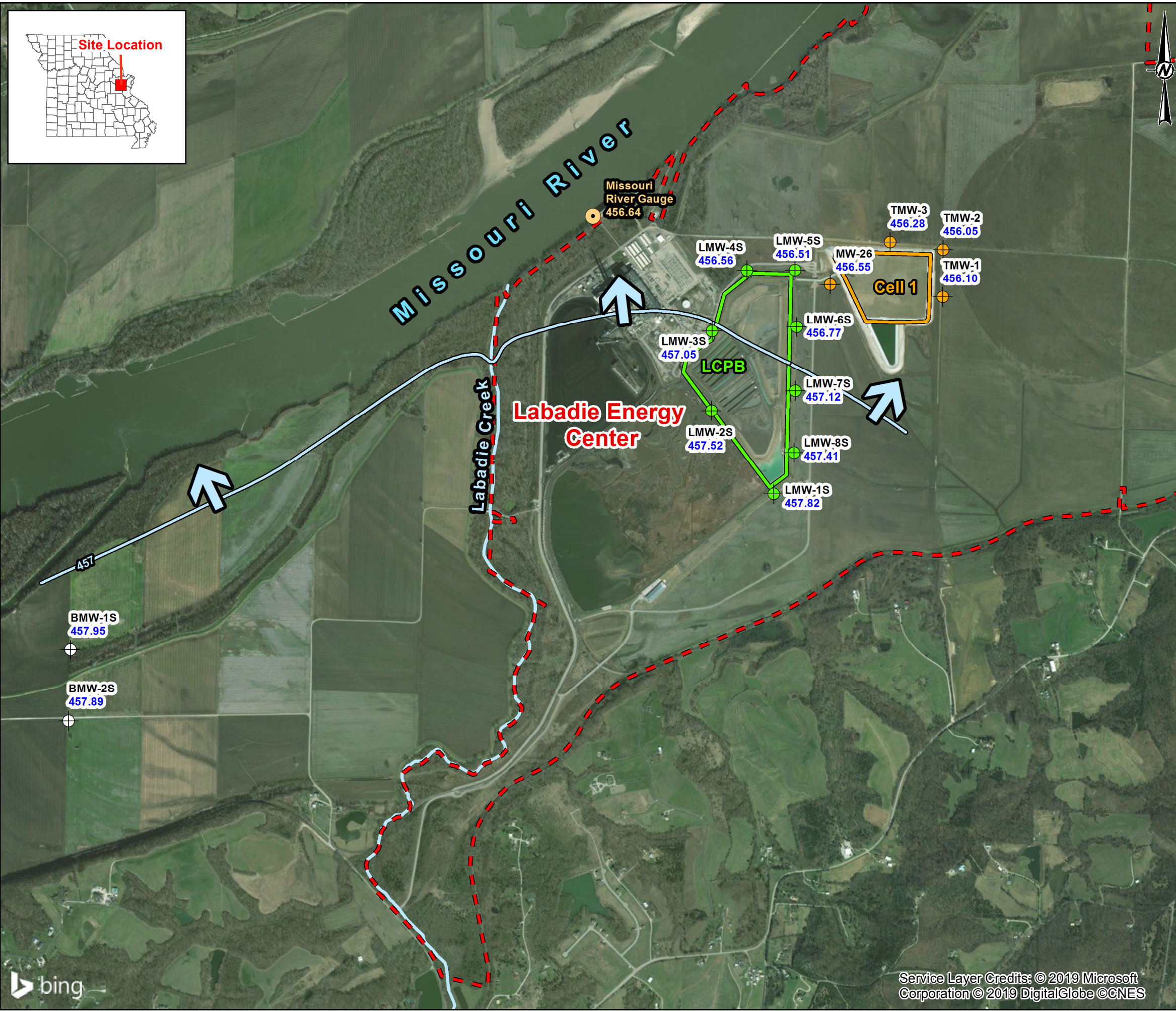
REFERENCES

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.
4. REITZ & JENS, INC. 2014. ADDITIONAL GROUND WATER DETECTION MONITORING WELLS INSTALLATION REPORT.

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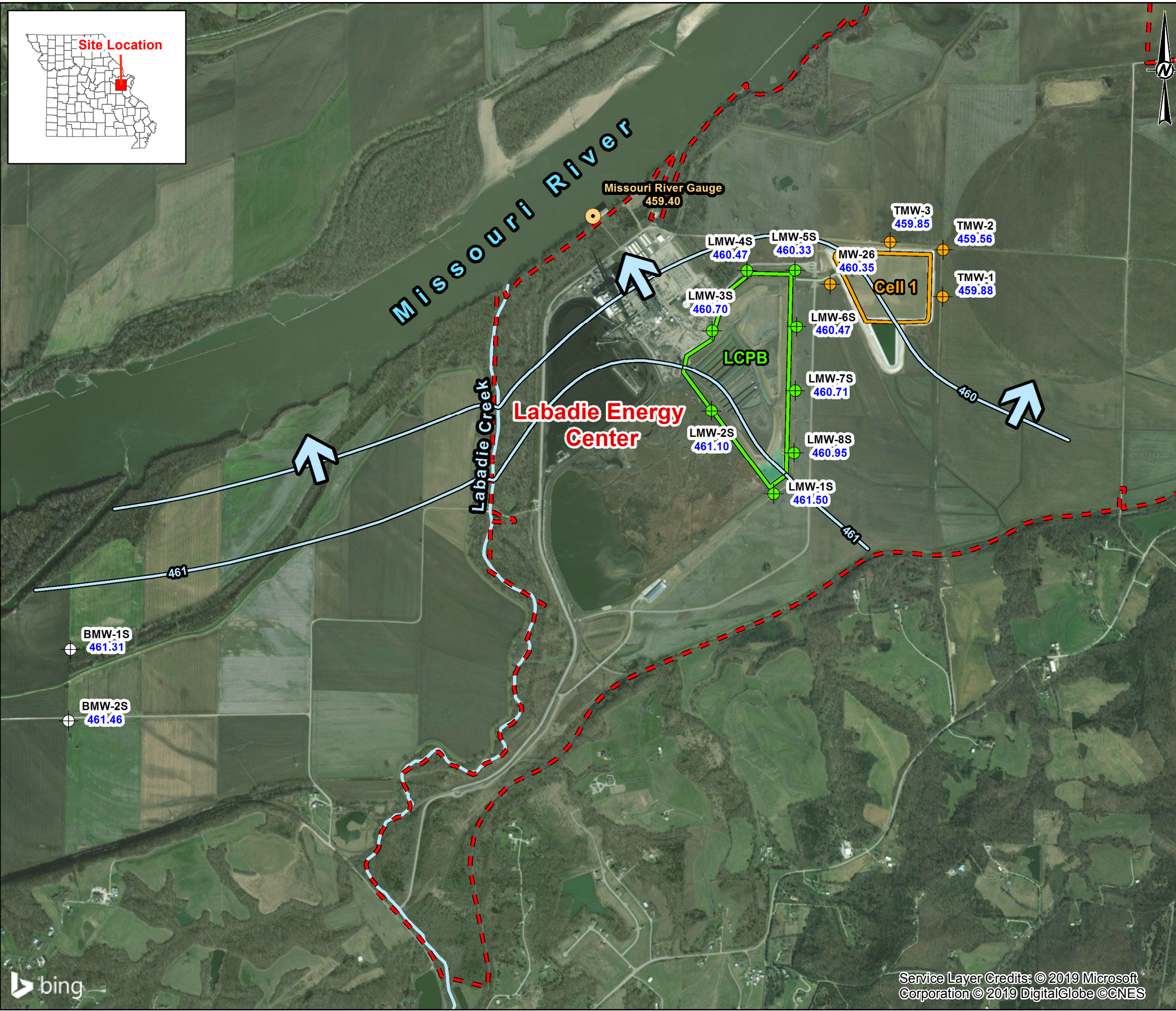
CLIENT			
AMEREN MISSOURI		LABADIE ENERGY CENTER	
PROJECT		CCR GROUNDWATER MONITORING PROGRAM	
TITLE		LCPB POTENTIOMETRIC SURFACE MAP - MAY 21, 2018	
CONSULTANT	YYYY-MM-DD	2018-12-20	
	PREPARED	EFT	
	DESIGN	JSI	
	REVIEW	EMS	
	APPROVED	MNH	
PROJECT No.	PHASE	Rev.	FIGURE
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LEGEND

- Labadie Energy Center Property Boundary
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- LCL1 - Utility Waste Landfill (UWL) Cell 1

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- Background Monitoring Well
- LCL1 Monitoring Well
- Missouri River Gauge
- Groundwater Flow Direction

NOTES

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7. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.

REFERENCES

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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.
4. REITZ & JENS, INC. 2014. ADDITIONAL GROUND WATER DETECTION MONITORING WELLS INSTALLATION REPORT.

0 1,500 3,000
Feet

CLIENT			
AMEREN MISSOURI		LABADIE ENERGY CENTER	
PROJECT		CCR GROUNDWATER MONITORING PROGRAM	
TITLE		LCPB POTENTIOMETRIC SURFACE MAP - NOVEMBER 7, 2018	
CONSULTANT	YYYY-MM-DD	2018-12-20	
	PREPARED	EFT	
	DESIGN	JSI	
	REVIEW	EMS	
	APPROVED	MNH	
PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0001	0.0	3

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Appendices

APPENDIX A

Laboratory Analytical Data

January 12, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CTR-FLY
Pace Project No.: 60261611

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60261611001	L-LMW-1S	Water	01/04/18 12:00	01/06/18 03:45
60261611002	L-LMW-2S	Water	01/05/18 10:15	01/06/18 03:45
60261611003	L-LMW-3S	Water	01/05/18 13:25	01/06/18 03:45
60261611004	L-LMW-4S	Water	01/05/18 13:20	01/06/18 03:45
60261611005	L-LMW-6S	Water	01/04/18 17:10	01/06/18 03:45
60261611006	L-LMW-7S	Water	01/04/18 15:20	01/06/18 03:45
60261611007	L-LMW-8S	Water	01/04/18 13:30	01/06/18 03:45
60261611008	L-LMW-DUP-1	Water	01/05/18 08:00	01/06/18 03:45
60261611009	L-LMW-FB-1	Water	01/05/18 13:15	01/06/18 03:45

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60261611001	L-LMW-1S	EPA 200.7	SMW	1	PASI-K
60261611002	L-LMW-2S	EPA 200.7	SMW	2	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60261611003	L-LMW-3S	EPA 200.7	SMW	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60261611004	L-LMW-4S	EPA 200.7	SMW	1	PASI-K
		EPA 300.0	OL	2	PASI-K
60261611005	L-LMW-6S	EPA 200.7	SMW	1	PASI-K
60261611006	L-LMW-7S	EPA 200.7	SMW	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60261611007	L-LMW-8S	EPA 200.7	SMW	1	PASI-K
		EPA 300.0	OL	2	PASI-K
60261611008	L-LMW-DUP-1	EPA 200.7	SMW	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60261611009	L-LMW-FB-1	EPA 200.7	SMW	2	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-1S **Lab ID: 60261611001** Collected: 01/04/18 12:00 Received: 01/06/18 03:45 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	4080	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:21	7440-42-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-2S **Lab ID: 60261611002** Collected: 01/05/18 10:15 Received: 01/06/18 03:45 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	5500	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:24	7440-42-8	
Calcium	63200	ug/L	100	36.0	1	01/08/18 15:00	01/11/18 12:24	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	445	mg/L	5.0	5.0	1		01/11/18 09:18		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.5	mg/L	2.0	1.0	2		01/10/18 21:53	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.10	1		01/09/18 10:10	16984-48-8	
Sulfate	249	mg/L	20.0	10.0	20		01/10/18 22:20	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-3S **Lab ID: 60261611003** Collected: 01/05/18 13:25 Received: 01/06/18 03:45 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	5590	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:30	7440-42-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	21.0	mg/L	2.0	1.0	2		01/10/18 22:48	16887-00-6	
Fluoride	0.49	mg/L	0.20	0.10	1		01/09/18 10:53	16984-48-8	
Sulfate	277	mg/L	20.0	10.0	20		01/10/18 23:02	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-4S **Lab ID: 60261611004** Collected: 01/05/18 13:20 Received: 01/06/18 03:45 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	8870	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:32	7440-42-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	22.6	mg/L	2.0	1.0	2		01/10/18 23:16	16887-00-6	
Sulfate	249	mg/L	20.0	10.0	20		01/10/18 23:30	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-6S **Lab ID: 60261611005** Collected: 01/04/18 17:10 Received: 01/06/18 03:45 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	595	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:35	7440-42-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-7S **Lab ID: 60261611006** Collected: 01/04/18 15:20 Received: 01/06/18 03:45 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	695	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:37	7440-42-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	52.7	mg/L	5.0	2.5	5		01/10/18 23:44	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-8S **Lab ID: 60261611007** Collected: 01/04/18 13:30 Received: 01/06/18 03:45 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	3760	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:39	7440-42-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	9.8	mg/L	1.0	0.50	1		01/09/18 12:04	16887-00-6	
Sulfate	152	mg/L	10.0	5.0	10		01/11/18 00:25	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-DUP-1 **Lab ID: 60261611008** Collected: 01/05/18 08:00 Received: 01/06/18 03:45 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	5580	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:46	7440-42-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.9	mg/L	2.0	1.0	2		01/11/18 00:39	16887-00-6	
Fluoride	0.48	mg/L	0.20	0.10	1		01/09/18 12:18	16984-48-8	
Sulfate	274	mg/L	20.0	10.0	20		01/11/18 00:53	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Sample: L-LMW-FB-1 **Lab ID: 60261611009** Collected: 01/05/18 13:15 Received: 01/06/18 03:45 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	13.3J	ug/L	100	3.5	1	01/08/18 15:00	01/11/18 12:49	7440-42-8	
Calcium	<36.0	ug/L	100	36.0	1	01/08/18 15:00	01/11/18 12:49	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		01/11/18 09:19		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	1.0	0.50	1		01/09/18 12:32	16887-00-6	
Fluoride	<0.10	mg/L	0.20	0.10	1		01/09/18 12:32	16984-48-8	
Sulfate	<0.50	mg/L	1.0	0.50	1		01/09/18 12:32	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

QC Batch: 509885 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60261611001, 60261611002, 60261611003, 60261611004, 60261611005, 60261611006, 60261611007, 60261611008, 60261611009

METHOD BLANK: 2088295 Matrix: Water
 Associated Lab Samples: 60261611001, 60261611002, 60261611003, 60261611004, 60261611005, 60261611006, 60261611007, 60261611008, 60261611009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<3.5	100	3.5	01/11/18 12:19	
Calcium	ug/L	<36.0	100	36.0	01/11/18 12:19	

LABORATORY CONTROL SAMPLE: 2088296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	990	99	85-115	
Calcium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2088297 2088298

Parameter	Units	2088297		2088298		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60261611002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	ug/L	5500	1000	1000	6730	6560	124	106	70-130	3	20
Calcium	ug/L	63200	10000	10000	74900	73100	116	99	70-130	2	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

QC Batch: 510170

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60261611002, 60261611009

METHOD BLANK: 2089188

Matrix: Water

Associated Lab Samples: 60261611002, 60261611009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/11/18 09:17	

LABORATORY CONTROL SAMPLE: 2089189

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	961	96	80-120	

SAMPLE DUPLICATE: 2089190

Parameter	Units	60261611002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	445	442	1	10	

SAMPLE DUPLICATE: 2089191

Parameter	Units	60261613007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	949	940	1	10	

SAMPLE DUPLICATE: 2089192

Parameter	Units	60261738002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1170	1200	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

QC Batch: 509912 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60261611002, 60261611003, 60261611007, 60261611008, 60261611009

METHOD BLANK: 2088428 Matrix: Water
 Associated Lab Samples: 60261611002, 60261611003, 60261611007, 60261611008, 60261611009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	01/09/18 09:42	
Fluoride	mg/L	<0.10	0.20	0.10	01/09/18 09:42	
Sulfate	mg/L	<0.50	1.0	0.50	01/09/18 09:42	

LABORATORY CONTROL SAMPLE: 2088429

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2088430 2088431

Parameter	Units	60261611002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.21	2.5	2.5	3.1	3.2	114	118	80-120	3	15	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

QC Batch: 510148 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60261611002, 60261611003, 60261611004, 60261611006, 60261611007, 60261611008

METHOD BLANK: 2089068 Matrix: Water
 Associated Lab Samples: 60261611002, 60261611003, 60261611004, 60261611006, 60261611007, 60261611008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	01/10/18 17:42	
Sulfate	mg/L	<0.50	1.0	0.50	01/10/18 17:42	

LABORATORY CONTROL SAMPLE: 2089069

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Sulfate	mg/L	5	5.3	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2089070 2089071

Parameter	Units	60261613007		2089071		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	13.8	5	5	19.8	19.8	120	119	80-120	0	15		
Sulfate	mg/L	436	250	250	713	718	111	113	80-120	1	15		

MATRIX SPIKE SAMPLE: 2089072

Parameter	Units	60261611002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20.5	10	32.1	116	80-120	
Sulfate	mg/L	249	100	368	119	80-120	

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

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.

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR-FLY

Pace Project No.: 60261611

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60261611001	L-LMW-1S	EPA 200.7	509885	EPA 200.7	509924
60261611002	L-LMW-2S	EPA 200.7	509885	EPA 200.7	509924
60261611003	L-LMW-3S	EPA 200.7	509885	EPA 200.7	509924
60261611004	L-LMW-4S	EPA 200.7	509885	EPA 200.7	509924
60261611005	L-LMW-6S	EPA 200.7	509885	EPA 200.7	509924
60261611006	L-LMW-7S	EPA 200.7	509885	EPA 200.7	509924
60261611007	L-LMW-8S	EPA 200.7	509885	EPA 200.7	509924
60261611008	L-LMW-DUP-1	EPA 200.7	509885	EPA 200.7	509924
60261611009	L-LMW-FB-1	EPA 200.7	509885	EPA 200.7	509924
60261611002	L-LMW-2S	SM 2540C	510170		
60261611009	L-LMW-FB-1	SM 2540C	510170		
60261611002	L-LMW-2S	EPA 300.0	509912		
60261611002	L-LMW-2S	EPA 300.0	510148		
60261611003	L-LMW-3S	EPA 300.0	509912		
60261611003	L-LMW-3S	EPA 300.0	510148		
60261611004	L-LMW-4S	EPA 300.0	510148		
60261611006	L-LMW-7S	EPA 300.0	510148		
60261611007	L-LMW-8S	EPA 300.0	509912		
60261611007	L-LMW-8S	EPA 300.0	510148		
60261611008	L-LMW-DUP-1	EPA 300.0	509912		
60261611008	L-LMW-DUP-1	EPA 300.0	510148		
60261611009	L-LMW-FB-1	EPA 300.0	509912		

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Sample Condition Upon Receipt

WO#: 60261611



Client Name: Golder Associates

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

Tracking #: Pace Shipping Label Used? Yes No

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

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: VOA Blue None

Cooler Temperature (°C): As-read 1.5/2.3 Corr. Factor CF 0.0 CF +0.2 Corrected 1.5/2.3

Date and initials of person examining contents: RH 1/6/18

Temperature should be above freezing to 6°C

Table with 3 columns: Question, Yes/No/N/A checkboxes, and handwritten notes (e.g., '5 Day', 'WT').

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Jami Cheek 1/8/18 Date:

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** Report To: **Mark Haddock (mhaddock@golder.com)** Copy To: **Jeffrey Ingram**

Address: **820 South Main Street, Suite 100** Project Name: **Ryan Feldman@golder.com**

Email To: **mhaddock@golder.com** Project Number: **15-3-14 06, 0001**

Phone: **636-724-9191** Fax: **636-724-9323**

Requested Due Date/TAT: **5 Day TAT**

Section B Required Project Information:

Company Name: **Jeffrey Ingram**

Address: **St Charles, MO 63301**

Purchase Order No.: **Standard TAT**

Site Location: **MO**

State: **MO**

Section C Invoice Information:

REGULATORY AGENCY: **NPDES** GROUND WATER DRINKING WATER OTHER

UST RCRA

Site Location: **MO**

State: **MO**

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↑	Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB			H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Boron	N	N								
1	L-LMW-15	DW	WT	G	10/18	1200		2																BP2N, BP2U	001	
2	L-LMW-25	WT	WT	G	10/18	1015		1																3(BP2N) 3(BP2U)	002	
3	L-LMW-25-MS	WT	WT	G	10/18	1015		1																		
4	L-LMW-25-MSD	WT	WT	G	10/18	1015		1																		
5	L-LMW-35	WT	WT	G	10/18	1325		1																BP2N, BP2U	003	
6	L-LMW-45	WT	WT	G	10/18	1520		1																		
7	L-LMW-55	WT	WT	G	10/18	1710		1																		
8	L-LMW-75	WT	WT	G	10/18	1520		1																		
9	L-LMW-85	WT	WT	G	10/18	1330		1																		
10	L-LMW-DUP-1	WT	WT	G	10/18	---		1																		
11	L-LMW-FB-1	WT	WT	G	10/18	1315		1																		
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Temp in °C	Received on	Cooler Sealed	Samples Intact
Confirm Analysis w/ Jeff Ingram	Jan Chh / PACE	11/05/18	1630	Jan Chh / PACE	11/15/18	1630	Y Y Y Y Y Y	1.5	Y	Y	Y
	Jan Chh / PACE	1700			11/16/18	0345		23	Y	Y	Y

SAMPLER NAME AND SIGNATURE: **Ryan Feldman**

PRINT Name of SAMPLER: **Ryan Feldman**

SIGNATURE of SAMPLER: *[Signature]*

DATE Signed (MM/DD/YYYY): **01/05/18**



MEMORANDUM

DATE January 15, 2018

Project No. 1531406

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Tommy Goodwin

EMAIL Tommy_Goodwin@golder.com

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – AMEREN GROUNDWATER – DATA PACKAGE 60261611

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

- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-Labadie-LMW - vs 2018 Sam
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001
 Validation Date: 4/15/18

Laboratory: Pace Analytical SDG #: 60261611
 Analytical Method (type and no.): Metals 200.7, 2540C TDS, 300.0 IC Anions
 Matrix: Air Soil/Sed. Water Waste
 Sample Names L-LMW1S, L-LMW-2S, L-LMW-3S, L-LMW-4S L-LMW-6S, L-LMW-7S, L-LMW-8S, L-LMW-DUP-1, S-LMW-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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grab _____
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW _____
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chloride, Sulfate _____
g) Were any matrix problems noted?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	B(13.3)
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dup-1@ L-LMW-35
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-1@ L-LMW-45
b) Were field dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-2S	Chloride	20.5	D	Result had a dilution factor of 2
L	Sulfate	249	D	
L-LMW-3S	Chloride	21.0	D	
L	Sulfate	277	D	
L-LMW-4S	Chloride	22.6	D	
L	Sulfate	249	D	
L-LMW-7S	I	52.7	D	
L-LMW-8S		152	D	
L-LMW-DUP-1	I	274	D	
L		Chloride	20.9		D
L-LMW-FB-1	Boron (B)	13.3	J		Result detected between PQL + MDL

Signature: Tommy J. Stroh

Date: 1/15/2018

June 07, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LEC LCPB
Pace Project No.: 60271049

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between May 23, 2018 and May 24, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Certification Number: 10090

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

Missouri Certification Number: 10090

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271049001	L-LMW-1S	Water	05/22/18 12:05	05/23/18 03:30
60271049002	L-LMW-2S	Water	05/22/18 12:15	05/23/18 03:30
60271049003	L-LMW-3S	Water	05/22/18 15:20	05/23/18 03:30
60271049004	L-LMW-7S	Water	05/22/18 15:45	05/23/18 03:30
60271049005	L-LMW-8S	Water	05/22/18 14:05	05/23/18 03:30
60271049006	L-BMW-1S	Water	05/21/18 13:05	05/23/18 03:30
60271049007	L-BMW-2S	Water	05/21/18 10:10	05/23/18 03:30
60271049008	L-LMW-DUP-1	Water	05/22/18 12:05	05/23/18 03:30
60271049009	L-LMW-FB-1	Water	05/22/18 12:10	05/23/18 03:30
60271160001	L-LMW-4S	Water	05/23/18 12:00	05/24/18 03:45
60271160002	L-LMW-5S	Water	05/23/18 10:20	05/24/18 03:45
60271160003	L-LMW-6S	Water	05/23/18 09:19	05/24/18 03:45

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SAMPLE ANALYTE COUNT

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271049001	L-LMW-1S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049002	L-LMW-2S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049003	L-LMW-3S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049004	L-LMW-7S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049005	L-LMW-8S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049006	L-BMW-1S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049007	L-BMW-2S	EPA 200.7	AGO	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049008	L-LMW-DUP-1	EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271049009	L-LMW-FB-1	EPA 200.7	AGO	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60271160001	L-LMW-4S	EPA 200.7	AGO	7	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271160002	L-LMW-5S	SM 2320B	LDB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
60271160003	L-LMW-6S	EPA 300.0	OL	3	PASI-K
		EPA 200.7	AGO	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-1S **Lab ID: 60271049001** Collected: 05/22/18 12:05 Received: 05/23/18 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	3780	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:13	7440-42-8	
Calcium	162000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:13	7440-70-2	M1
Iron	7040	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:13	7439-89-6	
Magnesium	29700	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:13	7439-95-4	
Manganese	1680	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:13	7439-96-5	
Potassium	5340	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:13	7440-09-7	
Sodium	9220	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:13	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	443	mg/L	20.0	4.9	1		06/04/18 19:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	664	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	4.7	mg/L	1.0	0.46	1		06/02/18 15:23	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		06/02/18 15:23	16984-48-8	
Sulfate	135	mg/L	10.0	2.4	10		06/04/18 14:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-2S **Lab ID: 60271049002** Collected: 05/22/18 12:15 Received: 05/23/18 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	5060	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:20	7440-42-8	
Calcium	54200	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:20	7440-70-2	
Iron	9.9J	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:20	7439-89-6	
Magnesium	108	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:20	7439-95-4	
Manganese	1.6J	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:20	7439-96-5	
Potassium	8880	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:20	7440-09-7	
Sodium	63800	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:20	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	32.3	mg/L	20.0	4.9	1		06/04/18 19:49		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	428	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.4	mg/L	2.0	0.92	2		06/04/18 14:49	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.063	1		06/02/18 16:08	16984-48-8	
Sulfate	227	mg/L	20.0	4.7	20		06/04/18 15:02	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-3S **Lab ID: 60271049003** Collected: 05/22/18 15:20 Received: 05/23/18 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	4220	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:22	7440-42-8	
Calcium	62200	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:22	7440-70-2	
Iron	3310	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:22	7439-89-6	
Magnesium	4960	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:22	7439-95-4	
Manganese	358	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:22	7439-96-5	
Potassium	7780	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:22	7440-09-7	
Sodium	98200	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:22	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	99.0	mg/L	20.0	4.9	1		06/04/18 20:03		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	546	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	21.5	mg/L	2.0	0.92	2		06/04/18 16:15	16887-00-6	
Fluoride	0.39	mg/L	0.20	0.063	1		06/02/18 16:23	16984-48-8	
Sulfate	271	mg/L	20.0	4.7	20		06/04/18 16:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-7S **Lab ID: 60271049004** Collected: 05/22/18 15:45 Received: 05/23/18 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	2100	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:24	7440-42-8	
Calcium	186000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:24	7440-70-2	
Iron	7750	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:24	7439-89-6	
Magnesium	41300	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:24	7439-95-4	
Manganese	1580	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:24	7439-96-5	
Potassium	6360	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:24	7440-09-7	
Sodium	16000	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:24	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	595	mg/L	20.0	4.9	1		06/04/18 20:11		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	769	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.4	mg/L	1.0	0.46	1		06/02/18 17:08	16887-00-6	
Fluoride	0.19J	mg/L	0.20	0.063	1		06/02/18 17:08	16984-48-8	
Sulfate	103	mg/L	10.0	2.4	10		06/04/18 16:42	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-8S **Lab ID: 60271049005** Collected: 05/22/18 14:05 Received: 05/23/18 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	7180	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:26	7440-42-8	
Calcium	159000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:26	7440-70-2	
Iron	5370	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:26	7439-89-6	
Magnesium	29200	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:26	7439-95-4	
Manganese	1390	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:26	7439-96-5	
Potassium	6740	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:26	7440-09-7	
Sodium	79200	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:26	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	348	mg/L	20.0	4.9	1		06/04/18 20:16		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	927	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.0	mg/L	1.0	0.46	1		06/02/18 17:23	16887-00-6	
Fluoride	0.31	mg/L	0.20	0.063	1		06/02/18 17:23	16984-48-8	
Sulfate	376	mg/L	50.0	11.8	50		06/04/18 16:56	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-BMW-1S **Lab ID: 60271049006** Collected: 05/21/18 13:05 Received: 05/23/18 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	128	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:29	7440-42-8	
Calcium	196000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:29	7440-70-2	
Iron	26300	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:29	7439-89-6	
Magnesium	49700	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:29	7439-95-4	
Manganese	2720	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:29	7439-96-5	
Potassium	6360	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:29	7440-09-7	
Sodium	24300	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:29	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	737	mg/L	20.0	4.9	1		05/31/18 12:00		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	784	mg/L	5.0	5.0	1		05/25/18 16:04		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	6.7	mg/L	1.0	0.46	1		06/02/18 17:38	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		06/02/18 17:38	16984-48-8	
Sulfate	57.0	mg/L	5.0	1.2	5		06/04/18 17:10	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-BMW-2S **Lab ID: 60271049007** Collected: 05/21/18 10:10 Received: 05/23/18 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	55.7J	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:35	7440-42-8	
Calcium	120000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:35	7440-70-2	
Iron	15.3J	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:35	7439-89-6	
Magnesium	18900	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:35	7439-95-4	
Manganese	1.2J	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:35	7439-96-5	
Potassium	6140	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:35	7440-09-7	
Sodium	6770	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:35	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	377	mg/L	20.0	4.9	1		05/31/18 12:07		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	437	mg/L	5.0	5.0	1		05/25/18 16:04		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	2.6	mg/L	1.0	0.46	1		06/02/18 17:52	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.063	1		06/02/18 17:52	16984-48-8	
Sulfate	25.0	mg/L	2.0	0.47	2		06/04/18 17:23	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-DUP-1 **Lab ID: 60271049008** Collected: 05/22/18 12:05 Received: 05/23/18 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	7140	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:37	7440-42-8	
Calcium	161000	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:37	7440-70-2	
Iron	5780	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:37	7439-89-6	
Magnesium	29400	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:37	7439-95-4	
Manganese	1410	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:37	7439-96-5	
Potassium	6770	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:37	7440-09-7	
Sodium	80300	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:37	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	337	mg/L	20.0	4.9	1		06/04/18 20:20		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	919	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.0	mg/L	1.0	0.46	1		06/02/18 18:07	16887-00-6	
Fluoride	0.32	mg/L	0.20	0.063	1		06/02/18 18:07	16984-48-8	
Sulfate	376	mg/L	50.0	11.8	50		06/04/18 17:37	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-FB-1 **Lab ID: 60271049009** Collected: 05/22/18 12:10 Received: 05/23/18 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	18.6J	ug/L	100	12.5	1	05/31/18 11:50	06/01/18 15:40	7440-42-8	
Calcium	<53.5	ug/L	200	53.5	1	05/31/18 11:50	06/01/18 15:40	7440-70-2	
Iron	<6.1	ug/L	50.0	6.1	1	05/31/18 11:50	06/01/18 15:40	7439-89-6	
Magnesium	<14.0	ug/L	50.0	14.0	1	05/31/18 11:50	06/01/18 15:40	7439-95-4	
Manganese	<0.73	ug/L	5.0	0.73	1	05/31/18 11:50	06/01/18 15:40	7439-96-5	
Potassium	<79.3	ug/L	500	79.3	1	05/31/18 11:50	06/01/18 15:40	7440-09-7	
Sodium	<157	ug/L	500	157	1	05/31/18 11:50	06/01/18 15:40	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	<4.9	mg/L	20.0	4.9	1		06/05/18 11:22		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		05/29/18 15:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		06/02/18 18:22	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		06/02/18 18:22	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		06/02/18 18:22	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-4S **Lab ID: 60271160001** Collected: 05/23/18 12:00 Received: 05/24/18 03:45 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	9160	ug/L	100	12.5	1	05/31/18 17:10	06/01/18 16:20	7440-42-8	
Calcium	93100	ug/L	200	53.5	1	05/31/18 17:10	06/01/18 16:20	7440-70-2	
Iron	6020	ug/L	50.0	6.1	1	05/31/18 17:10	06/01/18 16:20	7439-89-6	
Magnesium	19500	ug/L	50.0	14.0	1	05/31/18 17:10	06/01/18 16:20	7439-95-4	
Manganese	1190	ug/L	5.0	0.73	1	05/31/18 17:10	06/01/18 16:20	7439-96-5	
Potassium	6100	ug/L	500	79.3	1	05/31/18 17:10	06/01/18 16:20	7440-09-7	
Sodium	95700	ug/L	500	157	1	05/31/18 17:10	06/01/18 16:20	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	282	mg/L	20.0	4.9	1		06/05/18 13:24		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	701	mg/L	5.0	5.0	1		05/29/18 15:26		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	24.1	mg/L	2.0	0.92	2		06/03/18 16:41	16887-00-6	
Fluoride	0.33	mg/L	0.20	0.063	1		06/02/18 19:07	16984-48-8	
Sulfate	227	mg/L	20.0	4.7	20		06/03/18 17:26	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-5S **Lab ID: 60271160002** Collected: 05/23/18 10:20 Received: 05/24/18 03:45 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	74.9J	ug/L	100	12.5	1	05/31/18 17:10	06/01/18 16:22	7440-42-8	
Calcium	134000	ug/L	200	53.5	1	05/31/18 17:10	06/01/18 16:22	7440-70-2	
Iron	87.4	ug/L	50.0	6.1	1	05/31/18 17:10	06/01/18 16:22	7439-89-6	
Magnesium	14900	ug/L	50.0	14.0	1	05/31/18 17:10	06/01/18 16:22	7439-95-4	
Manganese	18.2	ug/L	5.0	0.73	1	05/31/18 17:10	06/01/18 16:22	7439-96-5	
Potassium	3430	ug/L	500	79.3	1	05/31/18 17:10	06/01/18 16:22	7440-09-7	
Sodium	22000	ug/L	500	157	1	05/31/18 17:10	06/01/18 16:22	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	440	mg/L	20.0	4.9	1		06/06/18 10:00		D6
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	495	mg/L	5.0	5.0	1		05/29/18 15:26		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	4.4	mg/L	1.0	0.46	1		06/02/18 19:22	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.063	1		06/02/18 19:22	16984-48-8	
Sulfate	19.2	mg/L	1.0	0.24	1		06/02/18 19:22	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Sample: L-LMW-6S **Lab ID: 60271160003** Collected: 05/23/18 09:19 Received: 05/24/18 03:45 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	3170	ug/L	100	12.5	1	05/31/18 17:10	06/01/18 16:29	7440-42-8	
Calcium	160000	ug/L	200	53.5	1	05/31/18 17:10	06/01/18 16:29	7440-70-2	
Iron	9940	ug/L	50.0	6.1	1	05/31/18 17:10	06/01/18 16:29	7439-89-6	
Magnesium	30200	ug/L	50.0	14.0	1	05/31/18 17:10	06/01/18 16:29	7439-95-4	
Manganese	1600	ug/L	5.0	0.73	1	05/31/18 17:10	06/01/18 16:29	7439-96-5	
Potassium	6350	ug/L	500	79.3	1	05/31/18 17:10	06/01/18 16:29	7440-09-7	
Sodium	20900	ug/L	500	157	1	05/31/18 17:10	06/01/18 16:29	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	513	mg/L	20.0	4.9	1		06/06/18 10:06		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	671	mg/L	5.0	5.0	1		05/29/18 15:26		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	7.7	mg/L	1.0	0.46	1		06/02/18 20:07	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		06/02/18 20:07	16984-48-8	
Sulfate	81.7	mg/L	5.0	1.2	5		06/03/18 17:41	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60271049

QC Batch: 528052 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008, 60271049009

METHOD BLANK: 2163156 Matrix: Water
Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008, 60271049009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	06/01/18 15:09	
Calcium	ug/L	<53.5	200	53.5	06/01/18 15:09	
Iron	ug/L	<6.1	50.0	6.1	06/01/18 15:09	
Magnesium	ug/L	<14.0	50.0	14.0	06/01/18 15:09	
Manganese	ug/L	<0.73	5.0	0.73	06/01/18 15:09	
Potassium	ug/L	<79.3	500	79.3	06/01/18 15:09	
Sodium	ug/L	<157	500	157	06/01/18 15:09	

LABORATORY CONTROL SAMPLE: 2163157

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	9510	95	85-115	
Iron	ug/L	10000	9820	98	85-115	
Magnesium	ug/L	10000	9680	97	85-115	
Manganese	ug/L	1000	937	94	85-115	
Potassium	ug/L	10000	9740	97	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2163158 2163159

Parameter	Units	60271049001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Boron	ug/L	3780	1000	1000	4740	4660	96	88	70-130	2	20		
Calcium	ug/L	162000	10000	10000	174000	168000	118	66	70-130	3	20	M1	
Iron	ug/L	7040	10000	10000	16800	16400	97	94	70-130	2	20		
Magnesium	ug/L	29700	10000	10000	38800	38100	91	84	70-130	2	20		
Manganese	ug/L	1680	1000	1000	2640	2590	96	91	70-130	2	20		
Potassium	ug/L	5340	10000	10000	15500	15100	102	97	70-130	3	20		
Sodium	ug/L	9220	10000	10000	19900	19300	107	101	70-130	3	20		

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Parameter	Units	2163160		2163161		MS % Rec	MSD % Rec	% Rec	Limits	RPD	Max RPD	Qual
		60271349004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Boron	ug/L	4240	1000	1000	4930	4770	69	53	70-130	3	20	M1
Calcium	ug/L	71400	10000	10000	78900	76600	74	51	70-130	3	20	M1
Iron	ug/L	5330	10000	10000	15200	14700	98	94	70-130	3	20	
Magnesium	ug/L	14300	10000	10000	23000	22100	87	78	70-130	4	20	
Manganese	ug/L	275	1000	1000	1200	1150	92	88	70-130	4	20	
Potassium	ug/L	4900	10000	10000	14900	14500	100	96	70-130	3	20	
Sodium	ug/L	59100	10000	10000	67200	65400	82	64	70-130	3	20	M1

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528173 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60271160001, 60271160002, 60271160003

METHOD BLANK: 2163463 Matrix: Water

Associated Lab Samples: 60271160001, 60271160002, 60271160003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	06/01/18 16:18	
Calcium	ug/L	<53.5	200	53.5	06/01/18 16:18	
Iron	ug/L	<6.1	50.0	6.1	06/01/18 16:18	
Magnesium	ug/L	<14.0	50.0	14.0	06/01/18 16:18	
Manganese	ug/L	<0.73	5.0	0.73	06/01/18 16:18	
Potassium	ug/L	<79.3	500	79.3	06/01/18 16:18	
Sodium	ug/L	<157	500	157	06/01/18 16:18	

LABORATORY CONTROL SAMPLE: 2163464

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	932	93	85-115	
Calcium	ug/L	10000	9440	94	85-115	
Iron	ug/L	10000	9820	98	85-115	
Magnesium	ug/L	10000	9340	93	85-115	
Manganese	ug/L	1000	913	91	85-115	
Potassium	ug/L	10000	9630	96	85-115	
Sodium	ug/L	10000	9870	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2163465 2163466

Parameter	Units	60271161001		2163465		2163466		% Rec	MSD	% Rec	MSD	% Rec	MSD	% Rec	Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Result											
Boron	ug/L	122	1000	1100	1080	98	96	70-130	2	20								
Calcium	ug/L	162000	10000	172000	174000	96	118	70-130	1	20								
Iron	ug/L	188	10000	10000	9930	98	97	70-130	1	20								
Magnesium	ug/L	43600	10000	53600	53500	99	99	70-130	0	20								
Manganese	ug/L	3030	1000	3970	3970	94	94	70-130	0	20								
Potassium	ug/L	5770	10000	15800	15800	101	101	70-130	0	20								
Sodium	ug/L	11800	10000	22200	22200	104	104	70-130	0	20								

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 527976

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60271049006, 60271049007

METHOD BLANK: 2162949

Matrix: Water

Associated Lab Samples: 60271049006, 60271049007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	05/31/18 10:30	

LABORATORY CONTROL SAMPLE: 2162950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	508	102	90-110	

SAMPLE DUPLICATE: 2162951

Parameter	Units	60271033003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	436	449	3	10	

SAMPLE DUPLICATE: 2162952

Parameter	Units	60271048010 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	457	453	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528561

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049008

METHOD BLANK: 2165227

Matrix: Water

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	06/04/18 18:00	

LABORATORY CONTROL SAMPLE: 2165228

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	498	100	90-110	

SAMPLE DUPLICATE: 2165231

Parameter	Units	60271046003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	472	468	1	10	

SAMPLE DUPLICATE: 2165232

Parameter	Units	60271048007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	352	351	0	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528620

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60271049009, 60271160001

METHOD BLANK: 2165496

Matrix: Water

Associated Lab Samples: 60271049009, 60271160001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	06/05/18 11:20	

LABORATORY CONTROL SAMPLE: 2165497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	524	105	90-110	

SAMPLE DUPLICATE: 2165498

Parameter	Units	60271130003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	133	138	4	10	

SAMPLE DUPLICATE: 2165499

Parameter	Units	60271331001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	96.6	94.3	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528700

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60271160002, 60271160003

METHOD BLANK: 2165829

Matrix: Water

Associated Lab Samples: 60271160002, 60271160003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	06/06/18 09:54	

LABORATORY CONTROL SAMPLE: 2165830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	515	103	90-110	

SAMPLE DUPLICATE: 2165833

Parameter	Units	60271160002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	440	514	16	10	D6

SAMPLE DUPLICATE: 2165834

Parameter	Units	60271232001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	326	323	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 527158

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60271049006, 60271049007

METHOD BLANK: 2159306

Matrix: Water

Associated Lab Samples: 60271049006, 60271049007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/25/18 16:04	

LABORATORY CONTROL SAMPLE: 2159307

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

SAMPLE DUPLICATE: 2159308

Parameter	Units	60271048010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	519	518	0	10	

SAMPLE DUPLICATE: 2159309

Parameter	Units	60271046005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	5690	5570	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 527615

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049008, 60271049009

METHOD BLANK: 2161667

Matrix: Water

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049008, 60271049009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/29/18 15:24	

LABORATORY CONTROL SAMPLE: 2161668

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 2161669

Parameter	Units	60271049001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	664	657	1	10	

SAMPLE DUPLICATE: 2161670

Parameter	Units	60271138001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	833	827	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 527618

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60271160001, 60271160002, 60271160003

METHOD BLANK: 2161671

Matrix: Water

Associated Lab Samples: 60271160001, 60271160002, 60271160003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/29/18 15:24	

LABORATORY CONTROL SAMPLE: 2161672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 2161673

Parameter	Units	60271146005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1080	1080	1	10	

SAMPLE DUPLICATE: 2161674

Parameter	Units	60271152005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	<5.0		10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528267

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008, 60271049009

METHOD BLANK: 2163963

Matrix: Water

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008, 60271049009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/02/18 14:54	
Fluoride	mg/L	<0.063	0.20	0.063	06/02/18 14:54	
Sulfate	mg/L	<0.24	1.0	0.24	06/02/18 14:54	

LABORATORY CONTROL SAMPLE: 2163964

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	2.4	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2163965 2163966

Parameter	Units	60271049001		2163965		2163966		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chloride	mg/L	4.7	5	5	9.7	9.7	100	90-110	0	15	
Fluoride	mg/L	0.18J	2.5	2.5	2.7	2.7	101	90-110	1	15	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528268 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60271160001, 60271160002, 60271160003

METHOD BLANK: 2163967 Matrix: Water

Associated Lab Samples: 60271160001, 60271160002, 60271160003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/02/18 18:37	
Fluoride	mg/L	<0.063	0.20	0.063	06/02/18 18:37	
Sulfate	mg/L	<0.24	1.0	0.24	06/02/18 18:37	

LABORATORY CONTROL SAMPLE: 2163968

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	2.4	96	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2163969 2163970

Parameter	Units	60271161001		2163969		2163970		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Chloride	mg/L	3.2	5	5	8.3	8.2	102	99	90-110	1	15		
Fluoride	mg/L	0.26	2.5	2.5	2.9	2.8	104	102	90-110	2	15		

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528385

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008

METHOD BLANK: 2164750

Matrix: Water

Associated Lab Samples: 60271049001, 60271049002, 60271049003, 60271049004, 60271049005, 60271049006, 60271049007, 60271049008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/04/18 08:18	
Sulfate	mg/L	<0.24	1.0	0.24	06/04/18 08:18	

LABORATORY CONTROL SAMPLE: 2164751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2164752 2164753

Parameter	Units	60271048003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Sulfate	mg/L	402	250	250	667	655	106	101	90-110	2	15		

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

QC Batch: 528386

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60271160001, 60271160003

METHOD BLANK: 2164755

Matrix: Water

Associated Lab Samples: 60271160001, 60271160003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/03/18 09:14	
Sulfate	mg/L	<0.24	1.0	0.24	06/03/18 09:14	

LABORATORY CONTROL SAMPLE: 2164756

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2164757 2164758

Parameter	Units	60270840003		2164757		2164758		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	37.9	25	25	63.8	63.6	104	103	90-110	0	15	

MATRIX SPIKE SAMPLE: 2164759

Parameter	Units	60271161001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	100	50	150	99	90-110	

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QUALIFIERS

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

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.

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

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271049001	L-LMW-1S	EPA 200.7	528052	EPA 200.7	528111
60271049002	L-LMW-2S	EPA 200.7	528052	EPA 200.7	528111
60271049003	L-LMW-3S	EPA 200.7	528052	EPA 200.7	528111
60271049004	L-LMW-7S	EPA 200.7	528052	EPA 200.7	528111
60271049005	L-LMW-8S	EPA 200.7	528052	EPA 200.7	528111
60271049006	L-BMW-1S	EPA 200.7	528052	EPA 200.7	528111
60271049007	L-BMW-2S	EPA 200.7	528052	EPA 200.7	528111
60271049008	L-LMW-DUP-1	EPA 200.7	528052	EPA 200.7	528111
60271049009	L-LMW-FB-1	EPA 200.7	528052	EPA 200.7	528111
60271160001	L-LMW-4S	EPA 200.7	528173	EPA 200.7	528218
60271160002	L-LMW-5S	EPA 200.7	528173	EPA 200.7	528218
60271160003	L-LMW-6S	EPA 200.7	528173	EPA 200.7	528218
60271049001	L-LMW-1S	SM 2320B	528561		
60271049002	L-LMW-2S	SM 2320B	528561		
60271049003	L-LMW-3S	SM 2320B	528561		
60271049004	L-LMW-7S	SM 2320B	528561		
60271049005	L-LMW-8S	SM 2320B	528561		
60271049006	L-BMW-1S	SM 2320B	527976		
60271049007	L-BMW-2S	SM 2320B	527976		
60271049008	L-LMW-DUP-1	SM 2320B	528561		
60271049009	L-LMW-FB-1	SM 2320B	528620		
60271160001	L-LMW-4S	SM 2320B	528620		
60271160002	L-LMW-5S	SM 2320B	528700		
60271160003	L-LMW-6S	SM 2320B	528700		
60271049001	L-LMW-1S	SM 2540C	527615		
60271049002	L-LMW-2S	SM 2540C	527615		
60271049003	L-LMW-3S	SM 2540C	527615		
60271049004	L-LMW-7S	SM 2540C	527615		
60271049005	L-LMW-8S	SM 2540C	527615		
60271049006	L-BMW-1S	SM 2540C	527158		
60271049007	L-BMW-2S	SM 2540C	527158		
60271049008	L-LMW-DUP-1	SM 2540C	527615		
60271049009	L-LMW-FB-1	SM 2540C	527615		
60271160001	L-LMW-4S	SM 2540C	527618		
60271160002	L-LMW-5S	SM 2540C	527618		
60271160003	L-LMW-6S	SM 2540C	527618		
60271049001	L-LMW-1S	EPA 300.0	528267		
60271049001	L-LMW-1S	EPA 300.0	528385		
60271049002	L-LMW-2S	EPA 300.0	528267		
60271049002	L-LMW-2S	EPA 300.0	528385		
60271049003	L-LMW-3S	EPA 300.0	528267		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LEC LCPB

Pace Project No.: 60271049

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271049003	L-LMW-3S	EPA 300.0	528385		
60271049004	L-LMW-7S	EPA 300.0	528267		
60271049004	L-LMW-7S	EPA 300.0	528385		
60271049005	L-LMW-8S	EPA 300.0	528267		
60271049005	L-LMW-8S	EPA 300.0	528385		
60271049006	L-BMW-1S	EPA 300.0	528267		
60271049006	L-BMW-1S	EPA 300.0	528385		
60271049007	L-BMW-2S	EPA 300.0	528267		
60271049007	L-BMW-2S	EPA 300.0	528385		
60271049008	L-LMW-DUP-1	EPA 300.0	528267		
60271049008	L-LMW-DUP-1	EPA 300.0	528385		
60271049009	L-LMW-FB-1	EPA 300.0	528267		
60271160001	L-LMW-4S	EPA 300.0	528268		
60271160001	L-LMW-4S	EPA 300.0	528386		
60271160002	L-LMW-5S	EPA 300.0	528268		
60271160003	L-LMW-6S	EPA 300.0	528268		
60271160003	L-LMW-6S	EPA 300.0	528386		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60271049



Client Name: Bolder Associates

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

Tracking #: _____ Pace Shipping Label Used? Yes No

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

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: 301 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.8 Corr. Factor 1.0 Corrected 3.8

Date and initials of person examining contents: JLS
5/23/18

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Check _____ Date: 5/23/18



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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100 St Charles, MO 63301	Copy To:	Jeffrey Ingram Ryan Feldmann	Company Name:	
Email To:	mhaddock@golder.com	Purchase Order No.:		Address:	
Phone:	636-724-9191	Project Name:	Ameren Labadie Energy Center LCPB	Face Quote Reference:	
Requested Due Date/TAT:	Standard	Project Number:	153-1406.0001E	Face Project Manager:	Jamie Church
				Face Profile #:	9285
			REGULATORY AGENCY		
			<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER		
			Site Location: MO STATE: MO		

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	Preservatives	Analysis Test ↑	Requested Analysis Filtered (Y/N)						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB				Y	N	N	N	N	N		
1	L-LMW-1S	DRINKING WATER DW	WT	G	5/22/18	12:05	6	Unpreserved	Metals* TDS Chloride/Fluoride/Sulfate	Y	N	N	N	N	N	N	60271049
2	L-LMW-2S	WASTE WATER WW	WT	G	5/22/18	12:15	2	HCl	Alkalinity	Y	N	N	N	N	N	N	60271049
3	L-LMW-3S	WASTE WATER WW	WT	G	5/22/18	15:20	2	HNO3		Y	N	N	N	N	N	N	60271049
4	L-LMW-4S	SOIL/SOLID	WT	G						Y	N	N	N	N	N	N	60271049
5	L-LMW-5S	SOIL/SOLID	WT	G						Y	N	N	N	N	N	N	60271049
6	L-LMW-6G	SOIL/SOLID	WT	G						Y	N	N	N	N	N	N	60271049
7	L-LMW-7S	WASTE WATER WW	WT	G	5/22/18	15:45	2	H2SO4		Y	N	N	N	N	N	N	60271049
8	L-LMW-8S	WASTE WATER WW	WT	G	5/22/18	14:05	1	Unpreserved		Y	N	N	N	N	N	N	60271049
9	L-BMW-1S	WASTE WATER WW	WT	G	5/22/18	14:05	1	Unpreserved		Y	N	N	N	N	N	N	60271049
10	L-BMW-2S	WASTE WATER WW	WT	G	5/22/18	10:10	1	Unpreserved		Y	N	N	N	N	N	N	60271049
11	L-LMW-DUP-1	WASTE WATER WW	WT	G	5/22/18	—	1	Unpreserved		Y	N	N	N	N	N	N	60271049
12	L-LMW-FB-1	WASTE WATER WW	WT	G	5/22/18	12:10	1	Unpreserved		Y	N	N	N	N	N	N	60271049

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
EPA 2007-B, C ₆ / Mn, F, Na, Fe, Mg	Ryan Feldmann / Golder	5/22/18	17:20	Ryan Feldmann	5/22/18	17:35	Y Y Y Y
	Ryan Feldmann	5/22/18	18:00	Ryan Feldmann	5/22/18	08:30	Y Y Y Y

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

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Ryan Feldmann
SIGNATURE of SAMPLER:	<i>Ryan Feldmann</i>
DATE Signed (MM/DD/YYYY):	5/22/18

*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** August 13, 2018**Project No.** 1531406**TO** Project File
Golder Associates**CC** Amanda Derhake, Jeff Ingram**FROM** Samantha DiCenso**EMAIL** samantha_dicenso@golder.com**DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – AMEREN GROUNDWATER –
DATA PACKAGE 60271049**

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

- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as a diluted result (D).
- When a field duplicate RPD or a lab duplicate RPD was not met, associated samples were qualified as estimated values (J).
- When analytes exceeded the recovery criteria for the MS/MSD of a sample, the sample result was qualified as an estimated value (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren Groundwater
 Reviewer: S. DiCenzo

Project Manager: J. Ingram
 Project Number: 1531406
 Validation Date: 8/13/18

Laboratory: Pace Analytical SDG #: 60271049

Analytical Method (type and no.): Metals 200.7, Alkalinity 2320B, TDS 2540C, Anions 300.0

Matrix: Air Soil/Sed. Water Waste

Sample Names L-LMW-1S, L-LMW-2S, L-LMW-3S, L-LMW-7S, L-LMW-8S, L-BMW-1S, L-BMW-2S, L-LMW-DUP-1, L-LMW-FB-1, L-LMW-4S, L-LMW-5S, L-LMW-6S

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>5/21/18 - 5/23/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (<u>grab</u> /composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, cond, turb, temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performance from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>See notes</u>
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>See notes</u>

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See notes
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L-LMW-BS : L-LMW-DUP-1
b) Were field dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	max RPD: 7% (<20%)
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See notes

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See notes
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See notes
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

Dilution: Chloride	Sulfate	Blanks: L-LMW-FB-1 : L-LMW-2S
L-LMW-2S [x2]	L-LMW-7S [x10]	FB detections: Boron 18.6 J % (sample > 10x PQL and > 10x blank)
L-LMW-3S [x2]	L-LMW-2S [x20]	
	L-LMW-3S [x20]	
	L-LMW-7S [x10]	Duplicates: Lab dup for Alkalinity >10% for sample associated with L-LMW-5S
	L-LMW-8S [x50]	
	L-BMW-1S [x5]	
	L-BMW-2S [x2]	MS/MSD:
L-LMW-4S [x2]	L-LMW-DUP-1 [x50]	Calcium below %Rec for MSD of L-LMW-1S
	L-LMW-4S [x20]	Boron, Calcium and sodium below %Rec for MS and/or MSD for a sample not included in this data package
	L-LMW-6S [x5]	

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-1S	sulfate	135	D	Analyzed at a dilution
L-LMW-2S	chloride	20.4	D	"
"	sulfate	227	D	"
L-LMW-3S	chloride	21.5	D	"
"	sulfate	271	D	"
L-LMW-7S	sulfate	103	D	"
L-LMW-8S	sulfate	376	D	"
L-BMW-1S	sulfate	57.0	D	"
L-BMW-2S	sulfate	25.0	D	"
L-LMW-DUP-1	sulfate	376	D	"
L-LMW-4S	chloride	24.1	D	"
"	sulfate	227	D	"
L-LMW-6S	sulfate	81.7	D	"
L-LMW-1S	Calcium	162000	J	MS/MSD %rec outside QC limits
L-LMW-5S	Alkalinity	440	J	Lab duplicate RPD > 10%

Signature: Samantha Wiley

Date: 8/13/18

July 16, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN MO CCR MONITORING
Pace Project No.: 60274099

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on July 04, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Certification Number: 10090

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

Missouri Certification Number: 10090

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60274099001	L-LMW-4S	Water	07/02/18 08:55	07/04/18 04:40
60274099002	L-LMW-7S	Water	07/02/18 10:30	07/04/18 04:40
60274099003	L-LMW-8S	Water	07/02/18 11:45	07/04/18 04:40
60274099004	L-LMW-1S	Water	07/02/18 13:20	07/04/18 04:40
60274099005	L-DUP-1	Water	07/02/18 08:55	07/04/18 04:40
60274099006	L-FB-1	Water	07/02/18 10:22	07/04/18 04:40

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SAMPLE ANALYTE COUNT

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60274099001	L-LMW-4S	EPA 300.0	OL	1	PASI-K
60274099002	L-LMW-7S	EPA 300.0	OL	1	PASI-K
60274099003	L-LMW-8S	EPA 200.7	TDS	2	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60274099004	L-LMW-1S	EPA 300.0	OL	1	PASI-K
60274099005	L-DUP-1	EPA 300.0	OL	1	PASI-K
60274099006	L-FB-1	EPA 200.7	TDS	2	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-LMW-4S **Lab ID: 60274099001** Collected: 07/02/18 08:55 Received: 07/04/18 04:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Fluoride	0.38	mg/L	0.20	0.063	1		07/14/18 21:56	16984-48-8	

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-LMW-7S **Lab ID: 60274099002** Collected: 07/02/18 10:30 Received: 07/04/18 04:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Sulfate	86.6	mg/L	10.0	2.4	10		07/15/18 14:15	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-LMW-8S **Lab ID: 60274099003** Collected: 07/02/18 11:45 Received: 07/04/18 04:40 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	6790	ug/L	100	12.5	1	07/05/18 16:00	07/12/18 22:11	7440-42-8	
Calcium	152000	ug/L	200	53.5	1	07/05/18 16:00	07/12/18 22:11	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	894	mg/L	5.0	5.0	1		07/09/18 11:21		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	18.9	mg/L	1.0	0.46	1		07/15/18 14:28	16887-00-6	M1
Fluoride	0.34	mg/L	0.20	0.063	1		07/15/18 14:28	16984-48-8	
Sulfate	321	mg/L	20.0	4.7	20		07/15/18 15:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-LMW-1S **Lab ID: 60274099004** Collected: 07/02/18 13:20 Received: 07/04/18 04:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	133	mg/L	10.0	2.4	10		07/15/18 16:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-DUP-1 **Lab ID: 60274099005** Collected: 07/02/18 08:55 Received: 07/04/18 04:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Fluoride	0.38	mg/L	0.20	0.063	1		07/14/18 23:26	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Sample: L-FB-1 **Lab ID: 60274099006** Collected: 07/02/18 10:22 Received: 07/04/18 04:40 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	48.0J	ug/L	100	12.5	1	07/05/18 16:00	07/12/18 22:17	7440-42-8	
Calcium	<53.5	ug/L	200	53.5	1	07/05/18 16:00	07/12/18 22:17	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		07/09/18 11:21		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		07/15/18 16:23	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		07/15/18 16:23	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		07/15/18 16:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN MO CCR MONITORING
Pace Project No.: 60274099

QC Batch: 533027 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60274099003, 60274099006

METHOD BLANK: 2183110 Matrix: Water
Associated Lab Samples: 60274099003, 60274099006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	07/12/18 21:32	
Calcium	ug/L	<53.5	200	53.5	07/12/18 21:32	

LABORATORY CONTROL SAMPLE: 2183111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	983	98	85-115	
Calcium	ug/L	10000	9960	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2183112 2183113

Parameter	Units	60274082001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Boron	ug/L	2.2 mg/L	1000	3120	3140	93	94	70-130	0	20		
Calcium	ug/L	136 mg/L	10000	142000	143000	60	65	70-130	0	20 M1		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2183199 2183200

Parameter	Units	60274099003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Boron	ug/L	6790	1000	7740	7690	95	90	70-130	1	20		
Calcium	ug/L	152000	10000	161000	161000	90	93	70-130	0	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

QC Batch: 533427

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60274099003, 60274099006

METHOD BLANK: 2184817

Matrix: Water

Associated Lab Samples: 60274099003, 60274099006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	07/09/18 11:21	

LABORATORY CONTROL SAMPLE: 2184818

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

SAMPLE DUPLICATE: 2184819

Parameter	Units	60274099003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	894	893	0	10	

SAMPLE DUPLICATE: 2184820

Parameter	Units	60274126003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	414	410	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

QC Batch: 534414

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60274099001, 60274099005

METHOD BLANK: 2188763

Matrix: Water

Associated Lab Samples: 60274099001, 60274099005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.063	0.20	0.063	07/14/18 21:26	

LABORATORY CONTROL SAMPLE: 2188764

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

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QUALITY CONTROL DATA

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

QC Batch: 534438

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60274099002, 60274099003, 60274099004, 60274099006

METHOD BLANK: 2189085

Matrix: Water

Associated Lab Samples: 60274099002, 60274099003, 60274099004, 60274099006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	07/15/18 12:33	
Fluoride	mg/L	<0.063	0.20	0.063	07/15/18 12:33	
Sulfate	mg/L	<0.24	1.0	0.24	07/15/18 12:33	

LABORATORY CONTROL SAMPLE: 2189086

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2189087 2189088

Parameter	Units	60274099003		2189087		2189088		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	18.9	5	5	24.7	24.7	114	115	90-110	0	15	E,M1
Fluoride	mg/L	0.34	2.5	2.5	2.9	2.9	102	104	90-110	1	15	
Sulfate	mg/L	321	100	100	418	422	97	101	90-110	1	15	E

MATRIX SPIKE SAMPLE: 2189089

Parameter	Units	60274126003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	14.8	5	20.5	113	90-110	E,M1
Fluoride	mg/L	0.37	2.5	2.9	101	90-110	
Sulfate	mg/L	83.7	50	133	99	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

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

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN MO CCR MONITORING

Pace Project No.: 60274099

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60274099003	L-LMW-8S	EPA 200.7	533027	EPA 200.7	533115
60274099006	L-FB-1	EPA 200.7	533027	EPA 200.7	533115
60274099003	L-LMW-8S	SM 2540C	533427		
60274099006	L-FB-1	SM 2540C	533427		
60274099001	L-LMW-4S	EPA 300.0	534414		
60274099002	L-LMW-7S	EPA 300.0	534438		
60274099003	L-LMW-8S	EPA 300.0	534438		
60274099004	L-LMW-1S	EPA 300.0	534438		
60274099005	L-DUP-1	EPA 300.0	534414		
60274099006	L-FB-1	EPA 300.0	534438		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO# : 60274099
60274099

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: 30L Type of Ice: Web Blue None

Cooler Temperature (°C): As-read 2.8 Corr. Factor HW Corrected 3.8

Date and initials of person examining contents: JLS JB 7/5

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Chok Date: 7/5/18

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: 820 South Main Street, Suite 100
 ST Charles, MO 63301
 Email To: maddock@golder.com
 Phone: 636-724-9191 Fax: 636-724-9323
 Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Mark Haddock (mhaddock@golder.com)
 Copy To: Jeffrey Ingram, Ryan Feldmann
 Purchase Order No.:
 Project Name: Ameron MO CCR Monitors
 Project Number: 153-1406.0001

Section C

Invoice Information:

Attention:
 Company Name:
 Address:
 Pace Quote Reference:
 Pace Project Manager: Jamie Church
 Pace Profile #: 9285
 Site Location: MO
 STATE: MO

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Page: 1 of 1

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DW DRINKING WATER WT WASTE WATER WW WASTE WATER PRODUCT P SOILSOLID SL OIL WP AR OT TS	COLLECTED				# OF CONTAINERS	Preservatives	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME					
1	L-LMW-45			7/2/18	0855	2	H2SO4 HNO3 HCl NaOH Na2S2O8 Methanol Other	N		182000	
2	L-LMW-75			7/2/18	1030	1	Unpreserved	N		182000	
3	L-LMW-85			7/2/18	1145	1		N		182000	
4	L-LMW-95			7/2/18	1320	1		N		182000	
5	L-Dig-1			7/2/18		1		N		182000	
6	L-FB-1			7/2/18		1		N		182000	
7	L-LMW-85-MS			7/2/18		1		N		182000	
8	L-LMW-85-MS D			7/2/18		1		N		182000	
9											
10											
11											
12											

RELEASER	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Mark Haddock	07/13/18	1800	[Signature]	7/13/18	0940	Y Y Y Y
Jeffrey Ingram						

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Ryan Feldmann
 SIGNATURE of SAMPLER: [Signature]
 DATE Signed (MM/DD/YYYY): 07/03/18



MEMORANDUM

DATE August 20, 2018

Project No. 1531406

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Tommy Goodwin

EMAIL Tommy_Goodwin@golder.com

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – AMEREN GROUNDWATER – DATA PACKAGE 60274099

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

- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a sample corresponding to a matrix spike/matrix spike duplicate that was outside the allowed range the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren - GW-LCPB-VS2
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406
 Validation Date: 8/20/18

Laboratory: Pace Analytical SDG #: 60274099
 Analytical Method (type and no.): Anions (300.0), Metals (200.7), TDS (2540C)
 Matrix: Air Soil/Sed. Water Waste
 Sample Names: L-LMW-4S, L-LMW-7S, L-LMW-8S, L-LMW-1S, L-DUP-1, L-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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grab
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sulfate
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ca, Cl ⁻ , SO ₄ ²⁻

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	B (45.0)
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dup-1@ L-LMW-4
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-1@ L-LMW-7 S
b) Were field dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RPD = 0%
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RPD = 0%

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cl ⁻
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ca, Cl ⁻
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-85	(SO ₄ ²⁻) Sulfate	86.6	D	Analyzed @ Dilution
L-LMW-85	↓	321	↓	↓
↓	Chloride (Cl ⁻)	18.9	J	MS/MSD outside limits
L-LMW-15	SO ₄ ²⁻	133	D	Analyzed @ Dilution

Signature: Tommy J. Wood, L.A.

Date: 8/20/2018

January 24, 2019

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE LCPB
Pace Project No.: 60286214

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between November 08, 2018 and November 09, 2018. 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, 12/27/18: Metals list trimmed.

REV-1A, 1/24/19: Project name revised.

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
Jeffrey Ingram, Golder Associates
Eric Schneider, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Certification Number: 10090

Arkansas Drinking Water

WY STR Certification #: 2456.01

Arkansas Certification #: 18-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 / E10426

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-18-11

Utah Certification #: KS000212018-8

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

Missouri Certification Number: 10090

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60286214001	L-LMW-1S	Water	11/07/18 13:10	11/08/18 04:02
60286214002	L-LMW-3S	Water	11/07/18 15:30	11/08/18 04:02
60286214003	L-BMW-1S	Water	11/07/18 10:00	11/08/18 04:02
60286214004	L-BMW-2S	Water	11/07/18 12:25	11/08/18 04:02
60286214005	L-LMW-FB-1	Water	11/07/18 15:25	11/08/18 04:02
60286214007	L-LMW-4S	Water	11/08/18 15:15	11/09/18 03:12
60286214008	L-LMW-5S	Water	11/08/18 13:35	11/09/18 03:12
60286214009	L-LMW-6S	Water	11/08/18 12:25	11/09/18 03:12
60286214010	L-LMW-7S	Water	11/08/18 10:55	11/09/18 03:12
60286214011	L-LMW-8S	Water	11/08/18 09:15	11/09/18 03:12
60286214017	L-LMW-DUP-1	Water	11/08/18 08:00	11/09/18 03:12
60286214018	L- LMW-2S	Water	11/08/18 14:45	11/09/18 03:12

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60286214001	L-LMW-1S	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214002	L-LMW-3S	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214003	L-BMW-1S	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214004	L-BMW-2S	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214005	L-LMW-FB-1	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214007	L-LMW-4S	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60286214008	L-LMW-5S	SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
60286214009	L-LMW-6S	EPA 300.0	LDB	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
60286214010	L-LMW-7S	SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
60286214011	L-LMW-8S	SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
60286214017	L-LMW-DUP-1	EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60286214018	L- LMW-2S	SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
		EPA 365.4	BLA	1	PASI-K
		EPA 200.7	JGP	7	PASI-K
		SM 2320B	ZMH	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		SM 3500-Fe B#4	LDB	1	PASI-K
		SM 3500-Fe B#4	RMT	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 365.4	BLA	1	PASI-K

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-1S **Lab ID: 60286214001** Collected: 11/07/18 13:10 Received: 11/08/18 04:02 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	13900	ug/L	100	12.5	1	11/12/18 18:25	11/20/18 21:02	7440-42-8	M1
Calcium	301000	ug/L	200	53.5	1	11/12/18 18:25	11/20/18 21:02	7440-70-2	M1
Iron	25400	ug/L	50.0	6.1	1	11/12/18 18:25	11/20/18 21:02	7439-89-6	
Magnesium	56500	ug/L	50.0	14.0	1	11/12/18 18:25	11/20/18 21:02	7439-95-4	
Manganese	3040	ug/L	5.0	0.73	1	11/12/18 18:25	11/20/18 21:02	7439-96-5	
Potassium	7730	ug/L	500	79.3	1	11/12/18 18:25	11/20/18 21:02	7440-09-7	
Sodium	51500	ug/L	500	157	1	11/12/18 18:25	11/20/18 21:02	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	327	mg/L	20.0	4.9	1		11/16/18 17:37		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1580	mg/L	5.0	5.0	1		11/13/18 13:44		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	11.9	mg/L	0.050		1		11/26/18 10:55	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	13.5	mg/L	1.0	0.060	5		11/10/18 12:28		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	16.4	mg/L	1.0	0.29	1		11/25/18 19:08	16887-00-6	
Fluoride	<0.19	mg/L	0.20	0.19	1		11/25/18 19:08	16984-48-8	M1
Sulfate	982	mg/L	100	24.0	100		11/25/18 19:51	14808-79-8	M1
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.45	mg/L	0.10	0.050	1		11/15/18 12:24	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-3S **Lab ID: 60286214002** Collected: 11/07/18 15:30 Received: 11/08/18 04:02 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	3840	ug/L	100	12.5	1	11/12/18 18:25	11/20/18 21:09	7440-42-8	
Calcium	58200	ug/L	200	53.5	1	11/12/18 18:25	11/20/18 21:09	7440-70-2	
Iron	3400	ug/L	50.0	6.1	1	11/12/18 18:25	11/20/18 21:09	7439-89-6	
Magnesium	4200	ug/L	50.0	14.0	1	11/12/18 18:25	11/20/18 21:09	7439-95-4	
Manganese	309	ug/L	5.0	0.73	1	11/12/18 18:25	11/20/18 21:09	7439-96-5	
Potassium	7510	ug/L	500	79.3	1	11/12/18 18:25	11/20/18 21:09	7440-09-7	
Sodium	88300	ug/L	500	157	1	11/12/18 18:25	11/20/18 21:09	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	91.1	mg/L	20.0	4.9	1		11/16/18 17:43		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	496	mg/L	5.0	5.0	1		11/13/18 13:44		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	3.7	mg/L	0.050		1		11/26/18 10:55	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	<0.012	mg/L	0.20	0.012	1		11/10/18 13:36		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.9	mg/L	2.0	0.58	2		11/21/18 22:29	16887-00-6	
Fluoride	0.46	mg/L	0.20	0.19	1		11/25/18 20:33	16984-48-8	
Sulfate	263	mg/L	20.0	4.8	20		11/25/18 20:47	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.50	mg/L	0.10	0.050	1		11/14/18 10:51	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-BMW-1S **Lab ID: 60286214003** Collected: 11/07/18 10:00 Received: 11/08/18 04:02 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	151	ug/L	100	12.5	1	11/12/18 18:25	11/20/18 21:11	7440-42-8	
Calcium	201000	ug/L	200	53.5	1	11/12/18 18:25	11/20/18 21:11	7440-70-2	
Iron	31100	ug/L	50.0	6.1	1	11/12/18 18:25	11/20/18 21:11	7439-89-6	
Magnesium	49400	ug/L	50.0	14.0	1	11/12/18 18:25	11/20/18 21:11	7439-95-4	
Manganese	2930	ug/L	5.0	0.73	1	11/12/18 18:25	11/20/18 21:11	7439-96-5	
Potassium	6100	ug/L	500	79.3	1	11/12/18 18:25	11/20/18 21:11	7440-09-7	
Sodium	22200	ug/L	500	157	1	11/12/18 18:25	11/20/18 21:11	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	733	mg/L	20.0	4.9	1		11/16/18 17:49		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	751	mg/L	5.0	5.0	1		11/13/18 13:44		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	27.7	mg/L	0.050		1		11/26/18 10:55	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	3.4	mg/L	0.20	0.012	1		11/10/18 12:13		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	5.6	mg/L	1.0	0.29	1		11/25/18 21:02	16887-00-6	
Fluoride	<0.19	mg/L	0.20	0.19	1		11/25/18 21:02	16984-48-8	
Sulfate	36.7	mg/L	5.0	1.2	5		11/25/18 21:44	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.86	mg/L	0.10	0.050	1		11/14/18 16:26	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-BMW-2S **Lab ID: 60286214004** Collected: 11/07/18 12:25 Received: 11/08/18 04:02 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	84.8J	ug/L	100	12.5	1	11/12/18 18:25	11/20/18 21:13	7440-42-8	
Calcium	128000	ug/L	200	53.5	1	11/12/18 18:25	11/20/18 21:13	7440-70-2	
Iron	12.6J	ug/L	50.0	6.1	1	11/12/18 18:25	11/20/18 21:13	7439-89-6	
Magnesium	21200	ug/L	50.0	14.0	1	11/12/18 18:25	11/20/18 21:13	7439-95-4	
Manganese	3.5J	ug/L	5.0	0.73	1	11/12/18 18:25	11/20/18 21:13	7439-96-5	B
Potassium	7530	ug/L	500	79.3	1	11/12/18 18:25	11/20/18 21:13	7440-09-7	
Sodium	9390	ug/L	500	157	1	11/12/18 18:25	11/20/18 21:13	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	392	mg/L	20.0	4.9	1		11/16/18 18:05		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	958	mg/L	5.0	5.0	1		11/13/18 06:46		L2
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	0.0J	mg/L	0.050		1		11/26/18 10:55	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	0.36	mg/L	0.20	0.012	1		11/10/18 12:22		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	1.3	mg/L	1.0	0.29	1		11/21/18 23:35	16887-00-6	B
Fluoride	<0.19	mg/L	0.20	0.19	1		11/21/18 23:35	16984-48-8	CH
Sulfate	28.4	mg/L	2.0	0.48	2		11/25/18 21:58	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	<0.050	mg/L	0.10	0.050	1		11/14/18 16:29	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-FB-1 **Lab ID: 60286214005** Collected: 11/07/18 15:25 Received: 11/08/18 04:02 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	17.9J	ug/L	100	12.5	1	11/12/18 18:25	11/20/18 21:16	7440-42-8	
Calcium	<53.5	ug/L	200	53.5	1	11/12/18 18:25	11/20/18 21:16	7440-70-2	
Iron	9.8J	ug/L	50.0	6.1	1	11/12/18 18:25	11/20/18 21:16	7439-89-6	
Magnesium	14.2J	ug/L	50.0	14.0	1	11/12/18 18:25	11/20/18 21:16	7439-95-4	
Manganese	1.9J	ug/L	5.0	0.73	1	11/12/18 18:25	11/20/18 21:16	7439-96-5	B
Potassium	<79.3	ug/L	500	79.3	1	11/12/18 18:25	11/20/18 21:16	7440-09-7	
Sodium	<157	ug/L	500	157	1	11/12/18 18:25	11/20/18 21:16	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	<4.9	mg/L	20.0	4.9	1		11/16/18 18:09		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	40.0	mg/L	5.0	5.0	1		11/13/18 06:46		L2
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	0.0J	mg/L	0.050		1		11/26/18 10:55	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	0.64	mg/L	0.20	0.012	1		11/10/18 13:35		1e,H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.29	mg/L	1.0	0.29	1		11/22/18 00:40	16887-00-6	
Fluoride	<0.19	mg/L	0.20	0.19	1		11/22/18 00:40	16984-48-8	CH
Sulfate	<0.24	mg/L	1.0	0.24	1		11/22/18 00:40	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	<0.050	mg/L	0.10	0.050	1		11/14/18 16:30	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-4S **Lab ID: 60286214007** Collected: 11/08/18 15:15 Received: 11/09/18 03:12 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	9450	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 11:50	7440-42-8	
Calcium	132000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 11:50	7440-70-2	
Iron	8060	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 11:50	7439-89-6	
Magnesium	27100	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 11:50	7439-95-4	
Manganese	1720	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 11:50	7439-96-5	
Potassium	7050	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 11:50	7440-09-7	
Sodium	89200	ug/L	500	157	1	11/26/18 16:15	11/27/18 11:50	7440-23-5	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	351	mg/L	20.0	4.9	1		11/17/18 20:38		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	757	mg/L	5.0	5.0	1		11/15/18 14:11		
Iron, Ferric (Calculation)									
Analytical Method: SM 3500-Fe B#4									
Iron, Ferric	5.8	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous									
Analytical Method: SM 3500-Fe B#4									
Iron, Ferrous	2.3	mg/L	0.20	0.012	1		11/10/18 15:47		H6
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	23.8	mg/L	2.0	0.58	2		11/25/18 11:45	16887-00-6	
Fluoride	0.23	mg/L	0.20	0.19	1		11/25/18 11:29	16984-48-8	
Sulfate	270	mg/L	20.0	4.8	20		11/25/18 12:01	14808-79-8	
365.4 Total Phosphorus									
Analytical Method: EPA 365.4									
Phosphorus	0.37	mg/L	0.10	0.050	1		11/15/18 11:03	7723-14-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-5S **Lab ID: 60286214008** Collected: 11/08/18 13:35 Received: 11/09/18 03:12 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	97.2J	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 11:53	7440-42-8	
Calcium	153000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 11:53	7440-70-2	
Iron	27.7J	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 11:53	7439-89-6	
Magnesium	17900	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 11:53	7439-95-4	
Manganese	57.7	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 11:53	7439-96-5	
Potassium	3180	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 11:53	7440-09-7	
Sodium	6700	ug/L	500	157	1	11/26/18 16:15	11/27/18 11:53	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	454	mg/L	20.0	4.9	1		11/17/18 20:44		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	473	mg/L	5.0	5.0	1		11/15/18 14:12		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	0.028J	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	<0.012	mg/L	0.20	0.012	1		11/10/18 15:44		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	4.0	mg/L	1.0	0.29	1		11/25/18 12:49	16887-00-6	
Fluoride	<0.19	mg/L	0.20	0.19	1		11/25/18 12:49	16984-48-8	
Sulfate	12.1	mg/L	1.0	0.24	1		11/25/18 12:49	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	<0.050	mg/L	0.10	0.050	1		11/15/18 11:04	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-6S **Lab ID: 60286214009** Collected: 11/08/18 12:25 Received: 11/09/18 03:12 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	3760	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 11:55	7440-42-8	
Calcium	182000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 11:55	7440-70-2	
Iron	27300	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 11:55	7439-89-6	
Magnesium	32900	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 11:55	7439-95-4	
Manganese	2430	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 11:55	7439-96-5	
Potassium	6930	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 11:55	7440-09-7	
Sodium	23800	ug/L	500	157	1	11/26/18 16:15	11/27/18 11:55	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	538	mg/L	20.0	4.9	1		11/17/18 20:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	740	mg/L	5.0	5.0	1		11/15/18 14:11		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	27.2	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	0.062J	mg/L	0.20	0.012	1		11/10/18 15:41		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	12.2	mg/L	1.0	0.29	1		11/26/18 21:49	16887-00-6	
Fluoride	0.20	mg/L	0.20	0.19	1		11/26/18 21:49	16984-48-8	
Sulfate	122	mg/L	20.0	4.8	20		11/26/18 22:17	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.37	mg/L	0.10	0.050	1		11/15/18 11:05	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-7S **Lab ID: 60286214010** Collected: 11/08/18 10:55 Received: 11/09/18 03:12 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	6620	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 11:57	7440-42-8	
Calcium	149000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 11:57	7440-70-2	
Iron	7150	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 11:57	7439-89-6	
Magnesium	33200	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 11:57	7439-95-4	
Manganese	1190	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 11:57	7439-96-5	
Potassium	6640	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 11:57	7440-09-7	
Sodium	50300	ug/L	500	157	1	11/26/18 16:15	11/27/18 11:57	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	365	mg/L	20.0	4.9	1		11/17/18 20:55		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	734	mg/L	5.0	5.0	1		11/15/18 14:11		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	4.4	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	2.8	mg/L	0.20	0.012	1		11/10/18 15:38		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	19.3	mg/L	2.0	0.58	2		11/26/18 23:14	16887-00-6	
Fluoride	0.20	mg/L	0.20	0.19	1		11/26/18 23:00	16984-48-8	
Sulfate	257	mg/L	50.0	12.0	50		11/26/18 23:28	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.23	mg/L	0.10	0.050	1		11/15/18 11:06	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-8S **Lab ID: 60286214011** Collected: 11/08/18 09:15 Received: 11/09/18 03:12 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	6970	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 12:08	7440-42-8	
Calcium	167000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 12:08	7440-70-2	
Iron	4490	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 12:08	7439-89-6	
Magnesium	31700	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 12:08	7439-95-4	
Manganese	1880	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 12:08	7439-96-5	
Potassium	7470	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 12:08	7440-09-7	
Sodium	69100	ug/L	500	157	1	11/26/18 16:15	11/27/18 12:08	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	368	mg/L	20.0	4.9	1		11/17/18 21:10		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	867	mg/L	5.0	5.0	1		11/15/18 14:11		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	3.5	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	1.0	mg/L	0.20	0.012	1		11/10/18 15:33		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	19.5	mg/L	1.0	0.29	1		11/26/18 23:42	16887-00-6	
Fluoride	0.35	mg/L	0.20	0.19	1		11/26/18 23:42	16984-48-8	
Sulfate	334	mg/L	50.0	12.0	50		11/27/18 00:11	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.21	mg/L	0.10	0.050	1		11/15/18 11:07	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L-LMW-DUP-1 **Lab ID: 60286214017** Collected: 11/08/18 08:00 Received: 11/09/18 03:12 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	6910	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 12:11	7440-42-8	
Calcium	166000	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 12:11	7440-70-2	
Iron	4470	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 12:11	7439-89-6	
Magnesium	31300	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 12:11	7439-95-4	
Manganese	1870	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 12:11	7439-96-5	
Potassium	7360	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 12:11	7440-09-7	
Sodium	68400	ug/L	500	157	1	11/26/18 16:15	11/27/18 12:11	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	385	mg/L	20.0	4.9	1		11/17/18 21:17		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	859	mg/L	5.0	5.0	1		11/15/18 14:11		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	2.9	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	1.6	mg/L	0.20	0.012	1		11/10/18 15:32		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	1.4	mg/L	1.0	0.29	1		11/25/18 14:41	16887-00-6	
Fluoride	<0.19	mg/L	0.20	0.19	1		11/25/18 14:41	16984-48-8	
Sulfate	12.0	mg/L	1.0	0.24	1		11/25/18 14:41	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	0.19	mg/L	0.10	0.050	1		11/15/18 11:09	7723-14-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Sample: L- LMW-2S **Lab ID: 60286214018** Collected: 11/08/18 14:45 Received: 11/09/18 03:12 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	4210	ug/L	100	12.5	1	11/26/18 16:15	11/27/18 12:13	7440-42-8	
Calcium	55100	ug/L	200	53.5	1	11/26/18 16:15	11/27/18 12:13	7440-70-2	
Iron	10.4J	ug/L	50.0	6.1	1	11/26/18 16:15	11/27/18 12:13	7439-89-6	
Magnesium	108	ug/L	50.0	14.0	1	11/26/18 16:15	11/27/18 12:13	7439-95-4	
Manganese	1.3J	ug/L	5.0	0.73	1	11/26/18 16:15	11/27/18 12:13	7439-96-5	B
Potassium	8640	ug/L	500	79.3	1	11/26/18 16:15	11/27/18 12:13	7440-09-7	
Sodium	59000	ug/L	500	157	1	11/26/18 16:15	11/27/18 12:13	7440-23-5	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	31.1	mg/L	20.0	4.9	1		11/20/18 10:58		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	420	mg/L	5.0	5.0	1		11/15/18 14:58		
Iron, Ferric (Calculation)		Analytical Method: SM 3500-Fe B#4							
Iron, Ferric	0.010J	mg/L	0.050		1		11/29/18 08:05	7439-89-6	
Iron, Ferrous		Analytical Method: SM 3500-Fe B#4							
Iron, Ferrous	<0.012	mg/L	0.20	0.012	1		11/17/18 10:33		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	22.8	mg/L	2.0	0.58	2		11/27/18 00:39	16887-00-6	
Fluoride	0.23	mg/L	0.20	0.19	1		11/27/18 00:25	16984-48-8	
Sulfate	222	mg/L	50.0	12.0	50		11/27/18 00:53	14808-79-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4							
Phosphorus	<0.050	mg/L	0.10	0.050	1		11/20/18 16:35	7723-14-0	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554744 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004, 60286214005

METHOD BLANK: 2275800 Matrix: Water
 Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	11/20/18 20:58	
Calcium	ug/L	<53.5	200	53.5	11/20/18 20:58	
Iron	ug/L	<6.1	50.0	6.1	11/20/18 20:58	
Magnesium	ug/L	<14.0	50.0	14.0	11/20/18 20:58	
Manganese	ug/L	1.8J	5.0	0.73	11/20/18 20:58	
Potassium	ug/L	<79.3	500	79.3	11/20/18 20:58	
Sodium	ug/L	<157	500	157	11/20/18 20:58	

LABORATORY CONTROL SAMPLE: 2275801

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1010	101	85-115	
Calcium	ug/L	10000	9880	99	85-115	
Iron	ug/L	10000	9670	97	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	975	98	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2275802 2275803

Parameter	Units	60286214001		60286214002		60286214003		60286214004		60286214005		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.				
Boron	ug/L	13900	1000	1000	15100	15200	125	139	70-130	1	20	M1			
Calcium	ug/L	301000	10000	10000	315000	316000	142	156	70-130	0	20	M1			
Iron	ug/L	25400	10000	10000	35100	35000	97	97	70-130	0	20				
Magnesium	ug/L	56500	10000	10000	66600	67000	101	105	70-130	1	20				
Manganese	ug/L	3040	1000	1000	4020	4040	98	100	70-130	0	20				
Potassium	ug/L	7730	10000	10000	17600	17700	99	100	70-130	1	20				
Sodium	ug/L	51500	10000	10000	62600	62800	111	113	70-130	0	20				

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2275804 2275805

Parameter	Units	60286215003		60286215004		60286215005		60286215006		60286215007		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.						
Boron	ug/L	8310	1000	1000	9270	9180	96	87	70-130	1	20				
Calcium	ug/L	220000	10000	10000	231000	228000	113	81	70-130	1	20				

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2275804												2275805	
Parameter	Units	60286215003 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
Iron	ug/L	11900	10000	10000	21500	21300	96	94	70-130	1	20		
Magnesium	ug/L	28100	10000	10000	37600	37200	95	92	70-130	1	20		
Manganese	ug/L	2110	1000	1000	3060	3030	95	93	70-130	1	20		
Potassium	ug/L	6910	10000	10000	17100	16900	102	100	70-130	1	20		
Sodium	ug/L	76500	10000	10000	87200	86600	107	100	70-130	1	20		

MATRIX SPIKE SAMPLE: 2275806												
Parameter	Units	60286215005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers					
								Boron	ug/L	113	1000	1120
Calcium	ug/L	114000	10000	124000	98	70-130						
Iron	ug/L	22700	10000	32300	96	70-130						
Magnesium	ug/L	31600	10000	41000	94	70-130						
Manganese	ug/L	349	1000	1290	94	70-130						
Potassium	ug/L	4120	10000	13800	97	70-130						
Sodium	ug/L	13800	10000	23800	100	70-130						

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60286214

QC Batch: 556667 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017, 60286214018

METHOD BLANK: 2283926 Matrix: Water
Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017, 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	11/27/18 11:10	
Calcium	ug/L	<53.5	200	53.5	11/27/18 11:10	
Iron	ug/L	<6.1	50.0	6.1	11/27/18 11:10	
Magnesium	ug/L	<14.0	50.0	14.0	11/27/18 11:10	
Manganese	ug/L	2.0J	5.0	0.73	11/27/18 11:10	
Potassium	ug/L	<79.3	500	79.3	11/27/18 11:10	
Sodium	ug/L	<157	500	157	11/27/18 11:10	

LABORATORY CONTROL SAMPLE: 2283927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	980	98	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10500	105	85-115	

SAMPLE DUPLICATE: 2285840

Parameter	Units	60286318005 Result	Dup Result	RPD	Max RPD	Qualifiers
Boron	ug/L	10600	10900	3	20	
Calcium	ug/L	99600	103000	3	20	
Iron	ug/L	5620	5670	1	19	
Magnesium	ug/L	22500	23400	4	20	
Manganese	ug/L	195	202	4	12	
Potassium	ug/L	6760	6910	2	20	
Sodium	ug/L	117000	119000	1	20	

SAMPLE DUPLICATE: 2285841

Parameter	Units	60286318009 Result	Dup Result	RPD	Max RPD	Qualifiers
Boron	ug/L	128	112	14	20	
Calcium	ug/L	157000	155000	1	20	
Iron	ug/L	14500	14300	1	19	
Magnesium	ug/L	37400	36700	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

SAMPLE DUPLICATE: 2285841

Parameter	Units	60286318009 Result	Dup Result	RPD	Max RPD	Qualifiers
Manganese	ug/L	2610	2560	2	12	
Potassium	ug/L	5540	5350	3	20	
Sodium	ug/L	12000	11800	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555675 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004, 60286214005

METHOD BLANK: 2279679 Matrix: Water
 Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	11/16/18 16:02	

LABORATORY CONTROL SAMPLE: 2279680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	507	101	90-110	

SAMPLE DUPLICATE: 2279681

Parameter	Units	60286398006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	101	101	0	10	

SAMPLE DUPLICATE: 2279682

Parameter	Units	60286349012 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	630	637	1	10	

SAMPLE DUPLICATE: 2280829

Parameter	Units	60286214001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	327	328	0	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555811

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

METHOD BLANK: 2280687

Matrix: Water

Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	11/17/18 19:13	

LABORATORY CONTROL SAMPLE: 2280688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	513	103	90-110	

SAMPLE DUPLICATE: 2280689

Parameter	Units	60286318005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	115	120	4	10	

SAMPLE DUPLICATE: 2280690

Parameter	Units	60286318013 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	375	397	6	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556192

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60286214018

METHOD BLANK: 2282069

Matrix: Water

Associated Lab Samples: 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	11/20/18 10:40	

LABORATORY CONTROL SAMPLE: 2282070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	513	103	90-110	

SAMPLE DUPLICATE: 2282071

Parameter	Units	60286215025 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	58.8	64.8	10	10	

SAMPLE DUPLICATE: 2282072

Parameter	Units	60286372001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	534	545	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554816

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60286214001, 60286214002, 60286214003

METHOD BLANK: 2276047

Matrix: Water

Associated Lab Samples: 60286214001, 60286214002, 60286214003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/13/18 13:21	

LABORATORY CONTROL SAMPLE: 2276048

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	982	98	80-120	

SAMPLE DUPLICATE: 2276049

Parameter	Units	60286314003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1150	1170	2	10	

SAMPLE DUPLICATE: 2277979

Parameter	Units	60286214001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1580	1600	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555016

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60286214004, 60286214005

METHOD BLANK: 2276777

Matrix: Water

Associated Lab Samples: 60286214004, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/13/18 06:59	

LABORATORY CONTROL SAMPLE: 2276778

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	2000	918	46	80-120	L2

SAMPLE DUPLICATE: 2276779

Parameter	Units	60286215003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1020	677	41	10	D6

SAMPLE DUPLICATE: 2276780

Parameter	Units	60286215007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	427	544	24	10	D6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555352

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

METHOD BLANK: 2278146

Matrix: Water

Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/15/18 14:58	

LABORATORY CONTROL SAMPLE: 2278147

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1050	105	80-120	

SAMPLE DUPLICATE: 2278148

Parameter	Units	60286318011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	631	644	2	10	

SAMPLE DUPLICATE: 2278150

Parameter	Units	60286488003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	484	488	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555435

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60286214018

METHOD BLANK: 2278566

Matrix: Water

Associated Lab Samples: 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/15/18 14:58	

LABORATORY CONTROL SAMPLE: 2278567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	978	98	80-120	

SAMPLE DUPLICATE: 2278568

Parameter	Units	60286214018 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	420	404	4	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554530 Analysis Method: SM 3500-Fe B#4

QC Batch Method: SM 3500-Fe B#4 Analysis Description: Iron, Ferrous

Associated Lab Samples: 60286214001, 60286214003, 60286214004

METHOD BLANK: 2274461 Matrix: Water

Associated Lab Samples: 60286214001, 60286214003, 60286214004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.012	0.20	0.012	11/10/18 12:07	H6

LABORATORY CONTROL SAMPLE: 2274462

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	2	2.0	100	90-110	H6

SAMPLE DUPLICATE: 2274464

Parameter	Units	60285787001 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	1.8	1.7	4	20	H6

SAMPLE DUPLICATE: 2274465

Parameter	Units	60285787003 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	0.32	0.28	13	20	H6

SAMPLE DUPLICATE: 2274466

Parameter	Units	60286214001 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	13.5	13.6	1	20	H6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554544

Analysis Method: SM 3500-Fe B#4

QC Batch Method: SM 3500-Fe B#4

Analysis Description: Iron, Ferrous

Associated Lab Samples: 60286214002, 60286214005

METHOD BLANK: 2274532

Matrix: Water

Associated Lab Samples: 60286214002, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.012	0.20	0.012	11/10/18 13:31	H6

LABORATORY CONTROL SAMPLE: 2274533

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	2	2.0	100	90-110	H6

SAMPLE DUPLICATE: 2274535

Parameter	Units	60286215010 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	<0.012	<0.012		20	H6

SAMPLE DUPLICATE: 2274537

Parameter	Units	60286372001 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	<0.012	<0.012		20	H6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554557 Analysis Method: SM 3500-Fe B#4
 QC Batch Method: SM 3500-Fe B#4 Analysis Description: Iron, Ferrous
 Associated Lab Samples: 60286214009, 60286214010, 60286214011, 60286214017

METHOD BLANK: 2274664 Matrix: Water
 Associated Lab Samples: 60286214009, 60286214010, 60286214011, 60286214017

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.012	0.20	0.012	11/10/18 15:30	H6

LABORATORY CONTROL SAMPLE: 2274665

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	2	2.1	103	90-110	H6

SAMPLE DUPLICATE: 2274667

Parameter	Units	60286318013 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	0.56	0.56	0	20	H6

SAMPLE DUPLICATE: 2274668

Parameter	Units	60286318005 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	0.19J	0.21		20	H6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554558 Analysis Method: SM 3500-Fe B#4

QC Batch Method: SM 3500-Fe B#4 Analysis Description: Iron, Ferrous

Associated Lab Samples: 60286214007, 60286214008

METHOD BLANK: 2274674 Matrix: Water

Associated Lab Samples: 60286214007, 60286214008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.012	0.20	0.012	11/10/18 15:43	H6

LABORATORY CONTROL SAMPLE: 2274675

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	2	2.0	102	90-110	H6

SAMPLE DUPLICATE: 2274676

Parameter	Units	60286318010 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	0.44	0.44	0	20	H6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555661

Analysis Method: SM 3500-Fe B#4

QC Batch Method: SM 3500-Fe B#4

Analysis Description: Iron, Ferrous

Associated Lab Samples: 60286214018

METHOD BLANK: 2279572

Matrix: Water

Associated Lab Samples: 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.012	0.20	0.012	11/17/18 10:32	H6

LABORATORY CONTROL SAMPLE: 2279573

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	2	2.0	100	90-110	H6

SAMPLE DUPLICATE: 2279574

Parameter	Units	60286571003 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	0.048J	0.048J		20	H6

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556563 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60286214002, 60286214004, 60286214005

METHOD BLANK: 2283534 Matrix: Water

Associated Lab Samples: 60286214002, 60286214004, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.31J	1.0	0.29	11/21/18 18:56	
Fluoride	mg/L	<0.19	0.20	0.19	11/21/18 18:56	
Sulfate	mg/L	<0.24	1.0	0.24	11/21/18 18:56	

LABORATORY CONTROL SAMPLE: 2283535

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	100	90-110	
Sulfate	mg/L	5	4.6	91	90-110	

MATRIX SPIKE SAMPLE: 2283538

Parameter	Units	60286215003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	568	250	739	68	90-110	M1

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556692 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60286214007, 60286214008, 60286214017

METHOD BLANK: 2284092 Matrix: Water

Associated Lab Samples: 60286214007, 60286214008, 60286214017

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	11/25/18 04:16	
Fluoride	mg/L	<0.19	0.20	0.19	11/25/18 04:16	
Sulfate	mg/L	<0.24	1.0	0.24	11/25/18 04:16	

LABORATORY CONTROL SAMPLE: 2284093

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2284094 2284095

Parameter	Units	60286318013		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	MS Spike Conc.	Spike Conc.	Result	MSD Result	% Rec	% Rec	RPD		RPD		
Chloride	mg/L	13.2	5	5	18.9	18.8	114	112	90-110	0	15	M1	
Fluoride	mg/L	<0.19	2.5	2.5	2.6	2.6	100	100	90-110	0	15		

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556718

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004

METHOD BLANK: 2284553

Matrix: Water

Associated Lab Samples: 60286214001, 60286214002, 60286214003, 60286214004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	11/25/18 17:57	
Fluoride	mg/L	<0.19	0.20	0.19	11/25/18 17:57	
Sulfate	mg/L	<0.24	1.0	0.24	11/25/18 17:57	

LABORATORY CONTROL SAMPLE: 2284554

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2284555 2284556

Parameter	Units	60286214001		60286215003		60286215003		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Chloride	mg/L	16.4	5	5	21.1	21.6	95	104	90-110	2	15	E	
Fluoride	mg/L	<0.19	2.5	2.5	3.0	3.2	114	121	90-110	6	15	M1	
Sulfate	mg/L	982	500	500	1430	1420	90	88	90-110	1	15	M1	

MATRIX SPIKE SAMPLE: 2284557

Parameter	Units	60286215003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	14.5	5	19.5	100	90-110	
Fluoride	mg/L	0.29	2.5	2.9	104	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556824

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60286214009, 60286214010, 60286214011, 60286214018

METHOD BLANK: 2284818

Matrix: Water

Associated Lab Samples: 60286214009, 60286214010, 60286214011, 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	11/26/18 19:27	
Fluoride	mg/L	<0.19	0.20	0.19	11/26/18 19:27	
Sulfate	mg/L	<0.24	1.0	0.24	11/26/18 19:27	

LABORATORY CONTROL SAMPLE: 2284819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.3	106	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2284820 2284821

Parameter	Units	60286318003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	25.7	10	10	36.8	36.8	111	110	90-110	0	15	M1

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554772	Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4	Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 60286214002	

METHOD BLANK: 2275870 Matrix: Water

Associated Lab Samples: 60286214002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	<0.050	0.10	0.050	11/14/18 15:44	

LABORATORY CONTROL SAMPLE: 2275871

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	2.0	102	90-110	

MATRIX SPIKE SAMPLE: 2275872

Parameter	Units	60286379001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	<0.050	2	1.8	90	90-110	

SAMPLE DUPLICATE: 2275873

Parameter	Units	60286277001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	6.5	7.3	10	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554773 Analysis Method: EPA 365.4
 QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
 Associated Lab Samples: 60286214003, 60286214004, 60286214005

METHOD BLANK: 2275875 Matrix: Water

Associated Lab Samples: 60286214003, 60286214004, 60286214005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	<0.050	0.10	0.050	11/14/18 16:24	

LABORATORY CONTROL SAMPLE: 2275876

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	2.0	98	90-110	

MATRIX SPIKE SAMPLE: 2275877

Parameter	Units	60286214003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	0.86	2	2.7	90	90-110	

MATRIX SPIKE SAMPLE: 2278555

Parameter	Units	60286215005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	0.76	2	2.6	90	90-110	

SAMPLE DUPLICATE: 2275878

Parameter	Units	60286215003 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.23	0.25	9	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 554983 Analysis Method: EPA 365.4
 QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
 Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

METHOD BLANK: 2276689 Matrix: Water
 Associated Lab Samples: 60286214007, 60286214008, 60286214009, 60286214010, 60286214011, 60286214017

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	<0.050	0.10	0.050	11/15/18 10:53	

LABORATORY CONTROL SAMPLE: 2276690

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	1.9	97	90-110	

MATRIX SPIKE SAMPLE: 2276691

Parameter	Units	60286318014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	<0.050	2	1.9	96	90-110	

MATRIX SPIKE SAMPLE: 2276693

Parameter	Units	60286270003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.9	2	4.8	91	90-110	

SAMPLE DUPLICATE: 2276692

Parameter	Units	60286214007 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.37	0.36	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 555260

Analysis Method: EPA 365.4

QC Batch Method: EPA 365.4

Analysis Description: 365.4 Phosphorus

Associated Lab Samples: 60286214001

METHOD BLANK: 2277812

Matrix: Water

Associated Lab Samples: 60286214001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	<0.050	0.10	0.050	11/15/18 12:03	

LABORATORY CONTROL SAMPLE: 2277813

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	1.9	96	90-110	

MATRIX SPIKE SAMPLE: 2277815

Parameter	Units	60286214001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	0.45	2	2.4	98	90-110	

MATRIX SPIKE SAMPLE: 2277816

Parameter	Units	60286739001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	1.4	2	3.2	89	90-110	M1

SAMPLE DUPLICATE: 2277992

Parameter	Units	60285891001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.20	0.19	7	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

QC Batch: 556190	Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4	Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 60286214018	

METHOD BLANK: 2282059 Matrix: Water
Associated Lab Samples: 60286214018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	<0.050	0.10	0.050	11/20/18 16:24	

LABORATORY CONTROL SAMPLE: 2282060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2	1.8	92	90-110	

MATRIX SPIKE SAMPLE: 2282061

Parameter	Units	60286964001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	14.0	2	16.0	98	90-110	

MATRIX SPIKE SAMPLE: 2282063

Parameter	Units	60287138004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	13.2	2	14.1	48	90-110	M1

SAMPLE DUPLICATE: 2282062

Parameter	Units	60286471001 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.19	0.18	4	10	

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QUALIFIERS

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

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

1e FERROUS IRON result is greater than the IRON. Data is within laboratory control limits.

B Analyte was detected in the associated method blank.

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

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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

H6 Analysis initiated outside of the 15 minute EPA required holding time.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60286214001	L-LMW-1S	EPA 200.7	554744	EPA 200.7	554814
60286214002	L-LMW-3S	EPA 200.7	554744	EPA 200.7	554814
60286214003	L-BMW-1S	EPA 200.7	554744	EPA 200.7	554814
60286214004	L-BMW-2S	EPA 200.7	554744	EPA 200.7	554814
60286214005	L-LMW-FB-1	EPA 200.7	554744	EPA 200.7	554814
60286214007	L-LMW-4S	EPA 200.7	556667	EPA 200.7	556947
60286214008	L-LMW-5S	EPA 200.7	556667	EPA 200.7	556947
60286214009	L-LMW-6S	EPA 200.7	556667	EPA 200.7	556947
60286214010	L-LMW-7S	EPA 200.7	556667	EPA 200.7	556947
60286214011	L-LMW-8S	EPA 200.7	556667	EPA 200.7	556947
60286214017	L-LMW-DUP-1	EPA 200.7	556667	EPA 200.7	556947
60286214018	L- LMW-2S	EPA 200.7	556667	EPA 200.7	556947
60286214001	L-LMW-1S	SM 2320B	555675		
60286214002	L-LMW-3S	SM 2320B	555675		
60286214003	L-BMW-1S	SM 2320B	555675		
60286214004	L-BMW-2S	SM 2320B	555675		
60286214005	L-LMW-FB-1	SM 2320B	555675		
60286214007	L-LMW-4S	SM 2320B	555811		
60286214008	L-LMW-5S	SM 2320B	555811		
60286214009	L-LMW-6S	SM 2320B	555811		
60286214010	L-LMW-7S	SM 2320B	555811		
60286214011	L-LMW-8S	SM 2320B	555811		
60286214017	L-LMW-DUP-1	SM 2320B	555811		
60286214018	L- LMW-2S	SM 2320B	556192		
60286214001	L-LMW-1S	SM 2540C	554816		
60286214002	L-LMW-3S	SM 2540C	554816		
60286214003	L-BMW-1S	SM 2540C	554816		
60286214004	L-BMW-2S	SM 2540C	555016		
60286214005	L-LMW-FB-1	SM 2540C	555016		
60286214007	L-LMW-4S	SM 2540C	555352		
60286214008	L-LMW-5S	SM 2540C	555352		
60286214009	L-LMW-6S	SM 2540C	555352		
60286214010	L-LMW-7S	SM 2540C	555352		
60286214011	L-LMW-8S	SM 2540C	555352		
60286214017	L-LMW-DUP-1	SM 2540C	555352		
60286214018	L- LMW-2S	SM 2540C	555435		
60286214001	L-LMW-1S	SM 3500-Fe B#4	556803		
60286214002	L-LMW-3S	SM 3500-Fe B#4	556803		
60286214003	L-BMW-1S	SM 3500-Fe B#4	556803		
60286214004	L-BMW-2S	SM 3500-Fe B#4	556803		
60286214005	L-LMW-FB-1	SM 3500-Fe B#4	556803		
60286214007	L-LMW-4S	SM 3500-Fe B#4	557436		
60286214008	L-LMW-5S	SM 3500-Fe B#4	557436		
60286214009	L-LMW-6S	SM 3500-Fe B#4	557436		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60286214010	L-LMW-7S	SM 3500-Fe B#4	557436		
60286214011	L-LMW-8S	SM 3500-Fe B#4	557436		
60286214017	L-LMW-DUP-1	SM 3500-Fe B#4	557436		
60286214018	L- LMW-2S	SM 3500-Fe B#4	557436		
60286214001	L-LMW-1S	SM 3500-Fe B#4	554530		
60286214002	L-LMW-3S	SM 3500-Fe B#4	554544		
60286214003	L-BMW-1S	SM 3500-Fe B#4	554530		
60286214004	L-BMW-2S	SM 3500-Fe B#4	554530		
60286214005	L-LMW-FB-1	SM 3500-Fe B#4	554544		
60286214007	L-LMW-4S	SM 3500-Fe B#4	554558		
60286214008	L-LMW-5S	SM 3500-Fe B#4	554558		
60286214009	L-LMW-6S	SM 3500-Fe B#4	554557		
60286214010	L-LMW-7S	SM 3500-Fe B#4	554557		
60286214011	L-LMW-8S	SM 3500-Fe B#4	554557		
60286214017	L-LMW-DUP-1	SM 3500-Fe B#4	554557		
60286214018	L- LMW-2S	SM 3500-Fe B#4	555661		
60286214001	L-LMW-1S	EPA 300.0	556718		
60286214002	L-LMW-3S	EPA 300.0	556563		
60286214002	L-LMW-3S	EPA 300.0	556718		
60286214003	L-BMW-1S	EPA 300.0	556718		
60286214004	L-BMW-2S	EPA 300.0	556563		
60286214004	L-BMW-2S	EPA 300.0	556718		
60286214005	L-LMW-FB-1	EPA 300.0	556563		
60286214007	L-LMW-4S	EPA 300.0	556692		
60286214008	L-LMW-5S	EPA 300.0	556692		
60286214009	L-LMW-6S	EPA 300.0	556824		
60286214010	L-LMW-7S	EPA 300.0	556824		
60286214011	L-LMW-8S	EPA 300.0	556824		
60286214017	L-LMW-DUP-1	EPA 300.0	556692		
60286214018	L- LMW-2S	EPA 300.0	556824		
60286214001	L-LMW-1S	EPA 365.4	555260		
60286214002	L-LMW-3S	EPA 365.4	554772		
60286214003	L-BMW-1S	EPA 365.4	554773		
60286214004	L-BMW-2S	EPA 365.4	554773		
60286214005	L-LMW-FB-1	EPA 365.4	554773		
60286214007	L-LMW-4S	EPA 365.4	554983		
60286214008	L-LMW-5S	EPA 365.4	554983		
60286214009	L-LMW-6S	EPA 365.4	554983		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE LCPB

Pace Project No.: 60286214

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60286214010	L-LMW-7S	EPA 365.4	554983		
60286214011	L-LMW-8S	EPA 365.4	554983		
60286214017	L-LMW-DUP-1	EPA 365.4	554983		
60286214018	L- LMW-2S	EPA 365.4	556190		

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Sample Condition Upon Receipt

WO#: 60286214
Barcode
60286214

Client Name: Goider

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 [] x5

Packing Material: Bubble Wrap [] Bubble Bags [] Foam [] None [] Other: 7 PIC x 5

Thermometer Used: T-299 Type of Ice: Wet Blue None x5

Cooler Temperature (°C): As-read 0.9/2.2 Corr. Factor +0.1 Corrected 1.0/2.3

Date and initials of person examining contents: 11-8-18 HF

Temperature should be above freezing to 6°C 0.4/0.5/2.3 0.5/0.4/2.4

Table with 2 columns: Question/Requirement and Answer (Yes/No/N/A). Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels, Multiple phases, pH preservation, Cyanide checks, Trip Blank, Headspace, USDA Regulated Area, and Additional labels.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: [Signature] Date: 11/9/18

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: maddock@golder.com Phone: 636-724-9191 Fax: 636-724-9323 Requested Due Date/TAT: Standard		Section B Required Project Information: Report To: Mark Haddock (mhaddock@golder.com) Copy To: Jeffrey Ingram Purchase Order No.: Project Name: Ameren Labadie EC LCPB Project Number: 153-1406.0001E (COC #4)		Section C Invoice Information: Attention: Company Name: Address: Pace Quote Reference: Pace Project Manager: Jamie Church Pace Profile #: 9285		REGULATORY AGENCY NPDES UST DRINKING WATER OTHER RCRA MO	
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ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRECIPITATION P SOLID S OIL OL WIP WP AK AK OT OT TS TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		PRESERVATIVES	# OF CONTAINERS	ACCEPTED BY / AFFILIATION	DATE	TIME	DATE	TIME	DATE	TIME	Requested Analysis Filtered (Y/N)				Pace Project No./ Lab I.D.		
					COMPOSITE START	COMPOSITE END/STOP										Analysis Test	Metals	Chloride/Fluoride/Sulfate	TDS		Residual Chlorine (Y/N)	
1	L-LMW-1S		WT G	G	11/7/18	1310	HCl HNO ₃ H ₂ SO ₄ Unpreserved	4	11/7/18	1735	11/7/18	1525	11/7/18	1525							60286214	
2	L-LMW-2S		WT G	G	11/7/18	1310		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								001
3	L-LMW-3S		WT G	G	11/7/18	1530		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								002
4	L-LMW-4S		WT G	G																		
5	L-LMW-5S		WT G	G																		
6	L-LMW-6S		WT G	G																		
7	L-LMW-7S		WT G	G	11/7/18	1310		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								
8	L-LMW-8S		WT G	G	11/7/18	1310		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								
9	L-LMW-9S		WT G	G	11/7/18	1000		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								
10	L-LMW-10S		WT G	G	11/7/18	1000		4	11/7/18	1735	11/7/18	1525	11/7/18	1525								
11	L-LMW-DUP-1		WT G	G																		
12	L-LMW-FB-1		WT G	G																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP IN	Ice (Y/N)	Cooler (Y/N)	Samples Infect (Y/N)
	Jeffrey Ingram	11/7/18	1735	Jamie Church	11/8/18	0402	1.0	Y	Y	Y
							2.3	Y	Y	Y
							0.5	Y	Y	Y
							0.6	Y	Y	Y
							2.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Eric Schaefer
 SIGNATURE of SAMPLER: *Eric Schaefer*
 DATE Signed (MM/DD/YYYY): 11/07/18

COC #2



Sample Condition Upon Receipt

WO# : 60286214

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-301 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.7, 2.9 Corr. Factor 10.0 Corrected 2.7, 2.9

Date and initials of person examining contents: HC 11/9

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>Ferrous Iron</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WST</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Jamie Chubb Date: 11/9/18

11/8/18



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: Goldier Associates Address: 13515 Barrett Parkway Drive, Ste 260 Bailwhr, MO 63021 Email To: mhaddock@golder.com Phone: 636-724-9191 Fax: 636-724-9323 Requested Due Date/TAT: Standard		Section B Required Project Information: Report To: Mark Haddock (mhaddock@golder.com) Copy To: Jeffrey Ingram Purchase Order No.: Project Name: Ameren Labadie EC LCPA N&E Project Number: 153-1406 0001 (COC #5)		Section C Invoice Information: Company Name: Address: Site Location: MO State:		Page: 1 of 1
Section D Required Client Information: SAMPLE ID (A-Z, 0-9, /, -) Sample IDs MUST BE UNIQUE		Valid Matrix Codes DW: DRINKING WATER WW: WASTE WATER P: PFC/COOLANT S: SOLID/SCALE OIL: OIL WP: WASTE PESTICIDES OT: OTHER TT: TANK TOPS		Requested Analysis Filtered (Y/N) Metals* Alkalinity Total Phosphorus Ferrous Iron Ferric Iron Residual Chlorine (Y/N)		Pace Project No./ Lab I.D.

ITEM #	MATRIX CODE	COLLECTED		SAMPLE TYPE (G-GRAB OR COMP)	MATRIX CODE (see valid codes to left)	RELINQUISHED BY / AFFILIATION		DATE		# OF CONTAINERS	PRESERVATIVES		Analysis Test ↓	Requested Analysis Filtered (Y/N)	Temp in °C	Received on Ice (Y/N)	Sealed Cooler (Y/N)	Samples Inlet (Y/N)
		DATE	TIME			DATE	TIME	DATE	TIME		DATE	TIME						
1	L-LMW-1S			G	WT					4	HNO ₃							
2	L-LMW-2S			G	WT					2	HCl							
3	L-LMW-3S			G	WT					1	NaOH							
4	L-LMW-4S			G	WT					1	H ₂ O ₂							
5	L-LMW-5S			G	WT					1	Unpreserved							
6	L-LMW-6S			G	WT					1	H ₂ SO ₄							
7	L-LMW-7S			G	WT					1	HNO ₃							
8	L-LMW-8S			G	WT					1	HCl							
9	L-BMW-1S			G	WT					1	NaOH							
10	L-BMW-2S			G	WT					1	H ₂ O ₂							
11	L-LMW-DUP-1			G	WT					4	Unpreserved							
12	L-LMW-FB-1			G	WT					1	Unpreserved							

ADDITIONAL COMMENTS EPA 200.7: Ba, Li, Mn, Fe, Mg, Mn, K, Na EPA 200.8: As		Relinquished by: <i>Jeffrey Ingram / Golder</i> Date: 11/8/18 17:35 Signature: <i>Jeffrey Ingram</i>		Accepted by: <i>Mark Haddock</i> Date: 11/9/18 03:12 2.7 Signature: <i>Mark Haddock</i>		Sample Conditions: 4 4 4 2.9 4 4 4	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER:				DATE Signed (MM/DD/YYYY):			

11/7/18



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: **Goldier Associates**
 Address: **13515 Barrett Parkway Drive, Ste 260**
 Email To: **mhaddock@golder.com**
 Phone: **636-724-9191** Fax: **636-724-9323**
 Requested Due Date/TAT: **Standard**

Section B Required Project Information: Report To: **Mark Haddock** (mhaddock@golder.com)
 Copy To: **Jeffrey Ingram**
 Project Name: **Ameren Labadie EC LCOPA N&E**
 Project Number: **153-1406 00011 (COC #5)**

Section C Invoice Information: Company Name: **Goldier Associates**
 Address: **Bailwin, MO 63021**
 Site Location: **MO**
 State: **MO**
 Pace Profile #: **9285**

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

Pace Project Manager: **Jamie Church**

Page: 1 of 1

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TEMP AT COLLECTION	PRESERVATIVES			Requested Analysis Filtered (Y/N)					Pace Project No. / Lab I.D.							
				COMPOSITE START	COMPOSITE END/GRAB		UNPRESERVED	NaOH	HCl	HNO3	H2SO4	Na2O2	Methanol	Other		Metals*	Alkalinity	Total Phosphorus	Ferrous Iron	Ferric Iron	Residual Chlorine (Y/N)	
1	L-LMW-1S		WT G	11/7/18	1310	4	2	1												-013		
2	L-LMW-2S		WT G																			
3	L-LMW-3S		WT G	11/7/18	1530	4	2	1													-013	
4	L-LMW-4S		WT G																			
5	L-LMW-5S		WT G																			
6	L-LMW-6S		WT G																			
7	L-LMW-7S LMU-M3-1		WT G	11/7/18	1310	4	2	1													510 -010	
8	L-LMW-8S LMU-M3A-1		WT G																			510 -014
9	L-BMW-1S		WT G		1000																	510 -015
10	L-BMW-2S		WT G		1225																	
11	L-LMW-DUP-1		WT G																			
12	L-LMW-FB-1		WT G	11/14/18	1530	4	2	1														-010

ADDITIONAL COMMENTS: *Signature / Golder* 11/5/18 1735

EPA 2007: Ba, Li, Mo, Fe, Mg, Mn, K, Na
 EPA 2008: As

RELINQUISHED BY / AFFILIATION: _____ DATE: _____ TIME: _____
 ACCEPTED BY / AFFILIATION: _____ DATE: _____ TIME: _____

SAMPLE CONDITIONS: _____

SAMPLER NAME AND SIGNATURE: _____ DATE Signed (MM/DD/YYYY): _____
 PRINT Name of SAMPLER: _____
 SIGNATURE of SAMPLER: _____

MEMORANDUM**DATE** January 3, 2019**Project No.** 1531406**TO** Project File
Golder Associates**CC****FROM** Tommy Goodwin**EMAIL** tgoodwin@golder.com**DATA VALIDATION SUMMARY: AMEREN – LABADIE ENERGY CENTER – NOVEMBER 2018 - DATA PACKAGE 60286214R1**

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U). When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the PQL and less than ten times the blank results the results were recorded at the result value and qualified as estimates (J).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the MDL (MDC for radionuclide analysis) or detected in a blank below the PQL the results were qualified as non-detects and estimates (UJ).
- When a compound was detected in a sample corresponding to a lab control sample that was outside the allowed range for percent recovery and/or percent difference the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-Labadie-LMW- Nov 2018
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001B
 Validation Date: 1/3/18

Laboratory: Pace Analytical SDG #: 60286214
 Analytical Method (type and no.): Metals 200.7&200.8, Hg 7470, TDS 2540C, pH 4500H+, Anions 300.0, Rads 903.1&904.0
 Matrix: Air Soil/Sed. Water Waste
 Sample Names L-LMW1S, L-LMW-2S, L-LMW-3S, L-LMW-4S, L-LMW-5S, L-LMW-6S, L-LMW-7S, L-LMW-8S, L-BMW-1S, L-BMW-2S, S-LMW-DUP-1, S-LMW-FB-1, S-LMW-15-MS, S-LMW-15-MSD

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>11/07 - 11/08</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performance from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>0.4/0.5/2.3/2.7/2.9 °C < 6°C</u>

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Were hold times met for sample analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Fe²⁺</u>
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Cl₂-001-004</u>

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Mn(1.8), (2.0), Cl⁻(0.31)</u>
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>(FB-1) B(17.9), Fe(9.8), Mg(14.2), Mn(1.9), TDS(40.0), Fe²⁺(1)</u>
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Fe(100)</u>
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>TDS(46⁻) {004+005}</u>
Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Dup-1 @ L-LMW-8 S</u>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>FB-2 @ L-LMW-6 S</u>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>FB-1 @ L-LMW-3 S</u>
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L(23.9), Cl⁻(173), F(200), SO₄²⁻(186), Fe²⁺(46.2)</u>
d) Were lab dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>TDS(41+24) {004+005}</u>
Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Ca⁽⁺⁾, SO₄^{2-(-)}}, Cl^{-(-)}}, F^{-(-)}}, SO₄^{2-(-)}}, P^{(-)}}</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>B⁽⁺⁾, Ca⁽⁺⁾, Cl^{-(-)}}, F^{-(-)}}, SO₄^{2-(-)}}</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
All Samples	Ferrous Iron (Fe ²⁺)	—	J/U _d	Analyte reported outside of hold time
L-BMW-2S	Manganese (Mn)	5.0	U	Detected in Method Blank (MB); MDL < Result < PQL ; PQL < Result < 10xBI
"	Chloride (Cl ⁻)	1.3	J	
L-LMW-FB-1	Mn	5.0	U	; MDL < Result < PQL
"	TDS	40.0	J	
L-BMW-2S	"	958	J	"
L-LMW-8S	Fe ²⁺	1.0	J	RPD outside limits; Result > MDL
|	Cl ⁻	19.5	J	
	Fluoride (F)	0.35	J	
	Sulfate (SO ₄ ²⁻)	334	J	
	L-LMW-DUP-1	Fe ²⁺	1.6		J
|	Cl ⁻	1.4	J	; MDL > Result
	F	0.19	UJ	
	SO ₄ ²⁻	12.0	J		; Result > MDL
L-LMW-2S	Mn	5.0	U	MB; MDL < Result < PQL

Signature: *Tommy Wood Jr* Date: 1/3/2018

APPENDIX B

Alternative Source Demonstration –
November 2017 Sampling Event



REPORT

LCPB - Alternative Source Demonstration

Labadie Energy Center, Franklin County, Missouri

Submitted to:

Ameren Missouri

1901 Chouteau Ave, St. Louis, MO 63103

Submitted by:

Golder Associates Inc.

820 South Main Street, Suite 100 St. Charles, Missouri, USA 63301

+1 636 724-9191

April 13, 2018



Distribution List

1 Electronic Copy - Ameren

1 Electronic Copy - Golder

Table of Contents

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION AND BACKGROUND.....	2
2.1 Geological and Hydrogeological Setting	2
2.2 LCPB – Fly Ash Surface Impoundment	2
2.3 LCPA – Bottom Ash Surface Impoundment.....	3
2.4 CCR Rule Groundwater Monitoring	3
3.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASES.....	4
4.0 REVIEW OF AVAILABLE DATA AND SOURCES.....	4
4.1 Previous Investigations	4
4.2 ASD Drilling and Sampling Investigation	5
4.3 CCR Indicators.....	5
5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE.....	6
5.1 Geochemical Evaluations.....	7
5.1.1 Piper Diagrams	7
5.1.1.1 Sources – LCPA, LCPB and Background.....	8
5.1.1.2 Alluvial Aquifer Groundwater Results	8
5.1.2 Stiff Diagrams.....	9
5.1.3 FALCON Ion Ratio Analysis.....	9
5.2 Hydrogeological Analysis	9
5.2.1 Horizontal Alluvial Aquifer Groundwater Flow	9
5.2.2 Vertical Alluvial Aquifer Gradients.....	10
6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY LCPB IMPACT	10
7.0 REFERENCES	11

TABLES

Table 1: Detection and Verification Sampling Results

Table 2: Temporary Piezometer Construction Details

Table 3: Summary of Temporary Piezometer Groundwater Sampling Results

Table 4: Summary of LCPA and LCPB Pore-Water Sampling Results

Table 5: Summary of NPDES Piezometer Groundwater Sampling Results

Table 6: Summary of Groundwater Elevation Measurements

Table 7: Types of CCR and Typical Indicator Parameters

Table 8: Key and Supporting Lines of Evidence for LCPB ASD

Table 9: Summary of FALCON Analysis Results

FIGURES

Figure 1 – Site Location Aerial Map and Sample/Measurement Locations

Figure 2 – March 5, 2018 Potentiometric Surface Map

Figure 3 – Background Groundwater and Pore-Water Piper Diagram

Figure 4 – LCPB/LCL1 CCR Rule Monitoring Wells Piper Diagram

Figure 5 – LCPA CCR Rule Monitoring Wells Piper Diagram

Figure 6 – ASD Temporary Piezometer Piper Diagram

Figure 7 – NPDES Piezometer Piper Diagram

Figure 8 – Spatial Distribution of Shallow Alluvial Zone Stiff Diagrams

Figure 9 – Spatial Distribution of Middle Alluvial Zone Stiff Diagrams

Figure 10 – Vertical Gradients – CCR Monitoring Wells

APPENDICES

APPENDIX A

Geological Boring Logs

APPENDIX B

Temporary Piezometer Construction Logs

APPENDIX C

Laboratory Data

APPENDIX D

FALCON Analysis

CERTIFICATION STATEMENT

This *LCPB – 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 *LCPB – 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

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates ("Golder") documents in this report that Statistically Significant Increases (SSIs) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), fly ash surface impoundment (LCPB) result from an alternative source. This *LCPB Alternative Source Demonstration* satisfies the requirements of §257.94(e)(2) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

2.0 SITE DESCRIPTION AND BACKGROUND

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

2.1 Geological and Hydrogeological Setting

The site lies between the Missouri River (to the north) and bedrock bluffs (to the south). Flow and deposition from the Missouri river has 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 Platin Group, Joachim Dolomite, St. Peter Sandstone, Powell Dolomite, and the Cotter/Jefferson City Dolomites.

2.2 LCPB – Fly Ash Surface Impoundment

In the early 1990's, Ameren constructed LCPB¹, a 79 acre impoundment located southeast of the plant building, by contouring and lining an existing lowland area with an engineered geomembrane lining system. The impoundment is surrounded by earthen berms with crest heights at 492.7 feet above mean sea level (FT MSL). Pond bottom elevation was designed at approximately 460 FT MSL. Discharges from the impoundment are routed from the southwest portion of the impoundment, into the LCPA and then out the western side of the LCPA through Outfall 002. The LCPB has a total



¹ LCPB is sometimes referred to as "Fly Ash Pond", "Secondary Pond", and "Ash Pond 2",

storage of 3,362,000 cubic yards and manages high and low volume waste streams including fly ash, conveyance water, and stormwater.

2.3 LCPA – Bottom Ash Surface Impoundment

LCPA², is a 164 acre unlined CCR surface impoundment constructed in the early 1970's as a borrow area for plant construction. The impoundment is located to the south/southwest of the power plant building. Earthen berms encompass the impoundment and have an approximate crest height of 492.7 FT MSL. Pond bottom elevations vary from approximately 410 to 470 FT MSL. Water in LCPA exits the pond via National Pollutant Discharge Elimination System (NPDES) Outfall 002 on the western side of the pond into a channel located at the western edge of the property. This channel runs parallel to Labadie Creek before discharging into the Missouri River.



LCPA has a total storage capacity of approximately 15,836,000 cubic yards and current discharges to the LCPA include water used to sluice bottom ash, water from the plant sump, and decant water discharge from the LCPB. Prior to the construction of LCPB, all CCR and high-volume wastes, and most low-volume wastes were disposed into the LCPA.

2.4 CCR Rule Groundwater Monitoring

The following has been completed and placed in the facility's operating record in accordance with the CCR Rule: (1) installation of a groundwater monitoring well system; (2) a Statistical Method Certification; (3) a Groundwater Monitoring Plan (GMP) that details design, installation, development, sampling procedures, as well as statistical methods; and (4) eight baseline groundwater sampling events for all Appendix III and Appendix IV parameters of the CCR Rule.

The groundwater monitoring system for the LCPB consists of eight “downgradient” or “compliance” monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. The CCR Rule monitoring wells (LMW-1S, LMW-2S, LMW-3S, LMW-4S, LMW-5S, LMW-6S, LMW-7S, and LMW-8S) were installed by Golder in 2015 and 2016 for groundwater monitoring purposes. Additionally, two background monitoring wells (BMW-1S and BMW-2S) are located approximately 2 miles to the west of the CCR Unit. These monitoring wells provide background groundwater quality data for the monitoring well network and are used to calculate statistical limits. More information on the design and installation of the monitoring wells is provided in the LCPB GMP and the LCPB 2017 Annual Report.

Between May 2016 and June 2017, eight (8) baseline groundwater sampling events were completed for the LCPB. After baseline sampling, the first Detection Monitoring event was completed in November 2017. The following Appendix III constituents were sampled during detection monitoring;

- Boron
- Calcium
- Chloride
- pH
- Sulfate
- TDS
- Fluoride

² LCPA, also called “Bottom Ash Pond”, “Primary Pond”, and “Ash Pond 1”.

In January 2018, background results from the eight baseline sampling events were used to calculate statistical upper prediction limits (UPL). These UPLs were then compared to the Detection Monitoring results from the November 2017 samples. If results from the Detection Monitoring sampling were higher than the calculated UPL, it was considered an initial exceedance, in which case a verification sample was collected and tested in accordance with the LCPB statistical analysis plan.

3.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASES

A summary table of the detection and verification sampling results is provided in **Table 1**. As shown in **Table 1**, at least one Statistically Significant Increase (SSI) was reported in seven of the eight downgradient (compliance) monitoring wells. Additionally, SSIs were reported for five of the seven Appendix III parameters, excluding Calcium and Total Dissolved Solids. In accordance with the statistical analysis plan for the LCPB, interwell statistical methods were used to evaluate the data, meaning results from compliance monitoring wells were compared with a statistical upper prediction limit (UPL) calculated for each constituent from background monitoring well data.

4.0 REVIEW OF AVAILABLE DATA AND SOURCES

Geological, geochemical, and hydrogeological data have been collected during several different historical investigations at the LEC. This section provides a brief review of the data available and used for this alternative source demonstration.

4.1 Previous Studies and Groundwater Monitoring Results

In 2016 and 2017, Gredell Engineering Resources, Inc. (Gredell) and Reitz & Jens, Inc. (Reitz & Jens) completed several investigations within the LCPA and LCPB surface impoundments. These reports were prepared for closure design studies and provide geological information on the two different CCR Units, and the types of materials that are present within each unit.

In 2011, as part of the permitting process for the Labadie Utility Waste Landfill (UWL, containing cell LCL1) east of the generation plant, Gredell and Reitz & Jens completed a *Detailed Site Investigation Report*. This report included data on the alluvial aquifer groundwater chemistry, geology and hydrogeologic characteristics of the area that is currently LCL1 and the rest of the proposed future UWL footprint. Additionally, as a part of the UWL permitting process, Gredell and Reitz & Jens installed and sampled 36 monitoring wells in the alluvial aquifer surrounding the proposed extents of the UWL. **Figure 1** displays the locations of these 36 monitoring wells. Sample results from these monitoring wells, as well as groundwater elevation measurements obtained at the monitoring wells, are used in this report.

In 2015 and 2016, 23 monitoring wells were installed around and exterior to the different CCR units at the LEC to comply with CCR Rule groundwater monitoring requirements. As described in Section 2.4, these monitoring wells were sampled as required by the CCR Rule. Information on the construction, geology and hydrogeology of these monitoring wells is provided in the Groundwater Monitoring Plans for the LCPA, LCPB, and LCL1 prepared in October 2017. Groundwater monitoring results and laboratory data are provided in the annual reports for the LCPA, LCPB, and LCL1 prepared in January 2018.

4.2 ASD Temporary Piezometer Drilling and Sampling Investigation

In addition to reviewing data from previously completed studies, Golder collected additional data for this ASD including roto-sonic drilling, soil sampling, and installation of temporary 1-inch piezometers. Geological boring logs from this investigation are available in **Appendix A**, and temporary piezometer construction details are available in **Appendix B** and **Table 2**.

After temporary piezometers were installed at each location, groundwater/pore-water samples were collected using peristaltic pumps or portable hydrostatic pressure pumps with dedicated tubing. The samples were collected following removal of at least three well volumes of water from each piezometer, as well as field parameter stabilization generally using the following criteria:

- ± 0.2 for pH
- $\pm 3\%$ for Conductivity
- $\pm 10\%$ for Temperature
- Less than 20 nephelometric turbidity units (NTU) or $\pm 10\%$ for Turbidity

Upon stabilization, groundwater samples were collected directly into laboratory-supplied containers. Unfiltered samples (totals) were collected directly from the pump tubing discharge. Filtered samples (dissolved) were collected for comparison at select locations by attaching a 0.45-micron filter to the discharge end of the tubing. Groundwater samples were then labeled with the sample identification number, requested analysis, collection date, and sampler's initials and placed on ice in a cooler for shipment under chain-of-custody protocol to Pace Analytical Laboratories. Analytical results for the temporary piezometer groundwater samples (ASD samples) are tabulated in **Table 3**. Analytical results for the LCPA and LCPB pore-water samples are tabulated in **Table 4**. Data packets, as provided by the laboratory, as well as data validation memos/reports, are provided in **Appendix C**.

Groundwater samples were also collected from 12 NPDES piezometers installed in 2016 by Gredell using low flow sampling techniques as outlined in the LCPB GMP. Analytical results from these samples are tabulated in **Table 5** and provided in **Appendix C**.

Groundwater surface elevation measurements were collected from all CCR Rule monitoring wells, and select State UWL monitoring wells on March 5, 2018. Groundwater levels were obtained manually using an electronic water level indicator. A summary of the groundwater surface elevation results is provided in **Table 6** and a potentiometric surface map of the groundwater flow is provided in **Figure 2**.

4.3 CCR Indicators

There are several different types of CCR generated by the burning of coal in coal-fired power plants. The different types of CCR typically display different geochemical signatures and indicator parameters. **Table 7** below describes the different types of CCR at LEC and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017). These indicator parameters can help evaluate if impacts are from CCR units or an alternative source.

Table 7: 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.	<ul style="list-style-type: none"> ■ Boron ■ Molybdenum ■ Lithium ■ Sulfate ■ Bromide ■ Potassium ■ Sodium ■ Fluoride
Boiler Slag / Bottom Ash	A coarse, angular ash particle that is too large to be carried upward so it forms in the bottom of the coal furnace.	

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 described above, the LCPA has historically received Fly Ash and Bottom Ash, while the LCPB has only historically received Fly Ash.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

While the types of waste within the LCPA and LCPB are similar, key differences exist between the pore-water in the two impoundments, which produces distinctively different geochemical fingerprints. In evaluating geochemical data from the impoundments against data from the LCPB compliance monitoring wells, it is apparent that the impacts observed in the compliance wells are not from the LCPB, but rather come from the LCPA. This geochemical pattern is supported by the following: (1) the hydrogeological and geological characteristics of the alluvial aquifer; (2) construction details of the two impoundments; and (3) by concentrations of key CCR indicators in downgradient monitoring wells and temporary piezometers. **Table 8** below summarizes the various analyses which, taken collectively, demonstrate that SSIs detected in the monitoring well network around the LCPB are from an alternative source. The details of these comparisons are provided below in Section 5.1.

Table 8: Key and Supporting Lines of Evidence for LCPB ASD

Key Lines of Evidence	Brief Description
Piper Diagrams	Piper Diagrams are graphical representations used to distinguish differences in groundwater chemistry from various sources. The Piper diagrams prepared for this investigation show a distinct difference between background groundwater, LCPA pore-water, and LCPB pore-water. Results from these diagrams demonstrate that groundwater data from the compliance monitoring wells around the LCPB are impacted by the LCPA and not the LCPB.

Supporting Lines of Evidence	Brief Description
Fingerprint Analysis of Leachate Contaminates (FALCON) analysis	A USEPA FALCON analysis was performed to compare key ion ratios between background groundwater, LCPA pore-water, and LCPB pore-water. Results from this analysis indicate that impacted monitoring wells are more closely correlated with LCPA pore-water or background groundwater.
Stiff Diagrams	Stiff diagrams use the same data plotted in Piper Diagrams to visually display the chemistry of different waters as a “shape”, with the “shape” of each distinct source being itself distinct. When plotted spatially on a map, the stiff diagrams show that the chemistry of the impacted monitoring wells are more similar to that of the LCPA pore-water, rather than that of the LCPB pore-water. This suggests that the LCPA is the source of the impacts observed in the monitoring wells.
Hydrogeological Analysis	A hydrogeological analysis of groundwater flow regimes within the alluvial aquifer demonstrates that groundwater flows from the LCPA toward the LCPB and that impacted monitoring wells around the LCPB are often hydraulically downgradient from the LCPA. Additionally, vertical gradients in the alluvial aquifer are variable, with no principal direction of flow except as seen very near the LCPA where downward vertical gradients are a result of ponded water in the LCPA. Since impacts are present in the shallow, middle, and deep alluvial zones and are not isolated to the shallow zone, the impacts are most likely from the LCPA, which extends to deeper depths in the aquifer.
Construction of the LCPB	The LCPB was constructed using an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner on the bottom and sides of the impoundment. The LCPA is unlined and is in contact with the alluvial aquifer.

5.1 Geochemical Evaluations

Geochemical evaluations of pore-water and alluvial aquifer data demonstrate that groundwater impacts present in the monitoring wells around the LCPB are not caused by the LCPB, but instead are caused by an alternative source, the LCPA. The following sections describe different geochemical evaluation methods which demonstrate that the LCPA and LCPB have distinct geochemical fingerprints and the concentrations in compliance monitoring wells downgradient of the LCPB match the fingerprint of the LCPA, not the LCPB.

5.1.1 Piper Diagrams

Piper diagrams are a graphical technique used to classify different water chemistries. Data are plotted based on major cation and anion concentrations, and were used to determine if there are differences in water/groundwater chemistry, either spatially or over time. Additionally, Piper diagrams were used to determine whether observed impacts are a mixture between different sources. The following sections describe the relationship between the

alluvial aquifer groundwater surrounding the LCPB and LCPA compared to the background alluvial aquifer groundwater, LCPA pore-water, and LCPB pore-water.

5.1.1.1 Sources – LCPA, LCPB and Background

In order to determine what sources are influencing downgradient groundwater quality around the LCPB, the background water quality was plotted against the two different “sources” (i.e., LCPA and LCPB pore-water) on a Piper Diagram. **Figure 3** displays the two “sources”, as well as the background groundwater, based on their major cation/anion composition. As displayed on the **Figure 3**, background groundwater plots on the left side of the trilinear diagram, meaning that it has relatively low concentrations of sulfate + chloride and sodium + potassium and relatively higher concentrations of alkalinity and calcium + magnesium. Pore-water from the LCPA plots on the upper right portion of the trilinear diagram indicating that it has high sulfate + chloride and a mix of calcium + magnesium and sodium + potassium concentrations. Pore-water from the LCPB plots on the lower right side of the trilinear diagram which indicates it has mixed concentrations of sulfate + chloride and alkalinity and very high concentrations of sodium + potassium.

Plotting of the downgradient groundwater data along with the sources is useful for determining the source of the downgradient impacts. If the groundwater impacts were from a particular source, the groundwater results from the downgradient wells would be expected to plot in an area between the source and background groundwater. These inferred “mixing” zones are shown on both **Figure 3** and **Figure 4** and represent that if impacts on downgradient monitoring wells were caused by the LCPB, the results from these wells should plot somewhere between the location of background groundwater and the location of LCPB pore-water in the LCPB mixing zone.

5.1.1.2 Alluvial Aquifer Groundwater Results

Figures 4 and **5** display where CCR Rule groundwater monitoring well sampling results plot in comparison to the LCPA pore-water, LCPB pore-water, and background groundwater zones developed using **Figure 3**. As displayed in these figures, results from groundwater results in the alluvial aquifer plot between un-impacted background groundwater and LCPA pore-water.

These figures reflect a close correlation between key CCR indicator parameters and the data plots on the Piper diagram. CCR indicators such as boron, sulfate, and molybdenum in monitoring wells around the LCPA are detected at their highest concentrations north and east of the LCPA in the downgradient groundwater flow directions in monitoring wells UMW-3D, UMW-4D, UMW-5D, UMW-6D and UMW-7D, which correlates with the location that these monitoring wells plot on the Piper diagram, in or adjacent to the zone for LCPA pore-water. The correlation can also be made with monitoring wells around the LCPB, where molybdenum concentrations are typically lowest in monitoring wells LMW-1S, LMW-5S, and LMW-6S and highest in LMW-2S, LMW-3S, LMW-4S, LMW-7S, and LMW-8S. The molybdenum concentrations correspond with the data displayed in the Piper diagram, in that monitoring wells with lower concentrations plot closer to background groundwater quality and monitoring wells with high concentrations plot closer to LCPA pore-water. The strong association between concentration of key CCR indicators and the location that wells plot relative to background groundwater and LCPA pore-water demonstrates impacts are caused by the LCPA. The more closely associated the water chemistry is to that of the LCPA zone, the higher the concentration of key CCR indicators.

There is also no notable difference in concentration between the shallow, middle and deep zones of the alluvial aquifer. **Figures 6** and **7** display where the ASD and PZ samples plot on a Piper diagram compared to background groundwater, as well as the LCPA and LCPB zones. These results demonstrate that there is no

apparent change in groundwater chemistry between the shallow, middle and deep zones of the alluvial aquifer, adding further support to the idea that impacts are not from the LCPB, because the LCPB is a lined impoundment whose base is shallow (generally above the groundwater surface elevation) and without widespread consistent downward gradients, impacts from LCPB would likely be isolated to the shallow zone of the alluvial aquifer where no apparent concentration stratification is observed. The LCPA is unlined and approximately 75 feet deep, encountering the shallow, middle and deep alluvial zones. Thus, impacts from the LCPA would be expected in the shallow, middle and deep alluvial zones.

5.1.2 Stiff Diagrams

Stiff Diagrams use the same major cation/anion chemistry data as Piper diagrams, but produce a visual representation of the data as a geometric shape. These visual plots were used spatially or temporally to compare water chemistry. **Figures 8 and 9** display the spatial distribution of the Stiff diagrams in the shallow and middle alluvial zones. These figures demonstrate downgradient well data in the shallow and middle zones more closely resemble that of the pore-water in the LCPA, and not that of the pore-water in the LCPB. Additionally, it demonstrates that there are no significant vertical changes in groundwater chemistry, which further supports that groundwater impacts are from the deeper unlined LCPA and not the shallow, lined LCPB.

5.1.3 FALCON Ion Ratio Analysis

The Fingerprint Analysis of Leachate Contaminants (FALCON) method was developed by the United States Environmental Protection Agency (USEPA) in 2004 to identify the source of a contaminant. This method compiles ion ratios from multiple constituents to develop a distinctive chemical fingerprint for each source. A description of the analytes that were used and the steps required to produce the results are provided in **Appendix D**.

Results from the FALCON analysis are summarized on **Table 9**, which displays the correlation between each alluvial aquifer sample with the fingerprint of the LCPA, LCPB, and background groundwater. This analysis displays that each sample from CCR Rule monitoring wells in the alluvial aquifer has a stronger correlation with either the LCPA pore-water or background groundwater than it does with LCPB pore-water.

5.2 Hydrogeological Analysis

Groundwater flow on site is characterized as having low hydraulic gradients and variable flow direction. Horizontal gradients are directly controlled by the river stage of the adjacent Missouri River. Vertical gradients are generally not consistent in the alluvial aquifer and vary, with the exception of localized effects very close to the LCPA where ponded water results in a downward gradient. Additionally, complex alluvial aquifer deposits such as floodplain and channel deposits can create preferential flow paths within the alluvial aquifer. The following sections discuss the hydrogeological conditions at the LEC as they relate to the alternative source evaluation.

5.2.1 Horizontal Alluvial Aquifer Gradients and Groundwater Flow

Groundwater flow at the LEC is directly controlled by the river stage of the Missouri River since the alluvial aquifer is hydraulically connected to this water body. The Missouri River displays large seasonal changes in elevation. Under normal aquifer conditions, groundwater flow in the alluvial aquifer at the LEC would be expected to have a minor flow direction component to the northeast in the direction of river flow and generally flow from the bluffs (to the south) towards the Missouri River (to the north) (see **Figure 2** and **Appendix C** of LCPB Annual Report).

Additionally, because of the low horizontal hydraulic gradient and changes in river stage, these maps indicate that groundwater flow near the LCPB (and LCPA) can be variable, and groundwater impacts from the units can travel any direction, but generally to the northwest, north, or northeast depending on river stages (see **Figure 2** and **Appendix C** of LCPB Annual Report). Therefore, the downgradient monitoring wells at the LCPB are sometimes downgradient of the LCPA.

5.2.2 Vertical Alluvial Aquifer Gradients

A review of vertical gradients in the alluvial aquifer is provided in **Figure 10**. The groundwater elevations between different zones of the alluvial aquifer were compared to evaluate vertical groundwater gradients in nested monitoring wells/piezometers. These data demonstrate that in areas outside of the influence of the LCPA, there is no consistent vertical gradient and vertical gradients are typically very low. However, in areas immediately adjacent to the LCPA there is a slight downward gradient. These gradients suggest that in areas outside of the influence of the LCPA, the groundwater impacts should be expected to be first detected at a similar elevation to the source.

6.0 DEMONSTRATION THAT SSI WAS CAUSED BY ALTERNATIVE SOURCE

Based on the information provided above, the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. Rather, the SSIs are caused by an alternative source, in this case, the unlined, adjacent LCPA surface impoundment. This conclusion is reached via multiple analytical and evaluations methods including Piper diagrams, FALCON fingerprinting, hydrogeologic assessments, and geochemistry analysis. The following list summarizes the demonstration results:

- As reflected on the Piper diagrams, LCPA pore-water has a distinctly different signature than the pore-water from LCPB. CCR groundwater samples in monitoring wells with SSIs plot on the Piper diagrams in a location between the LCPA pore-water zone and the background groundwater zone, indicating that well water chemistry is a mixture of unaffected groundwater and groundwater impacted by the LCPA. None of the downgradient monitoring wells plotted in the LCPB pore-water zone, or in the area that is strictly the LCPB mixing zone.
- The USEPA FALCON method compared constituent fingerprints between the downgradient monitoring wells and the background groundwater, LCPB pore-water and LCPA pore-water sources. The results indicate that there are strong correlations between downgradient monitoring wells and the LCPA pore-water or background groundwater, as compared to LCPB pore-water. These same correlations were found at depth within the alluvial aquifer in the temporary ASD piezometers.
- Potentiometric surface mapping demonstrates that groundwater flow directions onsite are variable and can flow in multiple directions, but generally with a northwest or northeast flow direction, depending on the river level in the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring because impacted monitoring wells around the LCPB are frequently downgradient from the LCPA.
- The LCPB was constructed with an engineered liner system with a bottom elevation of approximately 460 FT MSL at its lowest point. The LCPA was built in the early 1970's and has a bottom elevation estimated to be

at approximately 410 FT MSL. This, along with key CCR indicators being present in the shallow, middle and deep zones of the alluvial aquifer indicate that impacts present onsite are from the LCPA and not the LPCB.

References In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction and hydrogeological evidence all demonstrate that impacts (SSIs) calculated during the first Detection Monitoring event for the LCPB were not caused by impacts from the LCPB surface impoundment, and the LCPA surface impoundment is the source of the LCPB SSIs.

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Tables

Table 1
Detection and Verification Sampling Results
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
November 2017 Detection Monitoring Event												
DATE			11/7/2017	11/7/2017	11/8/2017	11/7/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017	11/8/2017
pH	SU	6.072-7.483	6.77	7.11	6.85	9.51	7.54	7.19	7.22	6.69	6.73	6.95
BORON, TOTAL	µg/L	122	100	46.3 J	4,570	6,350	5,350	9,160	108	843	3,690	4,430
CALCIUM, TOTAL	µg/L	219000	197,000	120,000	178,000	62,200	74,100	139,000	131,000	167,000	179,000	173,000
CHLORIDE, TOTAL	mg/L	13.75	4.6	21.2	5.4	21.0	20.3	22.6	3.6	3.0	11.5	15.0
FLUORIDE, TOTAL	mg/L	0.2507	0.18 J	0.18 J	0.16 J	0.18 J	0.42	0.22	0.19 J	0.17 J	0.14 J	0.22
SULFATE, TOTAL	mg/L	65.3	157	246	49.1 J	232	255	250	13.3	51.2	139	191
TOTAL DISSOLVED SOLIDS	mg/L	780	653	414	703	428	632	780	427	605	734	731
January 2018 Verification Sampling												
DATE					1/4/2018	1/5/2018	1/5/2018	1/5/2018		1/4/2018	1/4/2018	1/4/2018
pH	SU	6.072-7.483				9.32	7.16					
BORON, TOTAL	µg/L	122			4,080	5,500	5,590	8,870		595	695	3,760
CALCIUM, TOTAL	µg/L	219000										
CHLORIDE, TOTAL	mg/L	13.75				20.5	21.0	22.6				9.8
FLUORIDE, TOTAL	mg/L	0.2507					0.49					
SULFATE, TOTAL	mg/L	65.3				249	277	249			52.7	152
TOTAL DISSOLVED SOLIDS	mg/L	780										

- 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. Prediction Limits (PL) calculated using Sanitas Software.
 4. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantitation Rule (DQR) is used.
 5. Values bolded and highlighted in yellow indicate a Statistically Significant Increase (SSI).
 6. Values bolded and highlighted in green indicate an initial exceedance above the PL that was below the PL during Verification Sampling (not an SSI).
 7. Only analyte/well combinations that were detected above the PL were sampled during Verification Sampling.

Table 2
Temporary Piezometer Construction Details
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

	Well ID	Estimated Location		Estimated Ground Surface Elevation	Top of Screen	Bottom of Screen	Base of Well	Total Depth
		Northing	Easting					
				Feet MSL	Feet BGS	Feet BGS	Feet BGS	Feet BGS
Temporary Piezometers	L-ASD-1D	991019	725795	494	115.9	120.5	121.0	121.0
	L-ASD-1M	991019	725795	494	80.7	85.3	85.8	85.8
	L-ASD-1S	991019	725795	494	44.3	48.9	49.4	49.4
	L-ASD-2D	991678	725325	495	114.9	119.5	120.0	120.0
	L-ASD-2M	991678	725325	495	80.1	84.7	85.2	85.2
	L-ASD-2S	991678	725325	495	45.2	49.8	50.3	50.3
	L-ASD-3D	992369	724778	495	115.5	120.1	120.6	120.6
	L-ASD-3M	992369	724778	495	81.0	85.6	86.1	86.1
	L-ASD-3S	992369	724778	495	50.3	54.9	55.4	55.4
	L-ASD-4D	994276	725807	471	91.1	95.7	96.2	96.2
	L-ASD-4M	994276	725807	471	56.0	60.6	61.1	61.1
	L-ASD-4S	994276	725807	471	21.6	26.2	26.7	26.7
	L-ASD-5D	992987	726386	467	87.0	91.6	92.1	92.1
	L-ASD-5M	992987	726386	467	52.3	56.9	57.4	57.4
	L-ASD-5S	992987	726386	467	18.1	22.7	23.2	23.2
Temporary Piezometers in LCPA	L-LCPA-1D	991143	723728	504	57.8	62.4	62.9	70.0
	L-LCPA-1S	991143	723728	504	40.3	44.9	45.4	45.4
	L-LCPA-2D	991066	724361	500	64.6	69.2	69.7	80.0
	L-LCPA-2S	991066	724361	500	40.3	44.9	45.4	45.4
	L-LCPA-3D	991671	724582	505	65.0	69.6	70.1	80.0
	L-LCPA-3S	991671	724582	505	40.6	45.2	45.7	45.7
Temporary Piezometers in LCPB	L-LCPB-1	992696	724277	500	15.0	19.6	20.1	20.1
	L-LCPB-2	992288	725758	500	14.9	19.5	20.0	20.0
	L-LCPB-3	993142	725535	500	14.8	19.4	19.9	20.0

Notes:

- 1.) Feet BGS - Feet below ground surface.
- 2.) Horizontal Datum: State Plane Coordinates NAD83 (2000) Missouri East Zone feet.
- 3.) Vertical Datum: NAVD88 feet.
- 4.) Northing, Easting, and ground surface elevation estimated based upon a handheld GPS unit.
- 5.) Feet MSL - Feet above mean sea level.

Prepared By: RJF/BCW

Checked By TJG

Reviewed By: MNH

Table 3
Summary of Temporary Piezometer Groundwater Sampling Results
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	Temporary Alluvial Aquifer Piezometers														
		L-ASD-1D	L-ASD-1M	L-ASD-1S	L-ASD-2D	L-ASD-2M	L-ASD-2S	L-ASD-3D	L-ASD-3M	L-ASD-3S	L-ASD-4D	L-ASD-4M	L-ASD-4S	L-ASD-5D	L-ASD-5M	L-ASD-5S
Appendix III Parameters																
BORON, TOTAL	µg/L	5,280	5,530	7,370	8,130	8,550	9,520	5,850	3,050	2,610	5,620	6,630	1,050	2,740	12,300	1,440
CALCIUM, TOTAL	µg/L	189,000	95,600	156,000	173,000	101,000	110,000	70,500	70,200	75,700	119,000	53,400	72,200	114,000	51,800	79,500
CHLORIDE, TOTAL	mg/L	18.7	10	14.5	17.8	10.8	11.6	13.9	15.0	15.5	15.4	20.3	4.9	9.0	21.7	5.1
FLUORIDE, TOTAL	mg/L	0.093 J	ND	0.097 J	0.15 J	0.11 J	0.096 J	0.18 J	0.32	0.45	0.26	0.33	0.17 J	0.16 J	0.59	0.25
pH	SU	7.22	8.97	8.04	7.55	9.43	9.84	7.98	8.63	7.26	7.30	7.69	7.34	7.55	7.49	6.99
SULFATE, TOTAL	mg/L	978	433	708	792	450	421	185	173	145	400	279	14.3	311	176	19.8
TOTAL DISSOLVED SOLIDS	mg/L	1,560	784	1,140	1,110	693	705	491	452	574	729	533	327	679	524	317
Appendix IV Parameters																
ANTIMONY, TOTAL	µg/L	ND	1.6	0.090 J	0.17 J	1.9	1.2	1.4	ND	0.27 J	0.53 J	0.026 J	0.078 J	1.1	0.047 J	0.18 J
ARSENIC, TOTAL	µg/L	0.27 J	21.5	27.1	0.76 J	44.7	71.8	4.4	6.5	30.5	1.4	0.67 J	4.5	0.26 J	2.1	0.22 J
BARIUM, TOTAL	µg/L	95.0	177	136	136	125	58.9	138	70.6	169	123	91.2	127	160	65.5	151
BERYLLIUM, TOTAL	µg/L	ND	0.18 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	0.044 J	0.070 J	0.11 J	0.022 J	ND	ND	ND	ND	ND	0.028 J	0.019 J	ND	ND	0.035 J	ND
CHROMIUM, TOTAL	µg/L	ND	1.1	0.29 J	ND	1.2	ND	0.058 J	0.12 J	ND	0.083 J	ND	ND	ND	0.25 J	0.078 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.93 J	ND	ND	ND	ND	ND	0.90 J
LEAD, TOTAL	µg/L	ND	3.1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	18.3	39.6	ND	26.4	23.6	5.2 J	34.5	18.1	18.0	24.1	15.7	10.9	27.7	25.5	12.1
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	336	334	593	392	490	445	196	90.3	93.7	249	309	39.3	93.1	636	87.4
SELENIUM, TOTAL	µg/L	0.17 J	0.74 J	0.23 J	0.18 J	4.2	0.34 J	0.73 J	0.20 J	0.34 J	0.18 J	0.10 J	0.13 J	0.24 J	0.18 J	0.33 J
THALLIUM, TOTAL	µg/L	0.056 J	0.042 J	0.054 J	0.045 J	0.040 J	ND	0.067 J	ND	ND	ND	ND	0.044 J	ND	0.052 J	ND
Additional Parameters																
ALKALINITY	mg/L	55.4	89.9	82.7	69.9	64.9	85.6	138	113	274	158	64.5	295	218	181	318
CHEMICAL OXYGEN DEMAND	mg/L	ND	10.2	13.5 J	6.3 J	5.2 J	8.6 J	5.8 J	5.7 J	16.5	7.4 J	4.4 J	7.5 J	137	16.5	7.8 J
HARDNESS	µg/L	551,000	286,000	428,000	473,000	263,000	277,000	229,000	201,000	271,000	376,000	162,000	268,000	406,000	175,000	282,000
IRON, TOTAL	µg/L	4,120	454	223 J	1,130	77.6	26.2 J	21.9 J	319	3,070	2,350	705	3,620	3,300	4,790	1,100
MAGNESIUM, TOTAL	µg/L	19,400	11,400	9,290	10,100	2,620	655	12,900	6,190	20,000	18,800	7,030	21,400	29,100	11,100	20,200
MANGANESE, TOTAL	µg/L	724	21.6	484	698	20.6	2.1 J	111	173	1,860	372	252	703	439	602	182
POTASSIUM, TOTAL	µg/L	26,600	16,300	11,900	19,400	14,500	17,500	12,200	10,800	5,190	7,250	5,720	5,190	8,200	4,370	3,990
SODIUM, TOTAL	µg/L	234,000	124,000	187,000	151,000	102,000	87,300	50,400	46,800	80,200	68,700	87,000	15,000	51,000	88,200	14,400
SULFIDE, TOTAL	mg/L	ND	ND	ND	ND	0.077	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANIC CARBON	mg/L	2.3	3.0	3.6	3.8	5.1	5.0	2.5	2.4	5.5	2.5	3.0	1.8	37.4	5.1	2.4

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) and is considered a non-detect.

Prepared By: JSI

Checked By: TJG

Reviewed By: MNH

Table 4
Summary of LCPA and LCPB Pore-Water Sampling Results
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	LCPA Pore-Water Temporary Piezometers												LCPB Pore-Water Temporary Piezometers					
		L-LCPA-1D		L-LCPA-1S		L-LCPA-2D		L-LCPA-2S		L-LCPA-3D		L-LCPA-3S		L-LCPB-1		L-LCPB-2		L-LCPB-3	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Appendix III Parameters																			
BORON, TOTAL	µg/L	10,000	9,780	10,300	10,200	21,700	21,700	3,360	3,260	8,100	8,690	8,440	8,610	28,200	27,900	14,800	15,500	25,700	27,400
CALCIUM, TOTAL	µg/L	78,200	77,900	97,100	98,400	106,000	111,000	76,500	77,900	87,700	95,700	76,900	77,800	11,400	11,200	22,600	22,800	11,400	10,200
CHLORIDE, TOTAL	mg/L	15.2	NS	18.9	NS	19.8	NS	25.5	NS	18.9	NS	18.6	NS	15.6	NS	16.2	NS	18.4	NS
FLUORIDE, TOTAL	mg/L	0.20 J	NS	0.088 J	NS	0.14 J	NS	0.17 J	NS	0.16 J	NS	0.16 J	NS	2.4	NS	1.0	NS	1.9	NS
pH	SU	8.92	NS	10.83	NS	9.63	NS	8.91	NS	9.96	NS	10.44	NS	11.99	NS	12.33	NS	12.34	NS
SULFATE, TOTAL	mg/L	257	NS	267	NS	306	NS	254	NS	295	NS	272	NS	1,060	NS	728	NS	999	NS
TOTAL DISSOLVED SOLIDS	mg/L	528	NS	575	NS	642	NS	606	NS	577	NS	569	NS	2,500	NS	1,860	NS	2,850	NS
Appendix IV Parameters																			
ANTIMONY, TOTAL	µg/L	10.4	10.9	1.8	1.7	3.6	3.6	3.8	3.6	3.5	3.5	2.0	2.0	0.95 J	0.89 J	0.47 J	0.45 J	ND	ND
ARSENIC, TOTAL	µg/L	22.1	23.1	71.1	73.9	40.8	41.3	9.2	9.4	31.7	31.1	56.5	54.0	66.9	58.0	15.0	13.1	90.4	77.1
BARIUM, TOTAL	µg/L	45.6	45.6	45.7	43.4	71.2	70.8	89.5	89.7	47.0	49.7	36.5	26.2	19.4	16.0	48.4	37.4	47.1	9.6
BERYLLIUM, TOTAL	µg/L	ND	ND	0.24 J	ND	0.27 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	0.072 J	0.048 J	0.047 J	ND	0.12 J	0.10 J	ND	0.019 J	0.065 J	0.022 J	0.066 J	ND	0.13 J	0.078 J	0.072 J	0.032 J	0.26 J	0.086 J
CHROMIUM, TOTAL	µg/L	1.4	ND	ND	0.78 J	ND	ND	1.7	ND	1.1	ND	0.34 J	ND	2.7	2.7	120	119	7.5	7.0
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	1.0 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	3.5 J	ND	2.7 J	ND	2.7 J	ND	ND	ND	2.4 J	ND	2.7 J	ND	ND	ND	ND	ND	ND	6.6
LITHIUM, TOTAL	µg/L	34.6	33.7	40.6	41.4	61.4	63.0	5.5 J	7.3 J	59.8	67.7	39.8	39.9	46.2	47.8	13.7	12.3	50.4	51.4
MERCURY, TOTAL	µg/L	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS
MOLYBDENUM, TOTAL	µg/L	231	231	235	238	1,430	1,460	83.7	79.7	218	239	234	242	1,960	1,950	682	724	2,370	2,540
SELENIUM, TOTAL	µg/L	6.0	6.1	0.73 J	0.85 J	0.95 J	1.1	1.5	1.3	1.1	0.64 J	2.1	2.1	255	224	182	159	361	317
THALLIUM, TOTAL	µg/L	1.6	1.7	ND	ND	ND	ND	ND	ND	0.12 J	ND	0.26 J	ND	0.53 J	ND	0.42 J	ND	0.38 J	ND
Additional Parameters																			
ALKALINITY	mg/L	77.6	NS	120	NS	128	NS	208	NS	80.2	NS	91.8	NS	1,070	NS	861	NS	1,340	NS
ALUMINUM, TOTAL	µg/L	2,590	2,320	2,740	2,590	1,310	1,200	1,110	1,200	2,040	1,990	1,520	1,290	16,000	15,300	28,800	29,500	15,600	15,500
CHEMICAL OXYGEN DEMAND	mg/L	37.4	NS	10.7	NS	7.3 J	NS	11.1	NS	12.8	NS	10.2	NS	13.5	NS	5.4 J	NS	13.3	NS
COPPER, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	29.6	27.2	10.9	10.1	45.5	46.3
HARDNESS	µg/L	214,000	NS	243,000	NS	288,000	NS	378,000	NS	225,000	NS	194,000	NS	28,900	NS	56,800	NS	30,000	NS
IRON, TOTAL	µg/L	178	38.2 J	138 J	18.8 J	86.9	ND	27.9 J	86.4	122	13.9 J	112	ND	27.3 J	ND	129 J	ND	384	ND
MAGNESIUM, TOTAL	µg/L	4,470	4,180	184 J	126	5,430	5,480	45,500	46,800	1,540	1,610	445	418	84.4	ND	87.4	ND	386	ND
MANGANESE, TOTAL	µg/L	4.1 J	ND	3.2 J	ND	ND	ND	39.2	41.5	2.3 J	ND	ND	ND	ND	ND	ND	ND	2.3 J	ND
NICKEL, TOTAL	µg/L	4.6 J	3.4 J	3.2 J	2.3 J	9.3	8.8	ND	ND	ND	ND	2.5 J	2.8 J	5.2	5.4	ND	ND	35.0	36.9
POTASSIUM, TOTAL	µg/L	14,000	13,600	17,800	17,100	42,100	42,000	3,540	3,430	14,200	15,800	16,600	17,200	51,000	50,700	52,600	55,400	48,200	52,000
SILVER, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SODIUM, TOTAL	µg/L	60,000	58,500	71,100	69,200	50,500	50,300	67,200	66,100	69,000	74,300	84,000	82,800	935,000	925,000	750,000	691,000	969,000	1,080,000
SULFIDE, TOTAL	mg/L	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS
TOTAL ORGANIC CARBON	mg/L	10.7	NS	3.3	NS	6.4	NS	3.3	NS	3.3	NS	4.3	NS	3.1	NS	1.8	NS	5.0	NS
ZINC, TOTAL	µg/L	15.0 J	ND	13.3 J	ND	ND	ND	19.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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) and is considered a non-detect.
4) NS - Not sampled.

Prepared By: JSI
Checked By: TJG
Reviewed By: MNH

Table 5
Summary of NPDES Piezometer Groundwater Sampling Results
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	NPDES Piezometers											
		PZ-1D	PZ-1S	PZ-2D	PZ-2S	PZ-3D	PZ-3S	PZ-4D	PZ-4S	PZ-5D	PZ-5S	PZ-6D	PZ-6S
Appendix III Parameters													
BORON, TOTAL	µg/L	174	19,400	828	1,000	1,080	478	7,580	5,330	4,020	5,780	5,230	4,560
CALCIUM, TOTAL	µg/L	125,000	94,500	142,000	124,000	97,100	164,000	82,500	132,000	64,400	87,600	163,000	170,000
CHLORIDE, TOTAL	mg/L	12.4	8.7	9.5	23.9	26.9	26.5	20.2	28.2	19.3	22.6	12.5	10.8
FLUORIDE, TOTAL	mg/L	0.18 J	3.1	0.35	0.28	0.29	0.18 J	0.12 J	0.39	0.34	0.47	0.27	0.22
pH	SU	7.08	7.22	7.00	6.88	6.82	6.31	8.51	7.44	7.90	7.27	7.25	7.08
SULFATE, TOTAL	mg/L	1.5	755	9.8	101	136	92.6	303	369	284	269	239	138
TOTAL DISSOLVED SOLIDS	mg/L	420	1,390	514	568	520	624	545	759	493	781	718	701
Appendix IV Parameters													
ANTIMONY, TOTAL	µg/L	ND	0.13 J	ND	0.17 J	0.094 J	0.055 J	0.065 J	0.044 J	ND	0.85 J	0.040 J	ND
ARSENIC, TOTAL	µg/L	47.3	5.4	16.1	81.9	1.2	1.7	41.6	11.7	0.16 J	8.1	0.65 J	45.7
BARIUM, TOTAL	µg/L	485	104	264	395	124	167	105	84.9	70.3	71.8	53.3	261
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	0.52 J	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	0.021 J	0.28 J	0.030 J	ND	0.049 J	0.074 J	0.10 J	0.11 J	0.042 J	0.032 J	0.12 J	0.037 J
CHROMIUM, TOTAL	µg/L	0.080 J	0.43 J	0.73 J	0.35 J	0.29 J	0.15 J	0.59 J	0.23 J	0.47 J	0.44 J	0.36 J	0.080 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	2.3 J	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	31.3	18.1	33.0	32.5	25.9	40.3	21.7	24.1	27.4	29.2	28.1	30.5
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	2.7 J	1,540	16.1 J	1.8 J	28.2	20.7	213	77.5	137	75.7	216	162
SELENIUM, TOTAL	µg/L	ND	10.0	ND	0.13 J	ND	0.19 J	0.21 J	0.12 J	0.090 J	0.13 J	0.097 J	0.088 J
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043 J	ND
Additional Parameters													
ALKALINITY	mg/L	450	229	521	427	267	455	109	215	54.6	352	404	519
CHEMICAL OXYGEN DEMAND	mg/L	18.3	32.4	12.4	20.6	5.0 J	ND	9.7 J	8.6 J	3.5 J	11.7	10.4	13.2
HARDNESS	µg/L	433,000	312,000	471,000	444,000	341,000	513,000	226,000	405,000	174,000	253,000	513,000	569,000
IRON, TOTAL	µg/L	20,200	2,670	12,500	16,000	2,310	1,970	419	3,070	637	4,990	6,720	20,300
MAGNESIUM, TOTAL	µg/L	29,500	18,600	28,100	32,500	23,900	25,100	4,940	18,100	3,120	8,310	25,800	35,300
MANGANESE, TOTAL	µg/L	330	536	1,240	451	328	579	187	1,080	231	521	1,090	1,950
POTASSIUM, TOTAL	µg/L	4,790	7,270	5,620	6,170	5,940	3,940	11,400	6,450	10,400	6,550	5,900	7,510
SODIUM, TOTAL	µg/L	11,000	310,000	31,200	49,000	51,800	27,900	81,400	91,700	79,700	172,000	58,300	43,300
SULFIDE, TOTAL	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANIC CARBON	mg/L	3.7	9.3	3.6	6.2	1.5	1.4	3.4	2.8	2.3	4.4	2.3	3.5

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) and is considered a non-detect.

Prepared By: JSI

Checked By: EMS

Reviewed By: MNH

Table 6
Summary of Groundwater Elevation Measurements
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

	Well ID	Location		Top of Casing	Ground Surface	Groundwater Elevation Measurements 3/05/2018		
		Northing	Easting	Feet MSL	Feet MSL	DTW	GWE	
LCPA CCR Wells	UMW-1D	988,822.5	723,129.4	489.72	487.8	33.88	455.84	
	UMW-2D	990,437.2	722,248.6	484.81	482.7	29.17	455.64	
	UMW-3D	991,830.7	723,558.8	490.62	488.8	35.29	455.33	
	UMW-4D	992,512.3	724,538.1	494.95	493.2	39.99	454.96	
	UMW-5D	992,027.2	725,067.9	496.76	494.9	41.86	454.90	
	UMW-6D	991,382.8	725,540.9	496.19	494.5	41.12	455.07	
	UMW-7D	990,722.8	726,032.4	469.79	468.0	14.79	455.00	
	UMW-8D	989,892.7	725,179.5	469.47	467.5	13.64	455.83	
	UMW-9D	989,220.0	724,447.8	470.61	468.8	14.45	456.16	
	BMW-1D	988,310.6	715,138.4	473.54	471.2	17.38	456.16	
BMW-2D	987,204.3	715,104.2	474.39	472.4	18.41	455.98		
LCPB CCR Wells	LMW-1S	990,727.7	726,039.1	470.06	468.1	15.21	454.85	
	LMW-2S	992,017.5	725,074.2	496.64	494.9	41.56	455.08	
	LMW-3S	993,254.3	725,081.6	492.56	490.5	37.43	455.13	
	LMW-4S	994,194.9	725,624.1	472.88	470.7	19.03	453.85	
	LMW-5S	994,201.6	726,366.8	468.75	466.9	15.06	453.69	
	LMW-6S	993,320.2	726,391.4	469.56	467.2	15.63	453.93	
	LMW-7S	992,330.1	726,371.1	468.43	466.7	14.14	454.29	
	LMW-8S	991,371.2	726,351.3	467.24	465.2	12.66	454.58	
	BMW-1S	988,310.0	715,131.6	473.49	471.2	17.28	456.21	
	BMW-2S	987,210.1	715,104.3	474.56	472.5	18.62	455.94	
Utility Waste Landfill Wells	TMW-1	993,782.9	728,656.8	469.34	466.9	16.12	453.22	
	TMW-2	994,513.1	728,663.8	470.40	468.0	17.35	453.05	
	TMW-3	994,635.7	727,842.0	469.41	467.1	16.04	453.37	
	MW-4	995,818.4	728,546.3	470.96	468.3	18.18	452.78	
	MW-5	995,545.8	728,819.2	470.06	467.4	17.31	452.75	
	MW-8	994,382.7	729,643.2	468.25	465.6	15.34	452.91	
	MW-9	994,168.3	729,892.6	467.81	465.1	14.88	452.93	
	MW-10	993,950.5	730,148.7	468.56	465.8	15.54	453.02	
	MW-11	993,724.6	730,398.4	468.55	466.1	15.53	453.02	
	MW-12	993,469.5	730,622.5	468.11	465.7	15.05	453.06	
	MW-13	993,255.5	730,912.8	468.10	465.6	15.01	453.09	
	MW-14	993,052.3	731,166.4	466.83	464.2	13.77	453.06	
	MW-15	992,807.3	731,405.9	467.30	465.0	14.14	453.16	
	MW-17	992,302.1	731,675.3	467.89	465.3	14.54	453.35	
	MW-18	991,677.7	730,928.2	465.27	462.8	6.77	458.50	
	MW-20	991,669.1	729,951.7	465.97	463.6	12.15	453.82	
	MW-22	990,929.1	729,354.6	466.8	464.2	12.47	454.33	
	MW-23	991,099.5	728,511.5	467.54	464.9	6.30	461.24	
	MW-25	992,706.9	727,528.7	468.61	466.0	14.81	453.80	
	MW-26	993,976.5	726,910.9	469.2	466.7	15.52	453.68	
	MW-27	994,663.9	726,607.5	470.05	467.4	16.46	453.59	
	MW-28	995,276.3	726,639.9	471.18	468.6	18.60	452.58	
	MW-29	995,678.8	726,962.2	472.97	470.4	19.57	453.40	
	MW-30	995,759.9	727,408.8	472.02	469.3	18.70	453.32	
	MW-31	995,836.2	727,853.5	472.51	469.9	19.41	453.10	
	MW-32	995,912.4	728,305.6	471.07	468.2	18.26	452.81	
	MW-33D	995,741.5	727,408.7	472.15	469.4	18.68	453.47	
	MW-34D	995,560.9	728,820.5	470.19	467.4	17.13	453.06	
	MW-35D	992,693.5	727,536.2	468.59	465.9	14.77	453.82	
	Other Wells	AW-1	991,502.4	733,926.6	466.78	463.4	6.93	459.85
	River Level	Missouri River	995,047.6	723,234.9	NA	NA	NA	454.50

Notes:

- 1.) DTW - Depth to water measured in feet below top of casing.
- 2.) GWE - Groundwater elevation measured in feet above mean sea level.
- 3.) Feet MSL - Feet above mean sea level.
- 4.) Horizontal Datum: State Plane Coordinates NAD83 (2000) Missouri East Zone feet.
- 5.) Vertical Datum: NAVD88 feet.
- 6.) NA - Not Applicable.
- 7.) Missouri River level obtained from United States Geological Survey (USGS) gauge 06935550.
- 8.) CCR - Coal Combustion Residuals.
- 9.) NPDES - National Pollutant Discharge Elimination System.

Prepared By: RJF/MSG
Checked By: EMS
Reviewed By: MNH

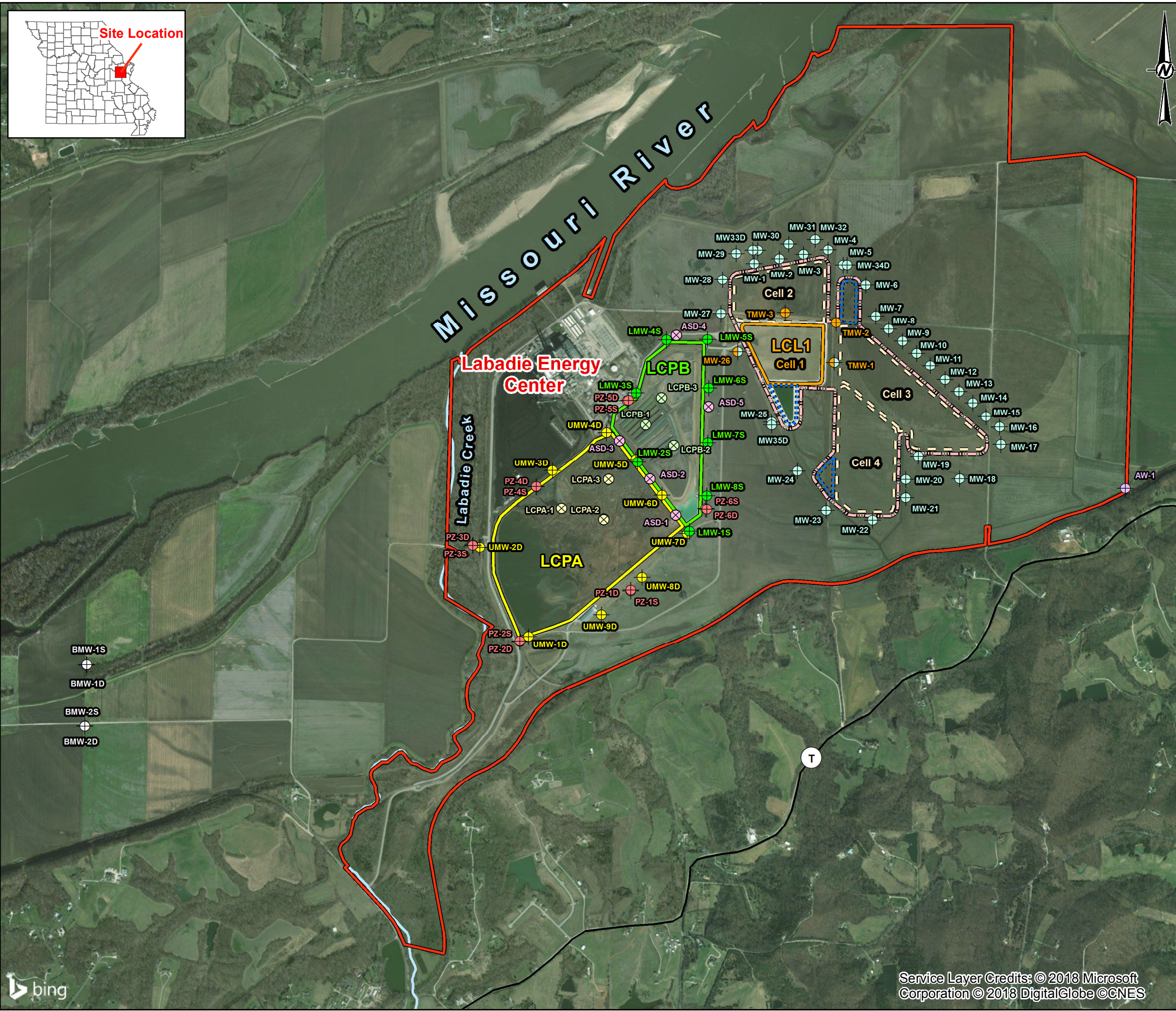
Table 9
Summary of FALCON Analysis Results
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Piezometer or Well ID	Percent Correlation					Highest (Best) Correlation
	Background Groundwater Average	LCPB Average	LCPA Average (LCPA-1 & LCPA-3)	LCPA-2D	LCPA-2S	
L-ASD-1D	-5%	55%	89%	39%	75%	LCPA-1&3
L-ASD-1M	16%	71%	96%	66%	75%	LCPA-1&3
L-ASD-1S	-2%	74%	98%	72%	69%	LCPA-1&3
L-ASD-2D	1%	61%	94%	52%	76%	LCPA-1&3
L-ASD-2M	1%	76%	96%	82%	63%	LCPA-1&3
L-ASD-2S	-4%	79%	98%	81%	66%	LCPA-1&3
L-ASD-3D	45%	76%	88%	68%	81%	LCPA-1&3
L-ASD-3M	38%	69%	89%	43%	96%	LCPA-2S
L-ASD-3S	72%	59%	52%	22%	86%	LCPA-2S
L-ASD-4D	22%	71%	96%	57%	88%	LCPA-1&3
L-ASD-4M	5%	80%	96%	81%	66%	LCPA-1&3
L-ASD-4S	74%	35%	14%	3%	58%	Background
L-ASD-5D	52%	53%	76%	24%	97%	LCPA-2S
L-ASD-5M	0%	85%	77%	98%	40%	LCPA-2D
L-ASD-5S	74%	42%	22%	16%	60%	Background
L-LMW-1S	61%	35%	18%	-5%	66%	LCPA-2S
L-LMW-2S	3%	59%	93%	47%	78%	LCPA-1&3
L-LMW-3S	25%	85%	91%	54%	92%	LCPA-2S
L-LMW-4S	54%	63%	63%	23%	94%	LCPA-2S
L-LMW-5S	91%	16%	5%	-9%	52%	Background
L-LMW-6S	83%	23%	14%	-7%	62%	Background
L-LMW-7S	87%	25%	19%	-4%	66%	Background
L-LMW-8S	64%	50%	53%	15%	89%	LCPA-2S
L-MW-26	80%	22%	8%	-8%	56%	Background
L-TMW-1	82%	23%	12%	-9%	61%	Background
L-TMW-2	68%	30%	15%	-8%	64%	Background
L-TMW-3	79%	24%	12%	-8%	61%	Background
L-UMW-1D	93%	13%	1%	-11%	49%	Background
L-UMW-2D	57%	50%	63%	10%	96%	LCPA-2S
L-UMW-3D	18%	51%	88%	35%	84%	LCPA-1&3
L-UMW-4D	3%	66%	93%	48%	78%	LCPA-1&3
L-UMW-5D	15%	64%	94%	46%	85%	LCPA-1&3
L-UMW-6D	0%	77%	91%	90%	53%	LCPA-1&3
L-UMW-7D	50%	70%	77%	42%	94%	LCPA-2S
L-UMW-8D	95%	11%	1%	-9%	46%	Background
L-UMW-9D	97%	5%	-2%	-11%	41%	Background
PZ-1D	96%	8%	-1%	-11%	44%	Background
PZ-1S	-11%	85%	87%	95%	46%	LCPA-2D
PZ-2D	79%	24%	6%	-7%	54%	Background
PZ-2S	93%	18%	12%	-10%	60%	Background
PZ-3D	69%	43%	41%	1%	85%	LCPA-2S
PZ-3S	70%	32%	21%	-5%	67%	Background
PZ-4D	19%	75%	97%	62%	84%	LCPA-1&3
PZ-4S	29%	56%	80%	19%	97%	LCPA-2S
PZ-5D	9%	64%	94%	48%	81%	LCPA-1&3
PZ-5S	36%	68%	61%	14%	92%	LCPA-2S
PZ-6D	36%	74%	69%	43%	86%	LCPA-2S
PZ-6S	74%	49%	38%	21%	73%	Background

Notes

- 1) Values display percent correlation between each sampling point and the LCPA, LCPB or Background fingerprints.
- 2) The higher values are shaded darker and indicate better correlation.
- 3) More information on the calculation of these numbers is provided in Appendix D.

Figures



- LEGEND**
- Labadie Energy Center Property Boundary
 - Surface Impoundments**
 - LCPA - Bottom Ash Surface Impoundment
 - LCPB - Fly Ash Surface Impoundment
 - Utility Waste Landfill (UWL)**
 - Proposed Fence Perimeter
 - LCL1 - UWL Cell 1
 - Proposed Stormwater Pond
 - Proposed Future Cell

- Groundwater Sampling/Measurement Locations**
- LCPA - Bottom Ash CCR Rule Surface Impoundment Monitoring Well
 - LCPB - Fly Ash CCR Rule Surface Impoundment Monitoring Well
 - Background CCR Rule Monitoring Well
 - UWL CCR Rule Monitoring Well
 - UWL CCR Rule and Solid Waste Disposal Area Monitoring Well
 - UWL Solid Waste Disposal Area Monitoring Well
 - Direct-Push Alluvial Aquifer Sample
 - Alluvial Aquifer Piezometer
 - NPDES Piezometers
 - ⊗ Temporary Alluvial Aquifer Sampling Location (Shallow, Middle, and Deep)
 - ⊗ Temporary LCPA Pore-Water Sampling Location (Shallow and Deep)
 - ⊗ Temporary LCPB Pore-Water Sampling Location

- NOTES**
- 1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
 - 2.) THE UTILITY WASTE LANDFILL (UWL) BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
 - 3.) CCR - COAL COMBUSTION RESIDUALS.
 - 4.) UWL - UTILITY WASTE LANDFILL.

- REFERENCES**
- 1.) ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
 - 2.) REITZ & JENS, INC. 2013. GROUNDWATER DETECTION MONITORING WELLS INSTALLATION REPORT. AMEREN MISSOURI, LABADIE ENERGY CENTER.
 - 3.) REITZ & JENS, INC. 2014. ADDITIONAL GROUNDWATER DETECTION MONITORING WELLS INSTALLATION REPORT. AMEREN MISSOURI, LABADIE ENERGY CENTER.
 - 4.) AMEREN MISSOURI LABADIE ENERGY CENTER CONSTRUCTION PERMIT APPLICATION FOR PROPOSED UTILITY WASTE LANDFILL SOLID WASTE DISPOSAL AREA FRANKLIN COUNTY, MISSOURI, REVISED NOVEMBER 2013.
 - 5.) COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.



CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER



PROJECT
LCPB - ALTERNATIVE SOURCE DEMONSTRATION

TITLE
SITE LOCATION AERIAL MAP AND SAMPLE/MEASUREMENT LOCATIONS

CONSULTANT	YYYY-MM-DD	2018-03-28
	PREPARED	JSI
	DESIGN	JSI
	REVIEW	BCW
	APPROVED	MNH



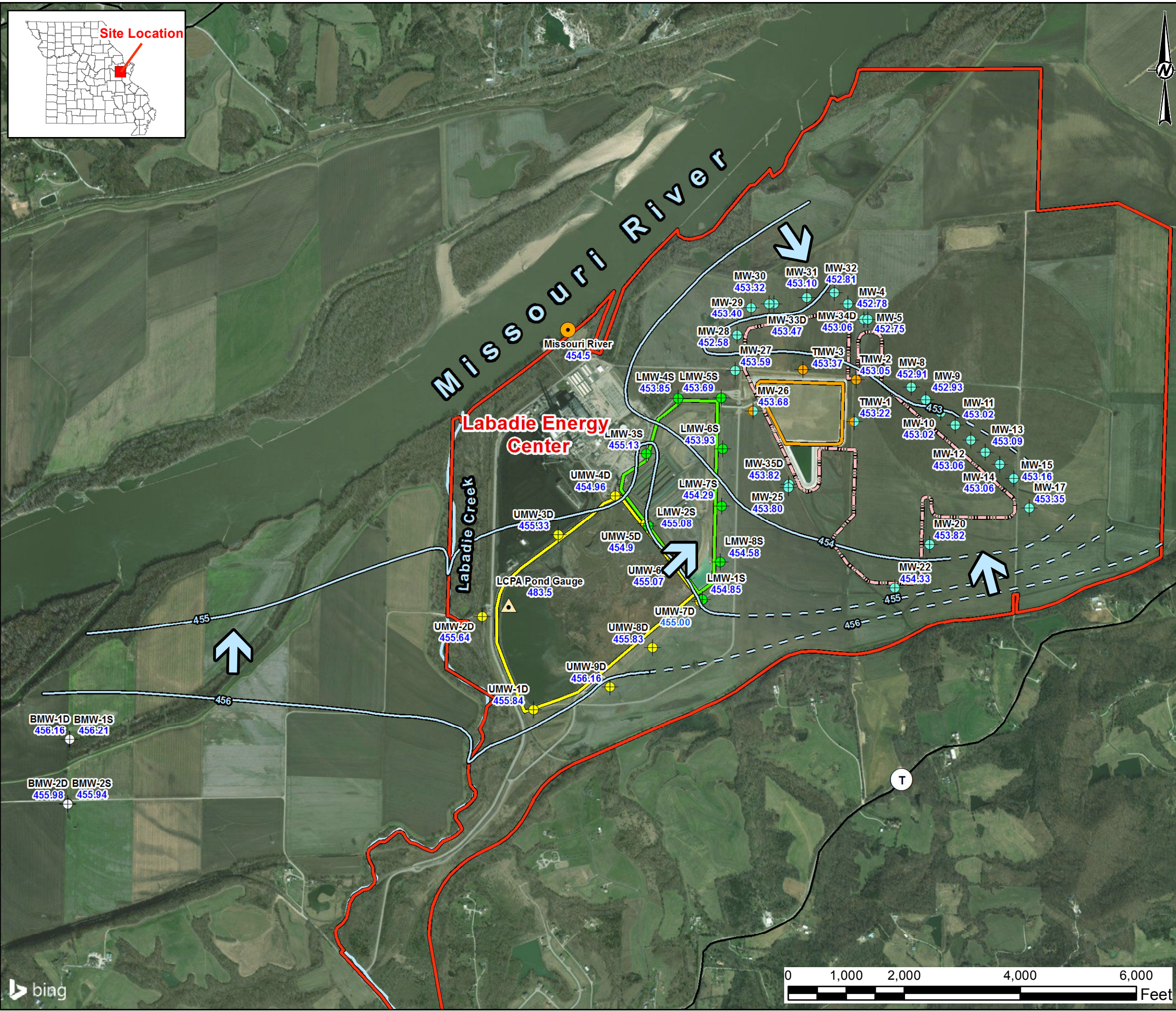
PROJECT No. 153-1406 Rev. 0.0 FIGURE 1

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MO\Phase 0001 - Labadie Energy\000 - FIGURES\DRAWINGS\PRODUCTION\LCPB\ASD\Fig. 1 - Site Location.mxd



Service Layer Credits: © 2018 Microsoft Corporation © 2018 DigitalGlobe © CNES

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



LEGEND

- Labadie Energy Center Property Boundary
- Surface Impoundments**
- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment
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- Proposed Future Fence Perimeter
- LCL1 - UWL Cell 1
- Groundwater Sampling/Measurement Locations**
- LCPA - Bottom Ash CCR Rule Surface Impoundment Monitoring Well
- LCPB - Fly Ash CCR Rule Surface Impoundment Monitoring Well
- ⊕ Background CCR Rule Monitoring Well
- UWL CCR Rule Monitoring Well
- ⊕ UWL Solid Waste Disposal Area Monitoring Well
- ⊕ UWL CCR Rule and Solid Waste Disposal Area Monitoring Well
- Missouri River Gauge
- ▲ LCPA Pond 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.) THE UTILITY WASTE LANDFILL (UWL) BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
- 3.) CCR - COAL COMBUSTION RESIDUALS.
- 4.) UWL - UTILITY WASTE LANDFILL.
- 5.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED ONSITE BY GOLDER ON MARCH 5, 2018.
- 6.) MW-18, MW-23 AND AW-1 GROUNDWATER ELEVATIONS NOT USED FOR POTENTIOMETRIC CONTOURING BECAUSE ELEVATIONS WERE NOT REPRESENTATIVE. VISUAL OBSERVATION NEAR ALL THREE LOCATIONS NOTED PONDED WATER AT THE SURFACE ADJACENT TO THE MONITORING WELL LOCATIONS.

REFERENCES

- 1.) ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
- 2.) REITZ & JENS, INC. 2013. GROUNDWATER DETECTION MONITORING WELLS INSTALLATION REPORT. AMEREN MISSOURI, LABADIE ENERGY CENTER.
- 3.) REITZ & JENS, INC. 2014. ADDITIONAL GROUNDWATER DETECTION MONITORING WELLS INSTALLATION REPORT. AMEREN MISSOURI, LABADIE ENERGY CENTER.
- 4.) COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER



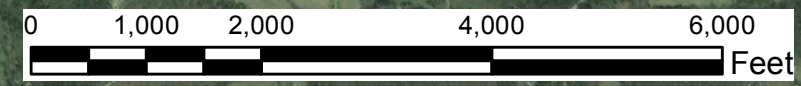
PROJECT
LCPB - ALTERNATIVE SOURCE DEMONSTRATION

TITLE
MARCH 5, 2018 POTENTIOMETRIC SURFACE MAP

CONSULTANT	YYYY-MM-DD	2018-03-28
	PREPARED	JSI
	DESIGN	JSI
	REVIEW	RJF
	APPROVED	MNH

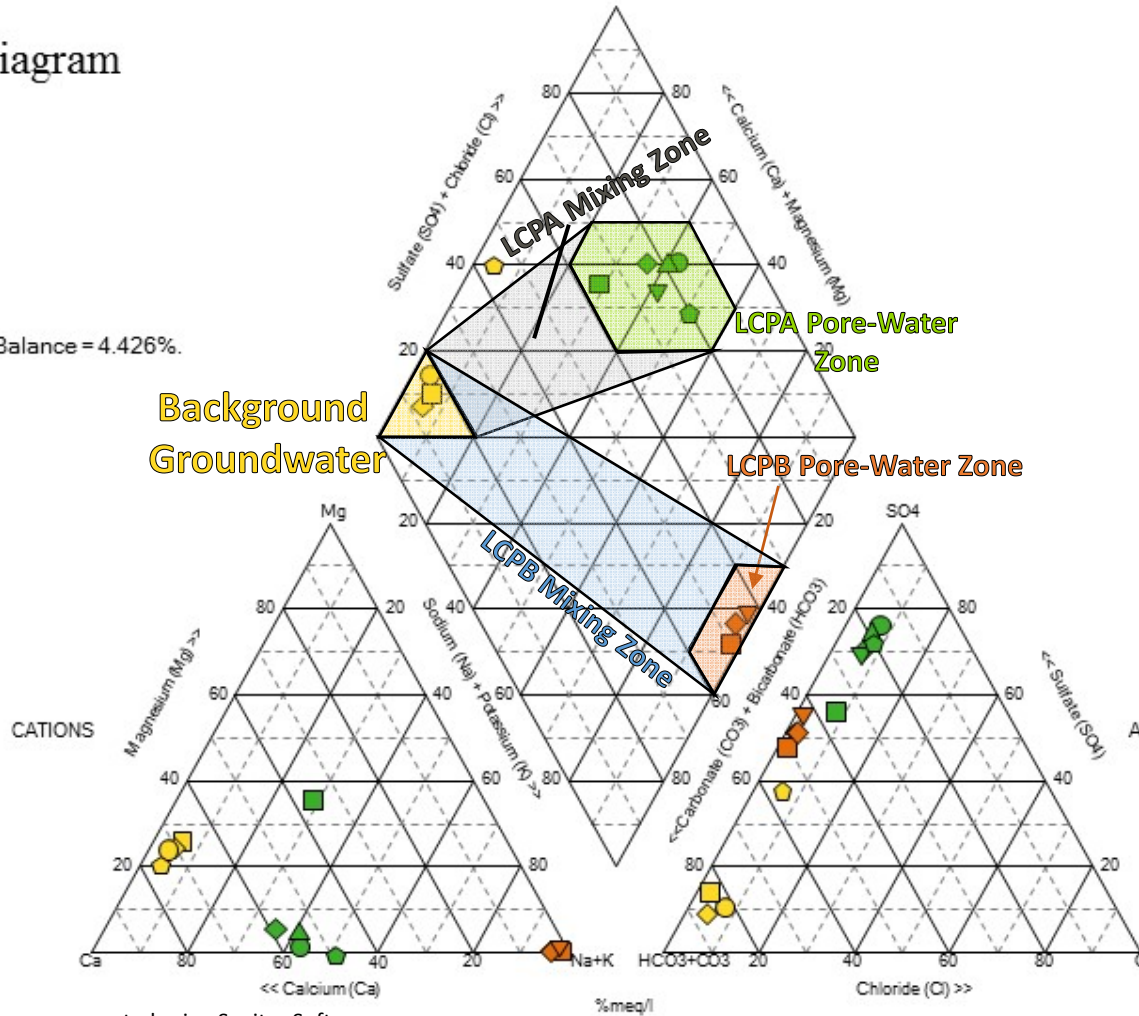
PROJECT No. 153-1406 Rev. 0.0 FIGURE 2

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 14



Piper Diagram

Cation-Anion Balance = 4.426%.



Background Groundwater

- ◆ L-BMW-1D 11/7/2017
- L-BMW-1S 11/7/2017 Note 2
- L-BMW-2D 11/7/2017
- ◆ L-BMW-2S 11/7/2017 Note 2 and 3

LCPA Pore-Water

- ▲ L-LCPA-1D 2/28/2018
- ▼ L-LCPA-1S 2/28/2018
- ◆ L-LCPA-2D 2/28/2018
- L-LCPA-2S 2/28/2018
- L-LCPA-3D 3/2/2018
- ◆ L-LCPA-3S 3/2/2018

LCPB Pore-Water

- ▼ L-LCPB-1 3/1/2018
- ◆ L-LCPB-2 3/1/2018
- L-LCPB-3 3/1/2018

Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Sulfate results used for L-BMW-1S and L-BMW-2S as well as Chloride results from L-BMW-2S represent the average from 8 baseline events. The values from November 2017 are outliers caused by laboratory error and are not representative of groundwater conditions.
- 3) Alkalinity results at L-BMW-2S are believed to be a laboratory error and are an outlier, therefore, this data point is excluded from the background groundwater zone.
- 4) Data used to generate diagram are available in Table 4 and in the LCPA and LCPB Annual Reports.

CLIENT/PROJECT
**AMEREN MISSOURI
 LABADIE LCPB ASD**

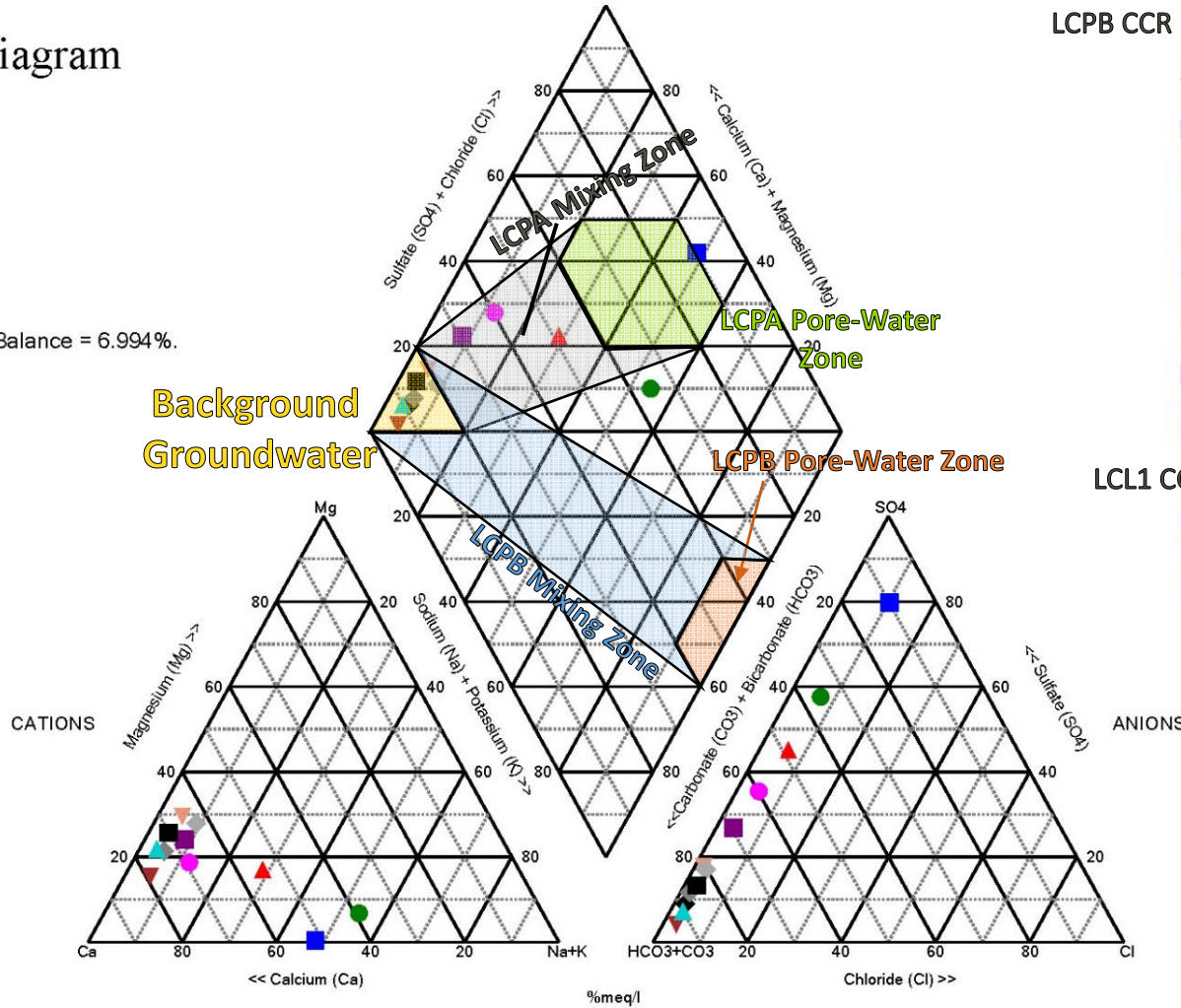


TITLE
**BACKGROUND AND PORE-WATER PIPER
 DIAGRAM**

PREPARED JSI	CHECKED BCW	REVIEWED MNH	DATE 3/15/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 3
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Piper Diagram

Cation-Anion Balance = 6.994%.



LCPB CCR Rule Monitoring Wells

- ◆ L-LMW-1S 11/8/2017
- L-LMW-2S* 11/7/2017
- L-LMW-3S 11/8/2017
- ▲ L-LMW-4S 11/8/2017
- ▼ L-LMW-5S 11/8/2017
- ◆ L-LMW-6S 11/8/2017
- L-LMW-7S 11/8/2017
- L-LMW-8S 11/8/2017

LCL1 CCR Rule Monitoring Wells

- ▲ L-LMW-26 11/8/2017
- ▼ L-LMW-1 11/8/2017
- ◆ L-LMW-2 11/8/2017
- L-LMW-3 11/8/2017

Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in LCPB and LCL1 Annual Report.

CLIENT/PROJECT
**AMEREN MISSOURI
 LABADIE LCPB ASD**

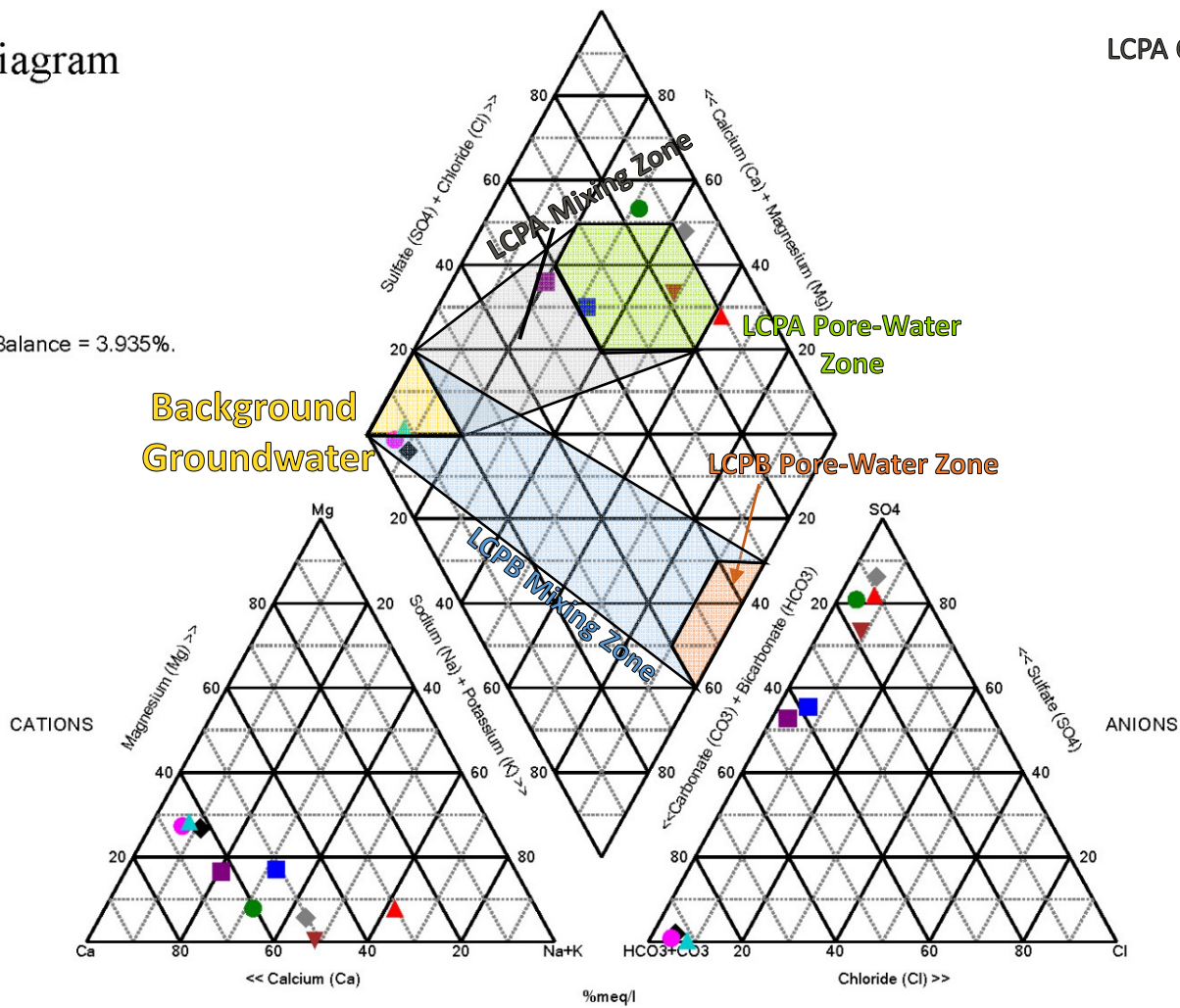


TITLE
**LCPB/LCL1 CCR RULE MONITORING
 WELLS PIPER DIAGRAM**

PREPARED JSI	CHECKED BCW	REVIEWED MNH	DATE 3/15/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 4
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Piper Diagram

Cation-Anion Balance = 3.935%.



LCPCB Rule Monitoring Wells

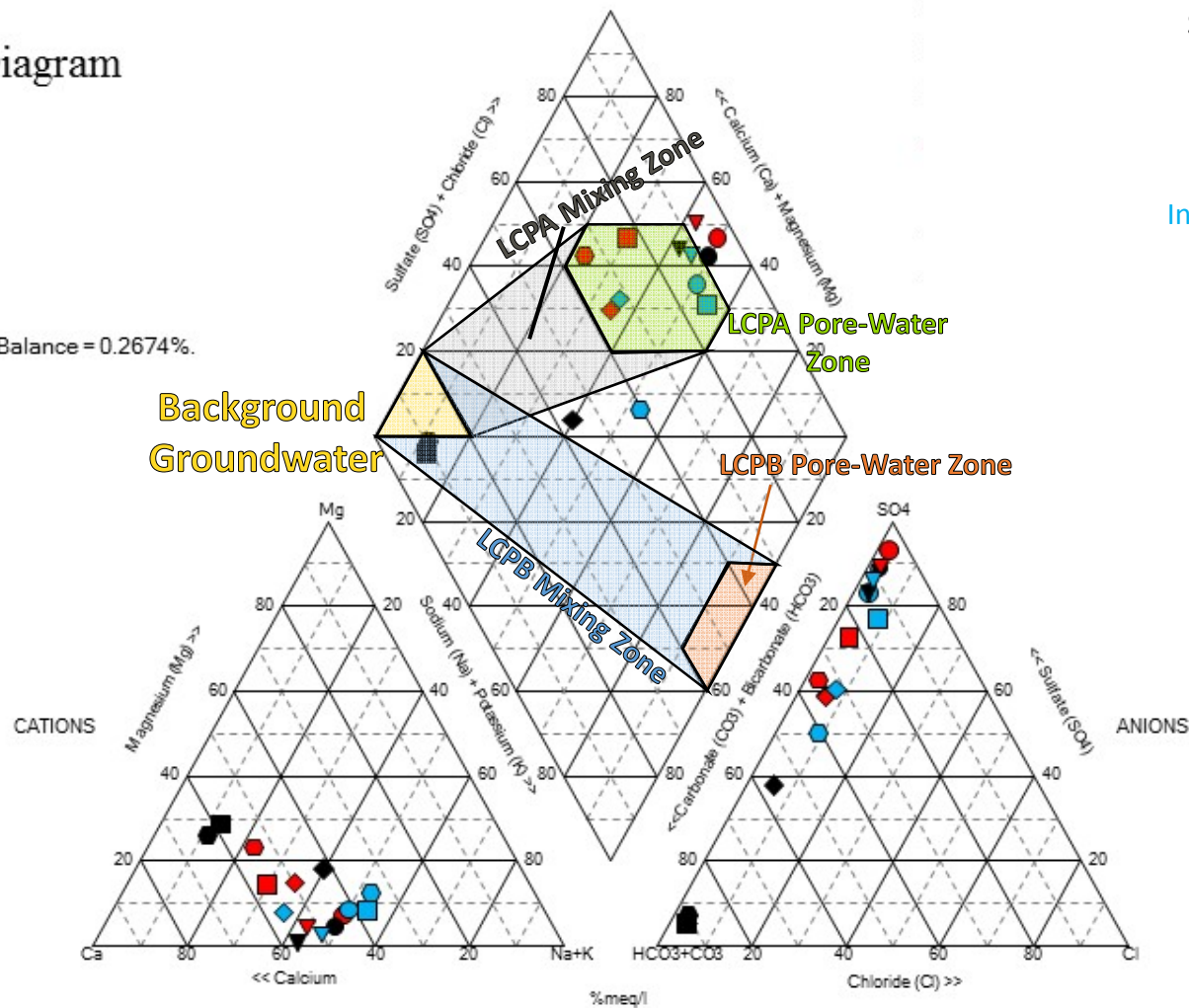
- ◆ L-UMW-1D 11/8/2017
- L-UMW-2D 11/8/2017
- L-UMW-3D 11/8/2017
- ▲ L-UMW-4D 11/7/2017
- ▼ L-UMW-5D 11/7/2017
- ◆ L-UMW-6D 11/7/2017
- L-UMW-7D 11/8/2017
- L-UMW-8D 11/8/2017
- ▲ L-UMW-9D 11/8/2017

- Notes
- 1) Piper diagram generated using Sanitas Software.
 - 2) Data used to generate diagram available in LCPCB Annual Report.

CLIENT/PROJECT AMEREN MISSOURI LABADIE LCPB ASD							TITLE LCPCB CCR RULE MONITORING WELLS PIPER DIAGRAM			
PREPARED JSI	CHECKED BCW	REVIEWED MNH	DATE 3/15/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 5

Piper Diagram

Cation-Anion Balance = 0.2674%.



Shallow Alluvial Zone

- L-ASD-1S 2/22/2018
- ▼ L-ASD-2S 2/20/2018
- ◆ L-ASD-3S 2/18/2018
- L-ASD-4S 2/16/2018
- L-ASD-5S 2/15/2018

Intermediate Alluvial Zone

- L-ASD-1M 2/22/2018
- ▼ L-ASD-2M 2/20/2018
- ◆ L-ASD-3M 2/18/2018
- L-ASD-4M 2/16/2018
- L-ASD-5M 2/15/2018

Deep Alluvial Zone

- L-ASD-1D 2/22/2018
- ▼ L-ASD-2D 2/20/2018
- ◆ L-ASD-3D 2/18/2018
- L-ASD-4D 2/16/2018
- L-ASD-5D 2/15/2018

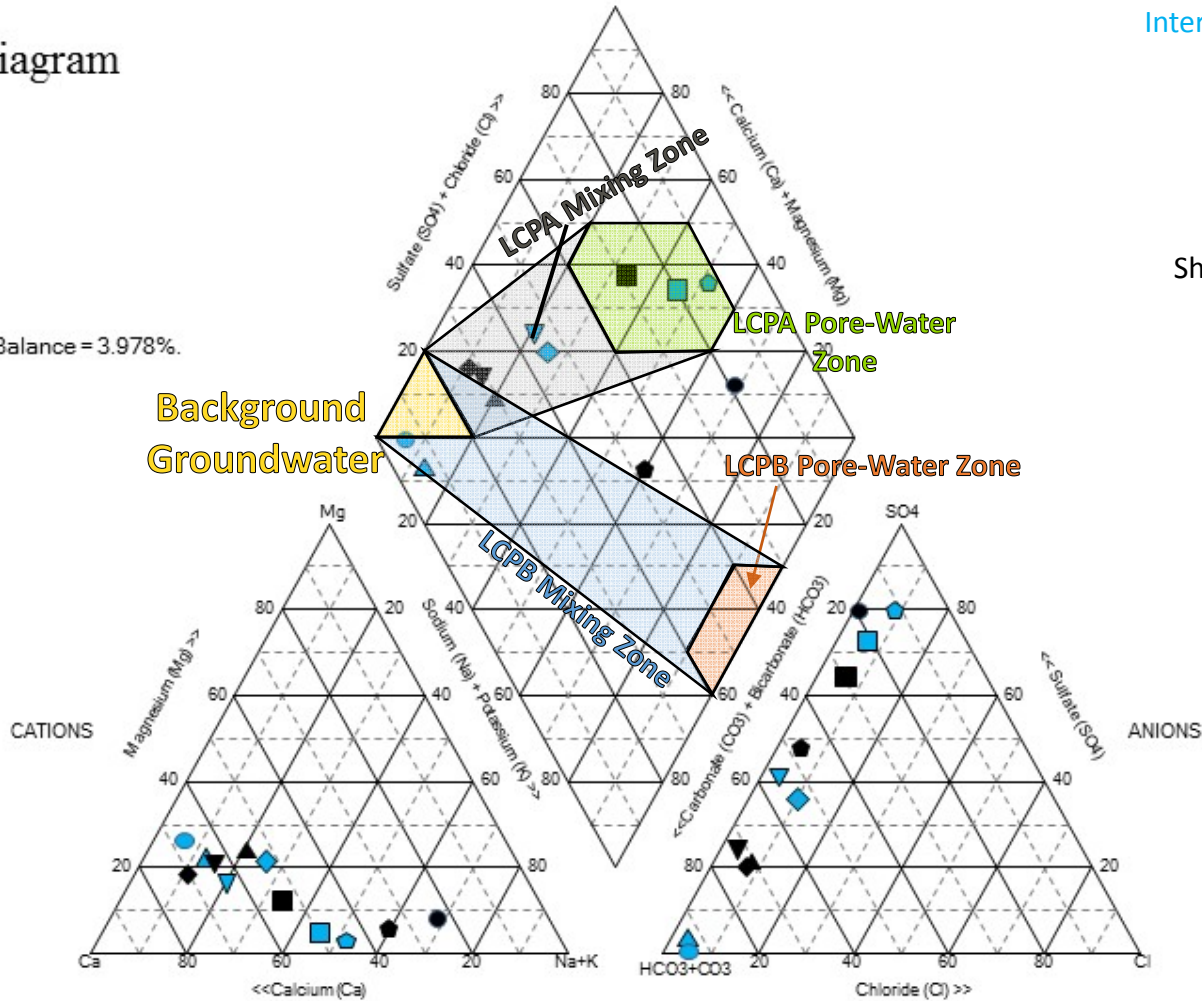
Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in Table 3.
- 3) Black symbols denote samples from the shallow alluvial zone, blue symbols represent samples from the intermediate alluvial zone, and red symbols are samples from the deep alluvial zone.

CLIENT/PROJECT AMEREN MISSOURI LABADIE LCPB ASD				GOLDER			TITLE ASD TEMPORARY PIEZOMETER PIPER DIAGRAM			
PREPARED JSI	CHECKED BCW	REVIEWED MNH	DATE 3/15/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 6

Piper Diagram

Cation-Anion Balance = 3.978%.



Intermediate Alluvial Zone

- PZ-1D 3/7/2018
- ▲ PZ-2D 3/7/2018
- ◆ PZ-3D 3/6/2018
- PZ-4D 3/8/2018
- ◐ PZ-5D 3/7/2018
- ▼ PZ-6D 3/7/2018

Shallow Alluvial Zone

- PZ-1S 3/6/2018
- ▲ PZ-2S 3/7/2018
- ◆ PZ-3S 3/6/2018
- PZ-4S 3/8/2018
- ◐ PZ-5S 3/7/2018
- ▼ PZ-6S 3/7/2018

Notes

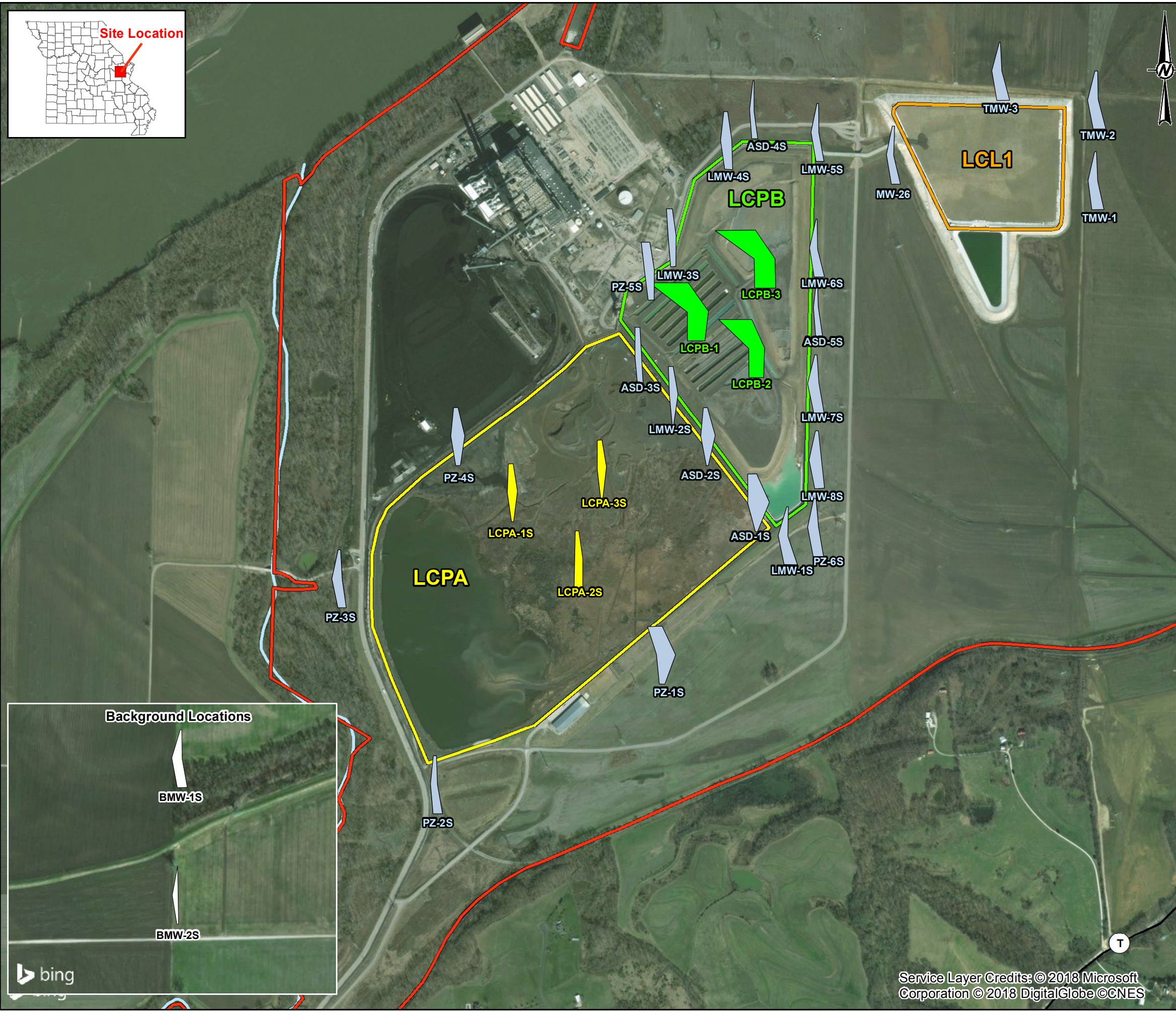
- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in Table 5.
- 3) Blue symbols denote samples from the shallow alluvial zone and black symbols represent samples from the intermediate alluvial zone.

CLIENT/PROJECT
**AMEREN MISSOURI
 LABADIE LCPB ASD**



TITLE
NPDES PIEZOMETER PIPER DIAGRAM

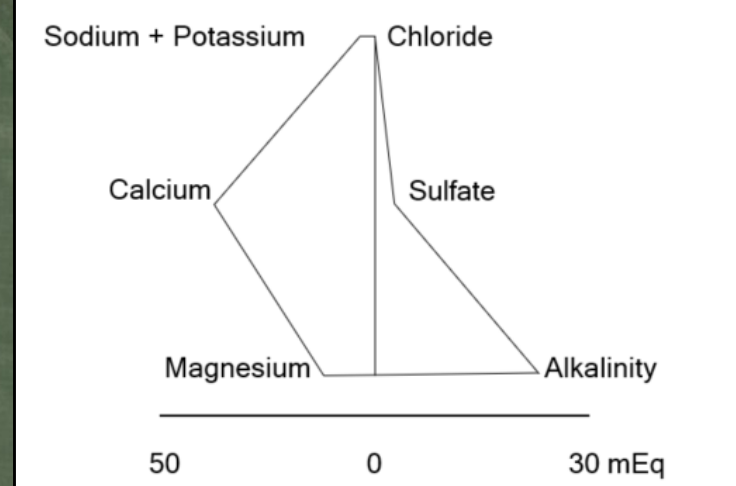
PREPARED JSI	CHECKED BCW	REVIEWED MNH	DATE 3/15/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 7
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LEGEND

- Approximate Labadie Energy Center Property Boundary
- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1

- LCPB Pore-water Stiff Diagrams
- Shallow Alluvial Zone Groundwater Stiff Diagrams
- LCPA Pore-water Stiff Diagrams
- Background Groundwater Stiff Diagrams



NOTES

- 1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
- 2.) STIFF DIAGRAMS CALCULATED AND GENERATED USING SANITAS.

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 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER



PROJECT
LCPB - ALTERNATIVE SOURCE DEMONSTRATION

TITLE
SPATIAL DISTRIBUTION OF SHALLOW ALLUVIAL ZONE STIFF DIAGRAMS

CONSULTANT	YYYY-MM-DD	2018-04-09
	PREPARED	BCW
	DESIGN	JSI
	REVIEW	JSI/SJD
	APPROVED	MNH

PROJECT No. 153-1406 Rev. 0.0 FIGURE 8

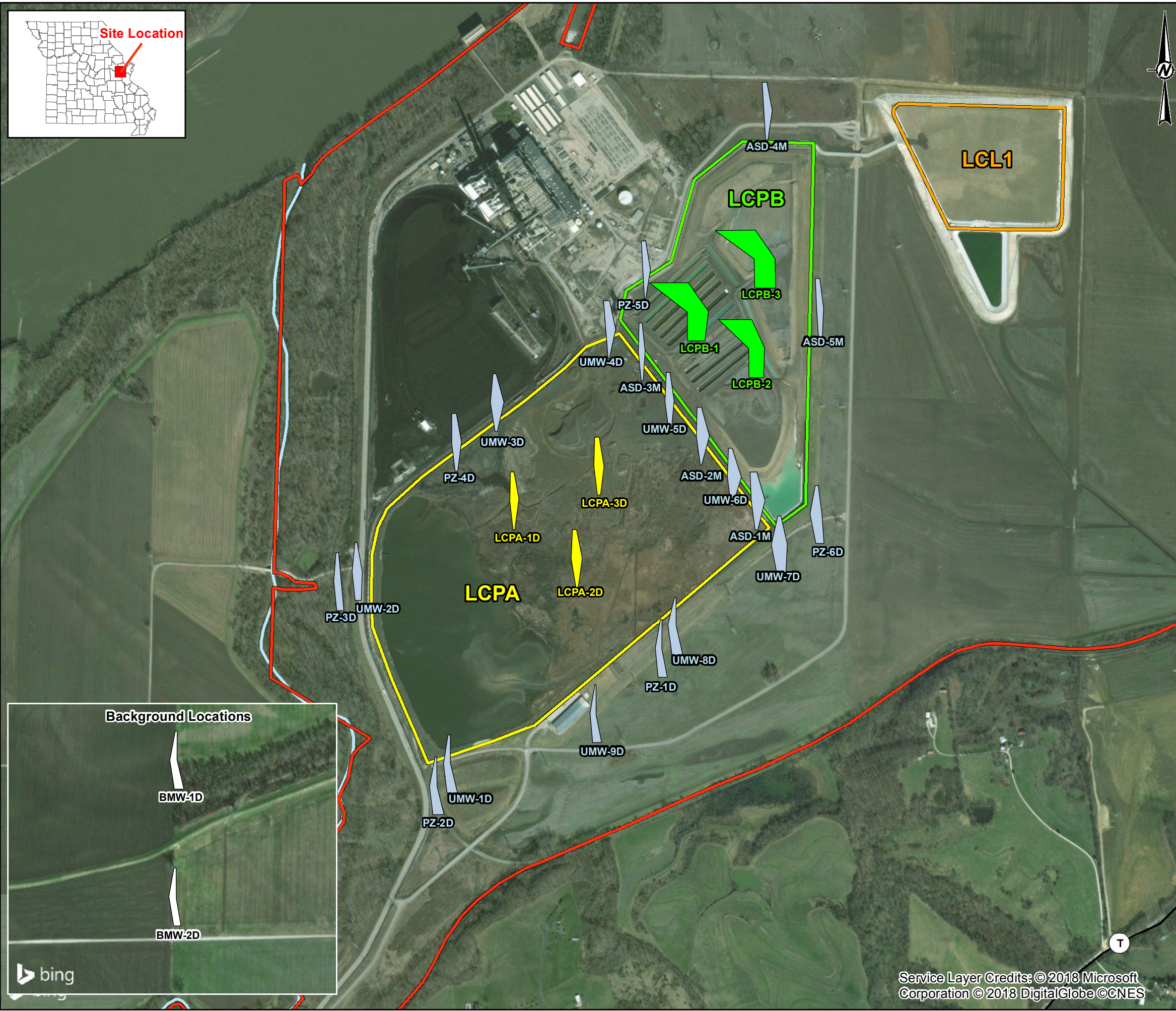
Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - HUCPhase0001 - Labadie Energy\800 - FIGURES\DRAWINGS\PRODUCTION\CPB ASD\Drawn SHF BCW.mxd

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



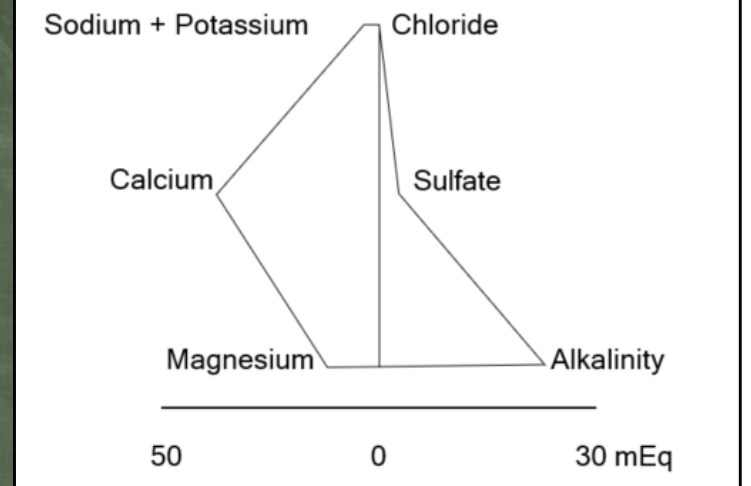
Service Layer Credits: © 2018 Microsoft Corporation © 2018 DigitalGlobe © CNES





- LEGEND**
- Approximate Labadie Energy Center Property Boundary
 - LCPA - Bottom Ash Surface Impoundment
 - LCPB - Fly Ash Surface Impoundment
 - LCL1 - Utility Waste Landfill Cell 1

- LCPA Pore-water Stiff Diagrams
- Middle Alluvial Zone Groundwater Stiff Diagrams
- Background Groundwater Stiff Diagrams
- LCPB Pore-water Stiff Diagrams



- NOTES**
- 1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
 - 2.) STIFF DIAGRAMS CALCULATED AND GENERATED USING SANITAS.
 - 3.) LCPB PORE-WATER STIFF DIAGRAMS ARE NOT IN THE MIDDLE ALLUVIAL ZONE BUT ARE INCLUDED IN THIS FIGURE FOR COMPARISON.

- 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 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER



PROJECT
LCPB - ALTERNATIVE SOURCE DEMONSTRATION

TITLE
SPATIAL DISTRIBUTION OF MIDDLE ALLUVIAL ZONE STIFF DIAGRAMS

CONSULTANT	YYYY-MM-DD	2018-04-09
	PREPARED	BCW
	DESIGN	JSI
	REVIEW	JSI/SJD
	APPROVED	MNH

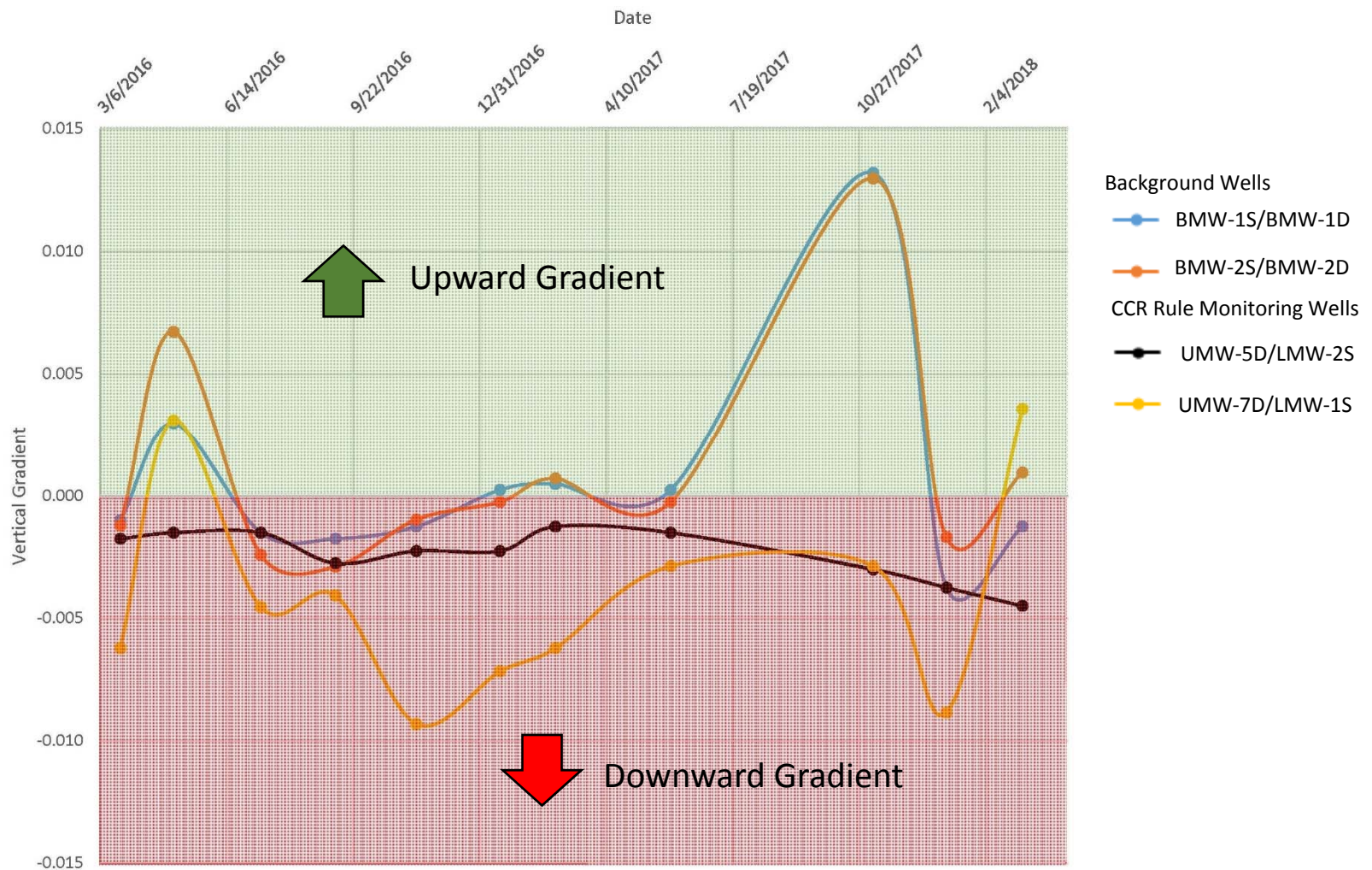
PROJECT No. 153-1406 Rev. 0.0 FIGURE 9



Service Layer Credits: © 2018 Microsoft Corporation © 2018 DigitalGlobe © CNES

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - HUCPhase0001 - Labadie Energy 800 - FIGURES\DRAWINGS\PRODUCTION\CPB ASD\Mids\BIF BCW - update.mxd

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



Notes:

- 1.) A positive gradient indicates upward flow and is green.
- 2.) A negative gradient indicates downward flow and is red.
- 3.) Groundwater elevation data from LCPA and LCPB Annual Reports and Table 6.

CLIENT/PROJECT AMEREN MISSOURI LABADIE LCPB ASD							TITLE Vertical Gradients - CCR Monitoring Wells			
PREPARED RJF	CHECKED BCW	REVIEWED MNH	DATE 4/10/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 10

APPENDIX A

Geological Boring Logs

RECORD OF BOREHOLE ASD-1

SHEET 1 of 5
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/20/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,020.00 E: 725,796.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
0	Hydrovac	(0.0-8.0) Hydrovac excavation. Material is (ML) SILT based on visual observation.							Hydrovac was used on the first 8 feet to ensure utility clearance.
5		ML			0	NA	<u>0.0</u> 8.0		
8.0	6" Sonic	(8.0-29.0) FILL, (ML) SILT, non-plastic fines, trace fine sand, trace fine sub-angular gravels; dusky yellowish brown (10YR 2/2), Fly Ash; non-cohesive, dry, dense.		ML	8.0				Run #1 - sample bag split open, about a foot of loose sample fell on ground.
10									
15						1	So	<u>3.0</u> 12.0	
20			(20.0) SAA, except moist and compact.		20.0				
23.0		(23.0) SAA, except no gravels.		23.0					
25					2	So	<u>8.0</u> 10.0		
28.0		(28.0) SAA, except moderate yellowish brown (10YR 5/4).		28.0					
29.0		(29.0-30.0) (SP-SM) SAND, fine sand, some non-plastic fines; pale yellowish brown (10YR 6/2); non-cohesive, moist, compact.	SP-SM	29.0					

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



Log continued on next page

RECORD OF BOREHOLE ASD-1

SHEET 2 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,020.00 E: 725,796.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/20/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
30	6" Sonic	(30.0-37.0) (ML) CLAYEY SILT, plastic fines, trace fine sand; medium dark gray (N4); cohesive, W<PL, stiff.	ML	| | | |	30.0	3	So	7.5 10.0	▽ Water Level 42.51 ft bgs 2/20/2018
35		(37.0-39.0) (CL) SILTY CLAY, plastic fines, trace fine sand; brownish gray (5YR 4/1); cohesive, W<PL, firm.			CL					/ / / / / / / /	37.0
40		(39.0-50.0) (SP-SM) SAND, fine sand, some non-plastic fines; pale yellowish brown (10YR 6/2); non-cohesive, moist, compact. (40.0) SAA, except wet.	SP-SM	. . . . .	39.0	4	So	4.0 10.0
45		(46.0) SAA, except dark gray (N3) and with pieces of native wood.			46.0				
50		(50.0-55.5) (SP) SAND, fine sand, trace non-plastic fines; medium dark gray (N4); non-cohesive, wet, compact.	SP	. . . . .	50.0	5	So	7.5 10.0
55		(55.5-56.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SW	. . . . .	55.5			
56		(56.0-59.0) (CL) SILTY CLAY, plastic fines, trace fine sand; medium dark gray (N4); cohesive, W~PL, firm.	CL	/ / / / / / / /	56.0				
60		(59.0-82.0) (SP) SAND, fine sand, trace non-plastic fines; medium dark gray (N4) with trace dark gray (N3); non-cohesive, wet, compact. Log continued on next page	SP	. . . . .	59.0			

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-1

SHEET 3 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,020.00 E: 725,796.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/20/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,020.00 E: 725,796.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT	
					DEPTH (ft)					
60	6" Sonic	(59.0-82.0) (SP) SAND, fine sand, trace non-plastic fines; medium dark gray (N4) with trace dark gray (N3); non-cohesive, wet, compact. <i>(Continued)</i>	SP							
65						68.5	6	So	2.5 10.0	
70		(68.5) 1.5 feet of wood.				70.0				Run #7 - No recovery. Catcher filled with wood, sample could not get through.
75		(70.0) (SP) SAND, unit inferred from drilling to be sand.				75.0	7	So	0.0 10.0	
80		(80.0) 0.5 feet of wood.				80.0				
80		(80.5) SAA, except brownish gray (5YR 4/1).			SP	80.5				
85						82.0	8	So	5.5 10.0	
90		(82.0-101.0) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded gravels, trace sub-angular cobbles; light brownish gray (5YR 6/1); non-cohesive, wet, dense.			SW					
Log continued on next page										

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-1

SHEET 4 of 5
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/20/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,020.00 E: 725,796.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
90	6" Sonic	(82.0-101.0) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded gravels, trace sub-angular cobbles; light brownish gray (5YR 6/1); non-cohesive, wet, dense. <i>(Continued)</i> (90.0) SAA, except no cobbles.	SW	[Pattern]	90.0	9	So	8.5 10.0	
95		(101.0-110.0) (SP) SAND, fine sand, trace non-plastic fines; pale yellowish brown (10YR 6/2); non-cohesive, wet, dense.		SP	[Pattern]					101.0	10	So	9.0 10.0
100		(110.0-121.0) (SW) SAND, unit inferred from drilling to be sand.	SW	[Pattern]	110.0	11	So	0.0 10.0	
105									Run #11 - No recovery. Driller says catcher got locked up. Likely due to large cobbles.
110									
115									
120									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI




RECORD OF BOREHOLE ASD-1

SHEET 5 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,020.00 E: 725,796.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/20/2018
DRILL RIG: Geoprobe 8150LS

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
120		(110.0-121.0) (SW) SAND, unit inferred from drilling to be sand. <i>(Continued)</i>	SW						
		END OF BORING AT 121 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS ASD-1D, ASD-1M, ASD-1S.			121.0				
125									
130									
135									
140									
145									
150									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-2

SHEET 1 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,678.00 E: 725,325.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/18/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,678.00 E: 725,325.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
0	Hydrovac	(0.0-8.0) Hydrovac excavation. Material is (ML) SILT, based on visual observation.	ML	| | | | |	8.0	0	NA	0.0 8.0	Hydrovac was used on the first 8 feet to ensure utility clearance.
5		(8.0-20.0) FILL, (ML) SILT, non-plastic fines, trace fine sand, trace fine sub-angular gravels; dusky yellowish brown (10YR 2/2), Fly Ash; non-cohesive, dry, compact.			ML	8.0	1	So		11.0 12.0
10	6" Sonic	(20.0-38.0) FILL, (ML) CLAYEY SILT, low-plasticity fines, trace fine sand; brownish gray (5YR 4/1) with moderate yellowish brown (10YR 5/4), Fly Ash; cohesive, W<PL, stiff.	ML	| | | | |	20.0	2	So	6.0 10.0	
15		25			30	30	30	30	30

Log continued on next page

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-2

SHEET 2 of 5
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/18/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,678.00 E: 725,325.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
30	6" Sonic	(20.0-38.0) FILL, (ML) CLAYEY SILT, low-plasticity fines, trace fine sand; brownish gray (5YR 4/1) with moderate yellowish brown (10YR 5/4), Fly Ash; cohesive, W<PL, stiff. <i>(Continued)</i> (38.0-52.0) (SP) SAND, fine sand, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, dry, loose. (39.0) SAA (Same As Above), except moist. (40.0) SAA, except brownish gray (5YR 4/1) and wet. (40.5) Thin 2 inch seam of (CH) CLAY, plastic fines; medium dark gray (N4); cohesive, W~PL, firm. (50.0) SAA, except medium dark gray (N4) and compact. (52.0-53.5) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace non-plastic fines, trace fine sub-rounded gravels; medium dark gray (N4); non-cohesive, wet, compact. (53.5-60.0) (SP) SAND, fine sand, trace non-plastic fines; medium dark gray (N4); non-cohesive, wet, compact.	ML		38.0	3	So	5.5 10.0	▽ Water Level 41.62 ft bgs 2/18/2018
35					39.0				
40					40.0				
45					40.5				
50					50.0				
55					52.0				
60					53.5				
60					50.0				
60					55				
60					60				

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



Log continued on next page


RECORD OF BOREHOLE ASD-2

SHEET 3 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,678.00 E: 725,325.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/18/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,678.00 E: 725,325.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
60	6" Sonic	(60.0-100.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace non-plastic fines, trace fine sub-rounded gravels; medium light gray (N6); non-cohesive, wet, compact.	SW		60.0	6	So	3.0 10.0	
65					70.0				
70					70.0	7	So	8.5 10.0	
75					80.0			8		So	7.5 10.0
80	80.0	(70.0) SAA, except trace sub-rounded cobbles.		(80.0) SAA, except no cobbles.					
85	Log continued on next page								

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-2




SHEET 4 of 5

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/18/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 991,678.00 E: 725,325.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
90	6" Sonic	(60.0-100.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace non-plastic fines, trace fine sub-rounded gravels; medium light gray (N6); non-cohesive, wet, compact. <i>(Continued)</i> (90.0) SAA, except fine to coarse sub-rounded gravels.	SW		90.0	9	So	$\frac{7.5}{10.0}$	
95					100.0 100.3				
100	6" Sonic	(100.0-120.0) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded to rounded gravels; light brownish gray (5YR 6/1); non-cohesive, wet, dense. (100.3) SAA, except trace amounts of fine to coarse well-graded sub-rounded gravels.	SW		100.0 100.3	10	So	$\frac{8.0}{20.0}$	
105					110				
110	6" Sonic	Log continued on next page	SW		110				
115					120				

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE ASD-2

SHEET 5 of 5
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/18/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,678.00 E: 725,325.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
120		END OF BORING AT 120 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS ASD-2D, ASD-2M, ASD-2S.			120.0				
125									
130									
135									
140									
145									
150									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-3

SHEET 1 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 992,369.00 E: 724,778.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/16/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 992,369.00 E: 724,778.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS						
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT							
					DEPTH (ft)										
0	Hydrovac	(0.0-8.0) Hydrovac excavation. Material is (ML) SILT, based on visual observation.	ML						Hydrovac was used on the first 8 feet to ensure utility clearance.						
5						0	NA	0.0 8.0							
10	6" Sonic	(8.0-27.5) FILL, (ML) SILT, non-plastic fines, trace fine sand, trace fine sub-angular to angular gravels; dusky yellowish brown (10YR 2/2), Fly Ash; non-cohesive, dry, dense.	ML	△	8.0				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">So</td> <td style="text-align: center;">12.0 12.0</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">So</td> <td style="text-align: center;">9.0 10.0</td> </tr> </table>	1	So	12.0 12.0	2	So	9.0 10.0
1				So		12.0 12.0									
2				So		9.0 10.0									
15								1		So	12.0 12.0				
20				2	So	9.0 10.0									
25															
27.5		(27.5-28.5) FILL, (ML) CLAYEY SILT, low-plasticity fines, trace fine sand, trace coarse sub-angular gravels; moderate yellowish brown (10YR 5/4), Fly Ash; cohesive, W<PL, stiff.	ML	△				27.5							
28.5		(28.5-31.0) (SP-SM) SILTY SAND, fine sand, non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, dry, compact.	SP-SM	□				28.5							
30		Log continued on next page													

GOLDER ST.L RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-3

SHEET 2 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 992,369.00 E: 724,778.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/16/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
30	6" Sonic	(30.0) SAA (Same As Above), except moist.	SP-SM	[Dotted pattern]	30.0				
		(31.0-32.5) (CL) SILTY CLAY, plastic fines, trace fine sand; medium gray (N5) with medium dark gray (N4); cohesive, W-PL, stiff.	CL	[Diagonal lines]	31.0				
		(32.5-40.0) (SP-SC) SAND, fine sand, layers of plastic fines; medium gray (N5) to medium dark gray (N4) with some moderate yellowish brown (10YR 5/4) and moderate brown (5YR 3/4); non-cohesive, moist, compact.	SP-SC	[Diagonal lines]	32.5				
35						3	So	7.0 10.0	
40			(40.0) (SP) SAND, unit inferred from drilling to be sand.	SP-SC	[Dotted pattern]	40.0			Run #4 - No recovery. Wood in catcher, could not sample through.
45						4	So	0.0 10.0	▽ Water Level 44.05 ft bgs 2/16/2018
50		(50.0-59.5) (SP) SAND, fine sand, trace non-plastic fines; medium gray (N5) with medium dark gray (N4); non-cohesive, moist, loose.	SP	[Dotted pattern]	50.0				
55					5	So	9.0 10.0		
60		Log continued on next page	SW	[Dotted pattern]	59.5				

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-3

SHEET 3 of 5
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 992,369.00 E: 724,778.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/16/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 992,369.00 E: 724,778.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
60	6" Sonic	(59.5-73.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace fine sub-rounded gravels, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact. <i>(Continued)</i>	SW	[Graphic Log: Dotted pattern]	73.0	6	So	4.5 10.0	
65									
70									
75		(73.0-77.0) (SP) SAND, fine sand, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SP	[Graphic Log: Dotted pattern]	77.0	7	So	9.0 10.0	
80		(77.0-89.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace fine sub-rounded to sub-angular gravels; medium gray (N5); non-cohesive, wet, dense.	SW	[Graphic Log: Dotted pattern]	77.0				
85					8	So	5.0 10.0		
90		Log continued on next page	SW	[Graphic Log: Dotted pattern]	89.0				

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-3


SHEET 4 of 5

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/16/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,369.00 E: 724,778.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
90	6" Sonic	(89.0-120.6) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded gravels; light brownish gray (5YR 6/1); non-cohesive, wet, very dense. <i>(Continued)</i> (90.0) SAA, except poorly graded fine sub-rounded gravels and medium dark gray (N4).	SW		90.0	9	So	3.5 30.0	Run #9 - driller was doing a 30ft run instead of 10ft and the catcher broke. Most of the sample was lost.
95					100					105	110	115	120
		Log continued on next page							

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE ASD-3


SHEET 5 of 5

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/16/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,369.00 E: 724,778.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
120			SW		120.6				
		END OF BORING AT 120.6 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS ASD-3D, ASD-3M, ASD-3S.							
125									
130									
135									
140									
145									
150									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE ASD-4

SHEET 1 of 4
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 994,276.00 E: 725,807.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/15/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 994,276.00 E: 725,807.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT		
					DEPTH (ft)					
0	Hydrovac	(0.0-8.0) Hydrovac excavation. Material is (ML) CLAYEY SILT, based on visual observation.	ML				0	NA	0.0 8.0	Hydrovac was used on the first 8 feet to ensure utility clearance.
5										
8.0	Direct Push	(8.0-20.0) (SM) SILTY SAND, fine sand, non-plastic fines; moderate yellowish brown (10YR 5/4); non-cohesive, moist, compact.	SM				1	So	2.0 12.0		Water Level 17.05 ft bgs 2/15/2018
10										
15										
20.0	Direct Push	(20.0-30.0) (SP-SM) SAND, fine sand, some non-plastic fines; moderate yellowish brown (10YR 5/4); non-cohesive, moist, compact.	SP-SM				2	So	8.0 10.0	<div style="text-align: right;"> Water Level 17.05 ft bgs 2/15/2018 </div>
25										
28.0										
30	Log continued on next page									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-4

SHEET 2 of 4
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 994,276.00 E: 725,807.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/15/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 994,276.00 E: 725,807.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
30	Direct Push	(30.0-40.0) (SW) SAND, fine to coarse well-graded, sub-rounded sand, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SW	[Dotted Pattern]	30.0	3	So	7.0 10.0	
35		40.0							
40		(40.0-45.0) (SP) SAND, fine sand, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SP	[Dotted Pattern]	40.0	4	So	10.0 10.0	
45		45.0							
50		(45.0-53.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, some well-graded sub-rounded gravel, trace sub-rounded cobbles; medium gray (N5); non-cohesive, wet, compact. (46.0) SAA, except with a 3 inch pocket of (CL) SILTY CLAY, low-plasticity fines; medium gray (N5); cohesive, W-PL, firm.	SW	[Dotted Pattern]	45.0	46.0			
55	53.0								
60	(53.0-70.0) (SW & GW) SAND and GRAVEL, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded gravel, trace sub-rounded cobbles; medium gray (N5); non-cohesive, wet, compact.	SW & GW	[Dotted Pattern with Circles]	53.0	5	So	10.0 10.0		
Log continued on next page									

GOLDER ST.L RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-4



SHEET 3 of 4

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/15/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 994,276.00 E: 725,807.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
60	Direct Push	(53.0-70.0) (SW & GW) SAND and GRAVEL, fine to coarse well-graded sub-rounded sand, fine to coarse well-graded sub-rounded gravel, trace sub-rounded cobbles; medium gray (N5); non-cohesive, wet, compact. <i>(Continued)</i> (60.0) SAA, except no cobbles.	SW & GW		60.0	6	So	6.0 10.0	
65									
70		(70.0-96.2) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine sub-rounded to sub-angular gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, compact.			SW					70.0	7	So	4.0 10.0
75									
80	(80.0) SAA, except no fines.	80.0	8	So		2.5 16.0			
85									
90	Log continued on next page								

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI




RECORD OF BOREHOLE ASD-4

SHEET 4 of 4
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 994,276.00 E: 725,807.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/15/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 994,276.00 E: 725,807.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
90	Direct Push	(70.0-96.2) (SW) gravelly SAND, fine to coarse well-graded sub-rounded sand, fine sub-rounded to sub-angular gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, compact. <i>(Continued)</i>	SW			8	So	$\frac{2.5}{16.0}$	
95									
100		END OF BORING AT 96.2 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS ASD-4D, ASD-4M, ASD-4S.			96.2				
105									
110									
115									
120									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-5

SHEET 1 of 4
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 992,987.00 E: 726,386.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/14/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 992,987.00 E: 726,386.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
0	Hydrovac	(0.0-8.0) Hydrovac excavation. Material is (CL) SILTY CLAY based on visual observation.	CL					Hydrovac was used on the first 8 feet to ensure utility clearance.	
5									
8.0	6" Sonic	(8.0-20.0) (SM) SILTY SAND, fine sand, non-plastic fines; dark yellowish brown (10YR 4/2); non-cohesive, wet, loose.	SM		8.0			<div style="text-align: right;"> Water Level 14.90 ft bgs 2/14/2018 </div>	
10									
15		(15.0) SAA (Same As Above), except moist.			15.0	1	So		6.5 12.0
20	6" Sonic	(20.0-40.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace sub-rounded gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, very loose.	SW		20.0			<div style="text-align: right;"> Water Level 14.90 ft bgs 2/14/2018 </div>	
25									
30					2	So	9.0 10.0		

Log continued on next page

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE ASD-5





SHEET 2 of 4

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/14/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,987.00 E: 726,386.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
30	6" Sonic	(20.0-40.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace sub-rounded gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, very loose. (Continued) (30.0) SAA, except medium gray (N5). (31.0) SAA, except with some pieces of wood.	SW		30.0	3	So	8.0 10.0	
31.0									
35.0									
35		(35.0) Thin 2 inch band of black (N1) gravels.	SW		35.0	3	So	8.0 10.0	
40		(40.0-44.5) (SP-SM) SAND, fine to medium sand, some non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SP-SM		40.0	4	So	8.0 10.0	
45	(44.5-60.0) (SW) SAND, medium to coarse well-graded sub-rounded sand, some fine sub-rounded cobbles, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SW		44.5					
50	(50.0) SAA, except trace cobbles.			SW	50.0	5	So	8.0 10.0	
55									
60									

Log continued on next page

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE ASD-5

SHEET 3 of 4

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/14/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,987.00 E: 726,386.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT	
					DEPTH (ft)					
60	6" Sonic	(60.0-60.5) (SM) SILTY SAND; fine sand, non-plastic fines; brownish gray (5YR 4/1); non-cohesive, wet, compact.	SM	[Symbol]	60.0	6	So	3.5 10.0		
		(60.5-73.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, some coarse sub-rounded gravels, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SW	[Symbol]	60.5					
65										
70										
75		(73.0-80.0) (GW-GM) GRAVEL, fine to coarse well-graded sub-rounded gravel, some non-plastic fines, trace fine sands; light brownish gray (5YR 6/1); non-cohesive, wet, compact.	GW-GM	[Symbol]	73.0	7	So	4.5 10.0		
80		(80.0-92.1) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace sub-rounded gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, compact.	SW	[Symbol]	80.0	8	So	2.0 12.0		
85										
90										

Log continued on next page

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE ASD-5

SHEET 4 of 4

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/14/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,987.00 E: 726,386.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
90	6" Sonic	(80.0-92.1) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace sub-rounded gravels, trace non-plastic fines; light brownish gray (5YR 6/1); non-cohesive, wet, compact. <i>(Continued)</i>	SW	[Graphic Log: Dotted pattern]		8	So	2.0 12.0	
		END OF BORING AT 92.1 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS ASD-5D, ASD-5M, ASD-5S.			92.1				
95									
100									
105									
110									
115									
120									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE LCPA-1

SHEET 1 of 3
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,143.00 E: 723,728.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/27/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,143.00 E: 723,728.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
0	6" Sonic	(0.0-2.0) FILL, (SM) SILTY SAND, fine to medium sand, non-plastic fines; dark yellowish brown (10YR 4/2), Bottom Ash; non-cohesive, moist, loose.	SM	△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△					
		(2.0-10.0) FILL, (SM) SILTY SAND, fine to coarse sub-angular sand, non-plastic fines, trace coarse sub-angular to angular gravels; black (N1), Bottom Ash; non-cohesive, wet, loose.		△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△	2.0				
5		(7.0) SAA (Same As Above), except dark yellowish brown (10YR 4/2).	SM	△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△		1	So		3.0 10.0
		(10.0-20.0) FILL, (SW-SM) SAND, fine to coarse well-graded sub-angular sand, some non-plastic fines, trace fine angular gravels; dark yellowish brown (10YR 4/2), Bottom Ash; non-cohesive, dry, loose.		△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△	10.0				
15		(20.0-23.0) FILL, (ML) sandy SILT, non-plastic fines, fine sand; brownish black (5YR 2/1), Fly Ash/Bottom Ash mix; non-cohesive, dry, loose.	SW-SM	△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△		2	So		4.5 10.0
20		(23.0-50.0) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML	△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△	20.0				
25			△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△	23.0					
			△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△		3	So		7.0 10.0	
30			△△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△ △△△						

Log continued on next page

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

RECORD OF BOREHOLE LCPA-1









SHEET 2 of 3
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,143.00 E: 723,728.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/27/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A

COORDINATES: N: 991,143.00 E: 723,728.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
30	6" Sonic	(23.0-50.0) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose. <i>(Continued)</i> (30.0) SAA, except trace fine gravels.	ML		30.0	4	So	8.5 20.0	Very poor recovery on first attempt from 30-40 feet, driller put a catcher on and went 30-50 feet.  Water Level 32.00 ft bgs 2/27/2018
		(32.0) SAA, except no gravels.		32.0					
35									
40									
45									
50		(50.0-68.5) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML		50.0	5	So	3.5 10.0	
55									
60		Log continued on next page							

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE LCPA-1

SHEET 3 of 3
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/27/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,143.00 E: 723,728.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
60	6" Sonic	(50.0-68.5) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose. <i>(Continued)</i>	ML			6	So	<u>9.0</u> 10.0	
65									
70		(68.5-70.0) (SP) SAND, fine sand, trace non-plastic fines; medium dark gray (N4); non-cohesive, wet, compact.	SP		68.5				
75	END OF BORING AT 70 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS LCPA-1D, LCPA-1S.				70.0				
80									
85									
90									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE LCPA-2

SHEET 1 of 3
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,066.00 E: 724,360.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/27/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,066.00 E: 724,360.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS			
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT		
					DEPTH (ft)						
0	6" Sonic	(0.0-8.0) FILL, (SW) SAND, fine to coarse well-graded sub-rounded sand, some sub-angular to angular fine gravel, trace non-plastic fines; dark yellowish brown (10YR 4/2) to dark yellowish orange (10YR 6/6), Bottom Ash; non-cohesive, dry, loose.	SW		8.0	1	So	3.0 10.0			
10					(8.0-14.5) FILL, (ML) SILT, non-plastic fines, trace fine sand, trace pieces of wood; dark yellowish brown (10YR 4/2) with some dark gray (N3) mottling, Fly Ash; non-cohesive, dry, loose.				ML		10.0
15											(14.5-20.0) FILL, (SP) SAND, fine to medium sand, trace sub-angular to angular gravel, trace non-plastic fines; brownish black (5YR 2/1), Bottom Ash; non-cohesive, wet, loose.	SP		14.5	2	So	4.5 10.0
20		(20.0-40.0) FILL, (SW) SAND, fine to coarse well-graded sub-angular sand, trace sub-angular to angular pieces of gravel, trace non-plastic fines; brownish black (5YR 2/1), Bottom ash; non-cohesive, wet, compact.	SW		20.0	3	So	6.0 10.0			
25					(23.0) 6" seam of (ML) SILT, Fly Ash; non-cohesive, wet, very loose.				SW		23.0
30	Log continued on next page		23.0								

▽ Water Level 19.95 ft bgs 2/27/2018

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE LCPA-2

SHEET 2 of 3
ELEVATION: N/A
INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/27/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,066.00 E: 724,360.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
30	6" Sonic	(20.0-40.0) FILL, (SW) SAND, fine to coarse well-graded sub-angular sand, trace sub-angular to angular pieces of gravel, trace non-plastic fines; brownish black (5YR 2/1), Bottom ash; non-cohesive, wet, compact. <i>(Continued)</i>	SW			4	So	5.5 10.0	
35									
40		(40.0-50.0) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose. (42.0) 3" seam of (SW) SAND, fine to coarse well-graded sub-angular sand, trace non-plastic fines, Bottom Ash; non-cohesive, wet, loose.			ML						40.0	5	So	5.5 10.0
45		42.0							
50		(50.0-60.0) Unit inferred from drilling to be (ML) SILT.	ML		50.0	6	So	0.0 10.0	No recovery due to the sample being too wet and falling out of the sampler.
55									
60		Log continued on next page							

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



RECORD OF BOREHOLE LCPA-2

SHEET 3 of 3

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/27/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 991,066.00 E: 724,360.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
60	6" Sonic	(60.0-70.0) FILL, (ML) sandy SILT, non-plastic fines, fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML		60.0	7	So	<u>3.0</u> 10.0	
65		(70.0-75.0) FILL, (ML) SILT, non-plastic fines, some fine sand, trace layers of cohesive fines; brownish gray (5YR 4/1) with dark gray (N3), Fly Ash; non-cohesive, wet, very loose.		ML	70.0				
75		(75.0-80.0) (SW) SAND, fine to coarse well-graded sub-rounded sand, trace fine sub-angular gravels, trace non-plastic fines; medium gray (N5); non-cohesive, wet, compact.	SW		75.0	8	So	<u>8.0</u> 10.0	Native soils encountered at 75 feet below ground surface.
80	END OF BORING AT 80 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS LCPA-2D, LCPA-2S.			80.0					
85									
90									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE LCPA-3

SHEET 1 of 3
ELEVATION: N/A
INCLINATION: -90
COORDINATES: N: 991,671.00 E: 724,582.00

PROJECT: Ameren CCR GW Monitoring
PROJECT NUMBER: 153-1406.0001H
LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
DRILLING DATE: 2/28/2018
DRILL RIG: Geoprobe 8150LS

DATUM: N/A
AZIMUTH: N/A
COORDINATES: N: 991,671.00 E: 724,582.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
0	6" Sonic	(0.0-14.0) FILL, (SW) SAND, fine to coarse well-graded sun-rounded sand, trace fine sub-angular gravel, trace non-plastic fines; dark yellowish brown (10YR 4/2) with dark yellowish orange (10YR 6/6), Bottom Ash; non-cohesive, dry, loose.	SW		5.0	1	So	5.0 10.0	
5					14.0				
10					17.0				
15					18.0				
18.1					18.1				
20.0					20.0				
25					25.0				
30					30.0				
30					30.0				
30					6" Sonic				(25.0-30.0) FILL, (SM) SILTY SAND, fine sand, non-plastic fines; brownish gray (5YR 4/1), Bottom Ash; non-cohesive, wet, loose.	SM		25.0	3	So	5.7 10.0
30	30.0								

▽ Water Level 29.15 ft bgs 2/28/2018

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
DRILLING CONTRACTOR: M&W Drilling
DRILLER: M. Patrick

LOGGED: BCW
CHECKED: MSG
REVIEWED: JSI



Log continued on next page

RECORD OF BOREHOLE LCPA-3

SHEET 2 of 3
 ELEVATION: N/A
 INCLINATION: -90
 COORDINATES: N: 991,671.00 E: 724,582.00

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/28/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A

GOLDER STI RECORD OF BOREHOLE MWDL ECL LOGS.GPJ GLDR_CO.GDT 4/11/18

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION DEPTH (ft)	NUMBER	TYPE	REC ATT	
30	6" Sonic	(30.0-32.5) FILL, (SW) SAND, fine to coarse well-graded sub-rounded to sub-angular sand, trace fine sub-angular gravel, trace non-plastic fines; brownish black (5YR 2/1), Bottom Ash; non-cohesive, wet, compact.	SW		30.0				No recovery due to sample being too wet and falling out of the sampler.
35		(32.5-37.5) FILL, (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML		32.5	4	So	8.0 10.0	
40		(37.5-40.0) FILL, (SW) SAND, fine to coarse well-graded sub-rounded to sub-angular sand, trace fine sub-angular gravels, trace non-plastic fines; brownish black (5YR 2/1), Bottom Ash; non-cohesive, wet, compact.	SW		37.5				
45		(40.0-50.0) Unit inferred from drilling to be (ML) SILT.	ML		40.0	5	So	0.0 10.0	
50		(50.0-58.0) FILL (SM) SILTY SAND, fine to coarse well-graded sub-rounded sand, non-plastic fines, trace fine sub-angular gravels; brownish black (5YR 2/1) with brownish gray (5YR 4/1), Bottom Ash; non-cohesive, wet, compact.	SM		50.0	6	So	4.0 10.0	
60		(58.0-64.0) FILL (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML		58.0				
		Log continued on next page							

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE LCPA-3

SHEET 3 of 3

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/28/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 991,671.00 E: 724,582.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
60	6" Sonic	(58.0-64.0) FILL (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose. <i>(Continued)</i>	ML						
65		(64.0-72.0) FILL (SM) SILTY SAND, fine to coarse well-graded sub-rounded sand, non-plastic fines, trace fine sub-angular gravels; brownish black (5YR 2/1) with brownish gray (5YR 4/1), Bottom Ash; non-cohesive, wet, compact.	SM		64.0	7	So	7.0 10.0	
70		(72.0-75.0) FILL (ML) SILT, non-plastic fines, trace fine sand; brownish gray (5YR 4/1), Fly Ash; non-cohesive, wet, very loose.	ML		72.0				
75		(75.0-80.0) (SW) fine to coarse well-graded sub-rounded sand, trace non-plastic fines; dark gray (N3); non-cohesive, wet, compact.	SW		75.0	8	So	8.0 10.0	
80		END OF BORING AT 80 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOGS LCPA-3D, LCPA-3S.			80.0				
85									
90									

Native soils encountered at 75 feet below ground surface.

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE LCPB-1

SHEET 1 of 1
 ELEVATION: N/A
 INCLINATION: -90

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/28/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 992,696.00 E: 725,277.00

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE				SAMPLES			REMARKS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE	REC ATT	
					DEPTH (ft)				
0	4" Sonic	(0.0-1.5) FILL, (SW) SAND, fine to coarse well-graded sub-rounded sand, trace fine sub-angular gravels, trace non-plastic fines; brownish black (5YR 2/1), Bottom Ash; non-cohesive, dry, loose.	SW	<div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div>					
5		(1.5-20.1) FILL, (ML) SILT, non-plastic fines, trace fine sand; very pale orange (10YR 8/2) with layers of light gray (N7) and moderate yellowish brown (10YR 5/4), Fly Ash; non-cohesive, moist, loose.	ML	<div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div> <div style="display: flex; justify-content: space-around;"> △ △ △ </div>	1.5	1	So	10.0 10.0	
10		2			So	10.0 10.0			
15	END OF BORING AT 20.1 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOG LCPB-1.			20.1					
20	END OF BORING AT 20.1 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOG LCPB-1.			20.1					
25	END OF BORING AT 20.1 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOG LCPB-1.			20.1					
30	END OF BORING AT 20.1 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOG LCPB-1.			20.1					

▽ Water Level 7.68 ft
bgs 2/28/2018

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick
 LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



RECORD OF BOREHOLE LCPB-3


SHEET 1 of 1

PROJECT: Ameren CCR GW Monitoring
 PROJECT NUMBER: 153-1406.0001H
 LOCATION: Labadie Energy Center

DRILLING METHOD: 6" Sonic
 DRILLING DATE: 2/28/2018
 DRILL RIG: Geoprobe 8150LS

DATUM: N/A
 AZIMUTH: N/A
 COORDINATES: N: 993,142.00 E: 725,535.00

ELEVATION: N/A
 INCLINATION: -90

DEPTH (feet)	BORING METHOD	SOIL/ROCK PROFILE			SAMPLES			REMARKS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEVATION	NUMBER	TYPE		REC ATT
					DEPTH (ft)				
0	4" Sonic	(0.0-12.5) FILL, (ML) SILT, non-plastic fines, trace fine sand, thinly to thickly laminated; very pale orange (10YR 8/2) with grayish orange (10YR 7/6) and pale yellowish brown (10YR 6/2), Fly Ash; non-cohesive, moist, loose.	ML		4.0	1	So	$\frac{10.0}{10.0}$	▽ Water Level 5.35 ft bgs 2/28/2018
5		(4.0-4.2) SAA (Same As Above), except dark gray (N3).		10.0					
10		(10.0) SAA, except wet.		12.5	2	So	$\frac{3.7}{10.0}$		
15		(12.5-20.0) FILL, (SP-SM) SILTY SAND, fine sand, some non-plastic fines; moderate yellowish brown (10YR 5/4), Fly Ash; non-cohesive, moist, compact.		18.0					
20		(18.0) SAA, except pale yellowish brown (10YR 6/2).	20.0	END OF BORING AT 20 FT BELOW GROUND SURFACE. FOR WELL DETAILS, SEE WELL CONSTRUCTION LOG LCPB-3.					
25									
30									

GOLDER STL RECORD OF BOREHOLE MWD LEC LOGS.GPJ GLDR_CO.GDT 4/11/18

SCALE: 1 in = 3.8 ft
 DRILLING CONTRACTOR: M&W Drilling
 DRILLER: M. Patrick

LOGGED: BCW
 CHECKED: MSG
 REVIEWED: JSI



APPENDIX B

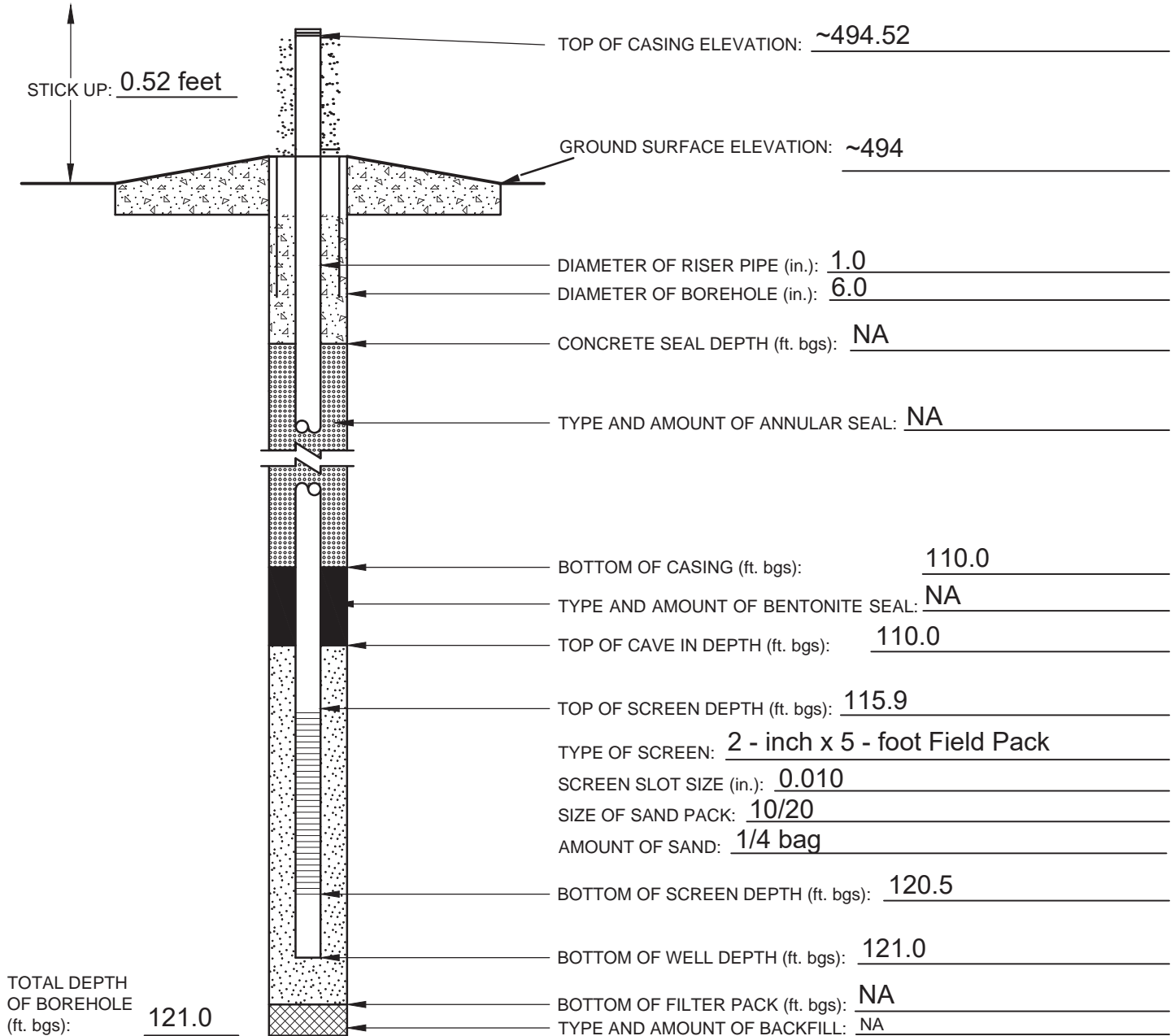
Temporary Piezometer
Construction Logs



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-1D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~494	
GEOLOGIST: B. Works	NORTHING: ~991019	EASTING: ~725795	
DRILLER: M. Patrick	STATIC WATER LEVEL: 42.51 FT BTOC	COMPLETION DATE: 2/20/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~620 gallons of water used during drilling/installation. Total depth of temporary piezometer is 121.52 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

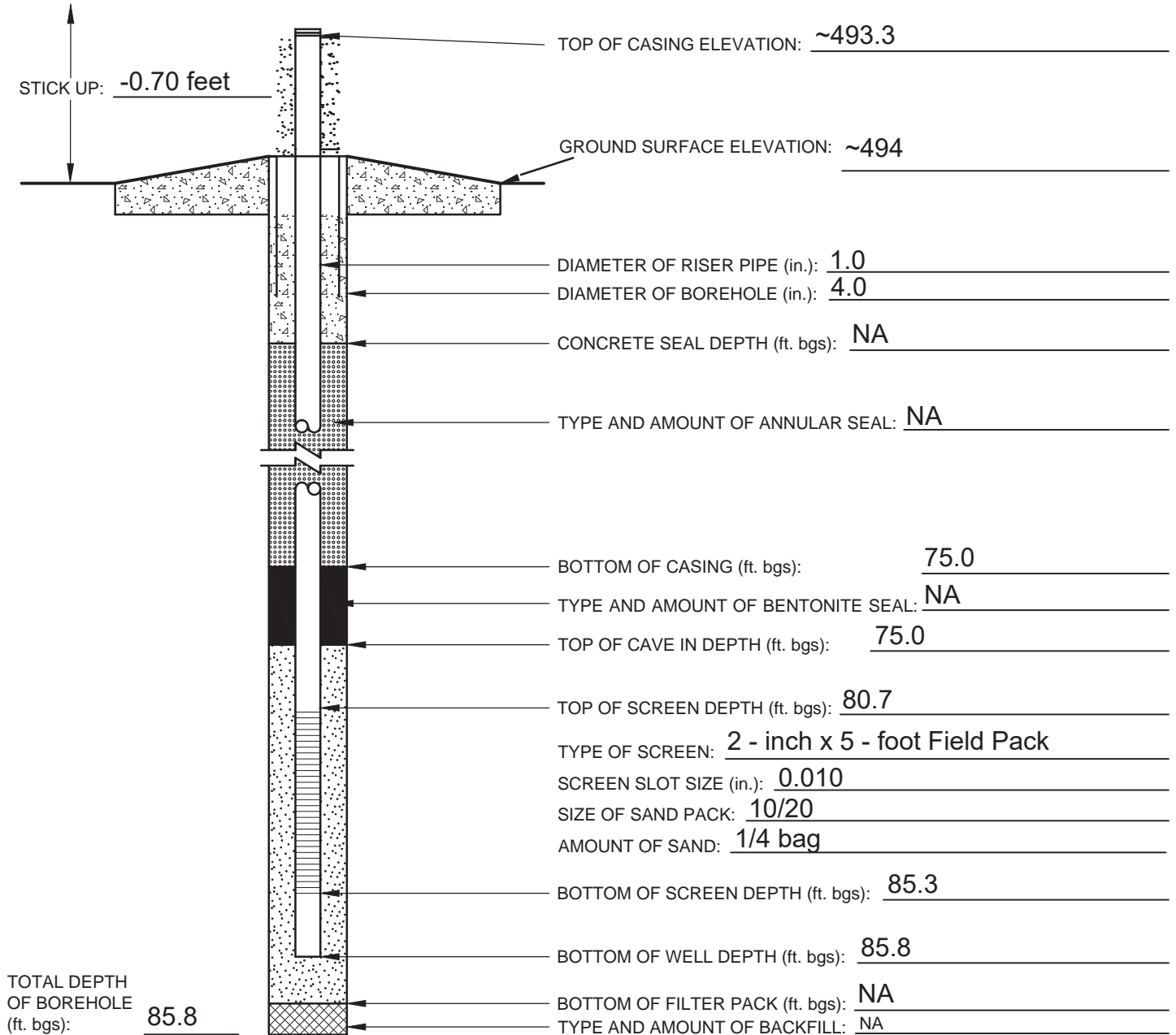
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-1M

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~494	
GEOLOGIST: B. Works	NORTHING: ~991019	EASTING: ~725795	
DRILLER: M. Patrick	STATIC WATER LEVEL: 41.28 FT BTOC	COMPLETION DATE: 2/202018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~60 gallons of water used during drilling/installation. Total depth of temporary piezometer is 85.10 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
DATE CHECKED: 3/8/2018

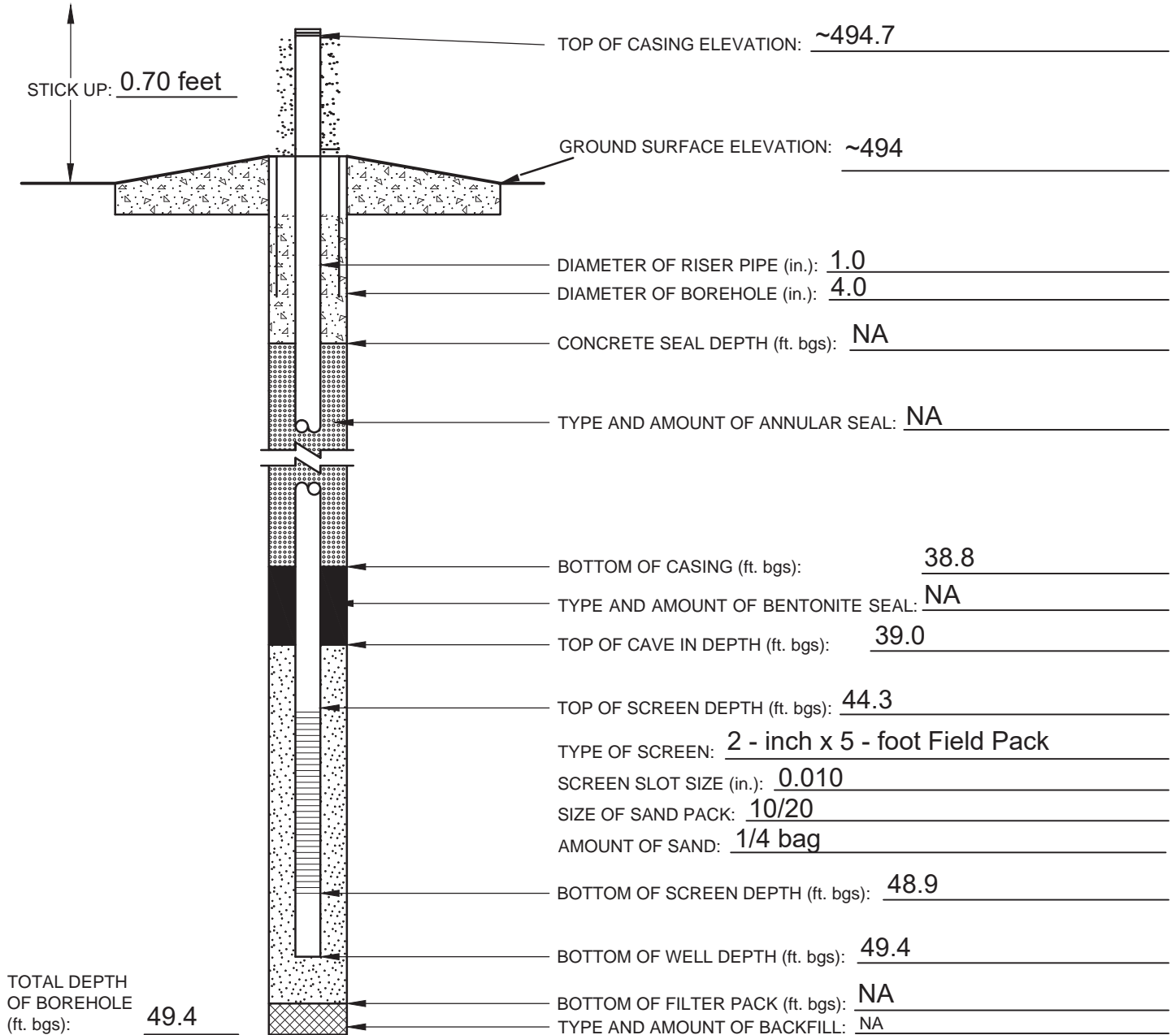
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-1S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~494	
GEOLOGIST: B. Works	NORTHING: ~991019	EASTING: ~725795	
DRILLER: M. Patrick	STATIC WATER LEVEL: 31.65 FT BTOC	COMPLETION DATE: 2/202018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~30 gallons of water used during drilling/installation. Total depth of temporary piezometer is 50.11 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

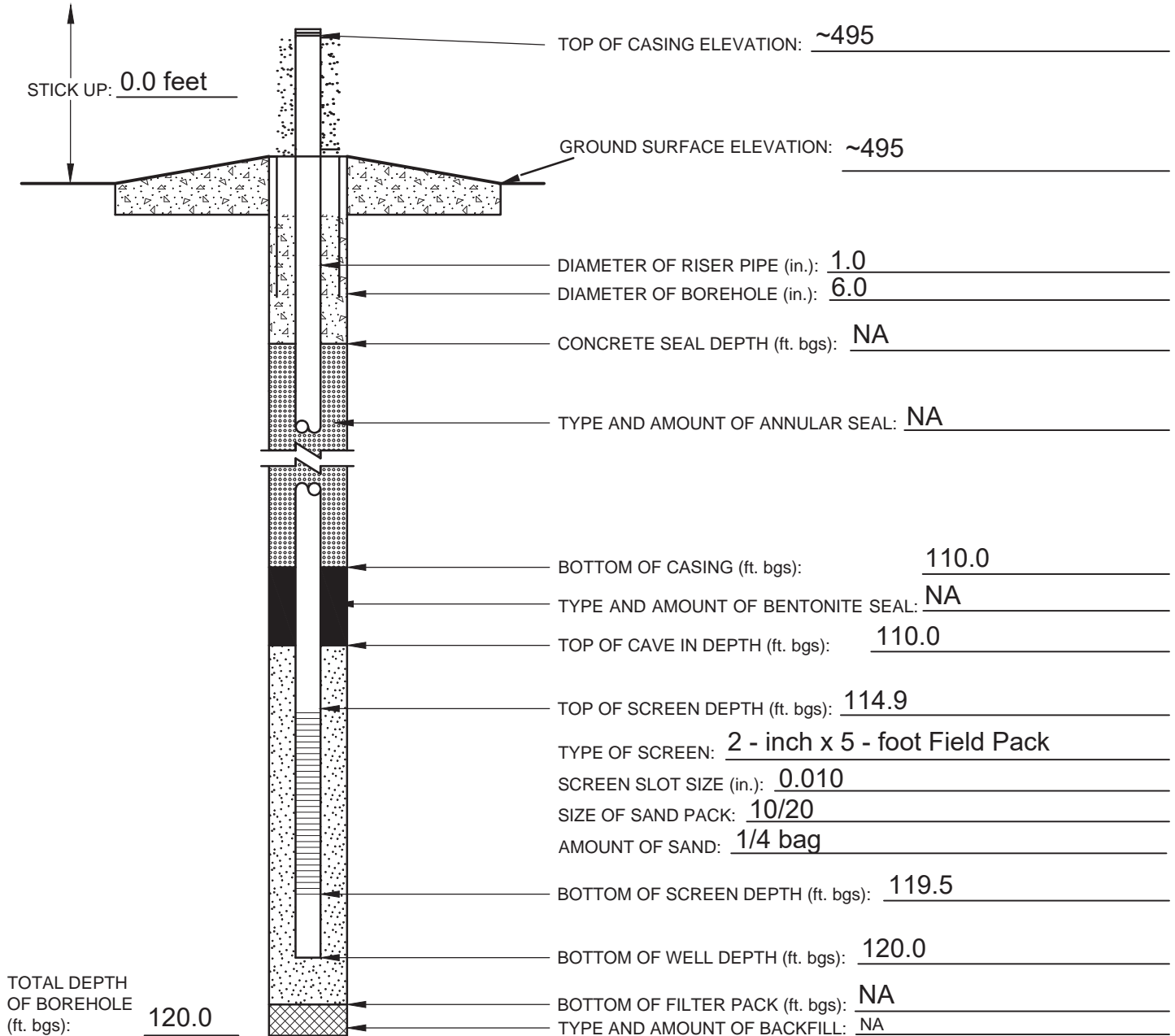
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-2D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 1531406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~991678	EASTING: ~725325	
DRILLER: M. Patrick	STATIC WATER LEVEL: 41.62 FT BTOC	COMPLETION DATE: 2/18/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~625 gallons of water used during drilling/installation. Total depth of temporary piezometer is 120.00 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

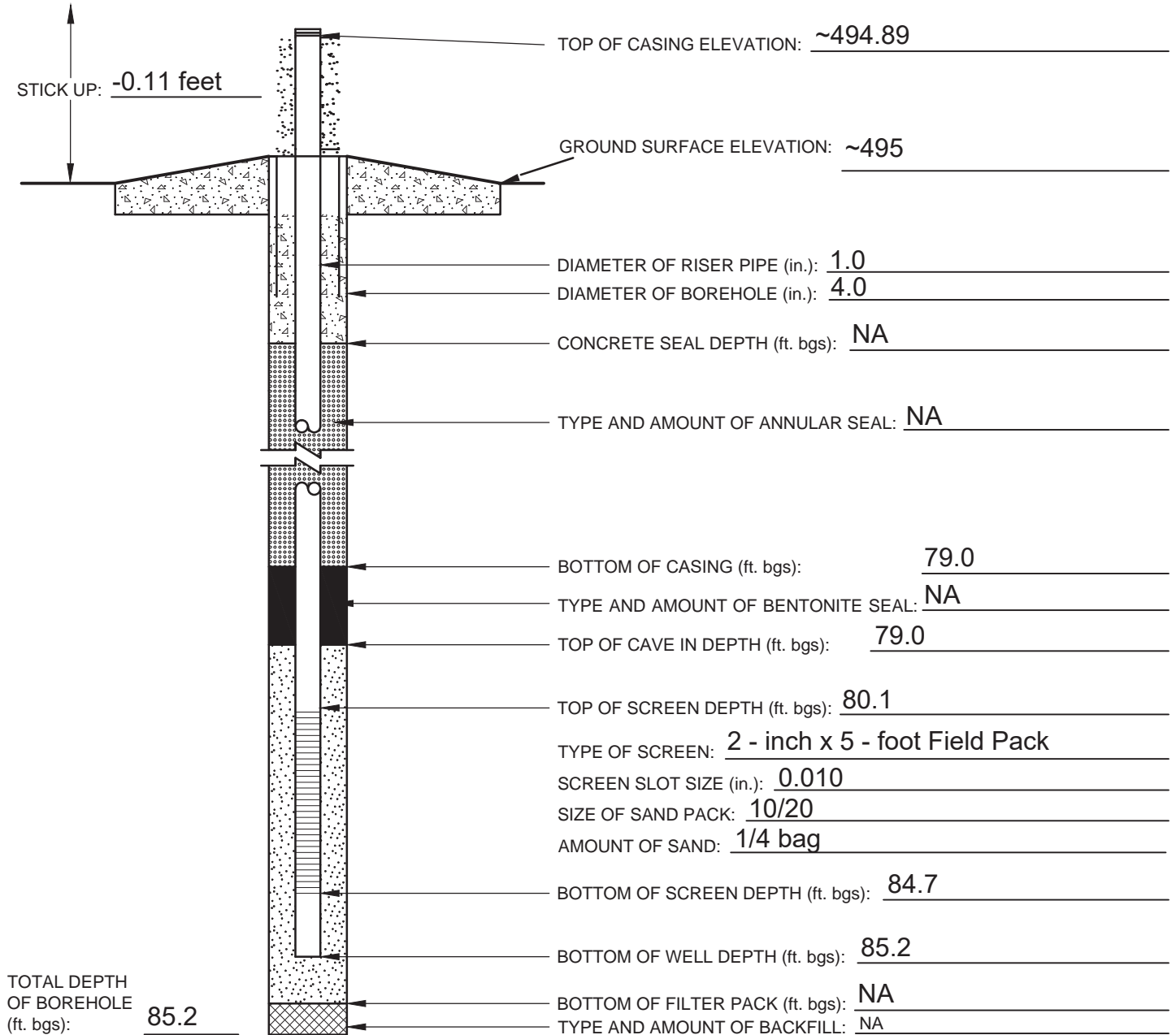
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-2M

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~991678	EASTING: ~725325	
DRILLER: M. Patrick	STATIC WATER LEVEL: 41.34 FT BTOC	COMPLETION DATE: 2/18/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~65 gallons of water used during drilling/installation. Total depth of temporary piezometer is 85.10 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
DATE CHECKED: 3/8/2018

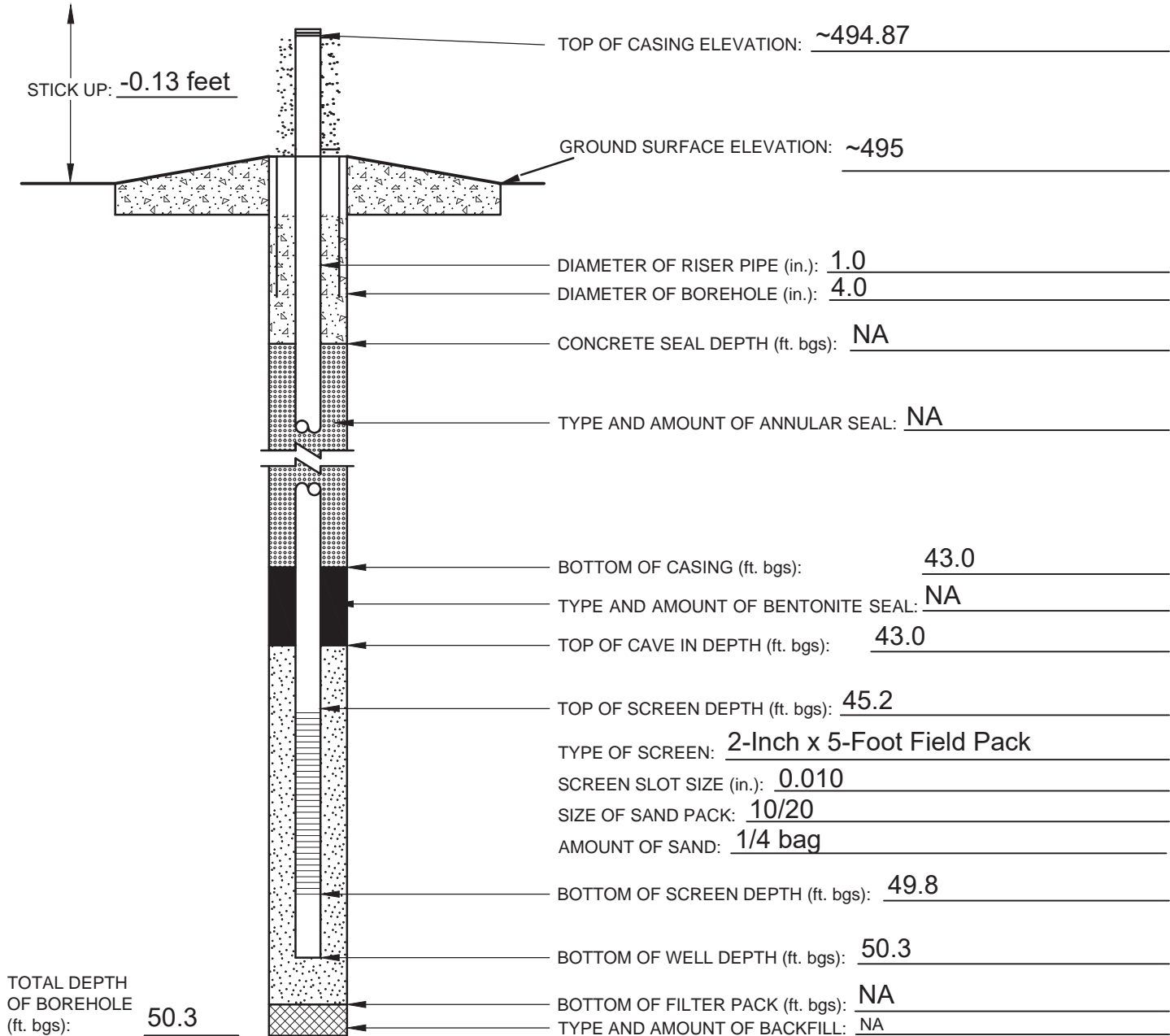
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-2S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~991678	EASTING: ~725325	
DRILLER: M. Patrick	STATIC WATER LEVEL: 18.52 FT BTOC	COMPLETION DATE: 2/18/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~25 gallons of water used during drilling/installation. Total depth of temporary piezometer is 50.15 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

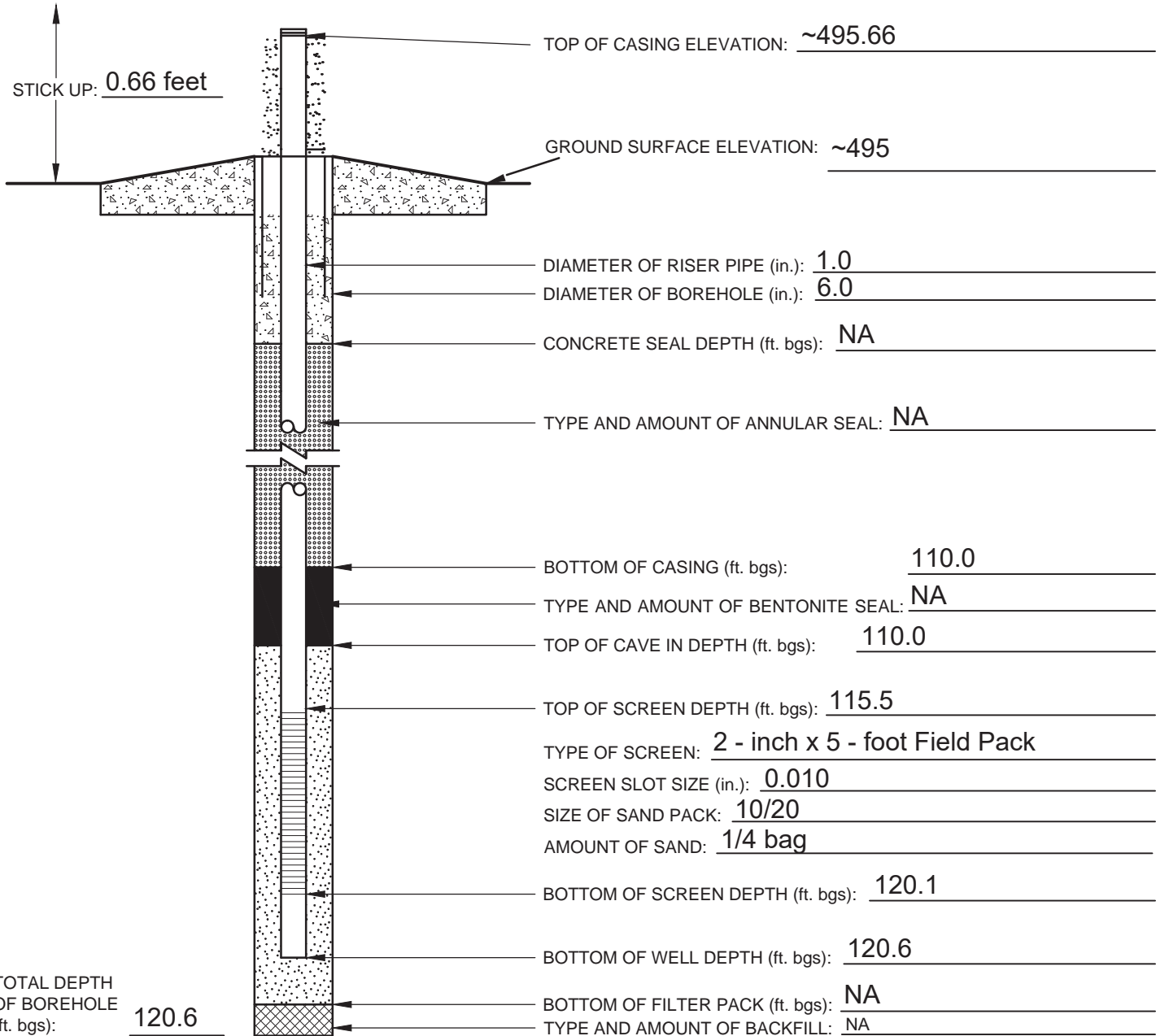
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-3D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~992369	EASTING: ~724778	
DRILLER: M. Patrick	STATIC WATER LEVEL: 44.05 FT BTOC	COMPLETION DATE: 2/16/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~620 gallons of water used during drilling/installation. Total depth of temporary piezometer is 121.33 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

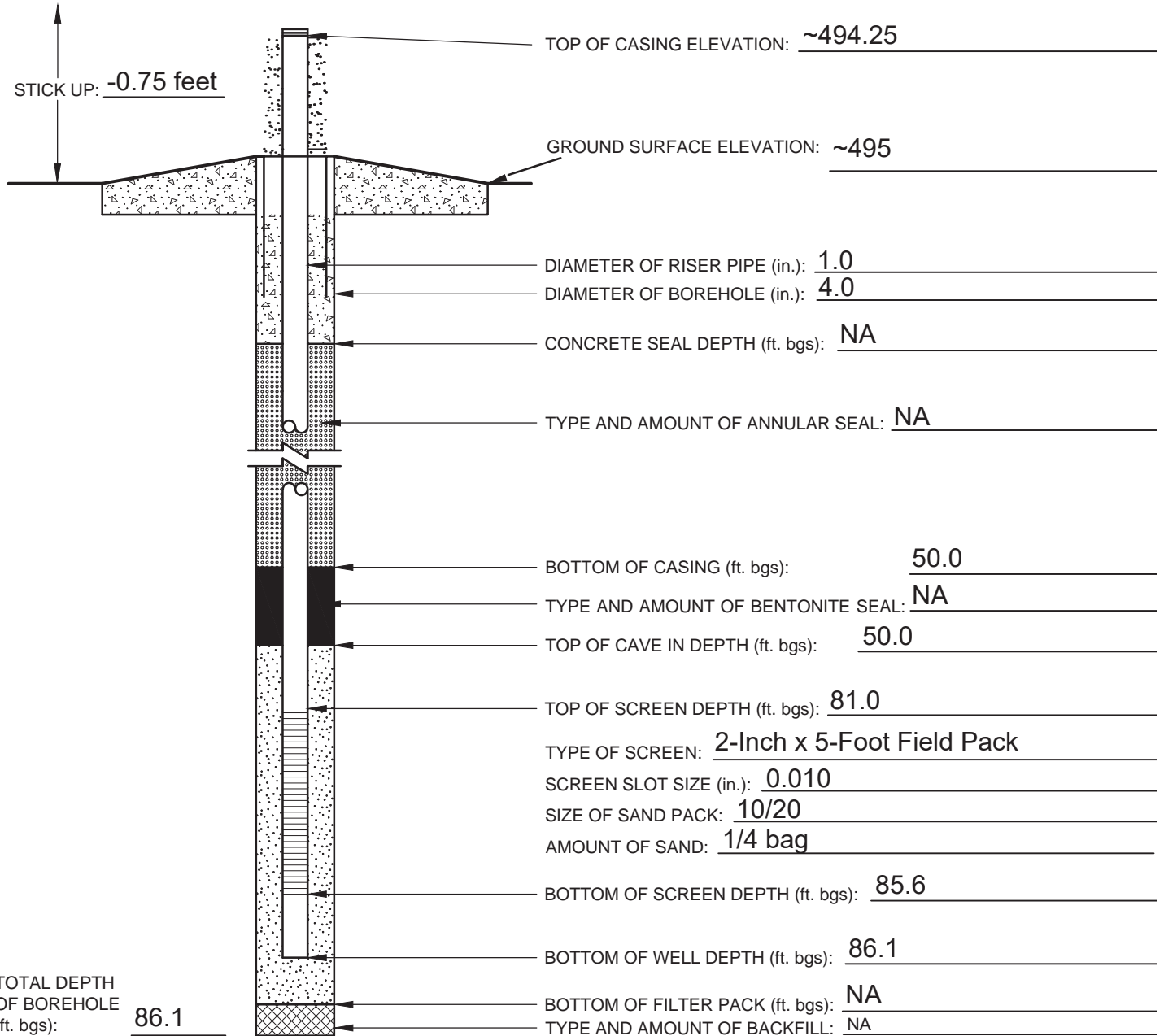
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-3M

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~992369	EASTING: ~724778	
DRILLER: M. Patrick	STATIC WATER LEVEL: 42.03 FT BTOC	COMPLETION DATE: 2/16/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~65 gallons of water used during drilling/installation. Total depth of temporary piezometer is 85.40 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photog

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

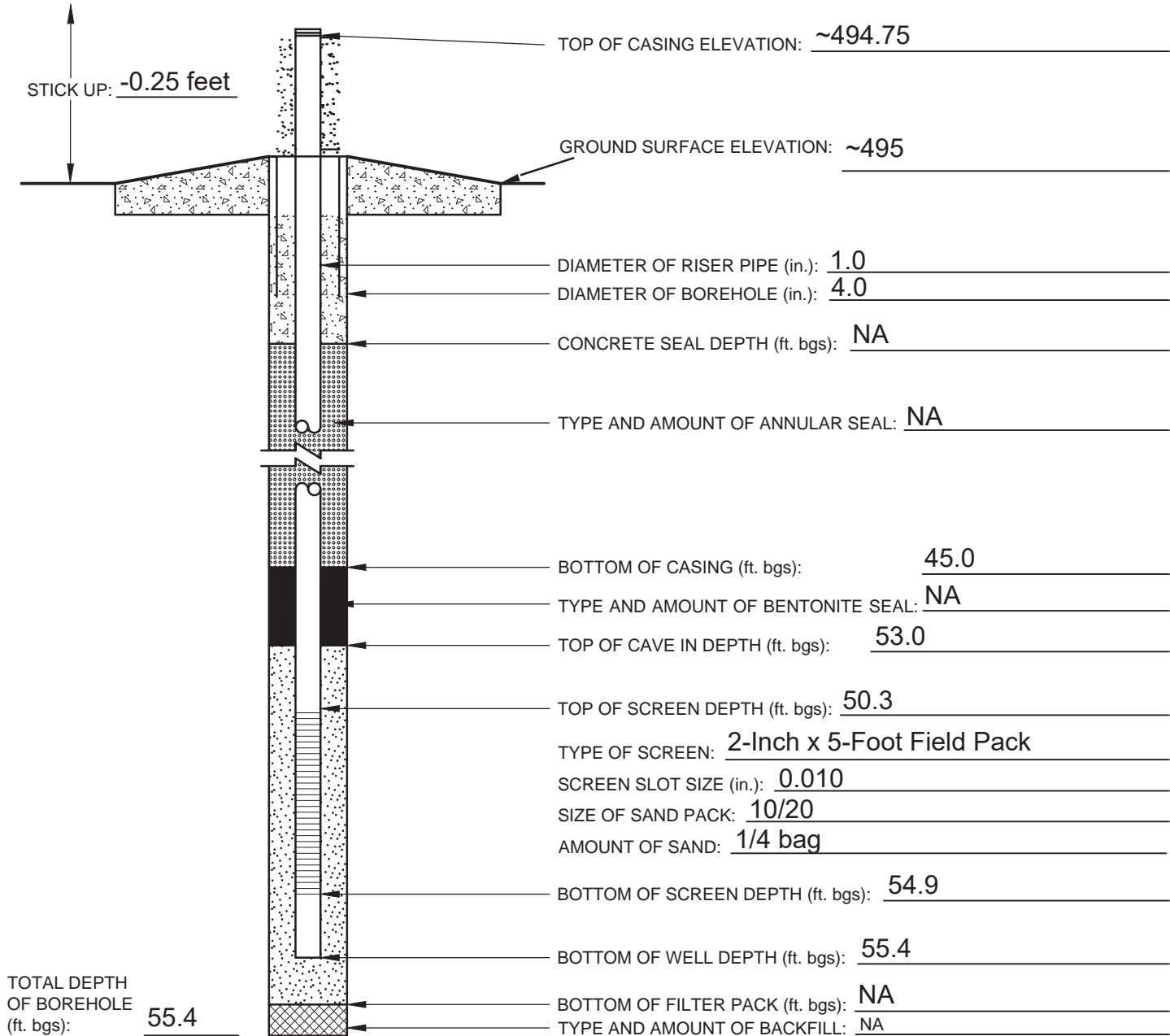
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-3S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~495	
GEOLOGIST: B. Works	NORTHING: ~992369	EASTING: ~724778	
DRILLER: M. Patrick	STATIC WATER LEVEL: 16.55 FT BTOC	COMPLETION DATE: 2/16/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~40 gallons of water used during drilling/installation. Total depth of temporary piezometer is 55.15 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

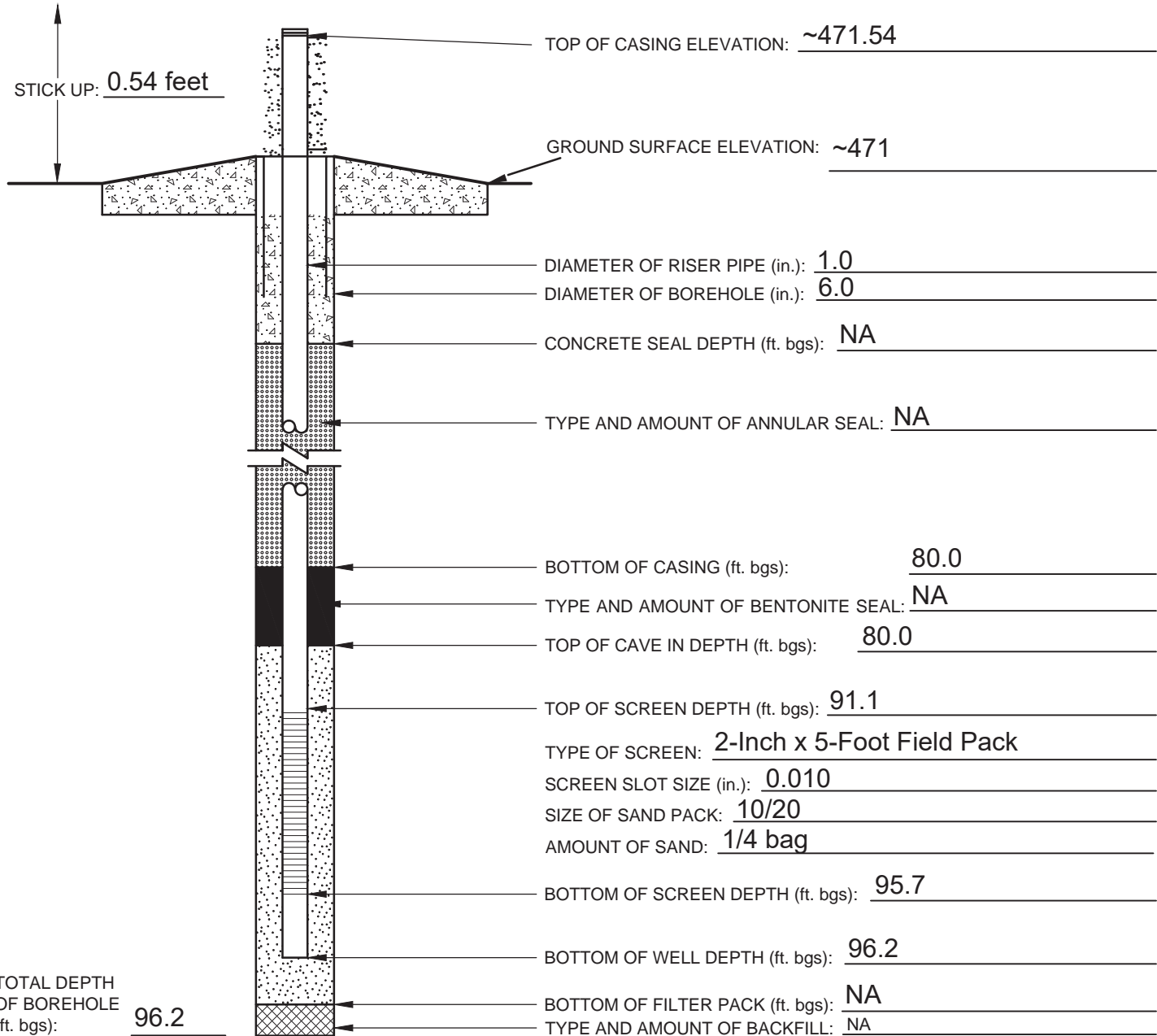
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-4D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~471	
GEOLOGIST: B. Works	NORTHING: ~994276	EASTING: ~725807	
DRILLER: M. Patrick	STATIC WATER LEVEL: 17.05 FT BTOC	COMPLETION DATE: 2/15/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~600 gallons of water used during drilling/installation. Total depth of temporary piezometer is 96.80 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

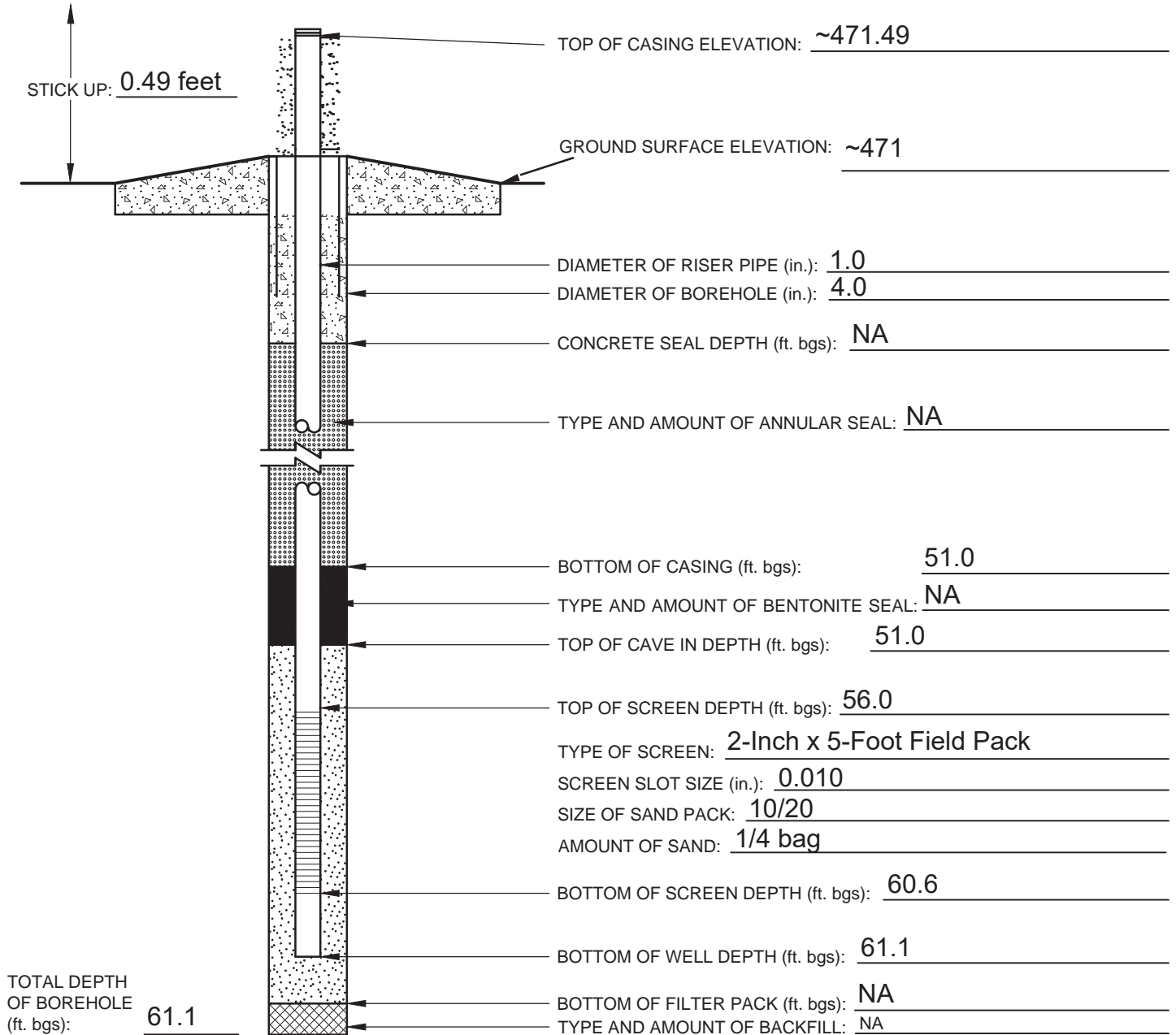
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-4M

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~471	
GEOLOGIST: B. Works	NORTHING: ~994276	EASTING: ~725807	
DRILLER: M. Patrick	STATIC WATER LEVEL: 17.07 FT BTOC	COMPLETION DATE: 2/15/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~95 gallons of water used during drilling/installation. Total depth of temporary piezometer is 61.65 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

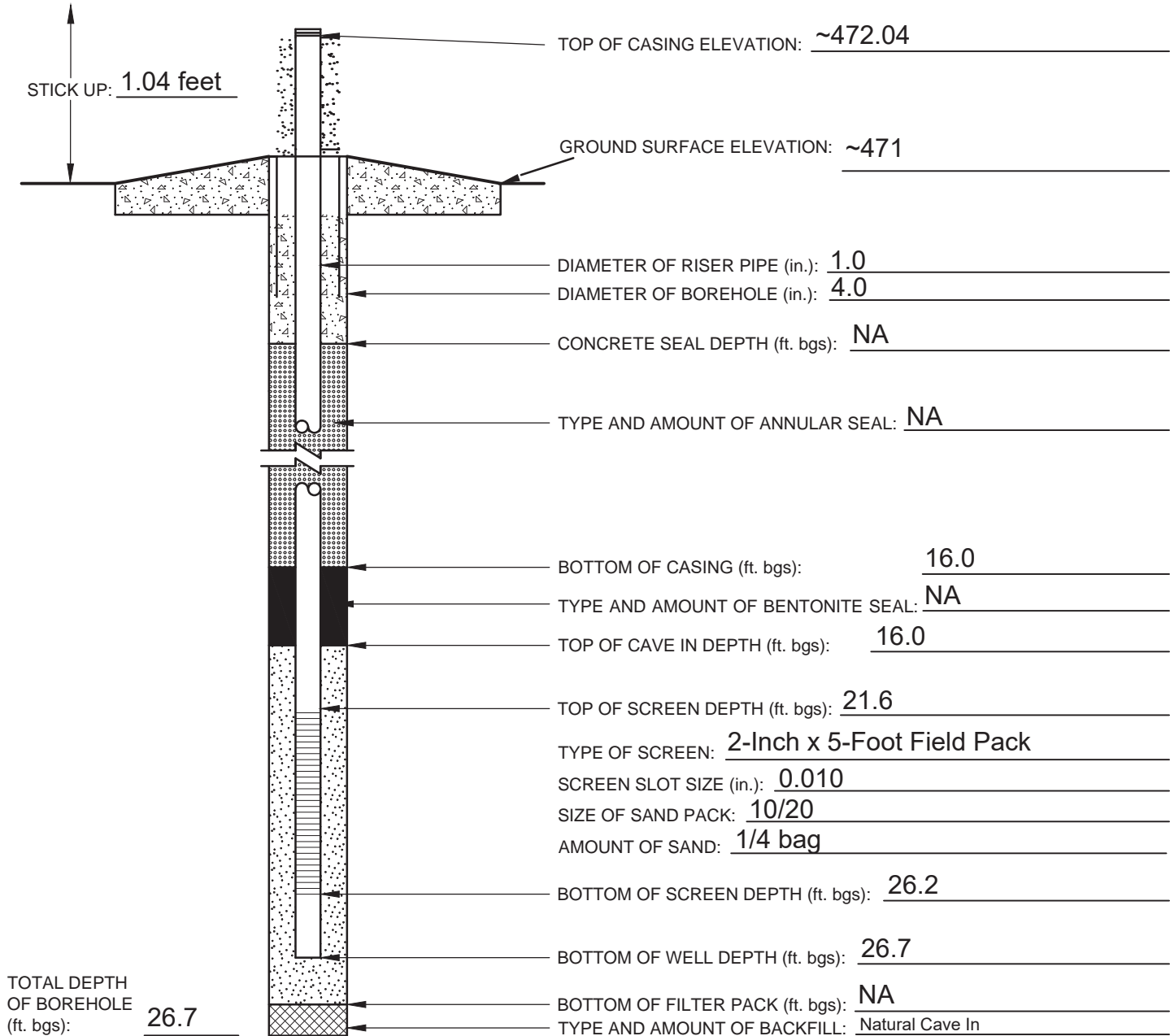
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-4S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~471	
GEOLOGIST: B. Works	NORTHING: ~994276	EASTING: ~725807	
DRILLER: M. Patrick	STATIC WATER LEVEL: 17.62 FT BTOC	COMPLETION DATE: 2/15/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~50 gallons of water used during drilling/installation. Total depth of temporary piezometer is 27.76 feet below top of casing.
Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

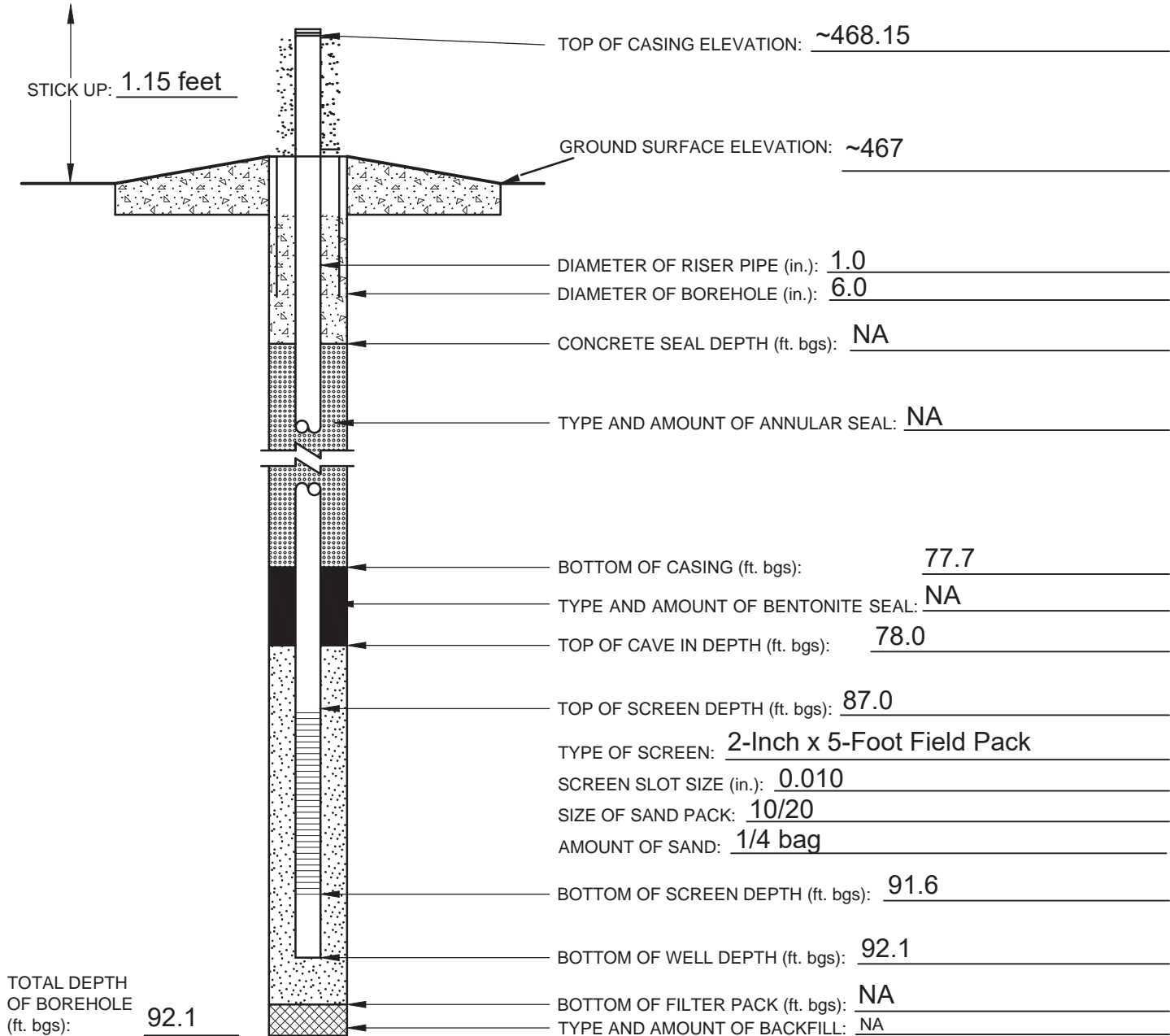
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-5D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~467	
GEOLOGIST: B. Works	NORTHING: ~992987	EASTING: ~726386	
DRILLER: M. Patrick	STATIC WATER LEVEL: 14.90 FT BTOC	COMPLETION DATE: 2/14/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~600 gallons of water used during drilling/installation. Total depth of temporary piezometer is 93.30 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

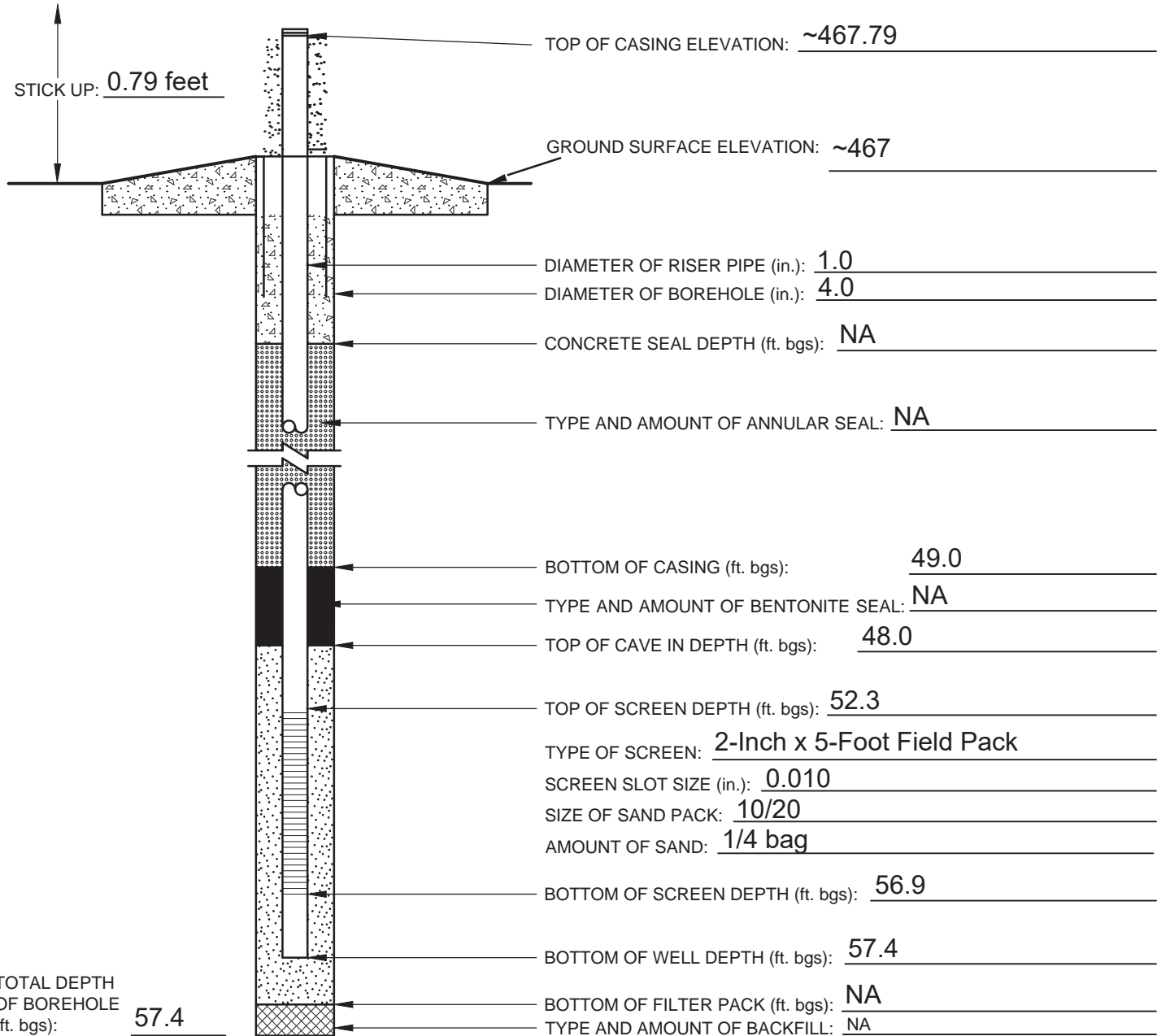
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-5M

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~467	
GEOLOGIST: B. Works	NORTHING: ~992987	EASTING: ~726386	
DRILLER: M. Patrick	STATIC WATER LEVEL: 14.39 FT BTOC	COMPLETION DATE: 2/14/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~250 gallons of water used during drilling/installation. Total depth of temporary piezometer is 58.25 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

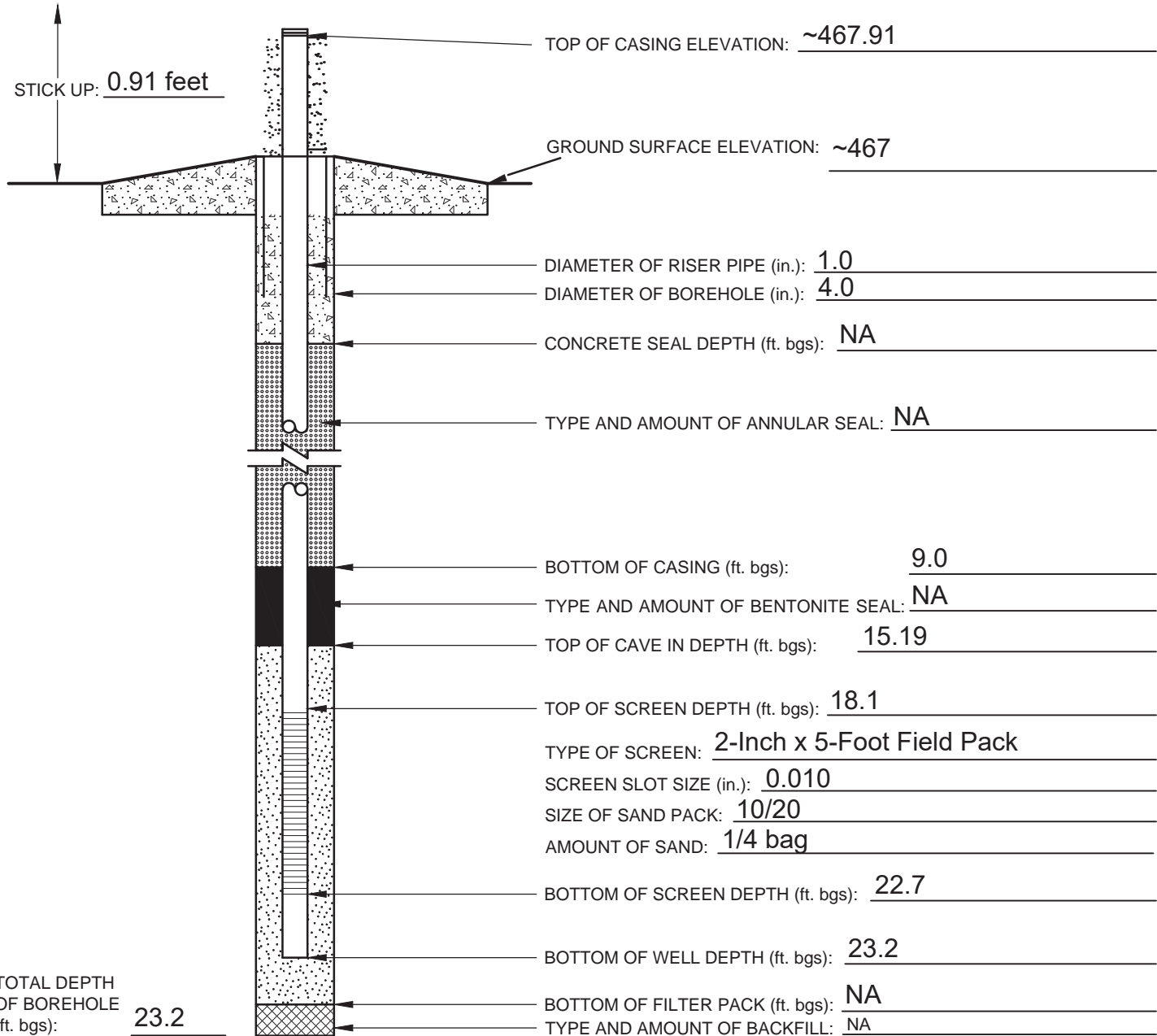
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-ASD-5S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~467	
GEOLOGIST: B. Works	NORTHING: ~992987	EASTING: ~726386	
DRILLER: M. Patrick	STATIC WATER LEVEL: 14.46 FT BTOC	COMPLETION DATE: 2/14/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~100 gallons of water used during drilling/installation. Total depth of temporary piezometer is 24.12 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

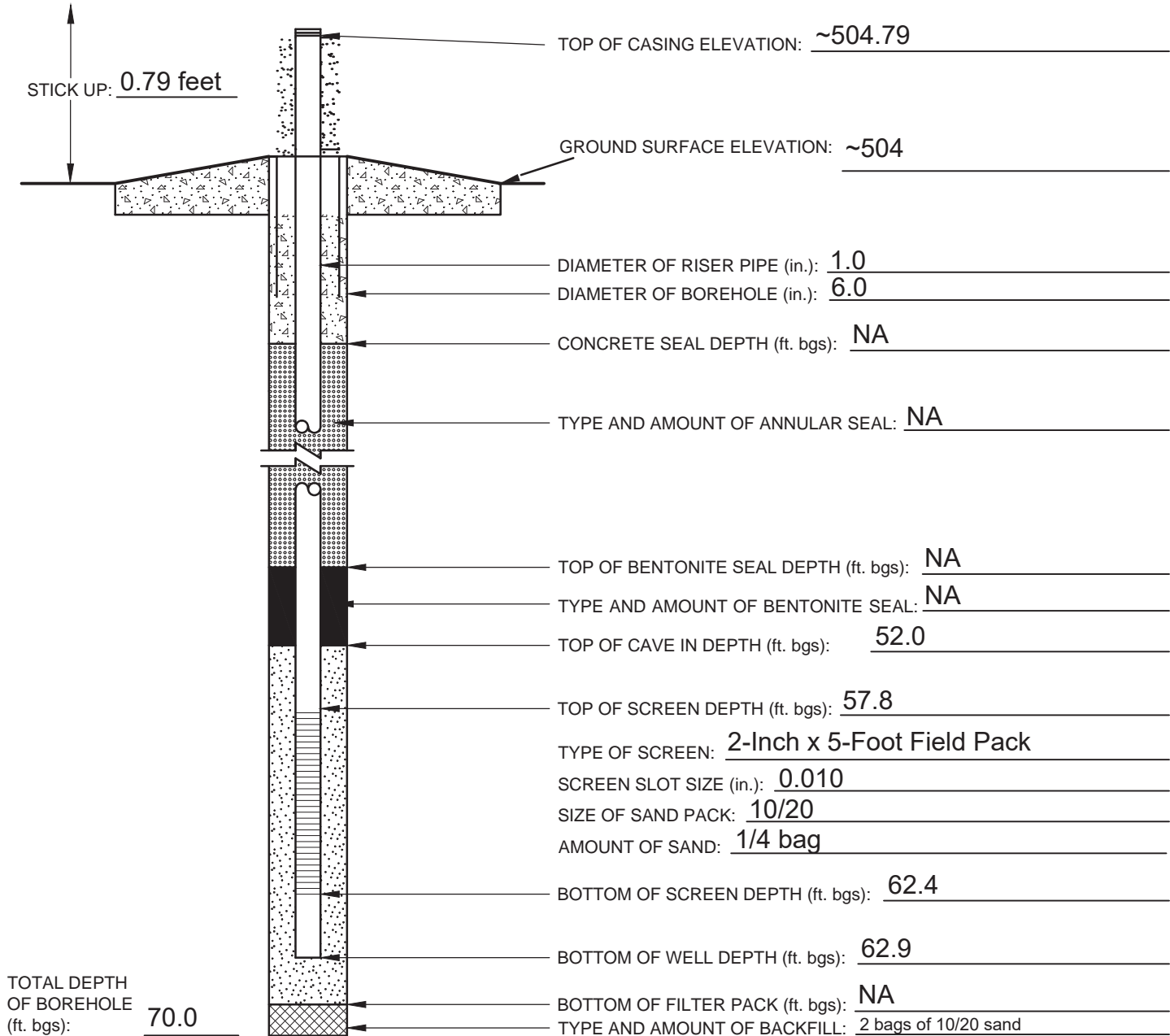
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-1D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~504	
GEOLOGIST: B. Works	NORTHING: ~991143	EASTING: ~723728	
DRILLER: M. Patrick	STATIC WATER LEVEL: 32.00 FT BTOC	COMPLETION DATE: 2/27/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~100 gallons of water used during drilling/installation. Total depth of temporary piezometer is 63.70 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

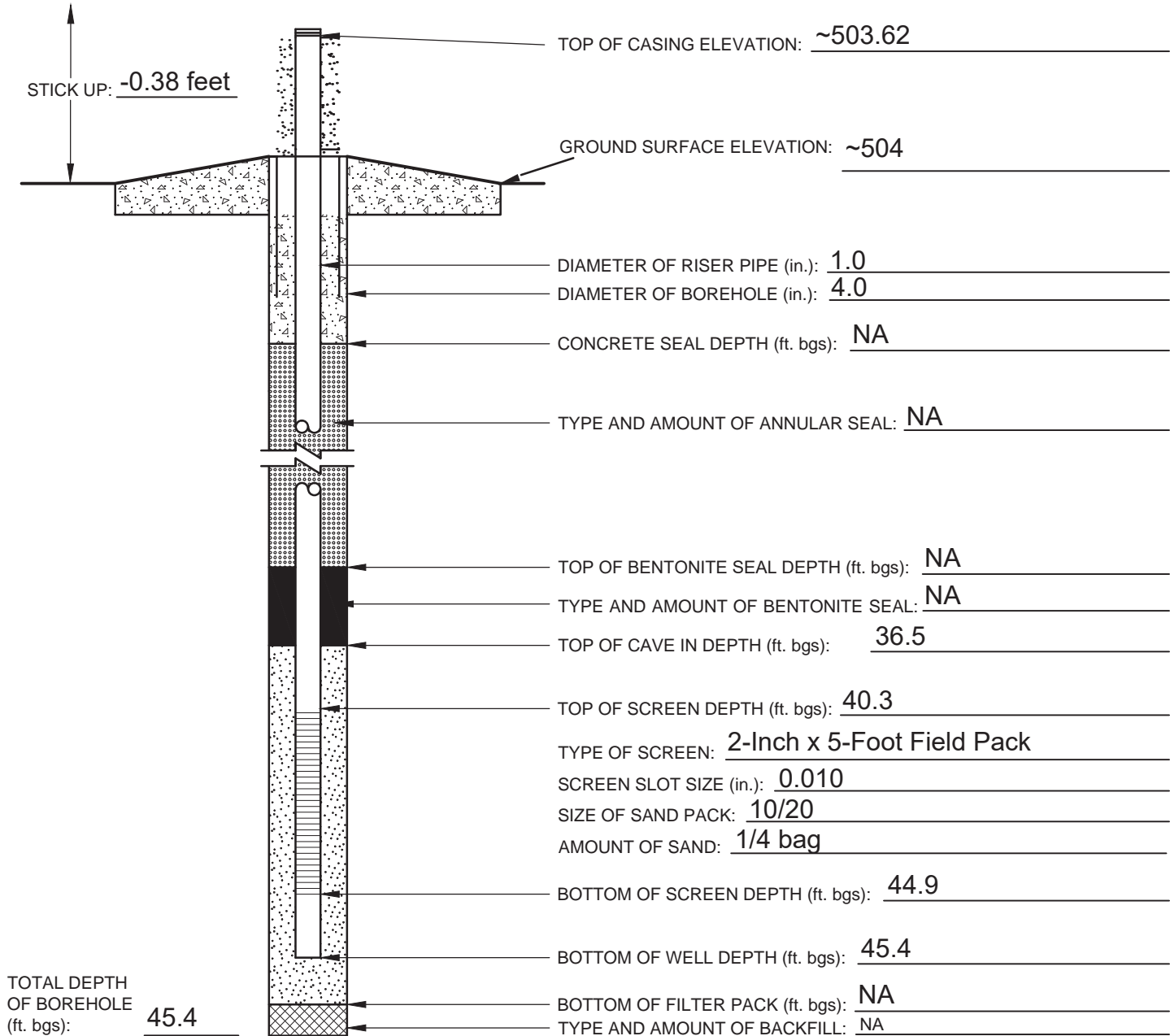
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-1S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~504	
GEOLOGIST: B. Works	NORTHING: ~991143	EASTING: ~723728	
DRILLER: M. Patrick	STATIC WATER LEVEL: 29.62 FT BTOC	COMPLETION DATE: 2/27/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~75 gallons of water used during drilling/installation. Total depth of temporary piezometer is 45.10 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

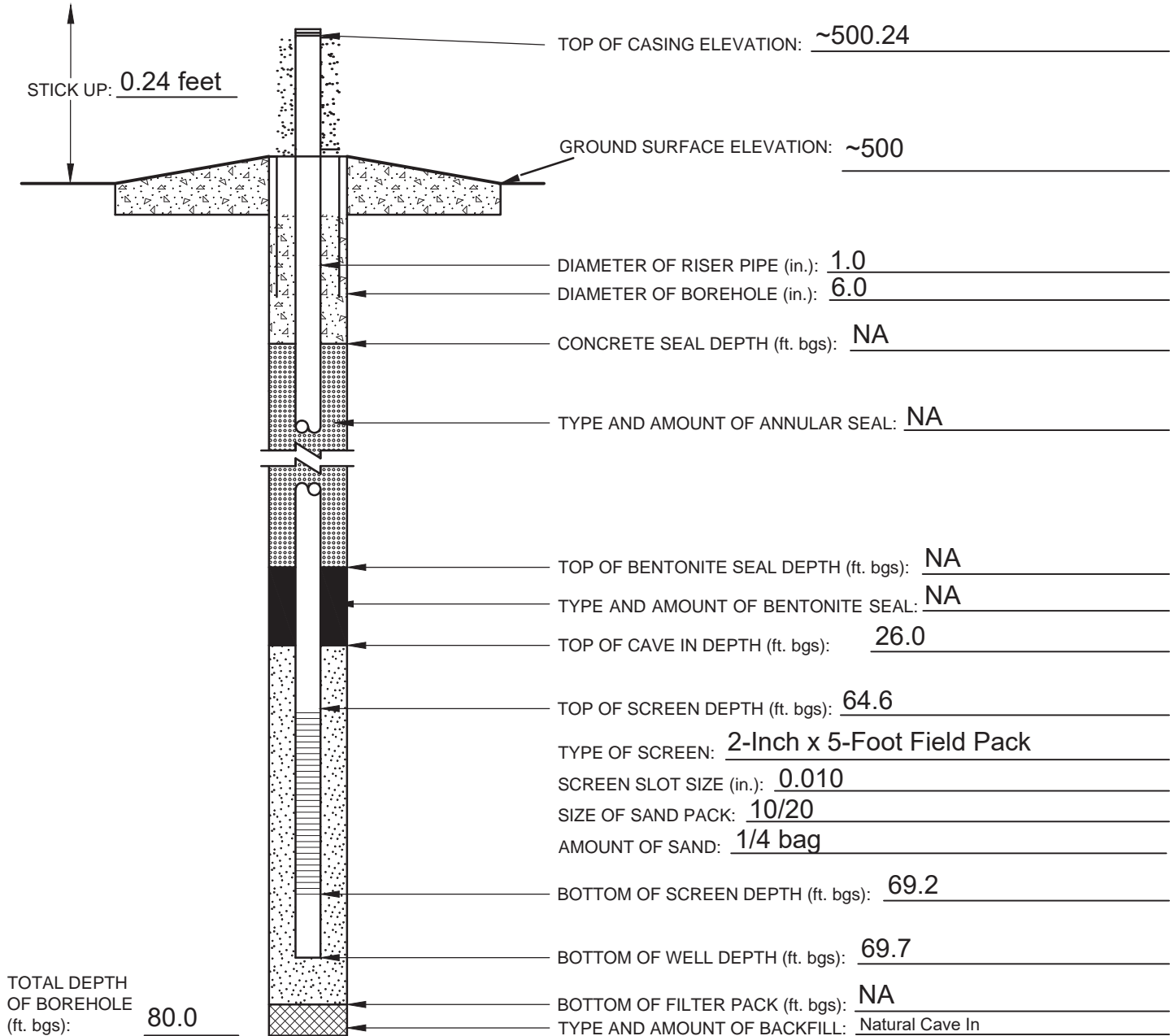
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-2D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~500	
GEOLOGIST: B. Works	NORTHING: ~991066	EASTING: ~724361	
DRILLER: M. Patrick	STATIC WATER LEVEL: 19.95 FT BTOC	COMPLETION DATE: 2/27/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~150 gallons of water used during drilling/installation. Total depth of temporary piezometer is 70.00 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

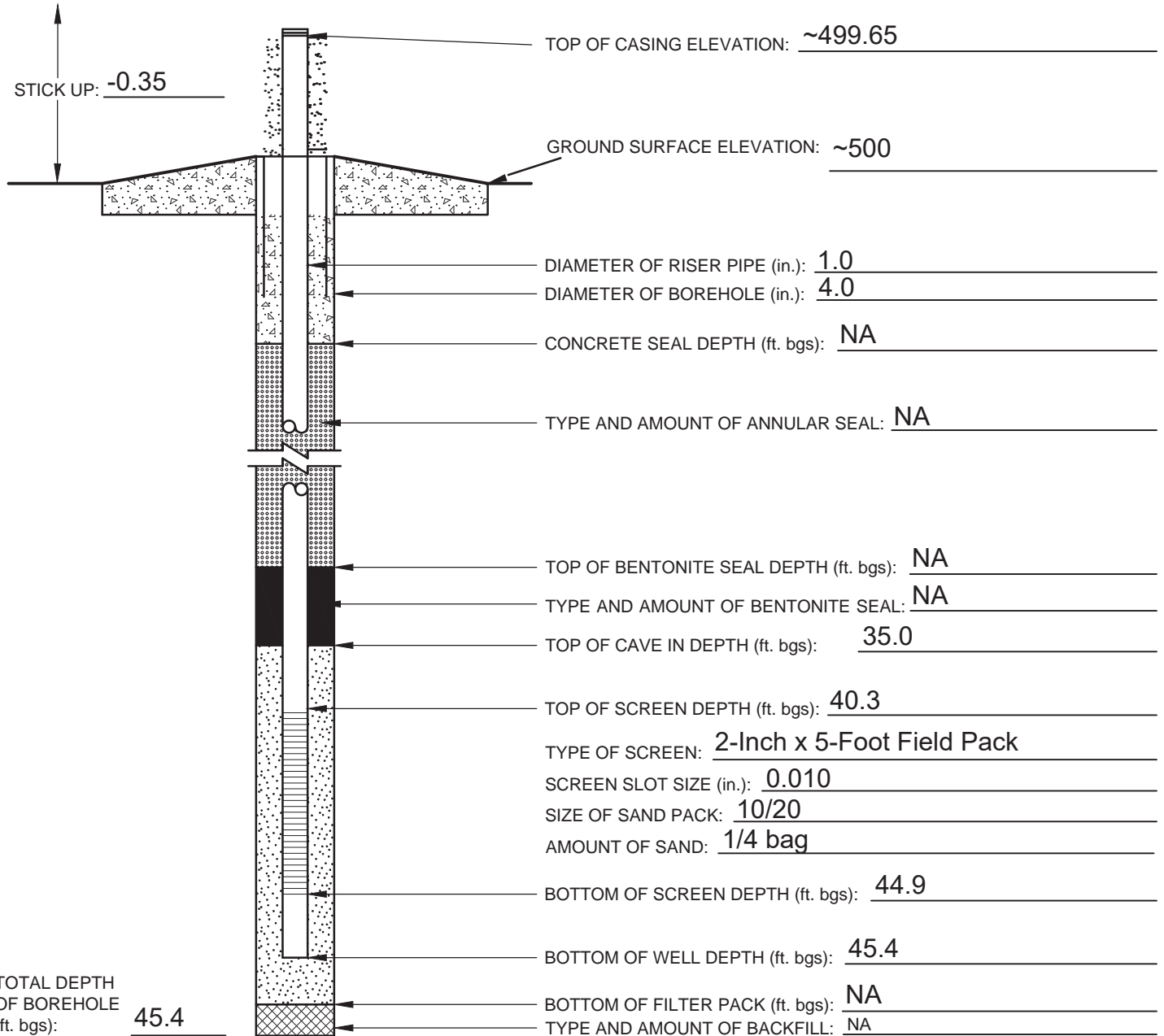
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-2S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~500	
GEOLOGIST: B. Works	NORTHING: ~991066	EASTING: ~724361	
DRILLER: M. Patrick	STATIC WATER LEVEL: 20.58 FT BTOC	COMPLETION DATE: 2/27/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~70 gallons of water used during drilling/installation. Total depth of temporary piezometer is 45.12 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

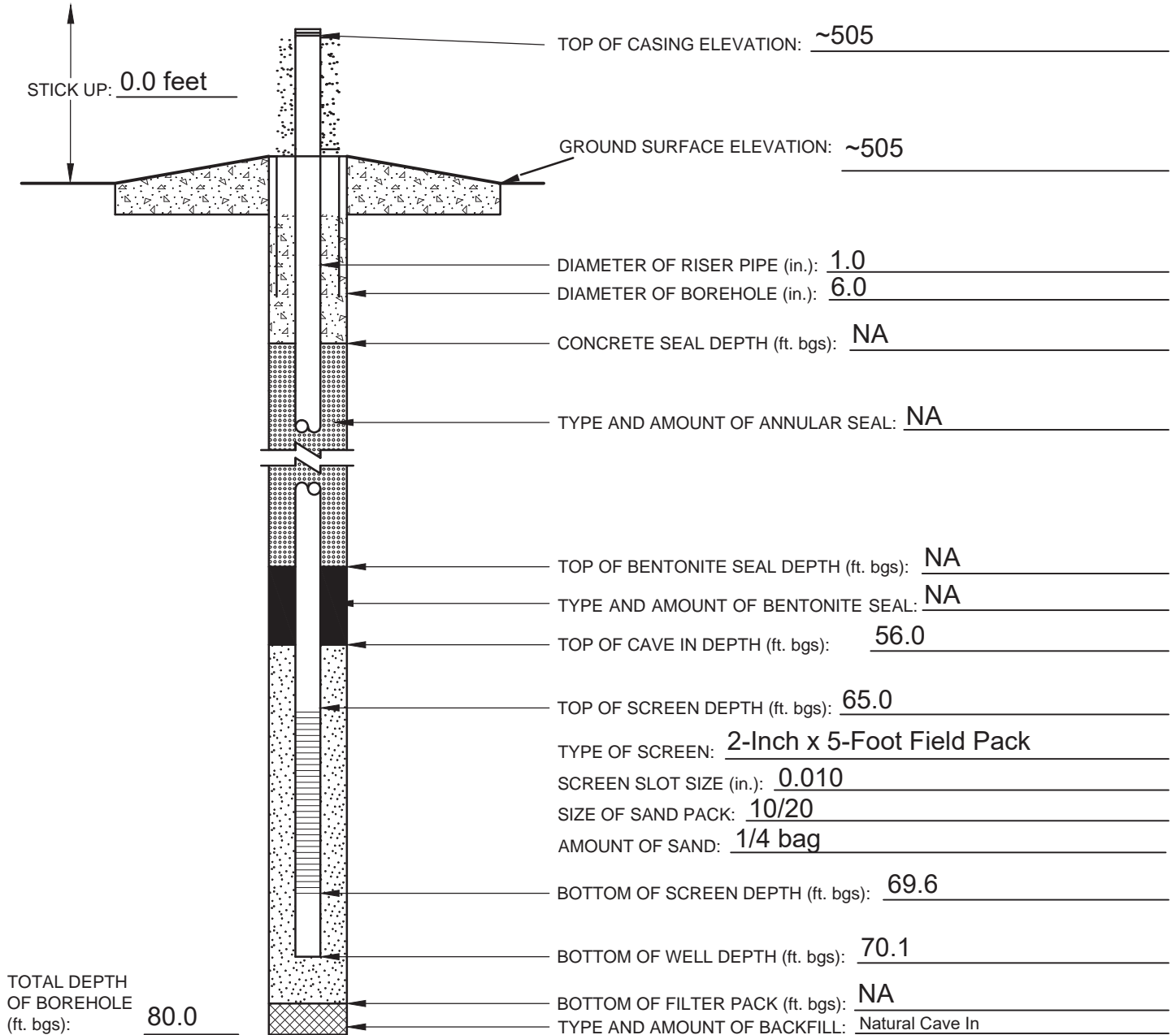
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-3D

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~505	
GEOLOGIST: B. Works	NORTHING: ~991671	EASTING: ~724582	
DRILLER: M. Patrick	STATIC WATER LEVEL: 29.15 FT BTOC	COMPLETION DATE: 2/28/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~125 gallons of water used during drilling/installation. Total depth of temporary piezometer is 70.14 feet below top of casing.
 Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.
 NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
 DATE CHECKED: 3/8/2018

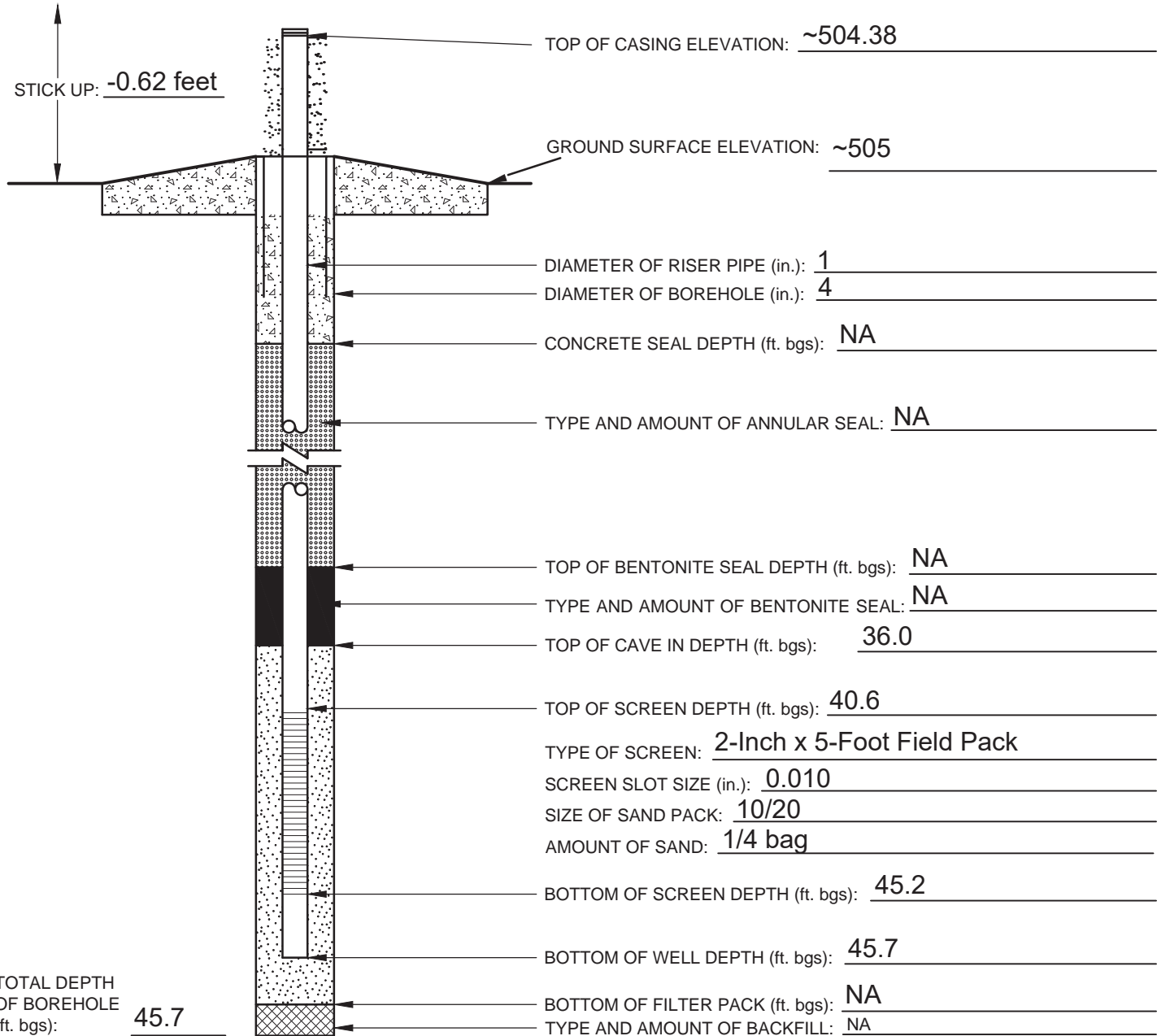
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPA-3S

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~505	
GEOLOGIST: B. Works	NORTHING: ~991671	EASTING: 724582	
DRILLER: M. Patrick	STATIC WATER LEVEL: 23.15 FT BTOC	COMPLETION DATE: 2/28/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~60 gallons of water used during drilling/installation. Total depth of temporary piezometer is 45.13 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

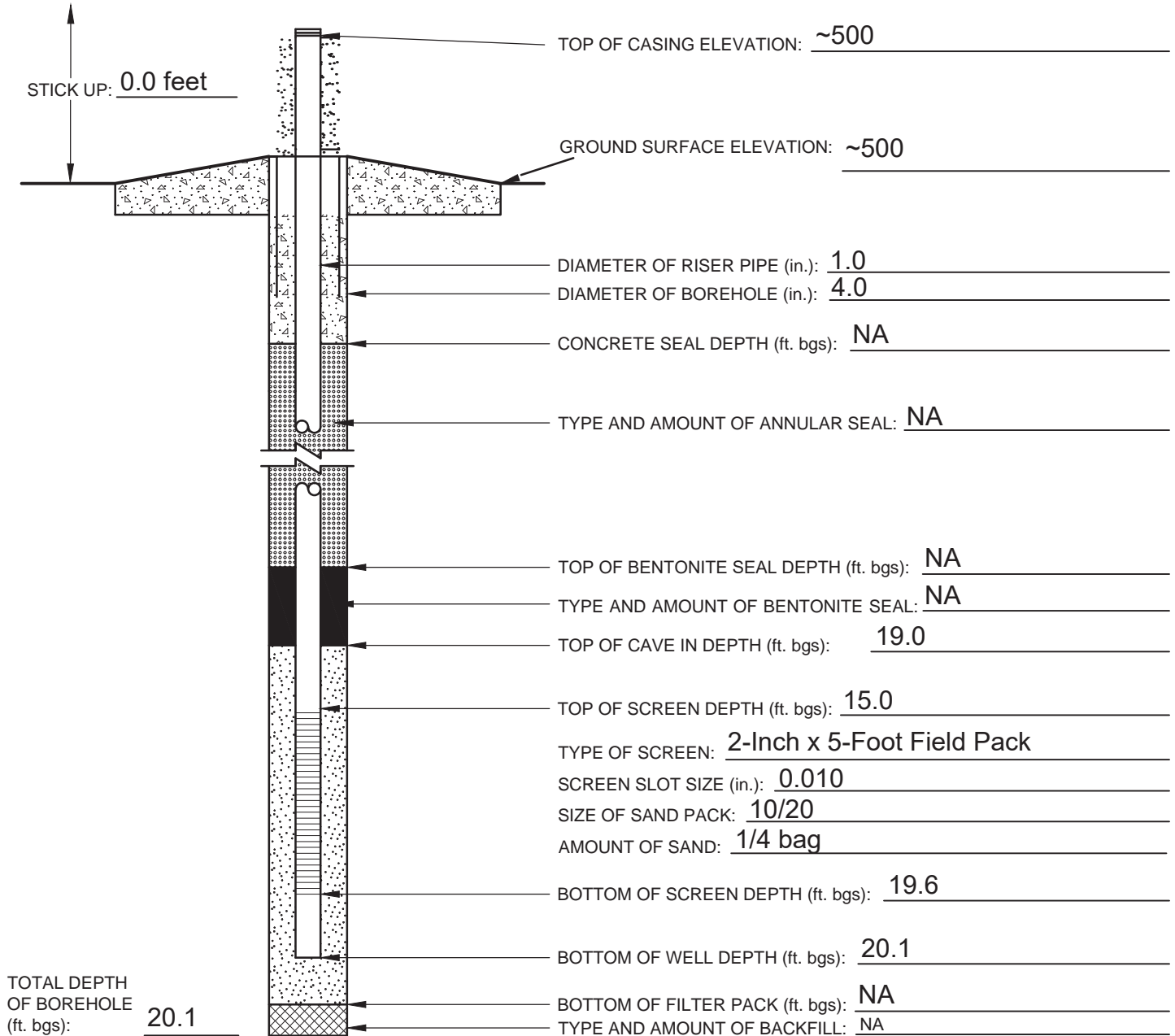
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPB-1

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~500	
GEOLOGIST: B. Works	NORTHING: ~992696	EASTING: ~724277	
DRILLER: M. Patrick	STATIC WATER LEVEL: 7.68 FT BTOC	COMPLETION DATE: 2/28/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~40 gallons of water used during drilling/installation. Total depth of temporary piezometer is 20.15 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

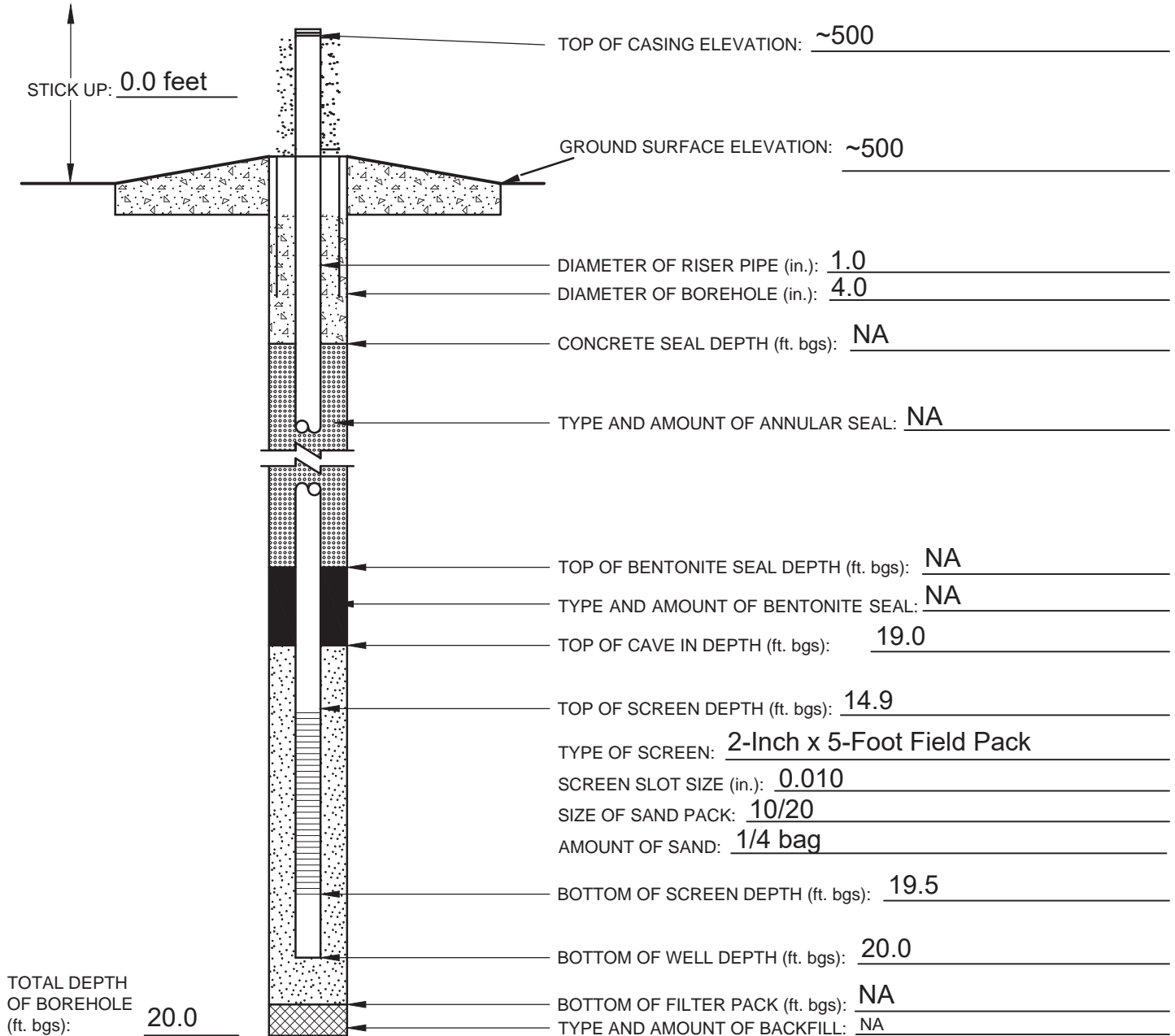
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPB-2

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~500	
GEOLOGIST: B. Works	NORTHING: 992288	EASTING: 725758	
DRILLER: M. Patrick	STATIC WATER LEVEL: 5.93 FT BTOC	COMPLETION DATE: 2/28/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~40 gallons of water used during drilling/installation. Total depth of temporary piezometer is 20.05 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore
DATE CHECKED: 3/8/2018

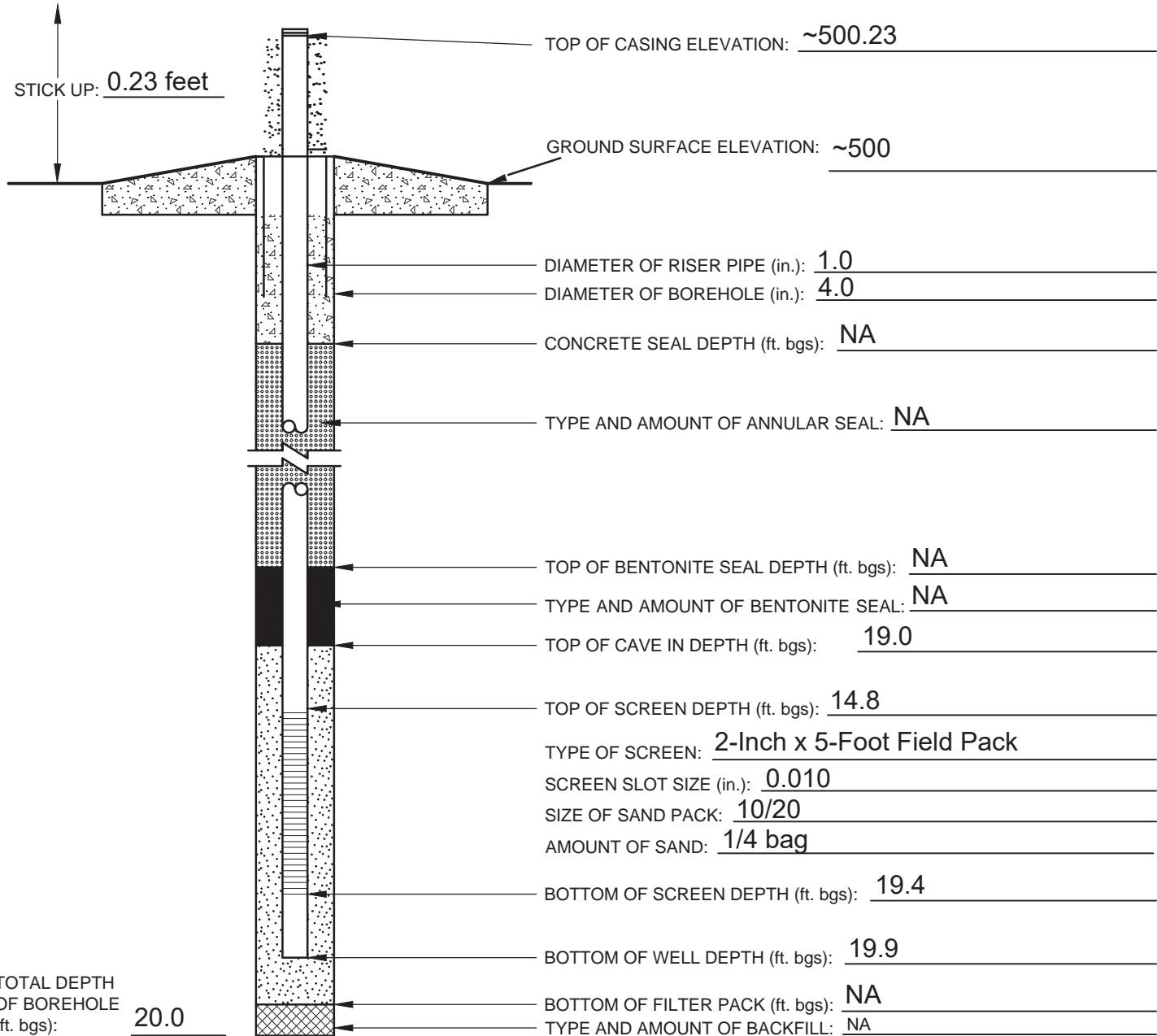
PREPARED BY: B. Works



TEMPORARY MONITORING WELL CONSTRUCTION LOG

L-LCPB-3

PROJECT NAME: Ameren - MO - ASD		PROJECT NUMBER: 153-1406	
SITE NAME: Labadie Energy Center		LOCATION: Labadie, MO	
CLIENT: Ameren		SURFACE ELEVATION: ~500	
GEOLOGIST: B. Works	NORTHING: 993142	EASTING: 725535	
DRILLER: M. Patrick	STATIC WATER LEVEL: 5.35 FT BTOC	COMPLETION DATE: 2/28/2018	
DRILLING COMPANY: M & W Drilling		DRILLING METHODS: Sonic	



ADDITIONAL NOTES: ~40 gallons of water used during drilling/installation. Total depth of temporary piezometer is 20.13 feet below top of casing.

Sample locations based on hand-held GPS coordinates obtained on-site by Golder and proofed visually using an aerial photograph.

NA - Not Applicable, BTOC - Below Top of Casing, BGS - Below Ground Surface

CHECKED BY: M. Gore

DATE CHECKED: 3/8/2018

PREPARED BY: B. Works

APPENDIX C

Laboratory Data

February 27, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: Ameren Labadie Energy Center
Pace Project No.: 60264164

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 16, 2018. 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, 2/27/18: Sample IDs revised per client request.

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

Sincerely,



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

Enclosures

cc: Ryan Feldmann, Golder
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264164001	L-ASD-4S	Water	02/16/18 10:25	02/16/18 23:00
60264164002	L-ASD-4M	Water	02/16/18 11:00	02/16/18 23:00
60264164003	L-ASD-4D	Water	02/16/18 11:05	02/16/18 23:00
60264164004	L-ASD-5S	Water	02/15/18 12:30	02/16/18 23:00
60264164005	L-ASD-5M	Water	02/15/18 14:05	02/16/18 23:00
60264164006	L-ASD-5D	Water	02/15/18 14:30	02/16/18 23:00

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SAMPLE ANALYTE COUNT

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264164001	L-ASD-4S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264164002	L-ASD-4M	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264164003	L-ASD-4D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264164004	L-ASD-5S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264164005	L-ASD-5M	EPA 200.7	SMW	14	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264164006	L-ASD-5D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-4S **Lab ID: 60264164001** Collected: 02/16/18 10:25 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	127	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:05	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:05	7440-41-7	
Boron	1050	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:05	7440-42-8	
Calcium	72200	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:05	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:05	7440-48-4	
Iron	3620	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:05	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:05	7439-92-1	
Lithium	10.9	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:05	7439-93-2	
Magnesium	21400	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:05	7439-95-4	
Manganese	703	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:05	7439-96-5	
Molybdenum	39.3	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:05	7439-98-7	
Potassium	5190	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:05	7440-09-7	
Sodium	15000	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:05	7440-23-5	
Total Hardness by 2340B	268000	ug/L	500		1	02/20/18 11:05	02/22/18 13:05		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.078J	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 13:58	7440-36-0	
Arsenic	4.5	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 13:58	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 13:58	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 13:58	7440-47-3	
Selenium	0.13J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 13:58	7782-49-2	
Thallium	0.044J	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 13:58	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:12	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	295	mg/L	20.0	4.9	1		02/22/18 11:30		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	327	mg/L	5.0	5.0	1		02/22/18 11:05		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:00	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	4.9	mg/L	1.0	0.46	1		02/21/18 20:16	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.063	1		02/21/18 20:16	16984-48-8	
Sulfate	14.3	mg/L	1.0	0.24	1		02/21/18 20:16	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	7.5J	mg/L	10.0	3.1	1		02/23/18 11:45		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	1.8	mg/L	1.0	0.13	1		02/20/18 20:05	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-4M **Lab ID: 60264164002** Collected: 02/16/18 11:00 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	91.2	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:07	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:07	7440-41-7	
Boron	6630	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:07	7440-42-8	
Calcium	53400	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:07	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:07	7440-48-4	
Iron	705	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:07	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:07	7439-92-1	
Lithium	15.7	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:07	7439-93-2	
Magnesium	7030	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:07	7439-95-4	
Manganese	252	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:07	7439-96-5	
Molybdenum	309	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:07	7439-98-7	
Potassium	5720	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:07	7440-09-7	
Sodium	87000	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:07	7440-23-5	
Total Hardness by 2340B	162000	ug/L	500		1	02/20/18 11:05	02/22/18 13:07		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.026J	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 14:02	7440-36-0	
Arsenic	0.67J	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 14:02	7440-38-2	
Cadmium	0.019J	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 14:02	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 14:02	7440-47-3	
Selenium	0.10J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 14:02	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 14:02	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:14	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	64.5	mg/L	20.0	4.9	1		02/22/18 11:34		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	533	mg/L	5.0	5.0	1		02/22/18 11:06		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:01	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.3	mg/L	2.0	0.92	2		02/21/18 20:57	16887-00-6	
Fluoride	0.33	mg/L	0.20	0.063	1		02/21/18 12:50	16984-48-8	
Sulfate	279	mg/L	20.0	4.7	20		02/21/18 21:11	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	4.4J	mg/L	10.0	3.1	1		02/23/18 11:46		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.0	mg/L	1.0	0.13	1		02/20/18 20:18	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-4D **Lab ID: 60264164003** Collected: 02/16/18 11:05 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	123	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:09	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:09	7440-41-7	
Boron	5620	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:09	7440-42-8	
Calcium	119000	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:09	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:09	7440-48-4	
Iron	2350	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:09	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:09	7439-92-1	
Lithium	24.1	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:09	7439-93-2	
Magnesium	18800	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:09	7439-95-4	
Manganese	372	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:09	7439-96-5	
Molybdenum	249	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:09	7439-98-7	
Potassium	7250	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:09	7440-09-7	
Sodium	68700	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:09	7440-23-5	
Total Hardness by 2340B	376000	ug/L	500		1	02/20/18 11:05	02/22/18 13:09		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.53J	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 14:05	7440-36-0	
Arsenic	1.4	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 14:05	7440-38-2	
Cadmium	0.028J	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 14:05	7440-43-9	
Chromium	0.083J	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 14:05	7440-47-3	
Selenium	0.18J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 14:05	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 14:05	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:16	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	158	mg/L	20.0	4.9	1		02/22/18 11:37		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	729	mg/L	5.0	5.0	1		02/22/18 11:06		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:01	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	15.4	mg/L	1.0	0.46	1		02/21/18 21:25	16887-00-6	
Fluoride	0.26	mg/L	0.20	0.063	1		02/21/18 21:25	16984-48-8	
Sulfate	400	mg/L	50.0	11.8	50		02/21/18 21:39	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	7.4J	mg/L	10.0	3.1	1		02/23/18 11:46		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.5	mg/L	1.0	0.13	1		02/20/18 20:31	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-5S **Lab ID: 60264164004** Collected: 02/15/18 12:30 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	151	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:11	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:11	7440-41-7	
Boron	1440	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:11	7440-42-8	
Calcium	79500	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:11	7440-70-2	
Cobalt	0.90J	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:11	7440-48-4	
Iron	1100	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:11	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:11	7439-92-1	
Lithium	12.1	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:11	7439-93-2	
Magnesium	20200	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:11	7439-95-4	
Manganese	182	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:11	7439-96-5	
Molybdenum	87.4	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:11	7439-98-7	
Potassium	3990	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:11	7440-09-7	
Sodium	14400	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:11	7440-23-5	
Total Hardness by 2340B	282000	ug/L	500		1	02/20/18 11:05	02/22/18 13:11		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.18J	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 14:09	7440-36-0	
Arsenic	0.22J	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 14:09	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 14:09	7440-43-9	
Chromium	0.078J	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 14:09	7440-47-3	
Selenium	0.33J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 14:09	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 14:09	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:18	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	318	mg/L	20.0	4.9	1		02/22/18 11:43		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	317	mg/L	5.0	5.0	1		02/22/18 11:03		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:01	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	5.1	mg/L	1.0	0.46	1		02/21/18 21:53	16887-00-6	
Fluoride	0.25	mg/L	0.20	0.063	1		02/21/18 21:53	16984-48-8	
Sulfate	19.8	mg/L	2.0	0.47	2		02/21/18 22:49	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	7.8J	mg/L	10.0	3.1	1		02/23/18 11:46		M1
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.4	mg/L	1.0	0.13	1		02/20/18 20:43	7440-44-0	

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-5M **Lab ID: 60264164005** Collected: 02/15/18 14:05 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	65.5	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:18	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:18	7440-41-7	
Boron	12300	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:18	7440-42-8	
Calcium	51800	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:18	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:18	7440-48-4	
Iron	4790	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:18	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:18	7439-92-1	
Lithium	25.5	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:18	7439-93-2	
Magnesium	11100	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:18	7439-95-4	
Manganese	602	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:18	7439-96-5	
Molybdenum	636	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:18	7439-98-7	
Potassium	4370	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:18	7440-09-7	
Sodium	88200	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:18	7440-23-5	
Total Hardness by 2340B	175000	ug/L	500		1	02/20/18 11:05	02/22/18 13:18		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.047J	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 14:19	7440-36-0	
Arsenic	2.1	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 14:19	7440-38-2	
Cadmium	0.035J	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 14:19	7440-43-9	
Chromium	0.25J	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 14:19	7440-47-3	
Selenium	0.18J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 14:19	7782-49-2	
Thallium	0.052J	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 14:19	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:30	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	181	mg/L	20.0	4.9	1		02/22/18 11:51		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	524	mg/L	5.0	5.0	1		02/22/18 11:04		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:02	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	21.7	mg/L	2.0	0.92	2		02/21/18 23:16	16887-00-6	
Fluoride	0.59	mg/L	0.20	0.063	1		02/21/18 13:46	16984-48-8	
Sulfate	176	mg/L	20.0	4.7	20		02/21/18 23:30	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	16.5	mg/L	10.0	3.1	1		02/23/18 11:47		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	5.1	mg/L	2.0	0.26	2		02/21/18 14:15	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Sample: L-ASD-5D **Lab ID: 60264164006** Collected: 02/15/18 14:30 Received: 02/16/18 23:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium	160	ug/L	5.0	0.91	1	02/20/18 11:05	02/22/18 13:20	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/20/18 11:05	02/22/18 13:20	7440-41-7	
Boron	2740	ug/L	100	3.5	1	02/20/18 11:05	02/22/18 13:20	7440-42-8	
Calcium	114000	ug/L	100	36.0	1	02/20/18 11:05	02/22/18 13:20	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/20/18 11:05	02/22/18 13:20	7440-48-4	
Iron	3300	ug/L	50.0	12.4	1	02/20/18 11:05	02/22/18 13:20	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/20/18 11:05	02/22/18 13:20	7439-92-1	
Lithium	27.7	ug/L	10.0	2.9	1	02/20/18 11:05	02/22/18 13:20	7439-93-2	
Magnesium	29100	ug/L	50.0	15.4	1	02/20/18 11:05	02/22/18 13:20	7439-95-4	
Manganese	439	ug/L	5.0	1.8	1	02/20/18 11:05	02/22/18 13:20	7439-96-5	
Molybdenum	93.1	ug/L	20.0	1.3	1	02/20/18 11:05	02/22/18 13:20	7439-98-7	
Potassium	8200	ug/L	500	52.3	1	02/20/18 11:05	02/22/18 13:20	7440-09-7	
Sodium	51000	ug/L	500	28.4	1	02/20/18 11:05	02/22/18 13:20	7440-23-5	
Total Hardness by 2340B	406000	ug/L	500		1	02/20/18 11:05	02/22/18 13:20		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	1.1	ug/L	1.0	0.026	1	02/20/18 11:05	02/26/18 14:23	7440-36-0	
Arsenic	0.26J	ug/L	1.0	0.052	1	02/20/18 11:05	02/26/18 14:23	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/20/18 11:05	02/26/18 14:23	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	02/20/18 11:05	02/26/18 14:23	7440-47-3	
Selenium	0.24J	ug/L	1.0	0.086	1	02/20/18 11:05	02/26/18 14:23	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/20/18 11:05	02/26/18 14:23	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:32	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	218	mg/L	20.0	4.9	1		02/22/18 12:04		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	679	mg/L	5.0	5.0	1		02/22/18 11:04		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/20/18 11:03	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	9.0	mg/L	1.0	0.46	1		02/21/18 14:00	16887-00-6	
Fluoride	0.16J	mg/L	0.20	0.063	1		02/21/18 14:00	16984-48-8	
Sulfate	311	mg/L	20.0	4.7	20		02/21/18 23:44	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	137	mg/L	10.0	3.1	1		02/23/18 11:47		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	37.4	mg/L	5.0	0.65	5		02/21/18 14:28	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 515020 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2107616 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.046	0.20	0.046	02/22/18 10:07	

LABORATORY CONTROL SAMPLE: 2107617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107618 2107619

Parameter	Units	2107618		2107619		% Rec	% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.								
Mercury	ug/L	<0.046	5	5	5	4.9	5.1	98	101	75-125	3	20	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514763 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2106885 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	02/22/18 12:49	
Beryllium	ug/L	<0.16	1.0	0.16	02/22/18 12:49	
Boron	ug/L	<3.5	100	3.5	02/22/18 12:49	
Calcium	ug/L	<36.0	100	36.0	02/22/18 12:49	
Cobalt	ug/L	<0.73	5.0	0.73	02/22/18 12:49	
Iron	ug/L	<12.4	50.0	12.4	02/22/18 12:49	
Lead	ug/L	<2.4	5.0	2.4	02/22/18 12:49	
Lithium	ug/L	<2.9	10.0	2.9	02/22/18 12:49	
Magnesium	ug/L	<15.4	50.0	15.4	02/22/18 12:49	
Manganese	ug/L	<1.8	5.0	1.8	02/22/18 12:49	
Molybdenum	ug/L	<1.3	20.0	1.3	02/22/18 12:49	
Potassium	ug/L	<52.3	500	52.3	02/22/18 12:49	
Sodium	ug/L	168J	500	28.4	02/22/18 12:49	
Total Hardness by 2340B	ug/L	87.3J	500		02/22/18 12:49	

LABORATORY CONTROL SAMPLE: 2106886

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	967	97	85-115	
Beryllium	ug/L	1000	976	98	85-115	
Boron	ug/L	1000	960	96	85-115	
Calcium	ug/L	10000	9710	97	85-115	
Cobalt	ug/L	1000	983	98	85-115	
Iron	ug/L	10000	9830	98	85-115	
Lead	ug/L	1000	982	98	85-115	
Lithium	ug/L	1000	978	98	85-115	
Magnesium	ug/L	10000	9760	98	85-115	
Manganese	ug/L	1000	973	97	85-115	
Molybdenum	ug/L	1000	977	98	85-115	
Potassium	ug/L	10000	9700	97	85-115	
Sodium	ug/L	10000	9670	97	85-115	
Total Hardness by 2340B	ug/L		64400			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2106887 2106888

Parameter	Units	60264164004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result					
Barium	ug/L	151	1000	1090	1090	94	94	70-130	0	20	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Parameter	Units	60264164004		2106887		2106888		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Beryllium	ug/L	<0.16	1000	1000	962	960	96	96	70-130	0	20			
Boron	ug/L	1440	1000	1000	2320	2330	89	89	70-130	0	20			
Calcium	ug/L	79500	10000	10000	88600	88600	90	90	70-130	0	20			
Cobalt	ug/L	0.90J	1000	1000	931	930	93	93	70-130	0	20			
Iron	ug/L	1100	10000	10000	10600	10600	95	95	70-130	0	20			
Lead	ug/L	<2.4	1000	1000	928	928	93	93	70-130	0	20			
Lithium	ug/L	12.1	1000	1000	978	967	97	96	70-130	1	20			
Magnesium	ug/L	20200	10000	10000	29400	29500	91	92	70-130	0	20			
Manganese	ug/L	182	1000	1000	1120	1120	93	93	70-130	0	20			
Molybdenum	ug/L	87.4	1000	1000	1030	1030	95	95	70-130	0	20			
Potassium	ug/L	3990	10000	10000	13400	13400	94	94	70-130	0	20			
Sodium	ug/L	14400	10000	10000	23800	23700	94	94	70-130	0	20			
Total Hardness by 2340B	ug/L	282000			342000	343000						0		

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514762 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2106881 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	02/26/18 13:51	
Arsenic	ug/L	<0.052	1.0	0.052	02/26/18 13:51	
Cadmium	ug/L	<0.018	0.50	0.018	02/26/18 13:51	
Chromium	ug/L	<0.054	1.0	0.054	02/26/18 13:51	
Selenium	ug/L	<0.086	1.0	0.086	02/26/18 13:51	
Thallium	ug/L	<0.036	1.0	0.036	02/26/18 13:51	

LABORATORY CONTROL SAMPLE: 2106882

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.3	98	85-115	
Arsenic	ug/L	40	40.5	101	85-115	
Cadmium	ug/L	40	39.8	99	85-115	
Chromium	ug/L	40	40.1	100	85-115	
Selenium	ug/L	40	39.3	98	85-115	
Thallium	ug/L	40	38.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2106883 2106884

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60264164004 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	0.18J	40	40	40.7	40.6	101	101	70-130	0	20
Arsenic	ug/L	0.22J	40	40	40.8	41.0	102	102	70-130	0	20
Cadmium	ug/L	<0.018	40	40	39.6	39.9	99	100	70-130	1	20
Chromium	ug/L	0.078J	40	40	40.4	39.8	101	99	70-130	1	20
Selenium	ug/L	0.33J	40	40	39.1	38.8	97	96	70-130	1	20
Thallium	ug/L	<0.036	40	40	41.3	41.4	103	103	70-130	0	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514849

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2107087

Matrix: Water

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	02/22/18 09:59	

LABORATORY CONTROL SAMPLE: 2107088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	524	105	90-110	

SAMPLE DUPLICATE: 2107089

Parameter	Units	60264189004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	450	464	3	10	

SAMPLE DUPLICATE: 2107090

Parameter	Units	60264164004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	318	309	3	10	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 515042

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2107716

Matrix: Water

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	02/22/18 11:02	

LABORATORY CONTROL SAMPLE: 2107717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	963	96	80-120	

SAMPLE DUPLICATE: 2107718

Parameter	Units	60264164004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	317	344	8	10	

SAMPLE DUPLICATE: 2107719

Parameter	Units	60264259002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	452	448	1	10	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514611 Analysis Method: SM 4500-S-2 D
 QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2106309 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	02/20/18 10:55	

LABORATORY CONTROL SAMPLE: 2106310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.50	100	80-120	

MATRIX SPIKE SAMPLE: 2106311

Parameter	Units	60263043001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.59	117	75-125	H1

SAMPLE DUPLICATE: 2106312

Parameter	Units	60263954001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	<0.0048		20	

SAMPLE DUPLICATE: 2106313

Parameter	Units	60264065002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	<0.0048		20	

SAMPLE DUPLICATE: 2106853

Parameter	Units	60264164004 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514860 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2107159 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	02/21/18 17:01	
Fluoride	mg/L	<0.063	0.20	0.063	02/21/18 17:01	
Sulfate	mg/L	<0.24	1.0	0.24	02/21/18 17:01	

LABORATORY CONTROL SAMPLE: 2107160

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	110	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107161 2107162

Parameter	Units	60264164001		2107161		2107162		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Chloride	mg/L	4.9	5	5	10.3	10.6	109	115	80-120	3	15		
Fluoride	mg/L	0.17J	2.5	2.5	2.9	2.9	108	110	80-120	2	15		
Sulfate	mg/L	14.3	5	5	19.9	20.1	112	117	80-120	1	15 E		

MATRIX SPIKE SAMPLE: 2107163

Parameter	Units	60264164004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.1	5	10.5	108	80-120	
Fluoride	mg/L	0.25	2.5	2.9	108	80-120	
Sulfate	mg/L	19.8	10	31.1	113	80-120	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 515021 Analysis Method: EPA 410.4
 QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

METHOD BLANK: 2107629 Matrix: Water
 Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004, 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	02/23/18 11:43	

LABORATORY CONTROL SAMPLE: 2107630

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	52.0	104	90-110	

MATRIX SPIKE SAMPLE: 2107632

Parameter	Units	60264164004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	7.8J	50	67.2	119	90-110	M1

MATRIX SPIKE SAMPLE: 2107633

Parameter	Units	60263939002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	63.4	121	90-110	M1

SAMPLE DUPLICATE: 2107631

Parameter	Units	60264164001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	7.5J	8.4J		25	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514834

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004

METHOD BLANK: 2107040

Matrix: Water

Associated Lab Samples: 60264164001, 60264164002, 60264164003, 60264164004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	02/20/18 16:29	

LABORATORY CONTROL SAMPLE: 2107041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.7	95	80-120	

MATRIX SPIKE SAMPLE: 2107042

Parameter	Units	60264268001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	13.5	5	17.2	73	80-120	M1

SAMPLE DUPLICATE: 2107043

Parameter	Units	60264164004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	2.4	2.3	5	25	

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QUALITY CONTROL DATA

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

QC Batch: 514835

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60264164005, 60264164006

METHOD BLANK: 2107044

Matrix: Water

Associated Lab Samples: 60264164005, 60264164006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	02/21/18 12:46	

LABORATORY CONTROL SAMPLE: 2107045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.6	93	80-120	

MATRIX SPIKE SAMPLE: 2107046

Parameter	Units	60264259003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.5	5	8.1	112	80-120	

SAMPLE DUPLICATE: 2107047

Parameter	Units	60264259004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	0.14J	<0.13		25	

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QUALIFIERS

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

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.

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

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

H1 Analysis conducted outside the EPA method holding time.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264164001	L-ASD-4S	EPA 200.7	514763	EPA 200.7	514785
60264164002	L-ASD-4M	EPA 200.7	514763	EPA 200.7	514785
60264164003	L-ASD-4D	EPA 200.7	514763	EPA 200.7	514785
60264164004	L-ASD-5S	EPA 200.7	514763	EPA 200.7	514785
60264164005	L-ASD-5M	EPA 200.7	514763	EPA 200.7	514785
60264164006	L-ASD-5D	EPA 200.7	514763	EPA 200.7	514785
60264164001	L-ASD-4S	EPA 200.8	514762	EPA 200.8	514781
60264164002	L-ASD-4M	EPA 200.8	514762	EPA 200.8	514781
60264164003	L-ASD-4D	EPA 200.8	514762	EPA 200.8	514781
60264164004	L-ASD-5S	EPA 200.8	514762	EPA 200.8	514781
60264164005	L-ASD-5M	EPA 200.8	514762	EPA 200.8	514781
60264164006	L-ASD-5D	EPA 200.8	514762	EPA 200.8	514781
60264164001	L-ASD-4S	EPA 7470	515020	EPA 7470	515059
60264164002	L-ASD-4M	EPA 7470	515020	EPA 7470	515059
60264164003	L-ASD-4D	EPA 7470	515020	EPA 7470	515059
60264164004	L-ASD-5S	EPA 7470	515020	EPA 7470	515059
60264164005	L-ASD-5M	EPA 7470	515020	EPA 7470	515059
60264164006	L-ASD-5D	EPA 7470	515020	EPA 7470	515059
60264164001	L-ASD-4S	SM 2320B	514849		
60264164002	L-ASD-4M	SM 2320B	514849		
60264164003	L-ASD-4D	SM 2320B	514849		
60264164004	L-ASD-5S	SM 2320B	514849		
60264164005	L-ASD-5M	SM 2320B	514849		
60264164006	L-ASD-5D	SM 2320B	514849		
60264164001	L-ASD-4S	SM 2540C	515042		
60264164002	L-ASD-4M	SM 2540C	515042		
60264164003	L-ASD-4D	SM 2540C	515042		
60264164004	L-ASD-5S	SM 2540C	515042		
60264164005	L-ASD-5M	SM 2540C	515042		
60264164006	L-ASD-5D	SM 2540C	515042		
60264164001	L-ASD-4S	SM 4500-S-2 D	514611		
60264164002	L-ASD-4M	SM 4500-S-2 D	514611		
60264164003	L-ASD-4D	SM 4500-S-2 D	514611		
60264164004	L-ASD-5S	SM 4500-S-2 D	514611		
60264164005	L-ASD-5M	SM 4500-S-2 D	514611		
60264164006	L-ASD-5D	SM 4500-S-2 D	514611		
60264164001	L-ASD-4S	EPA 300.0	514860		
60264164002	L-ASD-4M	EPA 300.0	514860		
60264164003	L-ASD-4D	EPA 300.0	514860		
60264164004	L-ASD-5S	EPA 300.0	514860		
60264164005	L-ASD-5M	EPA 300.0	514860		
60264164006	L-ASD-5D	EPA 300.0	514860		
60264164001	L-ASD-4S	EPA 410.4	515021		
60264164002	L-ASD-4M	EPA 410.4	515021		
60264164003	L-ASD-4D	EPA 410.4	515021		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ameren Labadie Energy Center

Pace Project No.: 60264164

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264164004	L-ASD-5S	EPA 410.4	515021		
60264164005	L-ASD-5M	EPA 410.4	515021		
60264164006	L-ASD-5D	EPA 410.4	515021		
60264164001	L-ASD-4S	SM 5310C	514834		
60264164002	L-ASD-4M	SM 5310C	514834		
60264164003	L-ASD-4D	SM 5310C	514834		
60264164004	L-ASD-5S	SM 5310C	514834		
60264164005	L-ASD-5M	SM 5310C	514835		
60264164006	L-ASD-5D	SM 5310C	514835		

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Sample Condition Upon Receipt

WO#: 60264164



Client Name: Bolker

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-266 T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.2 Corr. Factor CF +0.2 CF -0.1 Corrected 3.4

Date and initials of person examining contents:

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <u>2/19/18</u>
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>NT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A	
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____ Per Jeff, samples labeled as ASD-1 should be ASD-4.

Project Manager Review: Jami Chok _____ Date: 2/16/18

WO#: 60264164

PM: JLS Due Date: 02/26/18
CLIENT: GOLDER STL

CHAIN-OF-CUSTODY / Analysis
 The Chain-of-Custody is a LEGAL DOCUMENT. A



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Goldier Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100 St Charles, MO 63301	Copy To:	Jeffrey Ingram	Company Name:	
Email To:	mhaddock@golder.com	Purchase Order No.:	153106-0001	Address:	
Phone:	636-724-9191	Project Name:	Ameren Labadie Energy Center	Site Location:	MO
Requested Due Date/TAT:	Standard	Project Number:		State:	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DW WATER WASTE WATER PRODUCT SOIL/SOLID OIL SL WP AR PT TS	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES	Requested Analysis Filtered (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB								DATE	TIME
1	Z-ASD-1S				G	W		6	Unpreserved	Analysis Test Fingerprint Metals Fingerprint Metals, Diss COD Alkalinity Chloride/Fluoride/Sulfate TDS TOC Sulfide	
2	Z-ASD-1M				G			1	NaOH - 25 Acetic		
3	Z-ASD-1D				G			1			
4	Z-ASD-5S				G			1			
5	Z-ASD-5S-MS				G			1			
6	Z-ASD-5S-MS-D				G			1			
7	Z-ASD-5M				G			1			
8	Z-ASD-5D				G			1			
9											
10											
11											
12											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		SAMPLE CONDITIONS		
	DATE	TIME	DATE	TIME	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
EPA 200.7: Al, Pb, Li, Ba, Be, B, Ca, Cu, Fe, Mg, Mn, Mo, Ni, K, Ag, Na, Zn, Hardness EPA 200.8: As, Cd, Cr, Se, Sb, Tl	2/16/18	1320	2/16/18	1320	Y	Y	Y
	2/16/18	1700	2/16/18	2300	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider
 SIGNATURE of SAMPLER: *Eric Schneider*
 DATE Signed (MM/DD/YY): 02/16/18



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
RE: **DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60264164**

Project No.: 1531406
Project: Ameren
Email:

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/26/18

Laboratory: Pace Analytical

SDG #: 60264164

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide. 300.0 IC Anions. 410.4 COD. 5310C TOC
 Sample Names: L-ASD-YS, L-ASD-4M, L-ASD-4D, L-ASD-5S, L-ASD-5M, L-ASD-5D

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>2/16/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>N₂(168), TH(87.3),</u> _____
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>LOD, TOC</u> _____
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-ASD-4S	None	—	—	—
L-ASD-4M	Chloride	20.3	D	DF of 2
L	Sulfate	279	D	20
L-ASD-4D	|	400	D	50
L-ASD-5S		19.8	D	2
L-ASD-5D		311	D	20
L-ASD-5M		176	D	20
L		Chloride	21.7	D	2

Signature: *Tammy J. Hood*

Date: 3/26/2018

February 27, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60264259

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 20, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264259001	L-ASD-3S	Water	02/18/18 08:50	02/20/18 03:30
60264259002	L-ASD-3M	Water	02/18/18 10:45	02/20/18 03:30
60264259003	L-ASD-3D	Water	02/18/18 16:50	02/20/18 03:30
60264259004	L-FB-1	Water	02/18/18 08:05	02/20/18 03:30
60264259005	L-RB-1	Water	02/18/18 10:00	02/20/18 03:30

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264259001	L-ASD-3S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264259002	L-ASD-3M	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264259003	L-ASD-3D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264259004	L-FB-1	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264259005	L-RB-1	EPA 200.7	SMW	14	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Sample: L-ASD-3S **Lab ID: 60264259001** Collected: 02/18/18 08:50 Received: 02/20/18 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									
Barium	169	ug/L	5.0	0.91	1	02/21/18 09:00	02/23/18 14:18	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/21/18 09:00	02/23/18 14:18	7440-41-7	
Boron	2610	ug/L	100	3.5	1	02/21/18 09:00	02/23/18 14:18	7440-42-8	
Calcium	75700	ug/L	100	36.0	1	02/21/18 09:00	02/23/18 14:18	7440-70-2	
Cobalt	0.93J	ug/L	5.0	0.73	1	02/21/18 09:00	02/23/18 14:18	7440-48-4	
Iron	3070	ug/L	50.0	12.4	1	02/21/18 09:00	02/23/18 14:18	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/21/18 09:00	02/23/18 14:18	7439-92-1	
Lithium	18.0	ug/L	10.0	2.9	1	02/21/18 09:00	02/23/18 14:18	7439-93-2	
Magnesium	20000	ug/L	50.0	15.4	1	02/21/18 09:00	02/23/18 14:18	7439-95-4	
Manganese	1860	ug/L	5.0	1.8	1	02/21/18 09:00	02/23/18 14:18	7439-96-5	
Molybdenum	93.7	ug/L	20.0	1.3	1	02/21/18 09:00	02/23/18 14:18	7439-98-7	
Potassium	5190	ug/L	500	52.3	1	02/21/18 09:00	02/23/18 14:18	7440-09-7	
Sodium	80200	ug/L	500	28.4	1	02/21/18 09:00	02/23/18 14:18	7440-23-5	
Total Hardness by 2340B	271000	ug/L	500		1	02/21/18 09:00	02/23/18 14:18		
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	0.27J	ug/L	1.0	0.026	1	02/21/18 09:00	02/26/18 18:27	7440-36-0	
Arsenic	30.5	ug/L	1.0	0.052	1	02/21/18 09:00	02/26/18 18:27	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/21/18 09:00	02/26/18 18:27	7440-43-9	
Chromium	0.33J	ug/L	1.0	0.054	1	02/21/18 09:00	02/26/18 18:27	7440-47-3	
Selenium	0.34J	ug/L	1.0	0.086	1	02/21/18 09:00	02/26/18 18:27	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/21/18 09:00	02/26/18 18:27	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:34	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	274	mg/L	20.0	4.9	1		02/23/18 09:28		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	574	mg/L	5.0	5.0	1		02/22/18 11:07		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/22/18 17:02	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	15.5	mg/L	1.0	0.46	1		02/23/18 13:36	16887-00-6	
Fluoride	0.45	mg/L	0.20	0.063	1		02/23/18 13:36	16984-48-8	
Sulfate	145	mg/L	10.0	2.4	10		02/25/18 12:52	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	16.5	mg/L	10.0	3.1	1		02/23/18 12:03		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	5.5	mg/L	1.0	0.13	1		02/23/18 09:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Sample: L-ASD-3M **Lab ID: 60264259002** Collected: 02/18/18 10:45 Received: 02/20/18 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							
Barium	70.6	ug/L	5.0	0.91	1	02/21/18 09:00	02/23/18 14:24	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/21/18 09:00	02/23/18 14:24	7440-41-7	
Boron	3050	ug/L	100	3.5	1	02/21/18 09:00	02/23/18 14:24	7440-42-8	
Calcium	70200	ug/L	100	36.0	1	02/21/18 09:00	02/23/18 14:24	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/21/18 09:00	02/23/18 14:24	7440-48-4	
Iron	319	ug/L	50.0	12.4	1	02/21/18 09:00	02/23/18 14:24	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/21/18 09:00	02/23/18 14:24	7439-92-1	
Lithium	18.1	ug/L	10.0	2.9	1	02/21/18 09:00	02/23/18 14:24	7439-93-2	
Magnesium	6190	ug/L	50.0	15.4	1	02/21/18 09:00	02/23/18 14:24	7439-95-4	
Manganese	173	ug/L	5.0	1.8	1	02/21/18 09:00	02/23/18 14:24	7439-96-5	
Molybdenum	90.3	ug/L	20.0	1.3	1	02/21/18 09:00	02/23/18 14:24	7439-98-7	
Potassium	10800	ug/L	500	52.3	1	02/21/18 09:00	02/23/18 14:24	7440-09-7	
Sodium	46800	ug/L	500	28.4	1	02/21/18 09:00	02/23/18 14:24	7440-23-5	
Total Hardness by 2340B	201000	ug/L	500		1	02/21/18 09:00	02/23/18 14:24		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.14J	ug/L	1.0	0.026	1	02/21/18 09:00	02/26/18 18:30	7440-36-0	
Arsenic	6.5	ug/L	1.0	0.052	1	02/21/18 09:00	02/26/18 18:30	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/21/18 09:00	02/26/18 18:30	7440-43-9	
Chromium	0.12J	ug/L	1.0	0.054	1	02/21/18 09:00	02/26/18 18:30	7440-47-3	
Selenium	0.20J	ug/L	1.0	0.086	1	02/21/18 09:00	02/26/18 18:30	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/21/18 09:00	02/26/18 18:30	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:36	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	113	mg/L	20.0	4.9	1		02/23/18 09:31		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	452	mg/L	5.0	5.0	1		02/22/18 11:08		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/22/18 17:02	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	15.0	mg/L	1.0	0.46	1		02/23/18 14:03	16887-00-6	
Fluoride	0.32	mg/L	0.20	0.063	1		02/23/18 14:03	16984-48-8	
Sulfate	173	mg/L	20.0	4.7	20		02/25/18 13:48	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	5.7J	mg/L	10.0	3.1	1		02/23/18 12:03		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.4	mg/L	1.0	0.13	1		02/23/18 10:09	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Sample: L-ASD-3D **Lab ID: 60264259003** Collected: 02/18/18 16:50 Received: 02/20/18 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							
Barium	138	ug/L	5.0	0.91	1	02/21/18 09:00	02/23/18 14:30	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/21/18 09:00	02/23/18 14:30	7440-41-7	
Boron	5850	ug/L	100	3.5	1	02/21/18 09:00	02/23/18 14:30	7440-42-8	
Calcium	70500	ug/L	100	36.0	1	02/21/18 09:00	02/23/18 14:30	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/21/18 09:00	02/23/18 14:30	7440-48-4	
Iron	21.9J	ug/L	50.0	12.4	1	02/21/18 09:00	02/23/18 14:30	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/21/18 09:00	02/23/18 14:30	7439-92-1	
Lithium	34.5	ug/L	10.0	2.9	1	02/21/18 09:00	02/23/18 14:30	7439-93-2	
Magnesium	12900	ug/L	50.0	15.4	1	02/21/18 09:00	02/23/18 14:30	7439-95-4	
Manganese	111	ug/L	5.0	1.8	1	02/21/18 09:00	02/23/18 14:30	7439-96-5	
Molybdenum	196	ug/L	20.0	1.3	1	02/21/18 09:00	02/23/18 14:30	7439-98-7	
Potassium	12200	ug/L	500	52.3	1	02/21/18 09:00	02/23/18 14:30	7440-09-7	
Sodium	50400	ug/L	500	28.4	1	02/21/18 09:00	02/23/18 14:30	7440-23-5	
Total Hardness by 2340B	229000	ug/L	500		1	02/21/18 09:00	02/23/18 14:30		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	1.4	ug/L	1.0	0.026	1	02/21/18 09:00	02/26/18 18:34	7440-36-0	
Arsenic	4.4	ug/L	1.0	0.052	1	02/21/18 09:00	02/26/18 18:34	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/21/18 09:00	02/26/18 18:34	7440-43-9	
Chromium	0.058J	ug/L	1.0	0.054	1	02/21/18 09:00	02/26/18 18:34	7440-47-3	
Selenium	0.73J	ug/L	1.0	0.086	1	02/21/18 09:00	02/26/18 18:34	7782-49-2	
Thallium	0.067J	ug/L	1.0	0.036	1	02/21/18 09:00	02/26/18 18:34	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:38	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	138	mg/L	20.0	4.9	1		02/23/18 09:35		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	491	mg/L	5.0	5.0	1		02/22/18 11:09		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/22/18 17:03	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	13.9	mg/L	1.0	0.46	1		02/23/18 14:17	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		02/23/18 14:17	16984-48-8	
Sulfate	185	mg/L	20.0	4.7	20		02/25/18 14:02	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	5.8J	mg/L	10.0	3.1	1		02/23/18 12:04		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.5	mg/L	1.0	0.13	1		02/21/18 13:12	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Sample: L-FB-1 **Lab ID: 60264259004** Collected: 02/18/18 08:05 Received: 02/20/18 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							
Barium	<0.91	ug/L	5.0	0.91	1	02/21/18 09:00	02/23/18 14:33	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/21/18 09:00	02/23/18 14:33	7440-41-7	
Boron	35.9J	ug/L	100	3.5	1	02/21/18 09:00	02/23/18 14:33	7440-42-8	B
Calcium	40.5J	ug/L	100	36.0	1	02/21/18 09:00	02/23/18 14:33	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/21/18 09:00	02/23/18 14:33	7440-48-4	
Iron	<12.4	ug/L	50.0	12.4	1	02/21/18 09:00	02/23/18 14:33	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/21/18 09:00	02/23/18 14:33	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	02/21/18 09:00	02/23/18 14:33	7439-93-2	
Magnesium	<15.4	ug/L	50.0	15.4	1	02/21/18 09:00	02/23/18 14:33	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	02/21/18 09:00	02/23/18 14:33	7439-96-5	
Molybdenum	<1.3	ug/L	20.0	1.3	1	02/21/18 09:00	02/23/18 14:33	7439-98-7	
Potassium	90.6J	ug/L	500	52.3	1	02/21/18 09:00	02/23/18 14:33	7440-09-7	B
Sodium	205J	ug/L	500	28.4	1	02/21/18 09:00	02/23/18 14:33	7440-23-5	B
Total Hardness by 2340B	110J	ug/L	500		1	02/21/18 09:00	02/23/18 14:33		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.066J	ug/L	1.0	0.026	1	02/21/18 09:00	02/26/18 18:48	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	02/21/18 09:00	02/26/18 18:48	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/21/18 09:00	02/26/18 18:48	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	02/21/18 09:00	02/26/18 18:48	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	02/21/18 09:00	02/26/18 18:48	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/21/18 09:00	02/26/18 18:48	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:40	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<4.9	mg/L	20.0	4.9	1		02/23/18 09:38		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	82.5	mg/L	5.0	5.0	1		02/22/18 11:09		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/22/18 17:03	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		02/23/18 14:31	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		02/23/18 14:31	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		02/23/18 14:31	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		02/27/18 09:05		M1
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	0.14J	mg/L	1.0	0.13	1		02/21/18 13:37	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Sample: L-RB-1 **Lab ID:** 60264259005 Collected: 02/18/18 10:00 Received: 02/20/18 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							
Barium	<0.91	ug/L	5.0	0.91	1	02/21/18 09:00	02/23/18 14:35	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/21/18 09:00	02/23/18 14:35	7440-41-7	
Boron	25.0J	ug/L	100	3.5	1	02/21/18 09:00	02/23/18 14:35	7440-42-8	B
Calcium	192	ug/L	100	36.0	1	02/21/18 09:00	02/23/18 14:35	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/21/18 09:00	02/23/18 14:35	7440-48-4	
Iron	<12.4	ug/L	50.0	12.4	1	02/21/18 09:00	02/23/18 14:35	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/21/18 09:00	02/23/18 14:35	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	02/21/18 09:00	02/23/18 14:35	7439-93-2	
Magnesium	<15.4	ug/L	50.0	15.4	1	02/21/18 09:00	02/23/18 14:35	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	02/21/18 09:00	02/23/18 14:35	7439-96-5	
Molybdenum	<1.3	ug/L	20.0	1.3	1	02/21/18 09:00	02/23/18 14:35	7439-98-7	
Potassium	<52.3	ug/L	500	52.3	1	02/21/18 09:00	02/23/18 14:35	7440-09-7	
Sodium	94.4J	ug/L	500	28.4	1	02/21/18 09:00	02/23/18 14:35	7440-23-5	B
Total Hardness by 2340B	523	ug/L	500		1	02/21/18 09:00	02/23/18 14:35		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	<0.026	ug/L	1.0	0.026	1	02/21/18 09:00	02/26/18 18:44	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	02/21/18 09:00	02/26/18 18:44	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/21/18 09:00	02/26/18 18:44	7440-43-9	
Chromium	0.12J	ug/L	1.0	0.054	1	02/21/18 09:00	02/26/18 18:44	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	02/21/18 09:00	02/26/18 18:44	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/21/18 09:00	02/26/18 18:44	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/21/18 16:39	02/22/18 10:43	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<4.9	mg/L	20.0	4.9	1		02/23/18 09:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	7.5	mg/L	5.0	5.0	1		02/22/18 11:10		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/22/18 17:03	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		02/23/18 15:12	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		02/23/18 15:12	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		02/23/18 15:12	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		02/27/18 09:05		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	0.14J	mg/L	1.0	0.13	1		02/21/18 14:02	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515020 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107616 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.046	0.20	0.046	02/22/18 10:07	

LABORATORY CONTROL SAMPLE: 2107617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107618 2107619

Parameter	Units	2107618		2107619		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60264164004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.046	5	5	4.9	5.1	98	101	75-125	3	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 514892 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107279 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	02/23/18 14:13	
Beryllium	ug/L	<0.16	1.0	0.16	02/23/18 14:13	
Boron	ug/L	56.4J	100	3.5	02/23/18 14:13	
Calcium	ug/L	<36.0	100	36.0	02/23/18 14:13	
Cobalt	ug/L	<0.73	5.0	0.73	02/23/18 14:13	
Iron	ug/L	<12.4	50.0	12.4	02/23/18 14:13	
Lead	ug/L	<2.4	5.0	2.4	02/23/18 14:13	
Lithium	ug/L	<2.9	10.0	2.9	02/23/18 14:13	
Magnesium	ug/L	<15.4	50.0	15.4	02/23/18 14:13	
Manganese	ug/L	<1.8	5.0	1.8	02/23/18 14:13	
Molybdenum	ug/L	<1.3	20.0	1.3	02/23/18 14:13	
Potassium	ug/L	88.0J	500	52.3	02/23/18 14:13	
Sodium	ug/L	110J	500	28.4	02/23/18 14:13	
Total Hardness by 2340B	ug/L	81.7J	500		02/23/18 14:13	

LABORATORY CONTROL SAMPLE: 2107280

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	988	99	85-115	
Beryllium	ug/L	1000	1010	101	85-115	
Boron	ug/L	1000	1050	105	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Cobalt	ug/L	1000	992	99	85-115	
Iron	ug/L	10000	10200	102	85-115	
Lead	ug/L	1000	990	99	85-115	
Lithium	ug/L	1000	998	100	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Molybdenum	ug/L	1000	985	99	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Sodium	ug/L	10000	10100	101	85-115	
Total Hardness by 2340B	ug/L		67900			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107281 2107282

Parameter	Units	60264259001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Conc.	Spike Conc.	MSD Conc.						
Barium	ug/L	169	1000	1000	1150	1140	98	97	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107281		2107282		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		60264259001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result									MSD Result
Beryllium	ug/L	<0.16	1000	1000	1010	998	101	100	70-130	1	20		
Boron	ug/L	2610	1000	1000	3460	3460	85	85	70-130	0	20		
Calcium	ug/L	75700	10000	10000	84700	85100	90	94	70-130	0	20		
Cobalt	ug/L	0.93J	1000	1000	976	963	98	96	70-130	1	20		
Iron	ug/L	3070	10000	10000	13100	13000	100	99	70-130	1	20		
Lead	ug/L	<2.4	1000	1000	966	958	97	96	70-130	1	20		
Lithium	ug/L	18.0	1000	1000	1010	996	99	98	70-130	1	20		
Magnesium	ug/L	20000	10000	10000	29000	29000	90	90	70-130	0	20		
Manganese	ug/L	1860	1000	1000	2840	2830	98	98	70-130	0	20		
Molybdenum	ug/L	93.7	1000	1000	1090	1070	99	98	70-130	1	20		
Potassium	ug/L	5190	10000	10000	15200	15200	100	100	70-130	0	20		
Sodium	ug/L	80200	10000	10000	89200	89400	90	92	70-130	0	20		
Total Hardness by 2340B	ug/L	271000			331000	332000					0		

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 514897 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107283 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	02/26/18 18:03	
Arsenic	ug/L	<0.052	1.0	0.052	02/26/18 18:03	
Cadmium	ug/L	<0.018	0.50	0.018	02/26/18 18:03	
Chromium	ug/L	<0.054	1.0	0.054	02/26/18 18:03	
Selenium	ug/L	<0.086	1.0	0.086	02/26/18 18:03	
Thallium	ug/L	<0.036	1.0	0.036	02/26/18 18:03	

LABORATORY CONTROL SAMPLE: 2107284

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.6	99	85-115	
Arsenic	ug/L	40	40.6	101	85-115	
Cadmium	ug/L	40	39.7	99	85-115	
Chromium	ug/L	40	40.2	100	85-115	
Selenium	ug/L	40	38.6	96	85-115	
Thallium	ug/L	40	38.7	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107285 2107286

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60264243001 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	2.8	40	40	42.6	42.7	99	100	70-130	0	20
Arsenic	ug/L	0.64J	40	40	41.6	41.6	102	102	70-130	0	20
Cadmium	ug/L	0.060J	40	40	38.1	38.0	95	95	70-130	0	20
Chromium	ug/L	2.3	40	40	42.1	42.0	100	99	70-130	0	20
Selenium	ug/L	14.6	40	40	53.1	53.2	96	97	70-130	0	20
Thallium	ug/L	0.55J	40	40	41.3	41.2	102	102	70-130	0	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515126

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107970

Matrix: Water

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	02/23/18 09:03	

LABORATORY CONTROL SAMPLE: 2107971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	505	101	90-110	

SAMPLE DUPLICATE: 2107972

Parameter	Units	60264029003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	1380	1410	2	10	

SAMPLE DUPLICATE: 2107973

Parameter	Units	60263987001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	151	156	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515042

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107716

Matrix: Water

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	02/22/18 11:02	

LABORATORY CONTROL SAMPLE: 2107717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	963	96	80-120	

SAMPLE DUPLICATE: 2107718

Parameter	Units	60264164004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	317	344	8	10	

SAMPLE DUPLICATE: 2107719

Parameter	Units	60264259002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	452	448	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515146

Analysis Method: SM 4500-S-2 D

QC Batch Method: SM 4500-S-2 D

Analysis Description: 4500S2D Sulfide, Total

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2108036

Matrix: Water

Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	02/22/18 17:02	

LABORATORY CONTROL SAMPLE: 2108037

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.46	92	80-120	

MATRIX SPIKE SAMPLE: 2108038

Parameter	Units	60264259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	<0.0048	.5	0.48	97	75-125	

SAMPLE DUPLICATE: 2108039

Parameter	Units	60264259002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515184 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

METHOD BLANK: 2108290 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	02/23/18 12:28	
Fluoride	mg/L	<0.063	0.20	0.063	02/23/18 12:28	
Sulfate	mg/L	<0.24	1.0	0.24	02/23/18 12:28	

LABORATORY CONTROL SAMPLE: 2108291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2108292 2108293

Parameter	Units	60264243001		MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	56.6	50	50	110	109	106	105	80-120	0	15			
Fluoride	mg/L	0.68J	25	25	26.4	26.4	103	103	80-120	0	15			

MATRIX SPIKE SAMPLE: 2108294

Parameter	Units	60264259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	15.5	5	21.3	117	80-120 E	
Fluoride	mg/L	0.45	2.5	3.0	104	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515354 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60264259001, 60264259002, 60264259003

METHOD BLANK: 2109373 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.24	1.0	0.24	02/25/18 08:41	

LABORATORY CONTROL SAMPLE: 2109374

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2109375 2109376

Parameter	Units	60264243001		2109375		2109376		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec	MSD % Rec
Sulfate	mg/L	792	250	250	899	870	43	31	80-120	3	15 M1

MATRIX SPIKE SAMPLE: 2109377

Parameter	Units	60264259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	145	50	190	90	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515022 Analysis Method: EPA 410.4
 QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
 Associated Lab Samples: 60264259001, 60264259002, 60264259003

METHOD BLANK: 2107635 Matrix: Water
 Associated Lab Samples: 60264259001, 60264259002, 60264259003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	02/23/18 11:53	

LABORATORY CONTROL SAMPLE: 2107636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	48.2	96	90-110	

MATRIX SPIKE SAMPLE: 2107638

Parameter	Units	60264045001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	64.4	50	117	105	90-110	

MATRIX SPIKE SAMPLE: 2107639

Parameter	Units	60264135001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	77.0	50	130	107	90-110	

SAMPLE DUPLICATE: 2107637

Parameter	Units	60263939014 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	5.3J		25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515165 Analysis Method: EPA 410.4

QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD

Associated Lab Samples: 60264259004, 60264259005

METHOD BLANK: 2108074 Matrix: Water

Associated Lab Samples: 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	02/27/18 09:04	

LABORATORY CONTROL SAMPLE: 2108075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	53.7	107	90-110	

MATRIX SPIKE SAMPLE: 2108076

Parameter	Units	60264259004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	50	60.0	114	90-110	M1

MATRIX SPIKE SAMPLE: 2108078

Parameter	Units	60264330003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	36.1	50	90.5	109	90-110	

SAMPLE DUPLICATE: 2108077

Parameter	Units	60264387001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	92.1	78.8	16	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 514835

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60264259003, 60264259004, 60264259005

METHOD BLANK: 2107044

Matrix: Water

Associated Lab Samples: 60264259003, 60264259004, 60264259005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	02/21/18 12:46	

LABORATORY CONTROL SAMPLE: 2107045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.6	93	80-120	

MATRIX SPIKE SAMPLE: 2107046

Parameter	Units	60264259003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.5	5	8.1	112	80-120	

SAMPLE DUPLICATE: 2107047

Parameter	Units	60264259004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	0.14J	<0.13		25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

QC Batch: 515054

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60264259001, 60264259002

METHOD BLANK: 2107753

Matrix: Water

Associated Lab Samples: 60264259001, 60264259002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	02/23/18 09:18	

LABORATORY CONTROL SAMPLE: 2107754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.3	105	80-120	

MATRIX SPIKE SAMPLE: 2107755

Parameter	Units	60264259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5.5	5	11.2	114	80-120	

SAMPLE DUPLICATE: 2107756

Parameter	Units	60264259002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	2.4	2.4	0	25	

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

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.

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

B Analyte was detected in the associated method blank.

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264259001	L-ASD-3S	EPA 200.7	514892	EPA 200.7	514990
60264259002	L-ASD-3M	EPA 200.7	514892	EPA 200.7	514990
60264259003	L-ASD-3D	EPA 200.7	514892	EPA 200.7	514990
60264259004	L-FB-1	EPA 200.7	514892	EPA 200.7	514990
60264259005	L-RB-1	EPA 200.7	514892	EPA 200.7	514990
60264259001	L-ASD-3S	EPA 200.8	514897	EPA 200.8	514988
60264259002	L-ASD-3M	EPA 200.8	514897	EPA 200.8	514988
60264259003	L-ASD-3D	EPA 200.8	514897	EPA 200.8	514988
60264259004	L-FB-1	EPA 200.8	514897	EPA 200.8	514988
60264259005	L-RB-1	EPA 200.8	514897	EPA 200.8	514988
60264259001	L-ASD-3S	EPA 7470	515020	EPA 7470	515059
60264259002	L-ASD-3M	EPA 7470	515020	EPA 7470	515059
60264259003	L-ASD-3D	EPA 7470	515020	EPA 7470	515059
60264259004	L-FB-1	EPA 7470	515020	EPA 7470	515059
60264259005	L-RB-1	EPA 7470	515020	EPA 7470	515059
60264259001	L-ASD-3S	SM 2320B	515126		
60264259002	L-ASD-3M	SM 2320B	515126		
60264259003	L-ASD-3D	SM 2320B	515126		
60264259004	L-FB-1	SM 2320B	515126		
60264259005	L-RB-1	SM 2320B	515126		
60264259001	L-ASD-3S	SM 2540C	515042		
60264259002	L-ASD-3M	SM 2540C	515042		
60264259003	L-ASD-3D	SM 2540C	515042		
60264259004	L-FB-1	SM 2540C	515042		
60264259005	L-RB-1	SM 2540C	515042		
60264259001	L-ASD-3S	SM 4500-S-2 D	515146		
60264259002	L-ASD-3M	SM 4500-S-2 D	515146		
60264259003	L-ASD-3D	SM 4500-S-2 D	515146		
60264259004	L-FB-1	SM 4500-S-2 D	515146		
60264259005	L-RB-1	SM 4500-S-2 D	515146		
60264259001	L-ASD-3S	EPA 300.0	515184		
60264259001	L-ASD-3S	EPA 300.0	515354		
60264259002	L-ASD-3M	EPA 300.0	515184		
60264259002	L-ASD-3M	EPA 300.0	515354		
60264259003	L-ASD-3D	EPA 300.0	515184		
60264259003	L-ASD-3D	EPA 300.0	515354		
60264259004	L-FB-1	EPA 300.0	515184		
60264259005	L-RB-1	EPA 300.0	515184		
60264259001	L-ASD-3S	EPA 410.4	515022		
60264259002	L-ASD-3M	EPA 410.4	515022		
60264259003	L-ASD-3D	EPA 410.4	515022		
60264259004	L-FB-1	EPA 410.4	515165		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264259

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264259005	L-RB-1	EPA 410.4	515165		
60264259001	L-ASD-3S	SM 5310C	515054		
60264259002	L-ASD-3M	SM 5310C	515054		
60264259003	L-ASD-3D	SM 5310C	514835		
60264259004	L-FB-1	SM 5310C	514835		
60264259005	L-RB-1	SM 5310C	514835		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60264259
Barcode
60264259

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-266 T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.5 Corr. Factor 1.7 Corrected 1.7

Date and initials of person examining contents: PV 2/20/18

Temperature should be above freezing to 6°C

Table with 2 columns: Description and Yes/No/N/A checkboxes. Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Lead acetate strip, Potassium iodide test strip, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Jami Chok Date: 2/20/18

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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100 St Charles, MO 63301	Copy To:	Jeffrey Ingram	Company Name:	
Email To:	mhaddock@golder.com	Purchase Order No.:	1531406.0001	Address:	
Phone:	636-724-9191	Project Name:	Ameren Labadie Energy Center	Pace Quote Reference:	
Requested Due Date/TAT:	Standard	Project Number:		Pace Project Manager:	Jamie Church
				Pace Profile #:	9285, line 4

Page: _____ of _____

REGULATORY AGENCY	
NPDES	GROUND WATER
UST	RCRA
	DRINKING WATER
	OTHER

Site Location: _____
STATE: MO

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOLID S OIL O	SAMPLE TYPE (G=RAB C=COMP)	COLLECTED		PRESERVATIVES	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB				
		MATRIX CODE (see valid codes to left)	DATE	TIME				
1	L-ASD-3S 8072110 18724	9	2/19/18	0850	NaOH + Zn Acetate	Y	Y	8072110 18724
2	L-ASD-3M	1	2/19/18	1045		Y	Y	8072110 18724
3	L-ASD-3D	1	2/19/18	1650		Y	Y	8072110 18724
4	L-FB-1	1	2/19/18	0805		Y	Y	8072110 18724
5	L-RB-1	1	2/19/18	1000		Y	Y	8072110 18724
6								
7								
8								
9								
10								
11								
12								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*EPA 200.7: Pb, Li, Ba, Be, B, Ca, Co, Fe, Mg, Mn, Mo, K, Na, Hardness *EPA 200.8: As, Cd, Cr, Se, Sb, Tl	Mark Haddock/Golder	2/19/18	1700	Eric Schneider	2/20/18	0330	Y Y Y Y Y

Temp in C: _____

Received on Ice (Y/N): _____

Custody Sealed Cooler (Y/N): _____

Samples In tact (Y/N): _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: *Eric Schneider*

DATE Signed (MM/DD/YYYY): 2/19/18



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
Project No.: 1531406
Project: Ameren
Email:
RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60264259

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/26/18

Laboratory: Pace Analytical

SDG #: 60264259

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: L-ASD-3S, L-ASD-3M, L-ASD-3D, L-FB-1, L-RB-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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>2/18/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>B(56.4), K(88.0), Na(110), TH(81.7),</u>
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>B(35.9), Ca(40.5), K(90.6), Na(205), TH(110), Sb(0.066),</u> <u>TDS(82.5), TOC(0.14)</u>
c) Were analytes detected in the ^{rinse-water} equipment blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>B(25.0), Ca(192), Na(94.4), TH(523), Cr(0.12), TDS(7.3), TOC(0.14)</u>
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>FB-1 @ ASD-3M</u> <u>RB-1 @ ASD-3S</u>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>COD, Sulfate</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Sulfate</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-ASD-3S	Cr	1.0	U	Blank; PQL > Result > MDL
L	Sulfate	145	D	DF of 10
L-ASD-3M	Sulfate	173	D	L 20
L	Sb	1.0	U	Blank; PQL > Result > MDL
L-ASD-3D	Sulfate	185	D	DF of 20
L-FB-1	B	100	U	Blank; PQL > Result > MDL
L	K	500	U	| |
L	Na	500	U	
L	TH	500	U	
L-RB-1	B	100	U	| |
L	Na	500	U	
<div style="position: absolute; top: 0; left: 0; bottom: 0; right: 0; border: 1px solid black; transform: rotate(45deg); transform-origin: center;"></div>				

Signature: *Tommy J. Goodrich*

Date: 3/26/2018

March 02, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60264456

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 22, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60264456

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264456001	L-ASD-2M	Water	02/20/18 09:05	02/22/18 04:25
60264456002	L-ASD-2S	Water	02/20/18 09:20	02/22/18 04:25
60264456003	L-ASD-2D	Water	02/20/18 15:10	02/22/18 04:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264456001	L-ASD-2M	EPA 200.7	JRS, SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264456002	L-ASD-2S	EPA 200.7	JRS, SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264456003	L-ASD-2D	EPA 200.7	JRS, SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

Sample: L-ASD-2M **Lab ID: 60264456001** Collected: 02/20/18 09:05 Received: 02/22/18 04:25 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							
Barium	125	ug/L	5.0	0.91	1	02/23/18 13:05	02/26/18 18:41	7440-39-3	
Beryllium	0.23J	ug/L	1.0	0.16	1	02/23/18 13:05	02/26/18 18:41	7440-41-7	B
Boron	8550	ug/L	100	3.5	1	02/23/18 13:05	02/26/18 18:41	7440-42-8	
Calcium	101000	ug/L	100	36.0	1	02/23/18 13:05	02/26/18 18:41	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/23/18 13:05	02/26/18 18:41	7440-48-4	
Iron	77.6	ug/L	50.0	12.4	1	02/23/18 13:05	02/26/18 18:41	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/23/18 13:05	02/26/18 18:41	7439-92-1	
Lithium	23.6	ug/L	10.0	2.9	1	02/23/18 13:05	02/27/18 14:58	7439-93-2	
Magnesium	2620	ug/L	50.0	15.4	1	02/23/18 13:05	02/26/18 18:41	7439-95-4	
Manganese	20.6	ug/L	5.0	1.8	1	02/23/18 13:05	02/26/18 18:41	7439-96-5	
Molybdenum	490	ug/L	20.0	1.3	1	02/23/18 13:05	02/26/18 18:41	7439-98-7	
Potassium	14500	ug/L	500	52.3	1	02/23/18 13:05	02/26/18 18:41	7440-09-7	
Sodium	102000	ug/L	500	28.4	1	02/23/18 13:05	02/26/18 18:41	7440-23-5	
Total Hardness by 2340B	263000	ug/L	500		1	02/23/18 13:05	02/26/18 18:41		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	1.9	ug/L	1.0	0.026	1	02/23/18 13:05	02/28/18 15:42	7440-36-0	
Arsenic	44.7	ug/L	1.0	0.052	1	02/23/18 13:05	02/28/18 15:42	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/23/18 13:05	02/28/18 15:42	7440-43-9	
Chromium	1.2	ug/L	1.0	0.054	1	02/23/18 13:05	02/28/18 15:42	7440-47-3	
Selenium	4.2	ug/L	1.0	0.086	1	02/23/18 13:05	02/28/18 15:42	7782-49-2	
Thallium	0.040J	ug/L	1.0	0.036	1	02/23/18 13:05	02/28/18 15:42	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:12	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	64.9	mg/L	20.0	4.9	1		02/28/18 10:45		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	693	mg/L	5.0	5.0	1		02/26/18 13:39		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	0.077	mg/L	0.050	0.0048	1		02/27/18 12:21	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	10.8	mg/L	1.0	0.46	1		02/27/18 17:15	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.063	1		02/27/18 17:15	16984-48-8	
Sulfate	450	mg/L	50.0	11.8	50		02/28/18 12:00	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	5.2J	mg/L	10.0	3.1	1		03/01/18 15:15		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	5.1	mg/L	1.0	0.13	1		02/23/18 18:13	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

Sample: L-ASD-2S **Lab ID: 60264456002** Collected: 02/20/18 09:20 Received: 02/22/18 04:25 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							
Barium	58.9	ug/L	5.0	0.91	1	02/23/18 13:05	02/26/18 18:52	7440-39-3	
Beryllium	0.57J	ug/L	1.0	0.16	1	02/23/18 13:05	02/26/18 18:52	7440-41-7	B
Boron	9520	ug/L	100	3.5	1	02/23/18 13:05	02/26/18 18:52	7440-42-8	
Calcium	110000	ug/L	100	36.0	1	02/23/18 13:05	02/26/18 18:52	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/23/18 13:05	02/26/18 18:52	7440-48-4	
Iron	26.2J	ug/L	50.0	12.4	1	02/23/18 13:05	02/26/18 18:52	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/23/18 13:05	02/26/18 18:52	7439-92-1	
Lithium	5.2J	ug/L	10.0	2.9	1	02/23/18 13:05	02/27/18 15:01	7439-93-2	
Magnesium	655	ug/L	50.0	15.4	1	02/23/18 13:05	02/26/18 18:52	7439-95-4	
Manganese	2.1J	ug/L	5.0	1.8	1	02/23/18 13:05	02/26/18 18:52	7439-96-5	
Molybdenum	445	ug/L	20.0	1.3	1	02/23/18 13:05	02/26/18 18:52	7439-98-7	
Potassium	17500	ug/L	500	52.3	1	02/23/18 13:05	02/26/18 18:52	7440-09-7	
Sodium	87300	ug/L	500	28.4	1	02/23/18 13:05	02/26/18 18:52	7440-23-5	
Total Hardness by 2340B	277000	ug/L	500		1	02/23/18 13:05	02/26/18 18:52		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	1.2	ug/L	1.0	0.026	1	02/23/18 13:05	02/28/18 15:46	7440-36-0	
Arsenic	71.8	ug/L	1.0	0.052	1	02/23/18 13:05	02/28/18 15:46	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/23/18 13:05	02/28/18 15:46	7440-43-9	
Chromium	0.12J	ug/L	1.0	0.054	1	02/23/18 13:05	02/28/18 15:46	7440-47-3	B
Selenium	0.34J	ug/L	1.0	0.086	1	02/23/18 13:05	02/28/18 15:46	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/23/18 13:05	02/28/18 15:46	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:18	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	85.6	mg/L	20.0	4.9	1		02/28/18 10:49		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	705	mg/L	5.0	5.0	1		02/26/18 13:40		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:21	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	11.6	mg/L	1.0	0.46	1		02/27/18 17:29	16887-00-6	
Fluoride	0.096J	mg/L	0.20	0.063	1		02/27/18 17:29	16984-48-8	
Sulfate	421	mg/L	50.0	11.8	50		02/28/18 12:55	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	8.6J	mg/L	10.0	3.1	1		03/01/18 15:15		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	5.0	mg/L	1.0	0.13	1		02/23/18 18:26	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

Sample: L-ASD-2D **Lab ID: 60264456003** Collected: 02/20/18 15:10 Received: 02/22/18 04:25 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							
Barium	136	ug/L	5.0	0.91	1	02/23/18 13:05	02/26/18 18:55	7440-39-3	
Beryllium	0.28J	ug/L	1.0	0.16	1	02/23/18 13:05	02/26/18 18:55	7440-41-7	B
Boron	8130	ug/L	100	3.5	1	02/23/18 13:05	02/26/18 18:55	7440-42-8	M1
Calcium	173000	ug/L	100	36.0	1	02/23/18 13:05	02/26/18 18:55	7440-70-2	M1
Cobalt	<0.73	ug/L	5.0	0.73	1	02/23/18 13:05	02/26/18 18:55	7440-48-4	
Iron	1130	ug/L	50.0	12.4	1	02/23/18 13:05	02/26/18 18:55	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/23/18 13:05	02/26/18 18:55	7439-92-1	
Lithium	26.4	ug/L	10.0	2.9	1	02/23/18 13:05	02/27/18 15:03	7439-93-2	
Magnesium	10100	ug/L	50.0	15.4	1	02/23/18 13:05	02/26/18 18:55	7439-95-4	
Manganese	698	ug/L	5.0	1.8	1	02/23/18 13:05	02/26/18 18:55	7439-96-5	
Molybdenum	392	ug/L	20.0	1.3	1	02/23/18 13:05	02/26/18 18:55	7439-98-7	
Potassium	19400	ug/L	500	52.3	1	02/23/18 13:05	02/26/18 18:55	7440-09-7	
Sodium	151000	ug/L	500	28.4	1	02/23/18 13:05	02/26/18 18:55	7440-23-5	M1
Total Hardness by 2340B	473000	ug/L	500		1	02/23/18 13:05	02/26/18 18:55		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.17J	ug/L	1.0	0.026	1	02/23/18 13:05	02/28/18 15:56	7440-36-0	
Arsenic	0.76J	ug/L	1.0	0.052	1	02/23/18 13:05	02/28/18 15:56	7440-38-2	
Cadmium	0.022J	ug/L	0.50	0.018	1	02/23/18 13:05	02/28/18 15:56	7440-43-9	
Chromium	0.45J	ug/L	1.0	0.054	1	02/23/18 13:05	02/28/18 15:56	7440-47-3	B
Selenium	0.18J	ug/L	1.0	0.086	1	02/23/18 13:05	02/28/18 15:56	7782-49-2	
Thallium	0.045J	ug/L	1.0	0.036	1	02/23/18 13:05	02/28/18 15:56	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:21	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	69.9	mg/L	20.0	4.9	1		02/28/18 10:56		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1110	mg/L	5.0	5.0	1		02/26/18 13:41		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:21	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	17.8	mg/L	1.0	0.46	1		02/27/18 17:43	16887-00-6	
Fluoride	0.15J	mg/L	0.20	0.063	1		02/27/18 17:43	16984-48-8	
Sulfate	792	mg/L	50.0	11.8	50		02/28/18 13:09	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	6.3J	mg/L	10.0	3.1	1		03/01/18 15:15		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.8	mg/L	1.0	0.13	1		02/23/18 18:38	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515603 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2110094 Matrix: Water
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.046	0.20	0.046	02/27/18 14:08	

LABORATORY CONTROL SAMPLE: 2110095

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110096 2110097

Parameter	Units	60264456001		2110096		2110097		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Mercury	ug/L	<0.046	5	5	4.9	4.8	97	96	75-125	1	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515269 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2108508 Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	02/26/18 18:38	
Beryllium	ug/L	0.41J	1.0	0.16	02/26/18 18:38	
Boron	ug/L	<3.5	100	3.5	02/26/18 18:38	
Calcium	ug/L	<36.0	100	36.0	02/26/18 18:38	
Cobalt	ug/L	1.3J	5.0	0.73	02/26/18 18:38	
Iron	ug/L	<12.4	50.0	12.4	02/26/18 18:38	
Lead	ug/L	<2.4	5.0	2.4	02/26/18 18:38	
Lithium	ug/L	<2.9	10.0	2.9	02/27/18 14:48	
Magnesium	ug/L	<15.4	50.0	15.4	02/26/18 18:38	
Manganese	ug/L	<1.8	5.0	1.8	02/26/18 18:38	
Molybdenum	ug/L	1.6J	20.0	1.3	02/26/18 18:38	
Potassium	ug/L	<52.3	500	52.3	02/26/18 18:38	
Sodium	ug/L	105J	500	28.4	02/26/18 18:38	
Total Hardness by 2340B	ug/L	89.2J	500		02/26/18 18:38	

LABORATORY CONTROL SAMPLE: 2108509

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1030	103	85-115	
Beryllium	ug/L	1000	1050	105	85-115	
Boron	ug/L	1000	984	98	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Iron	ug/L	10000	10300	103	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	1000	100	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Manganese	ug/L	1000	1030	103	85-115	
Molybdenum	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	
Total Hardness by 2340B	ug/L		66500			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2108510 2108511

Parameter	Units	60264456001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Barium	ug/L	125	1000	1000	1170	1170	104	104	70-130	0	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2108510												2108511	
Parameter	Units	60264456001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD			
Beryllium	ug/L	0.23J	1000	1000	1060	1070	106	107	70-130	0	20		
Boron	ug/L	8550	1000	1000	9740	9640	119	109	70-130	1	20		
Calcium	ug/L	101000	10000	10000	113000	112000	118	107	70-130	1	20		
Cobalt	ug/L	<0.73	1000	1000	997	994	100	99	70-130	0	20		
Iron	ug/L	77.6	10000	10000	10400	10400	103	104	70-130	0	20		
Lead	ug/L	<2.4	1000	1000	994	995	99	99	70-130	0	20		
Lithium	ug/L	23.6	1000	1000	1090	1090	106	107	70-130	1	20		
Magnesium	ug/L	2620	10000	10000	12400	12400	98	97	70-130	0	20		
Manganese	ug/L	20.6	1000	1000	1050	1050	103	103	70-130	0	20		
Molybdenum	ug/L	490	1000	1000	1520	1510	103	102	70-130	0	20		
Potassium	ug/L	14500	10000	10000	25100	25000	106	105	70-130	1	20		
Sodium	ug/L	102000	10000	10000	114000	113000	118	110	70-130	1	20		
Total Hardness by 2340B	ug/L	263000			333000	330000					1		

MATRIX SPIKE SAMPLE: 2108512							
Parameter	Units	60264456003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	136	1000	1160	102	70-130	
Beryllium	ug/L	0.28J	1000	1030	103	70-130	
Boron	ug/L	8130	1000	8790	66	70-130	M1
Calcium	ug/L	173000	10000	175000	18	70-130	M1
Cobalt	ug/L	<0.73	1000	976	98	70-130	
Iron	ug/L	1130	10000	11200	100	70-130	
Lead	ug/L	<2.4	1000	965	96	70-130	
Lithium	ug/L	26.4	1000	1110	108	70-130	
Magnesium	ug/L	10100	10000	18900	88	70-130	
Manganese	ug/L	698	1000	1660	96	70-130	
Molybdenum	ug/L	392	1000	1390	100	70-130	
Potassium	ug/L	19400	10000	28800	95	70-130	
Sodium	ug/L	151000	10000	157000	65	70-130	M1
Total Hardness by 2340B	ug/L	473000		514000			

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515276 Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2108555 Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	02/28/18 15:35	
Arsenic	ug/L	<0.052	1.0	0.052	02/28/18 15:35	
Cadmium	ug/L	<0.018	0.50	0.018	02/28/18 15:35	
Chromium	ug/L	0.054J	1.0	0.054	02/28/18 15:35	
Selenium	ug/L	<0.086	1.0	0.086	02/28/18 15:35	
Thallium	ug/L	<0.036	1.0	0.036	02/28/18 15:35	

LABORATORY CONTROL SAMPLE: 2108556

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.3	98	85-115	
Arsenic	ug/L	40	40.0	100	85-115	
Cadmium	ug/L	40	39.8	100	85-115	
Chromium	ug/L	40	40.3	101	85-115	
Selenium	ug/L	40	40.1	100	85-115	
Thallium	ug/L	40	39.6	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2108557 2108558

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60264456002 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	1.2	40	40	40.2	40.4	97	98	70-130	1	20
Arsenic	ug/L	71.8	40	40	111	111	98	99	70-130	1	20
Cadmium	ug/L	<0.018	40	40	38.2	38.3	95	96	70-130	0	20
Chromium	ug/L	0.12J	40	40	39.2	39.4	98	98	70-130	0	20
Selenium	ug/L	0.34J	40	40	36.7	38.0	91	94	70-130	3	20
Thallium	ug/L	<0.036	40	40	40.6	41.3	101	103	70-130	2	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515756 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2110728 Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	02/28/18 10:41	

LABORATORY CONTROL SAMPLE: 2110729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	516	103	90-110	

SAMPLE DUPLICATE: 2110730

Parameter	Units	60264456002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	85.6	89.4	4	10	

SAMPLE DUPLICATE: 2110731

Parameter	Units	60264628002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	89.9	91.3	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515380

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2109460

Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	02/26/18 13:38	

LABORATORY CONTROL SAMPLE: 2109461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2109462

Parameter	Units	60264375001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1520	1540	2	10	

SAMPLE DUPLICATE: 2109463

Parameter	Units	60264493002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1500	1580	5	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515570

Analysis Method: SM 4500-S-2 D

QC Batch Method: SM 4500-S-2 D

Analysis Description: 4500S2D Sulfide, Total

Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2109976

Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	02/27/18 12:14	

LABORATORY CONTROL SAMPLE: 2109977

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.53	106	80-120	

MATRIX SPIKE SAMPLE: 2109978

Parameter	Units	60264456001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	0.077	.5	0.64	113	75-125	

SAMPLE DUPLICATE: 2109979

Parameter	Units	60264473001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	0.037J		20	

SAMPLE DUPLICATE: 2109980

Parameter	Units	60264473002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515650 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2110227 Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	02/27/18 10:41	
Fluoride	mg/L	<0.063	0.20	0.063	02/27/18 10:41	

LABORATORY CONTROL SAMPLE: 2110228

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	2.4	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110229 2110230

Parameter	Units	60264388001 Result	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	% Rec	% Rec							
Chloride	mg/L	1660	1000	2750	2700	109	104	80-120	2	15				
Fluoride	mg/L	ND	500	508	508	99	99	80-120	0	15				

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515740

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2110621

Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.24	1.0	0.24	02/28/18 10:52	

LABORATORY CONTROL SAMPLE: 2110622

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110623 2110624

Parameter	Units	60264430001		2110623		2110624		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Sulfate	mg/L	589	500	500	500	1080	1070	98	97	80-120	1	15

MATRIX SPIKE SAMPLE: 2110625

Parameter	Units	60264456001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	450	250	663	85	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515742 Analysis Method: EPA 410.4
 QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2110674 Matrix: Water
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/01/18 15:11	

LABORATORY CONTROL SAMPLE: 2110675

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	48.7	97	90-110	

MATRIX SPIKE SAMPLE: 2110676

Parameter	Units	60264340001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	17600	10000	27000	94	90-110	

MATRIX SPIKE SAMPLE: 2110678

Parameter	Units	60264346001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	617	250	875	103	90-110	

SAMPLE DUPLICATE: 2110677

Parameter	Units	60264432001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	7.6J	5.0J		25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

QC Batch: 515305 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
 Associated Lab Samples: 60264456001, 60264456002, 60264456003

METHOD BLANK: 2108679 Matrix: Water

Associated Lab Samples: 60264456001, 60264456002, 60264456003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	0.24J	1.0	0.13	02/23/18 17:09	

LABORATORY CONTROL SAMPLE: 2108680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	108	80-120	

MATRIX SPIKE SAMPLE: 2108681

Parameter	Units	7582277001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	6.1	5	11.7	111	80-120	

SAMPLE DUPLICATE: 2108682

Parameter	Units	60264473001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	1.6	1.5	3	25	

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264456

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.

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

B Analyte was detected in the associated method blank.

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 CENTER

Pace Project No.: 60264456

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264456001	L-ASD-2M	EPA 200.7	515269	EPA 200.7	515301
60264456002	L-ASD-2S	EPA 200.7	515269	EPA 200.7	515301
60264456003	L-ASD-2D	EPA 200.7	515269	EPA 200.7	515301
60264456001	L-ASD-2M	EPA 200.8	515276	EPA 200.8	515303
60264456002	L-ASD-2S	EPA 200.8	515276	EPA 200.8	515303
60264456003	L-ASD-2D	EPA 200.8	515276	EPA 200.8	515303
60264456001	L-ASD-2M	EPA 7470	515603	EPA 7470	515619
60264456002	L-ASD-2S	EPA 7470	515603	EPA 7470	515619
60264456003	L-ASD-2D	EPA 7470	515603	EPA 7470	515619
60264456001	L-ASD-2M	SM 2320B	515756		
60264456002	L-ASD-2S	SM 2320B	515756		
60264456003	L-ASD-2D	SM 2320B	515756		
60264456001	L-ASD-2M	SM 2540C	515380		
60264456002	L-ASD-2S	SM 2540C	515380		
60264456003	L-ASD-2D	SM 2540C	515380		
60264456001	L-ASD-2M	SM 4500-S-2 D	515570		
60264456002	L-ASD-2S	SM 4500-S-2 D	515570		
60264456003	L-ASD-2D	SM 4500-S-2 D	515570		
60264456001	L-ASD-2M	EPA 300.0	515650		
60264456001	L-ASD-2M	EPA 300.0	515740		
60264456002	L-ASD-2S	EPA 300.0	515650		
60264456002	L-ASD-2S	EPA 300.0	515740		
60264456003	L-ASD-2D	EPA 300.0	515650		
60264456003	L-ASD-2D	EPA 300.0	515740		
60264456001	L-ASD-2M	EPA 410.4	515742		
60264456002	L-ASD-2S	EPA 410.4	515742		
60264456003	L-ASD-2D	EPA 410.4	515742		
60264456001	L-ASD-2M	SM 5310C	515305		
60264456002	L-ASD-2S	SM 5310C	515305		
60264456003	L-ASD-2D	SM 5310C	515305		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60264456
Barcode
60264456

Client Name: Gower

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-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.5 Corr. Factor CF +0.2 CF -0.1 Corrected 1.5

Date and initials of person examining contents: JLS [Signature]

Temperature should be above freezing to 6°C

Table with 2 columns: Question/Field and Yes/No/N/A checkboxes. Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Lead acetate strip, Potassium iodide test strip, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: [Signature] Date: 2/23/18



CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100 St Charles, MO 63301	Copy To:	Jeffrey Ingram	Company Name:	
Email To:	mhaddock@golder.com	Purchase Order No.:		Address:	
Phone:	636-724-9191	Project Name:	Ameren Labadie Energy Center	Pace Quote Reference:	
Requested Due Date/FAT:	Standard	Project Number:		Pace Project Manager:	Jamie Church
				Pace Profile #:	9285, line 4

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WT PRODUCT LIQUID PL SOLID OIL OTHER OT	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test ¹	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/STOP								DATE	TIME
1	L-ASD-2M	G				6	NaOH + CaHClO4	ASD Metals ²	Y		1026456
2	L-ASD-2S	G				6	NaOH + CaHClO4	ASD Metals ²	Y		
3	L-ASD-2D	G				6	NaOH + CaHClO4	ASD Metals ²	Y		
4											
5											
6											
7											
8											
9											
10											
11											
12											

Section D Required Client Information		Section E Requested Analysis Filtered (Y/N)	
Matrix Code		NPDES	GROUND WATER
Sample ID		UST	RCRA
Sample Temp		Site Location	DRINKING WATER
Matrix Type		STATE:	OTHER
Matrix Code		MO	

RELIQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION	
Eric Haddock Golder	02/21/18 1659	Richard Ingram	02/21/18 1700
Richard Ingram	02/21/18 1700	Eric Schneider	02/21/18 0425

SAMPLER NAME AND SIGNATURE		DATE SIGNED (MM/DD/YYYY)	
PRINT Name of SAMPLER:	Eric Schneider	02/21/18	
SIGNATURE of SAMPLER:	<i>Eric Schneider</i>		



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
Project No.: 1531406
Project: Ameren
Email:
RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60264456

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/26/18

Laboratory: Pace Analytical

SDG #: 60264456

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: L-ASD-2S, L-ASD-2M, L-ASD-2D

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grab _____
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW _____
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Be(0.41), G(1.3), Mo(1.6), Ni(105), TH(89.2)</u> <u>Cr(0.054), TdC(0.24),</u> <hr/> <hr/> <hr/>
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<hr/> <hr/> <hr/>
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<hr/> <hr/> <hr/> <hr/>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<hr/> <hr/> <hr/>
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>B, Ca, Na</u> <hr/>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<hr/> <hr/> <hr/>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

March 27, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60264628

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 24, 2018. 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, 3/27/18: B flags removed from Thallium for samples 001-003.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264628001	L-ASD-1S	Water	02/22/18 09:30	02/24/18 04:25
60264628002	L-ASD-1M	Water	02/22/18 15:30	02/24/18 04:25
60264628003	L-ASD-1D	Water	02/22/18 10:10	02/24/18 04:25
60264628004	L-DUP-1	Water	02/22/18 08:00	02/24/18 04:25
60264628005	L-FB-2	Water	02/22/18 13:15	02/24/18 04:25

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264628001	L-ASD-1S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264628002	L-ASD-1M	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264628003	L-ASD-1D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264628004	L-DUP-1	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264628005	L-FB-2	EPA 200.7	SMW	14	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Sample Project No.: 60264628

Sample: L-ASD-1S **Lab ID: 60264628001** Collected: 02/22/18 09:30 Received: 02/24/18 04:25 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							
Barium	136	ug/L	5.0	0.91	1	02/28/18 11:25	03/01/18 11:53	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/28/18 11:25	03/01/18 11:53	7440-41-7	
Boron	7370	ug/L	100	3.5	1	02/28/18 11:25	03/01/18 11:53	7440-42-8	
Calcium	156000	ug/L	100	36.0	1	02/28/18 11:25	03/01/18 11:53	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/28/18 11:25	03/01/18 11:53	7440-48-4	
Iron	223	ug/L	50.0	12.4	1	02/28/18 11:25	03/01/18 11:53	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/28/18 11:25	03/01/18 11:53	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	02/28/18 11:25	03/01/18 11:53	7439-93-2	
Magnesium	9290	ug/L	50.0	15.4	1	02/28/18 11:25	03/01/18 11:53	7439-95-4	
Manganese	484	ug/L	5.0	1.8	1	02/28/18 11:25	03/01/18 11:53	7439-96-5	
Molybdenum	593	ug/L	20.0	1.3	1	02/28/18 11:25	03/01/18 11:53	7439-98-7	
Potassium	11900	ug/L	500	52.3	1	02/28/18 11:25	03/01/18 11:53	7440-09-7	
Sodium	187000	ug/L	500	28.4	1	02/28/18 11:25	03/01/18 11:53	7440-23-5	
Total Hardness by 2340B	428000	ug/L	500		1	02/28/18 11:25	03/01/18 11:53		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.090J	ug/L	1.0	0.026	1	02/28/18 11:25	03/02/18 11:38	7440-36-0	
Arsenic	27.1	ug/L	1.0	0.052	1	02/28/18 11:25	03/02/18 11:38	7440-38-2	
Cadmium	0.11J	ug/L	0.50	0.018	1	02/28/18 11:25	03/02/18 11:38	7440-43-9	
Chromium	0.29J	ug/L	1.0	0.054	1	02/28/18 11:25	03/02/18 11:38	7440-47-3	
Selenium	0.23J	ug/L	1.0	0.086	1	02/28/18 11:25	03/02/18 11:38	7782-49-2	
Thallium	0.054J	ug/L	1.0	0.036	1	02/28/18 11:25	03/02/18 11:38	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:25	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	82.7	mg/L	20.0	4.9	1		02/28/18 11:26		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1140	mg/L	5.0	5.0	1		03/01/18 15:37		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:35	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	14.5	mg/L	1.0	0.46	1		02/28/18 15:27	16887-00-6	
Fluoride	0.097J	mg/L	0.20	0.063	1		02/28/18 15:27	16984-48-8	
Sulfate	708	mg/L	50.0	11.8	50		03/02/18 15:10	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	13.5	mg/L	10.0	3.1	1		03/01/18 15:31		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.6	mg/L	1.0	0.13	1		02/27/18 10:05	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Sample Project No.: 60264628

Sample: L-ASD-1M **Lab ID: 60264628002** Collected: 02/22/18 15:30 Received: 02/24/18 04:25 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							
Barium	177	ug/L	5.0	0.91	1	02/28/18 11:25	03/01/18 11:59	7440-39-3	
Beryllium	0.18J	ug/L	1.0	0.16	1	02/28/18 11:25	03/01/18 11:59	7440-41-7	
Boron	5530	ug/L	100	3.5	1	02/28/18 11:25	03/01/18 11:59	7440-42-8	
Calcium	95600	ug/L	100	36.0	1	02/28/18 11:25	03/01/18 11:59	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/28/18 11:25	03/01/18 11:59	7440-48-4	
Iron	454	ug/L	50.0	12.4	1	02/28/18 11:25	03/01/18 11:59	7439-89-6	
Lead	3.1J	ug/L	5.0	2.4	1	02/28/18 11:25	03/01/18 11:59	7439-92-1	
Lithium	39.6	ug/L	10.0	2.9	1	02/28/18 11:25	03/01/18 11:59	7439-93-2	
Magnesium	11400	ug/L	50.0	15.4	1	02/28/18 11:25	03/01/18 11:59	7439-95-4	
Manganese	21.6	ug/L	5.0	1.8	1	02/28/18 11:25	03/01/18 11:59	7439-96-5	
Molybdenum	334	ug/L	20.0	1.3	1	02/28/18 11:25	03/01/18 11:59	7439-98-7	
Potassium	16300	ug/L	500	52.3	1	02/28/18 11:25	03/01/18 11:59	7440-09-7	
Sodium	124000	ug/L	500	28.4	1	02/28/18 11:25	03/01/18 11:59	7440-23-5	
Total Hardness by 2340B	286000	ug/L	500		1	02/28/18 11:25	03/01/18 11:59		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	1.6	ug/L	1.0	0.026	1	02/28/18 11:25	03/02/18 11:41	7440-36-0	
Arsenic	21.5	ug/L	1.0	0.052	1	02/28/18 11:25	03/02/18 11:41	7440-38-2	
Cadmium	0.070J	ug/L	0.50	0.018	1	02/28/18 11:25	03/02/18 11:41	7440-43-9	
Chromium	1.1	ug/L	1.0	0.054	1	02/28/18 11:25	03/02/18 11:41	7440-47-3	
Selenium	0.74J	ug/L	1.0	0.086	1	02/28/18 11:25	03/02/18 11:41	7782-49-2	
Thallium	0.042J	ug/L	1.0	0.036	1	02/28/18 11:25	03/02/18 11:41	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:27	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	89.9	mg/L	20.0	4.9	1		02/28/18 11:30		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	784	mg/L	5.0	5.0	1		03/01/18 15:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:35	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	10	mg/L	1.0	0.46	1		02/28/18 15:41	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		02/28/18 15:41	16984-48-8	
Sulfate	433	mg/L	50.0	11.8	50		03/02/18 15:24	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	10.2	mg/L	10.0	3.1	1		03/01/18 15:32		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.0	mg/L	1.0	0.13	1		02/27/18 10:31	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Sample Project No.: 60264628

Sample: L-ASD-1D **Lab ID: 60264628003** Collected: 02/22/18 10:10 Received: 02/24/18 04:25 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							
Barium	95.0	ug/L	5.0	0.91	1	02/28/18 11:25	03/01/18 12:01	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/28/18 11:25	03/01/18 12:01	7440-41-7	
Boron	5280	ug/L	100	3.5	1	02/28/18 11:25	03/01/18 12:01	7440-42-8	
Calcium	189000	ug/L	100	36.0	1	02/28/18 11:25	03/01/18 12:01	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/28/18 11:25	03/01/18 12:01	7440-48-4	
Iron	4120	ug/L	50.0	12.4	1	02/28/18 11:25	03/01/18 12:01	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/28/18 11:25	03/01/18 12:01	7439-92-1	
Lithium	18.3	ug/L	10.0	2.9	1	02/28/18 11:25	03/01/18 12:01	7439-93-2	
Magnesium	19400	ug/L	50.0	15.4	1	02/28/18 11:25	03/01/18 12:01	7439-95-4	
Manganese	724	ug/L	5.0	1.8	1	02/28/18 11:25	03/01/18 12:01	7439-96-5	
Molybdenum	336	ug/L	20.0	1.3	1	02/28/18 11:25	03/01/18 12:01	7439-98-7	
Potassium	26600	ug/L	500	52.3	1	02/28/18 11:25	03/01/18 12:01	7440-09-7	
Sodium	234000	ug/L	500	28.4	1	02/28/18 11:25	03/01/18 12:01	7440-23-5	
Total Hardness by 2340B	551000	ug/L	500		1	02/28/18 11:25	03/01/18 12:01		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.068J	ug/L	1.0	0.026	1	02/28/18 11:25	03/02/18 11:51	7440-36-0	
Arsenic	0.27J	ug/L	1.0	0.052	1	02/28/18 11:25	03/02/18 11:51	7440-38-2	
Cadmium	0.044J	ug/L	0.50	0.018	1	02/28/18 11:25	03/02/18 11:51	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	02/28/18 11:25	03/02/18 11:51	7440-47-3	
Selenium	0.17J	ug/L	1.0	0.086	1	02/28/18 11:25	03/02/18 11:51	7782-49-2	
Thallium	0.056J	ug/L	1.0	0.036	1	02/28/18 11:25	03/02/18 11:51	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:34	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	55.4	mg/L	20.0	4.9	1		02/28/18 11:38		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1560	mg/L	5.0	5.0	1		03/01/18 15:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:35	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	18.7	mg/L	1.0	0.46	1		02/28/18 15:56	16887-00-6	
Fluoride	0.093J	mg/L	0.20	0.063	1		02/28/18 15:56	16984-48-8	
Sulfate	978	mg/L	100	23.6	100		03/02/18 15:52	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		03/01/18 15:34		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.3	mg/L	1.0	0.13	1		02/27/18 10:43	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Project No.: 60264628

Sample: L-DUP-1 **Lab ID: 60264628004** Collected: 02/22/18 08:00 Received: 02/24/18 04:25 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							
Barium	133	ug/L	5.0	0.91	1	02/28/18 11:25	03/01/18 12:04	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/28/18 11:25	03/01/18 12:04	7440-41-7	
Boron	7260	ug/L	100	3.5	1	02/28/18 11:25	03/01/18 12:04	7440-42-8	
Calcium	153000	ug/L	100	36.0	1	02/28/18 11:25	03/01/18 12:04	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/28/18 11:25	03/01/18 12:04	7440-48-4	
Iron	156	ug/L	50.0	12.4	1	02/28/18 11:25	03/01/18 12:04	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/28/18 11:25	03/01/18 12:04	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	02/28/18 11:25	03/01/18 12:04	7439-93-2	
Magnesium	9320	ug/L	50.0	15.4	1	02/28/18 11:25	03/01/18 12:04	7439-95-4	
Manganese	483	ug/L	5.0	1.8	1	02/28/18 11:25	03/01/18 12:04	7439-96-5	
Molybdenum	582	ug/L	20.0	1.3	1	02/28/18 11:25	03/01/18 12:04	7439-98-7	
Potassium	11800	ug/L	500	52.3	1	02/28/18 11:25	03/01/18 12:04	7440-09-7	
Sodium	178000	ug/L	500	28.4	1	02/28/18 11:25	03/01/18 12:04	7440-23-5	
Total Hardness by 2340B	420000	ug/L	500		1	02/28/18 11:25	03/01/18 12:04		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.10J	ug/L	1.0	0.026	1	02/28/18 11:25	03/02/18 11:54	7440-36-0	
Arsenic	26.9	ug/L	1.0	0.052	1	02/28/18 11:25	03/02/18 11:54	7440-38-2	
Cadmium	0.10J	ug/L	0.50	0.018	1	02/28/18 11:25	03/02/18 11:54	7440-43-9	
Chromium	0.10J	ug/L	1.0	0.054	1	02/28/18 11:25	03/02/18 11:54	7440-47-3	
Selenium	0.26J	ug/L	1.0	0.086	1	02/28/18 11:25	03/02/18 11:54	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/28/18 11:25	03/02/18 11:54	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:36	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	84.0	mg/L	20.0	4.9	1		02/28/18 11:42		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1150	mg/L	5.0	5.0	1		03/01/18 15:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:36	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	14.4	mg/L	1.0	0.46	1		02/28/18 16:10	16887-00-6	
Fluoride	0.24	mg/L	0.20	0.063	1		02/28/18 16:10	16984-48-8	
Sulfate	690	mg/L	50.0	11.8	50		03/02/18 16:06	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	21.9	mg/L	10.0	3.1	1		03/01/18 15:36		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.7	mg/L	1.0	0.13	1		02/27/18 10:56	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Project No.: 60264628

Sample: L-FB-2 **Lab ID: 60264628005** Collected: 02/22/18 13:15 Received: 02/24/18 04:25 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							
Barium	<0.91	ug/L	5.0	0.91	1	02/28/18 11:25	03/01/18 12:06	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	02/28/18 11:25	03/01/18 12:06	7440-41-7	
Boron	31.7J	ug/L	100	3.5	1	02/28/18 11:25	03/01/18 12:06	7440-42-8	
Calcium	94.1J	ug/L	100	36.0	1	02/28/18 11:25	03/01/18 12:06	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	02/28/18 11:25	03/01/18 12:06	7440-48-4	
Iron	<12.4	ug/L	50.0	12.4	1	02/28/18 11:25	03/01/18 12:06	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	02/28/18 11:25	03/01/18 12:06	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	02/28/18 11:25	03/01/18 12:06	7439-93-2	
Magnesium	<15.4	ug/L	50.0	15.4	1	02/28/18 11:25	03/01/18 12:06	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	02/28/18 11:25	03/01/18 12:06	7439-96-5	
Molybdenum	<1.3	ug/L	20.0	1.3	1	02/28/18 11:25	03/01/18 12:06	7439-98-7	
Potassium	436J	ug/L	500	52.3	1	02/28/18 11:25	03/01/18 12:06	7440-09-7	
Sodium	516	ug/L	500	28.4	1	02/28/18 11:25	03/01/18 12:06	7440-23-5	
Total Hardness by 2340B	263J	ug/L	500		1	02/28/18 11:25	03/01/18 12:06		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.050J	ug/L	1.0	0.026	1	02/28/18 11:25	03/02/18 12:05	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	02/28/18 11:25	03/02/18 12:05	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/28/18 11:25	03/02/18 12:05	7440-43-9	
Chromium	0.092J	ug/L	1.0	0.054	1	02/28/18 11:25	03/02/18 12:05	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	02/28/18 11:25	03/02/18 12:05	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	02/28/18 11:25	03/02/18 12:05	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.046	ug/L	0.20	0.046	1	02/27/18 11:26	02/27/18 14:38	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<4.9	mg/L	20.0	4.9	1		02/28/18 11:46		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		03/01/18 15:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		02/27/18 12:57	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		03/02/18 14:01	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		03/02/18 14:01	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		03/02/18 14:01	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		03/01/18 15:40		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	<0.13	mg/L	1.0	0.13	1		02/27/18 11:47	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515603 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2110094 Matrix: Water
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	02/27/18 14:08	

LABORATORY CONTROL SAMPLE: 2110095

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110096 2110097

Parameter	Units	60264456001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.046	5	5	4.9	4.8	97	96	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515744

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2110679

Matrix: Water

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	03/01/18 11:50	
Beryllium	ug/L	<0.16	1.0	0.16	03/01/18 11:50	
Boron	ug/L	<3.5	100	3.5	03/01/18 11:50	
Calcium	ug/L	<36.0	200	36.0	03/01/18 11:50	
Cobalt	ug/L	<0.73	5.0	0.73	03/01/18 11:50	
Iron	ug/L	<12.4	50.0	12.4	03/01/18 11:50	
Lead	ug/L	<2.4	10.0	2.4	03/01/18 11:50	
Lithium	ug/L	<2.9	10.0	2.9	03/01/18 11:50	
Magnesium	ug/L	<15.4	50.0	15.4	03/01/18 11:50	
Manganese	ug/L	<1.8	5.0	1.8	03/01/18 11:50	
Molybdenum	ug/L	<1.3	20.0	1.3	03/01/18 11:50	
Potassium	ug/L	<52.3	500	52.3	03/01/18 11:50	
Sodium	ug/L	<28.4	500	28.4	03/01/18 11:50	
Total Hardness by 2340B	ug/L	1.4J	500		03/01/18 11:50	

LABORATORY CONTROL SAMPLE: 2110680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1040	104	85-115	
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Cobalt	ug/L	1000	1050	105	85-115	
Iron	ug/L	10000	10400	104	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Molybdenum	ug/L	1000	1050	105	85-115	
Potassium	ug/L	10000	9770	98	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Total Hardness by 2340B	ug/L		67300			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110681

2110682

Parameter	Units	60264628001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Barium	ug/L	136	1000	1000	1190	1170	105	103	70-130	2	20	

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

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Parameter	Units	2110681		2110682		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		60264628001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Beryllium	ug/L	<0.16	1000	1000	1060	1050	106	105	70-130	1	20
Boron	ug/L	7370	1000	1000	8450	8320	108	94	70-130	2	20
Calcium	ug/L	156000	10000	10000	164000	163000	84	71	70-130	1	20
Cobalt	ug/L	<0.73	1000	1000	1040	1020	104	102	70-130	1	20
Iron	ug/L	223	10000	10000	10400	10400	102	102	70-130	0	20
Lead	ug/L	<2.4	1000	1000	978	963	98	96	70-130	2	20
Lithium	ug/L	<2.9	1000	1000	1110	1100	111	110	70-130	1	20
Magnesium	ug/L	9290	10000	10000	19100	18800	98	95	70-130	2	20
Manganese	ug/L	484	1000	1000	1500	1470	101	99	70-130	2	20
Molybdenum	ug/L	593	1000	1000	1640	1610	105	102	70-130	2	20
Potassium	ug/L	11900	10000	10000	22500	22200	106	102	70-130	2	20
Sodium	ug/L	187000	10000	10000	196000	194000	91	73	70-130	1	20
Total Hardness by 2340B	ug/L	428000			489000	485000				1	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515745 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2110683 Matrix: Water
Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/02/18 11:31	
Arsenic	ug/L	<0.052	1.0	0.052	03/02/18 11:31	
Cadmium	ug/L	<0.018	0.50	0.018	03/02/18 11:31	
Chromium	ug/L	<0.054	1.0	0.054	03/02/18 11:31	
Selenium	ug/L	<0.086	1.0	0.086	03/02/18 11:31	
Thallium	ug/L	<0.036	1.0	0.036	03/02/18 11:31	

LABORATORY CONTROL SAMPLE: 2110684

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.4	99	85-115	
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	39.8	100	85-115	
Chromium	ug/L	40	41.0	103	85-115	
Selenium	ug/L	40	38.5	96	85-115	
Thallium	ug/L	40	39.5	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110685 2110686

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60264628002 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	1.6	40	40	40.3	40.3	97	97	70-130	0	20
Arsenic	ug/L	21.5	40	40	60.2	60.4	97	97	70-130	0	20
Cadmium	ug/L	0.070J	40	40	36.8	36.2	92	90	70-130	2	20
Chromium	ug/L	1.1	40	40	40.8	40.6	99	99	70-130	1	20
Selenium	ug/L	0.74J	40	40	37.4	36.2	92	89	70-130	3	20
Thallium	ug/L	0.042J	40	40	37.3	37.8	93	94	70-130	1	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515756 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2110728 Matrix: Water
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.9	20.0	4.9	02/28/18 10:41	

LABORATORY CONTROL SAMPLE: 2110729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	516	103	90-110	

SAMPLE DUPLICATE: 2110730

Parameter	Units	60264456002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	85.6	89.4	4	10	

SAMPLE DUPLICATE: 2110731

Parameter	Units	60264628002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	89.9	91.3	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515940 Analysis Method: SM 2540C
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2111384 Matrix: Water
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/01/18 15:34	

LABORATORY CONTROL SAMPLE: 2111385

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

SAMPLE DUPLICATE: 2111386

Parameter	Units	40165027001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	692	674	3	10	

SAMPLE DUPLICATE: 2111387

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	832	809	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515574 Analysis Method: SM 4500-S-2 D
 QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2109996 Matrix: Water
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	02/27/18 12:32	

LABORATORY CONTROL SAMPLE: 2109997

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.52	104	80-120	

MATRIX SPIKE SAMPLE: 2109998

Parameter	Units	60264531007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.30	60	75-125	M1

SAMPLE DUPLICATE: 2109999

Parameter	Units	60264577001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	0.028J		20	

SAMPLE DUPLICATE: 2110000

Parameter	Units	60264628004 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515783 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004

METHOD BLANK: 2110789 Matrix: Water

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	02/28/18 12:54	
Fluoride	mg/L	<0.063	0.20	0.063	02/28/18 12:54	

LABORATORY CONTROL SAMPLE: 2110790

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	99	90-110	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 516129 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2112226 Matrix: Water
 Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/02/18 11:48	
Fluoride	mg/L	<0.063	0.20	0.063	03/02/18 11:48	
Sulfate	mg/L	<0.24	1.0	0.24	03/02/18 11:48	

LABORATORY CONTROL SAMPLE: 2112227

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2112228 2112229

Parameter	Units	60264566001 Result	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	% Rec	MSD % Rec						
Chloride	mg/L	23.2J	250	250	252	253	91	92	80-120	0	15		
Fluoride	mg/L	<3.1	125	125	125	122	100	97	80-120	3	15		
Sulfate	mg/L	468	250	250	654	619	74	61	80-120	5	15 M1		

MATRIX SPIKE SAMPLE: 2112230

Parameter	Units	60264628002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	433	250	717	114	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60264628

QC Batch: 515742 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2110674 Matrix: Water
Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/01/18 15:11	

LABORATORY CONTROL SAMPLE: 2110675

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	48.7	97	90-110	

MATRIX SPIKE SAMPLE: 2110676

Parameter	Units	60264340001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	17600	10000	27000	94	90-110	

MATRIX SPIKE SAMPLE: 2110678

Parameter	Units	60264346001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	617	250	875	103	90-110	

SAMPLE DUPLICATE: 2110677

Parameter	Units	60264432001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	7.6J	5.0J		25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

QC Batch: 515543

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

METHOD BLANK: 2109835

Matrix: Water

Associated Lab Samples: 60264628001, 60264628002, 60264628003, 60264628004, 60264628005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	02/27/18 09:15	

LABORATORY CONTROL SAMPLE: 2109836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.2	104	80-120	

MATRIX SPIKE SAMPLE: 2109837

Parameter	Units	7582447001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	8.0	5	12.9	97	80-120	

SAMPLE DUPLICATE: 2109838

Parameter	Units	60264628001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	3.6	3.6	1	25	

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

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.

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264628001	L-ASD-1S	EPA 200.7	515744	EPA 200.7	515829
60264628002	L-ASD-1M	EPA 200.7	515744	EPA 200.7	515829
60264628003	L-ASD-1D	EPA 200.7	515744	EPA 200.7	515829
60264628004	L-DUP-1	EPA 200.7	515744	EPA 200.7	515829
60264628005	L-FB-2	EPA 200.7	515744	EPA 200.7	515829
60264628001	L-ASD-1S	EPA 200.8	515745	EPA 200.8	515830
60264628002	L-ASD-1M	EPA 200.8	515745	EPA 200.8	515830
60264628003	L-ASD-1D	EPA 200.8	515745	EPA 200.8	515830
60264628004	L-DUP-1	EPA 200.8	515745	EPA 200.8	515830
60264628005	L-FB-2	EPA 200.8	515745	EPA 200.8	515830
60264628001	L-ASD-1S	EPA 7470	515603	EPA 7470	515619
60264628002	L-ASD-1M	EPA 7470	515603	EPA 7470	515619
60264628003	L-ASD-1D	EPA 7470	515603	EPA 7470	515619
60264628004	L-DUP-1	EPA 7470	515603	EPA 7470	515619
60264628005	L-FB-2	EPA 7470	515603	EPA 7470	515619
60264628001	L-ASD-1S	SM 2320B	515756		
60264628002	L-ASD-1M	SM 2320B	515756		
60264628003	L-ASD-1D	SM 2320B	515756		
60264628004	L-DUP-1	SM 2320B	515756		
60264628005	L-FB-2	SM 2320B	515756		
60264628001	L-ASD-1S	SM 2540C	515940		
60264628002	L-ASD-1M	SM 2540C	515940		
60264628003	L-ASD-1D	SM 2540C	515940		
60264628004	L-DUP-1	SM 2540C	515940		
60264628005	L-FB-2	SM 2540C	515940		
60264628001	L-ASD-1S	SM 4500-S-2 D	515574		
60264628002	L-ASD-1M	SM 4500-S-2 D	515574		
60264628003	L-ASD-1D	SM 4500-S-2 D	515574		
60264628004	L-DUP-1	SM 4500-S-2 D	515574		
60264628005	L-FB-2	SM 4500-S-2 D	515574		
60264628001	L-ASD-1S	EPA 300.0	515783		
60264628001	L-ASD-1S	EPA 300.0	516129		
60264628002	L-ASD-1M	EPA 300.0	515783		
60264628002	L-ASD-1M	EPA 300.0	516129		
60264628003	L-ASD-1D	EPA 300.0	515783		
60264628003	L-ASD-1D	EPA 300.0	516129		
60264628004	L-DUP-1	EPA 300.0	515783		
60264628004	L-DUP-1	EPA 300.0	516129		
60264628005	L-FB-2	EPA 300.0	516129		
60264628001	L-ASD-1S	EPA 410.4	515742		
60264628002	L-ASD-1M	EPA 410.4	515742		
60264628003	L-ASD-1D	EPA 410.4	515742		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60264628

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264628004	L-DUP-1	EPA 410.4	515742		
60264628005	L-FB-2	EPA 410.4	515742		
60264628001	L-ASD-1S	SM 5310C	515543		
60264628002	L-ASD-1M	SM 5310C	515543		
60264628003	L-ASD-1D	SM 5310C	515543		
60264628004	L-DUP-1	SM 5310C	515543		
60264628005	L-FB-2	SM 5310C	515543		

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Sample Condition Upon Receipt

WO#: 60264628
Barcode with number 60264628

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-266 [] T-239 [] Type of Ice: Wet [] Blue [] None []

Cooler Temperature (°C): As-read 1.1/1.5 Corr. Factor CF+0.2/CF-0.1 Corrected 1.3/1.7

Date and initials of person examining contents: 2/24/18

Temperature should be above freezing to 6°C

Table with 2 columns: Question/Requirement and Yes/No/N/A checkboxes. Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels match, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Lead acetate strip, Potassium iodide test strip, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Jamie Chook Date: 2/26/18



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
Project No.: 1531406
Project: Ameren
Email:
RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60264628

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the MDL or detected in a blank below the PQL the results were qualified as non-detects and estimates (UJ).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/26/18

Laboratory: Pace Analytical

SDG #: 60264628

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: L-ASD-1S, L-ASD-1M, L-ASD-1D, L-DUP-1, L-FB-2

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>2/22/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Notations of unacceptable field conditions/performance from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TH(1.4),
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-2 { B(31.7), Ca(94.1), K(432), Na(516), TH(263), Sb(0.050), Cr(0.092),
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DUP-1 @ ASD-15
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-2 @ ASD-1D
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fe ₂ (35.4), Cr ₂ (97.4), Tl ₂ (200), Fluoride(84.9), Cd(47.3)
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sulfide, Sulfate,
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sulfate
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason	
L-ASD-1S	Sulfate	708	D	DF of 50	
| | | | |	Fe	223	J	RPD exceeded limit; Result > MDL	
	Cr	0.29	J	| | | | |	
	Tl	0.054	J		
	Fluoride	0.097	J		
	CoD	13.5	J		
L-DUP-1	Fe	156	J		
| | | | |	Cr	0.10	J	| | | | |	
	Tl	0.036	UJ		; Result < MDL
	Fluoride	0.24	J		; Result > MDL
	CoD	21.9	J		|
	Sulfate	690	D		DF of 50
L-ASD-1M	Sulfate	433	D	DF of 50	
L-ASD-1D	Sulfate	978	D	DF of 100	
|	Sb	1.0	U	Detected in Blank; PQL > Result > MDL	
L-FB-2	None	—	—	—	

Signature: Tommy J. Goodrich

Date: 3/26/2018

March 14, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265051

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 02, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60265051001	L-LCPA-1S	Water	02/28/18 09:45	03/02/18 03:50
60265051002	L-LCPA-1D	Water	02/28/18 15:00	03/02/18 03:50
60265051003	L-DUP-2	Water	02/28/18 09:45	03/02/18 03:50
60265051004	L-LCPA-2S	Water	02/28/18 12:50	03/02/18 03:50
60265051005	L-LCPA-2D	Water	02/28/18 14:45	03/02/18 03:50

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
60265051001	L-LCPA-1S	EPA 200.7	JGP	19	PASI-K		
		EPA 200.7	JRS	18	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 7470	TDS	1	PASI-K		
		SM 2320B	MJK	1	PASI-K		
		SM 2540C	OL	1	PASI-K		
		SM 4500-S-2 D	LDB	1	PASI-K		
		EPA 300.0	AGO	3	PASI-K		
		EPA 410.4	MJK	1	PASI-K		
		SM 5310C	LDF	1	PASI-K		
		60265051002	L-LCPA-1D	EPA 200.7	JGP	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
EPA 200.8	JGP			6	PASI-K		
EPA 200.8	JGP			6	PASI-K		
EPA 7470	TDS			1	PASI-K		
SM 2320B	MJK			1	PASI-K		
SM 2540C	OL			1	PASI-K		
SM 4500-S-2 D	LDB			1	PASI-K		
EPA 300.0	AGO			3	PASI-K		
EPA 410.4	MJK			1	PASI-K		
SM 5310C	LDF			1	PASI-K		
60265051003	L-DUP-2			EPA 200.7	JGP	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
		EPA 200.8	JGP	6	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 7470	TDS	1	PASI-K		
		SM 2320B	MJK	1	PASI-K		
		SM 2540C	OL	1	PASI-K		
		SM 4500-S-2 D	LDB	1	PASI-K		
		EPA 300.0	AGO	3	PASI-K		
		EPA 410.4	MJK	1	PASI-K		
		SM 5310C	LDF	1	PASI-K		
		60265051004	L-LCPA-2S	EPA 200.7	JGP	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
EPA 200.8	JGP			6	PASI-K		
EPA 200.8	JGP			6	PASI-K		

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265051005	L-LCPA-2D	EPA 200.7	JGP	19	PASI-K
		EPA 200.7	JRS	18	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-1S Lab ID: 60265051001 Collected: 02/28/18 09:45 Received: 03/02/18 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									
Aluminum	2740	ug/L	75.0	28.8	1	03/05/18 15:00	03/07/18 11:48	7429-90-5	
Barium	45.7	ug/L	5.0	0.91	1	03/05/18 15:00	03/07/18 11:48	7440-39-3	
Beryllium	0.24J	ug/L	1.0	0.16	1	03/05/18 15:00	03/07/18 11:48	7440-41-7	
Boron	10300	ug/L	100	3.5	1	03/05/18 15:00	03/07/18 11:48	7440-42-8	
Calcium	97100	ug/L	100	36.0	1	03/05/18 15:00	03/07/18 11:48	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/05/18 15:00	03/07/18 11:48	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/05/18 15:00	03/07/18 11:48	7440-50-8	
Iron	138	ug/L	50.0	12.4	1	03/05/18 15:00	03/07/18 11:48	7439-89-6	
Lead	2.7J	ug/L	5.0	2.4	1	03/05/18 15:00	03/07/18 11:48	7439-92-1	
Lithium	40.6	ug/L	10.0	2.9	1	03/05/18 15:00	03/07/18 11:48	7439-93-2	
Magnesium	184	ug/L	50.0	15.4	1	03/05/18 15:00	03/07/18 11:48	7439-95-4	
Manganese	3.2J	ug/L	5.0	1.8	1	03/05/18 15:00	03/07/18 11:48	7439-96-5	
Molybdenum	235	ug/L	20.0	1.3	1	03/05/18 15:00	03/07/18 11:48	7439-98-7	
Nickel	3.2J	ug/L	5.0	2.3	1	03/05/18 15:00	03/07/18 11:48	7440-02-0	
Potassium	17800	ug/L	500	52.3	1	03/05/18 15:00	03/07/18 11:48	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/05/18 15:00	03/07/18 11:48	7440-22-4	
Sodium	71100	ug/L	500	28.4	1	03/05/18 15:00	03/07/18 11:48	7440-23-5	
Total Hardness by 2340B	243000	ug/L	500		1	03/05/18 15:00	03/07/18 11:48		
Zinc	13.3J	ug/L	50.0	11.2	1	03/05/18 15:00	03/07/18 11:48	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	2590	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:29	7429-90-5	
Barium, Dissolved	43.4	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:29	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:29	7440-41-7	
Boron, Dissolved	10200	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:29	7440-42-8	
Calcium, Dissolved	98400	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:29	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:29	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:29	7440-50-8	
Iron, Dissolved	18.8J	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:29	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:29	7439-92-1	
Lithium, Dissolved	41.4	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:29	7439-93-2	D9
Magnesium, Dissolved	126	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:29	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:29	7439-96-5	
Molybdenum, Dissolved	238	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:29	7439-98-7	D9
Nickel, Dissolved	2.3J	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:29	7440-02-0	
Potassium, Dissolved	17100	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:29	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:29	7440-22-4	
Sodium, Dissolved	69200	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:29	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:29	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	1.8	ug/L	1.0	0.026	1	03/05/18 15:00	03/12/18 23:56	7440-36-0	
Arsenic	71.1	ug/L	1.0	0.052	1	03/05/18 15:00	03/12/18 23:56	7440-38-2	
Cadmium	0.047J	ug/L	0.50	0.018	1	03/05/18 15:00	03/12/18 23:56	7440-43-9	
Chromium	0.73J	ug/L	1.0	0.054	1	03/05/18 15:00	03/12/18 23:56	7440-47-3	B
Selenium	0.73J	ug/L	1.0	0.086	1	03/05/18 15:00	03/12/18 23:56	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-1S **Lab ID: 60265051001** Collected: 02/28/18 09:45 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.12J	ug/L	1.0	0.036	1	03/05/18 15:00	03/13/18 13:28	7440-28-0	B
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	1.7	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 01:43	7440-36-0	
Arsenic, Dissolved	73.9	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 01:43	7440-38-2	D9
Cadmium, Dissolved	<0.018	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 01:43	7440-43-9	
Chromium, Dissolved	0.78J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 01:43	7440-47-3	
Selenium, Dissolved	0.85J	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 01:43	7782-49-2	
Thallium, Dissolved	0.11J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 13:59	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:26	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	120	mg/L	20.0	4.9	1		03/08/18 12:42		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	575	mg/L	5.0	5.0	1		03/07/18 09:40		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:05	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	18.9	mg/L	1.0	0.46	1		03/06/18 15:59	16887-00-6	
Fluoride	0.088J	mg/L	0.20	0.063	1		03/06/18 15:59	16984-48-8	
Sulfate	267	mg/L	25.0	5.9	25		03/08/18 19:42	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	10.7	mg/L	10.0	3.1	1		03/09/18 13:44		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	3.3	mg/L	1.0	0.13	1		03/06/18 09:38	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-1D **Lab ID: 60265051002** Collected: 02/28/18 15:00 Received: 03/02/18 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									
Aluminum	2590	ug/L	75.0	28.8	1	03/05/18 15:00	03/07/18 11:50	7429-90-5	
Barium	45.6	ug/L	5.0	0.91	1	03/05/18 15:00	03/07/18 11:50	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/05/18 15:00	03/07/18 11:50	7440-41-7	
Boron	10000	ug/L	100	3.5	1	03/05/18 15:00	03/07/18 11:50	7440-42-8	
Calcium	78200	ug/L	100	36.0	1	03/05/18 15:00	03/07/18 11:50	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/05/18 15:00	03/07/18 11:50	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/05/18 15:00	03/07/18 11:50	7440-50-8	
Iron	178	ug/L	50.0	12.4	1	03/05/18 15:00	03/07/18 11:50	7439-89-6	
Lead	3.5J	ug/L	5.0	2.4	1	03/05/18 15:00	03/07/18 11:50	7439-92-1	
Lithium	34.6	ug/L	10.0	2.9	1	03/05/18 15:00	03/07/18 11:50	7439-93-2	
Magnesium	4470	ug/L	50.0	15.4	1	03/05/18 15:00	03/07/18 11:50	7439-95-4	
Manganese	4.1J	ug/L	5.0	1.8	1	03/05/18 15:00	03/07/18 11:50	7439-96-5	
Molybdenum	231	ug/L	20.0	1.3	1	03/05/18 15:00	03/07/18 11:50	7439-98-7	
Nickel	4.6J	ug/L	5.0	2.3	1	03/05/18 15:00	03/07/18 11:50	7440-02-0	
Potassium	14000	ug/L	500	52.3	1	03/05/18 15:00	03/07/18 11:50	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/05/18 15:00	03/07/18 11:50	7440-22-4	
Sodium	60000	ug/L	500	28.4	1	03/05/18 15:00	03/07/18 11:50	7440-23-5	
Total Hardness by 2340B	214000	ug/L	500		1	03/05/18 15:00	03/07/18 11:50		
Zinc	15.0J	ug/L	50.0	11.2	1	03/05/18 15:00	03/07/18 11:50	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	2320	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:31	7429-90-5	
Barium, Dissolved	45.6	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:31	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:31	7440-41-7	
Boron, Dissolved	9780	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:31	7440-42-8	
Calcium, Dissolved	77900	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:31	7440-70-2	
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:31	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:31	7440-50-8	
Iron, Dissolved	38.2J	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:31	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:31	7439-92-1	
Lithium, Dissolved	33.7	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:31	7439-93-2	
Magnesium, Dissolved	4180	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:31	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:31	7439-96-5	
Molybdenum, Dissolved	231	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:31	7439-98-7	
Nickel, Dissolved	3.4J	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:31	7440-02-0	
Potassium, Dissolved	13600	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:31	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:31	7440-22-4	
Sodium, Dissolved	58500	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:31	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:31	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	10.4	ug/L	1.0	0.026	1	03/05/18 15:00	03/13/18 00:17	7440-36-0	
Arsenic	22.1	ug/L	1.0	0.052	1	03/05/18 15:00	03/13/18 00:17	7440-38-2	
Cadmium	0.072J	ug/L	0.50	0.018	1	03/05/18 15:00	03/13/18 00:17	7440-43-9	
Chromium	1.4	ug/L	1.0	0.054	1	03/05/18 15:00	03/13/18 00:17	7440-47-3	
Selenium	6.0	ug/L	1.0	0.086	1	03/05/18 15:00	03/13/18 00:17	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-1D **Lab ID: 60265051002** Collected: 02/28/18 15:00 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	1.6	ug/L	1.0	0.036	1	03/05/18 15:00	03/13/18 13:34	7440-28-0	
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	10.9	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 01:56	7440-36-0	D9
Arsenic, Dissolved	23.1	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 01:56	7440-38-2	D9
Cadmium, Dissolved	0.048J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 01:56	7440-43-9	
Chromium, Dissolved	0.75J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 01:56	7440-47-3	
Selenium, Dissolved	6.1	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 01:56	7782-49-2	D9
Thallium, Dissolved	1.7	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:06	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:28	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	77.6	mg/L	20.0	4.9	1		03/08/18 12:47		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	528	mg/L	5.0	5.0	1		03/07/18 09:43		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:05	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	15.2	mg/L	1.0	0.46	1		03/06/18 16:13	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.063	1		03/06/18 16:13	16984-48-8	
Sulfate	257	mg/L	25.0	5.9	25		03/08/18 19:56	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	37.4	mg/L	10.0	3.1	1		03/09/18 13:45		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	10.7	mg/L	1.0	0.13	1		03/06/18 10:03	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-DUP-2 Lab ID: 60265051003 Collected: 02/28/18 09:45 Received: 03/02/18 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									
Aluminum	2620	ug/L	75.0	28.8	1	03/05/18 15:00	03/07/18 11:57	7429-90-5	
Barium	44.4	ug/L	5.0	0.91	1	03/05/18 15:00	03/07/18 11:57	7440-39-3	
Beryllium	0.28J	ug/L	1.0	0.16	1	03/05/18 15:00	03/07/18 11:57	7440-41-7	
Boron	10400	ug/L	100	3.5	1	03/05/18 15:00	03/07/18 11:57	7440-42-8	
Calcium	97300	ug/L	100	36.0	1	03/05/18 15:00	03/07/18 11:57	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/05/18 15:00	03/07/18 11:57	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/05/18 15:00	03/07/18 11:57	7440-50-8	
Iron	23.8J	ug/L	50.0	12.4	1	03/05/18 15:00	03/07/18 11:57	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/05/18 15:00	03/07/18 11:57	7439-92-1	
Lithium	42.4	ug/L	10.0	2.9	1	03/05/18 15:00	03/07/18 11:57	7439-93-2	
Magnesium	116	ug/L	50.0	15.4	1	03/05/18 15:00	03/07/18 11:57	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/05/18 15:00	03/07/18 11:57	7439-96-5	
Molybdenum	238	ug/L	20.0	1.3	1	03/05/18 15:00	03/07/18 11:57	7439-98-7	
Nickel	2.7J	ug/L	5.0	2.3	1	03/05/18 15:00	03/07/18 11:57	7440-02-0	
Potassium	17800	ug/L	500	52.3	1	03/05/18 15:00	03/07/18 11:57	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/05/18 15:00	03/07/18 11:57	7440-22-4	
Sodium	71200	ug/L	500	28.4	1	03/05/18 15:00	03/07/18 11:57	7440-23-5	
Total Hardness by 2340B	243000	ug/L	500		1	03/05/18 15:00	03/07/18 11:57		
Zinc	24.1J	ug/L	50.0	11.2	1	03/05/18 15:00	03/07/18 11:57	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	2670	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:38	7429-90-5	D9
Barium, Dissolved	45.0	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:38	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:38	7440-41-7	
Boron, Dissolved	10700	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:38	7440-42-8	D9
Calcium, Dissolved	102000	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:38	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:38	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:38	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:38	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:38	7439-92-1	
Lithium, Dissolved	43.2	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:38	7439-93-2	D9
Magnesium, Dissolved	127	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:38	7439-95-4	D9
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:38	7439-96-5	
Molybdenum, Dissolved	246	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:38	7439-98-7	D9
Nickel, Dissolved	2.7J	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:38	7440-02-0	
Potassium, Dissolved	17700	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:38	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:38	7440-22-4	
Sodium, Dissolved	71300	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:38	7440-23-5	D9
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:38	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	1.7	ug/L	1.0	0.026	1	03/05/18 15:00	03/13/18 00:21	7440-36-0	
Arsenic	71.5	ug/L	1.0	0.052	1	03/05/18 15:00	03/13/18 00:21	7440-38-2	
Cadmium	0.021J	ug/L	0.50	0.018	1	03/05/18 15:00	03/13/18 00:21	7440-43-9	
Chromium	0.26J	ug/L	1.0	0.054	1	03/05/18 15:00	03/13/18 00:21	7440-47-3	B
Selenium	0.80J	ug/L	1.0	0.086	1	03/05/18 15:00	03/13/18 00:21	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-DUP-2 **Lab ID: 60265051003** Collected: 02/28/18 09:45 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.10J	ug/L	1.0	0.036	1	03/05/18 15:00	03/13/18 13:36	7440-28-0	B
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	1.8	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:00	7440-36-0	D9
Arsenic, Dissolved	73.4	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:00	7440-38-2	D9
Cadmium, Dissolved	<0.018	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:00	7440-43-9	
Chromium, Dissolved	0.16J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:00	7440-47-3	B
Selenium, Dissolved	0.74J	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:00	7782-49-2	
Thallium, Dissolved	0.090J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:08	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:31	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	121	mg/L	20.0	4.9	1		03/08/18 12:52		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	580	mg/L	5.0	5.0	1		03/07/18 09:44		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:06	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	19.0	mg/L	1.0	0.46	1		03/06/18 16:27	16887-00-6	
Fluoride	0.088J	mg/L	0.20	0.063	1		03/06/18 16:27	16984-48-8	
Sulfate	266	mg/L	25.0	5.9	25		03/08/18 20:10	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	9.1J	mg/L	10.0	3.1	1		03/09/18 13:45		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	3.3	mg/L	1.0	0.13	1		03/06/18 10:29	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-2S **Lab ID: 60265051004** Collected: 02/28/18 12:50 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
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200.7 Metals, Total

Analytical Method: EPA 200.7 Preparation Method: EPA 200.7

Aluminum	1110	ug/L	75.0	28.8	1	03/05/18 15:00	03/07/18 12:00	7429-90-5	
Barium	89.5	ug/L	5.0	0.91	1	03/05/18 15:00	03/07/18 12:00	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/05/18 15:00	03/07/18 12:00	7440-41-7	
Boron	3360	ug/L	100	3.5	1	03/05/18 15:00	03/07/18 12:00	7440-42-8	
Calcium	76500	ug/L	100	36.0	1	03/05/18 15:00	03/07/18 12:00	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/05/18 15:00	03/07/18 12:00	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/05/18 15:00	03/07/18 12:00	7440-50-8	
Iron	27.9J	ug/L	50.0	12.4	1	03/05/18 15:00	03/07/18 12:00	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/05/18 15:00	03/07/18 12:00	7439-92-1	
Lithium	5.5J	ug/L	10.0	2.9	1	03/05/18 15:00	03/07/18 12:00	7439-93-2	
Magnesium	45500	ug/L	50.0	15.4	1	03/05/18 15:00	03/07/18 12:00	7439-95-4	
Manganese	39.2	ug/L	5.0	1.8	1	03/05/18 15:00	03/07/18 12:00	7439-96-5	
Molybdenum	83.7	ug/L	20.0	1.3	1	03/05/18 15:00	03/07/18 12:00	7439-98-7	
Nickel	<2.3	ug/L	5.0	2.3	1	03/05/18 15:00	03/07/18 12:00	7440-02-0	
Potassium	3540	ug/L	500	52.3	1	03/05/18 15:00	03/07/18 12:00	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/05/18 15:00	03/07/18 12:00	7440-22-4	
Sodium	67200	ug/L	500	28.4	1	03/05/18 15:00	03/07/18 12:00	7440-23-5	
Total Hardness by 2340B	378000	ug/L	500		1	03/05/18 15:00	03/07/18 12:00		
Zinc	19.6J	ug/L	50.0	11.2	1	03/05/18 15:00	03/07/18 12:00	7440-66-6	

200.7 Metals, Dissolved

Analytical Method: EPA 200.7 Preparation Method: EPA 200.7

Aluminum, Dissolved	1200	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:40	7429-90-5	D9
Barium, Dissolved	89.7	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:40	7440-39-3	D9
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:40	7440-41-7	
Boron, Dissolved	3260	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:40	7440-42-8	
Calcium, Dissolved	77900	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:40	7440-70-2	D9
Cobalt, Dissolved	1.0J	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:40	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:40	7440-50-8	
Iron, Dissolved	86.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:40	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:40	7439-92-1	
Lithium, Dissolved	7.3J	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:40	7439-93-2	
Magnesium, Dissolved	46800	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:40	7439-95-4	D9
Manganese, Dissolved	41.5	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:40	7439-96-5	D9
Molybdenum, Dissolved	79.7	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:40	7439-98-7	
Nickel, Dissolved	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:40	7440-02-0	
Potassium, Dissolved	3430	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:40	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:40	7440-22-4	
Sodium, Dissolved	66100	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:40	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:40	7440-66-6	

200.8 MET ICPMS

Analytical Method: EPA 200.8 Preparation Method: EPA 200.8

Antimony	3.8	ug/L	1.0	0.026	1	03/05/18 15:00	03/13/18 00:26	7440-36-0	
Arsenic	9.2	ug/L	1.0	0.052	1	03/05/18 15:00	03/13/18 00:26	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	03/05/18 15:00	03/13/18 00:26	7440-43-9	
Chromium	1.7	ug/L	1.0	0.054	1	03/05/18 15:00	03/13/18 00:26	7440-47-3	
Selenium	1.5	ug/L	1.0	0.086	1	03/05/18 15:00	03/13/18 00:26	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-2S **Lab ID: 60265051004** Collected: 02/28/18 12:50 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.61J	ug/L	1.0	0.036	1	03/05/18 15:00	03/13/18 13:38	7440-28-0	B
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	3.6	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:04	7440-36-0	
Arsenic, Dissolved	9.4	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:04	7440-38-2	D9
Cadmium, Dissolved	0.019J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:04	7440-43-9	
Chromium, Dissolved	0.94J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:04	7440-47-3	
Selenium, Dissolved	1.3	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:04	7782-49-2	
Thallium, Dissolved	0.66J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:10	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:33	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	208	mg/L	20.0	4.9	1		03/08/18 12:56		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	606	mg/L	5.0	5.0	1		03/07/18 09:44		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:06	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	25.5	mg/L	2.0	0.92	2		03/08/18 21:05	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.063	1		03/06/18 16:54	16984-48-8	
Sulfate	254	mg/L	25.0	5.9	25		03/08/18 20:51	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	11.1	mg/L	10.0	3.1	1		03/09/18 13:45		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	3.3	mg/L	1.0	0.13	1		03/06/18 10:41	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-2D Lab ID: 60265051005 Collected: 02/28/18 14:45 Received: 03/02/18 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									
Aluminum	1310	ug/L	75.0	28.8	1	03/05/18 15:00	03/07/18 12:02	7429-90-5	
Barium	71.2	ug/L	5.0	0.91	1	03/05/18 15:00	03/07/18 12:02	7440-39-3	
Beryllium	0.27J	ug/L	1.0	0.16	1	03/05/18 15:00	03/07/18 12:02	7440-41-7	
Boron	21700	ug/L	100	3.5	1	03/05/18 15:00	03/07/18 12:02	7440-42-8	
Calcium	106000	ug/L	100	36.0	1	03/05/18 15:00	03/07/18 12:02	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/05/18 15:00	03/07/18 12:02	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/05/18 15:00	03/07/18 12:02	7440-50-8	
Iron	86.9	ug/L	50.0	12.4	1	03/05/18 15:00	03/07/18 12:02	7439-89-6	
Lead	2.7J	ug/L	5.0	2.4	1	03/05/18 15:00	03/07/18 12:02	7439-92-1	
Lithium	61.4	ug/L	10.0	2.9	1	03/05/18 15:00	03/07/18 12:02	7439-93-2	
Magnesium	5430	ug/L	50.0	15.4	1	03/05/18 15:00	03/07/18 12:02	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/05/18 15:00	03/07/18 12:02	7439-96-5	
Molybdenum	1430	ug/L	20.0	1.3	1	03/05/18 15:00	03/07/18 12:02	7439-98-7	
Nickel	9.3	ug/L	5.0	2.3	1	03/05/18 15:00	03/07/18 12:02	7440-02-0	
Potassium	42100	ug/L	500	52.3	1	03/05/18 15:00	03/07/18 12:02	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/05/18 15:00	03/07/18 12:02	7440-22-4	
Sodium	50500	ug/L	500	28.4	1	03/05/18 15:00	03/07/18 12:02	7440-23-5	
Total Hardness by 2340B	288000	ug/L	500		1	03/05/18 15:00	03/07/18 12:02		
Zinc	<11.2	ug/L	50.0	11.2	1	03/05/18 15:00	03/07/18 12:02	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	1200	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:42	7429-90-5	
Barium, Dissolved	70.8	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:42	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:42	7440-41-7	
Boron, Dissolved	21700	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:42	7440-42-8	
Calcium, Dissolved	111000	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:42	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:42	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:42	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:42	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:42	7439-92-1	
Lithium, Dissolved	63.0	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:42	7439-93-2	D9
Magnesium, Dissolved	5480	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:42	7439-95-4	D9
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:42	7439-96-5	
Molybdenum, Dissolved	1460	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:42	7439-98-7	D9
Nickel, Dissolved	8.8	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:42	7440-02-0	
Potassium, Dissolved	42000	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:42	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:42	7440-22-4	
Sodium, Dissolved	50300	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:42	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:42	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	3.6	ug/L	1.0	0.026	1	03/05/18 15:00	03/13/18 00:30	7440-36-0	
Arsenic	40.8	ug/L	1.0	0.052	1	03/05/18 15:00	03/13/18 00:30	7440-38-2	
Cadmium	0.12J	ug/L	0.50	0.018	1	03/05/18 15:00	03/13/18 00:30	7440-43-9	
Chromium	0.61J	ug/L	1.0	0.054	1	03/05/18 15:00	03/13/18 00:30	7440-47-3	B
Selenium	0.95J	ug/L	1.0	0.086	1	03/05/18 15:00	03/13/18 00:30	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Sample: L-LCPA-2D **Lab ID: 60265051005** Collected: 02/28/18 14:45 Received: 03/02/18 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.24J	ug/L	1.0	0.036	1	03/05/18 15:00	03/13/18 13:40	7440-28-0	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	3.6	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:08	7440-36-0	
Arsenic, Dissolved	41.3	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:08	7440-38-2	D9
Cadmium, Dissolved	0.10J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:08	7440-43-9	
Chromium, Dissolved	0.18J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:08	7440-47-3	B
Selenium, Dissolved	1.1	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:08	7782-49-2	D9
Thallium, Dissolved	0.19J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:12	7440-28-0	B
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:35	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	128	mg/L	20.0	4.9	1		03/08/18 13:00		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	642	mg/L	5.0	5.0	1		03/07/18 09:45		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:06	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	19.8	mg/L	2.0	0.92	2		03/08/18 21:47	16887-00-6	
Fluoride	0.14J	mg/L	0.20	0.063	1		03/06/18 17:08	16984-48-8	
Sulfate	306	mg/L	25.0	5.9	25		03/08/18 22:01	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	7.3J	mg/L	10.0	3.1	1		03/12/18 10:28		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	6.4	mg/L	1.0	0.13	1		03/06/18 10:54	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 517075 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2116742 Matrix: Water
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	03/11/18 16:06	

LABORATORY CONTROL SAMPLE: 2116743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2116744 2116745

Parameter	Units	60264894001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.5	96	90	75-125	6	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516349

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113348

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	<28.8	75.0	28.8	03/07/18 11:43	
Barium	ug/L	<0.91	5.0	0.91	03/07/18 11:43	
Beryllium	ug/L	<0.16	1.0	0.16	03/07/18 11:43	
Boron	ug/L	<3.5	100	3.5	03/07/18 11:43	
Calcium	ug/L	<36.0	100	36.0	03/07/18 11:43	
Cobalt	ug/L	<0.73	5.0	0.73	03/07/18 11:43	
Copper	ug/L	<4.8	10.0	4.8	03/07/18 11:43	
Iron	ug/L	<12.4	50.0	12.4	03/07/18 11:43	
Lead	ug/L	<2.4	5.0	2.4	03/07/18 11:43	
Lithium	ug/L	<2.9	10.0	2.9	03/07/18 11:43	
Magnesium	ug/L	<15.4	50.0	15.4	03/07/18 11:43	
Manganese	ug/L	<1.8	5.0	1.8	03/07/18 11:43	
Molybdenum	ug/L	<1.3	20.0	1.3	03/07/18 11:43	
Nickel	ug/L	<2.3	5.0	2.3	03/07/18 11:43	
Potassium	ug/L	<52.3	500	52.3	03/07/18 11:43	
Silver	ug/L	<1.9	7.0	1.9	03/07/18 11:43	
Sodium	ug/L	43.6J	500	28.4	03/07/18 11:43	
Total Hardness by 2340B	ug/L	105J	500		03/07/18 11:43	
Zinc	ug/L	<11.2	50.0	11.2	03/07/18 11:43	

LABORATORY CONTROL SAMPLE: 2113349

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Barium	ug/L	1000	1020	102	85-115	
Beryllium	ug/L	1000	1030	103	85-115	
Boron	ug/L	1000	971	97	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Cobalt	ug/L	1000	1050	105	85-115	
Copper	ug/L	1000	1020	102	85-115	
Iron	ug/L	10000	10200	102	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	1040	104	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1030	103	85-115	
Molybdenum	ug/L	1000	1020	102	85-115	
Nickel	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Silver	ug/L	500	515	103	85-115	
Sodium	ug/L	10000	10100	101	85-115	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

LABORATORY CONTROL SAMPLE: 2113349

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness by 2340B	ug/L		68100			
Zinc	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113350 2113351

Parameter	Units	60265051002		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Aluminum	ug/L	2590	10000	10000	12700	12800	101	102	70-130	0	20				
Barium	ug/L	45.6	1000	1000	1060	1060	102	102	70-130	0	20				
Beryllium	ug/L	<0.16	1000	1000	1020	1020	102	102	70-130	0	20				
Boron	ug/L	10000	1000	1000	10900	11000	90	101	70-130	1	20				
Calcium	ug/L	78200	10000	10000	87000	88100	88	99	70-130	1	20				
Cobalt	ug/L	<0.73	1000	1000	1020	1020	102	102	70-130	0	20				
Copper	ug/L	<4.8	1000	1000	1020	1020	102	102	70-130	0	20				
Iron	ug/L	178	10000	10000	10100	10200	99	100	70-130	1	20				
Lead	ug/L	3.5J	1000	1000	996	996	99	99	70-130	0	20				
Lithium	ug/L	34.6	1000	1000	1090	1090	105	106		0					
Magnesium	ug/L	4470	10000	10000	14300	14300	98	99	70-130	0	20				
Manganese	ug/L	4.1J	1000	1000	1010	1010	100	100	70-130	0	20				
Molybdenum	ug/L	231	1000	1000	1240	1250	101	102	70-130	0	20				
Nickel	ug/L	4.6J	1000	1000	992	995	99	99	70-130	0	20				
Potassium	ug/L	14000	10000	10000	24300	24500	102	104	70-130	1	20				
Silver	ug/L	<1.9	500	500	509	512	102	102	70-130	0	20				
Sodium	ug/L	60000	10000	10000	69500	70400	95	104	70-130	1	20				
Total Hardness by 2340B	ug/L	214000			276000	279000					1				
Zinc	ug/L	15.0J	1000	1000	1030	1030	101	101	70-130	0	20				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516442 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113818 Matrix: Water
Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	<28.8	75.0	28.8	03/07/18 17:20	
Barium, Dissolved	ug/L	<0.91	5.0	0.91	03/07/18 17:20	
Beryllium, Dissolved	ug/L	<0.16	1.0	0.16	03/07/18 17:20	
Boron, Dissolved	ug/L	8.9J	100	3.5	03/07/18 17:20	
Calcium, Dissolved	ug/L	<36.0	100	36.0	03/07/18 17:20	
Cobalt, Dissolved	ug/L	<0.73	5.0	0.73	03/07/18 17:20	
Copper, Dissolved	ug/L	<4.8	10.0	4.8	03/07/18 17:20	
Iron, Dissolved	ug/L	<12.4	50.0	12.4	03/07/18 17:20	
Lead, Dissolved	ug/L	<2.4	5.0	2.4	03/07/18 17:20	
Lithium, Dissolved	ug/L	<2.9	10.0	2.9	03/07/18 17:20	
Magnesium, Dissolved	ug/L	<15.4	50.0	15.4	03/07/18 17:20	
Manganese, Dissolved	ug/L	<1.8	5.0	1.8	03/07/18 17:20	
Molybdenum, Dissolved	ug/L	<1.3	20.0	1.3	03/07/18 17:20	
Nickel, Dissolved	ug/L	<2.3	5.0	2.3	03/07/18 17:20	
Potassium, Dissolved	ug/L	<52.3	500	52.3	03/07/18 17:20	
Silver, Dissolved	ug/L	<1.9	7.0	1.9	03/07/18 17:20	
Sodium, Dissolved	ug/L	<28.4	500	28.4	03/07/18 17:20	
Zinc, Dissolved	ug/L	<11.2	50.0	11.2	03/07/18 17:20	

LABORATORY CONTROL SAMPLE: 2113819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9880	99	93-108	
Barium, Dissolved	ug/L	1000	1000	100	93-109	
Beryllium, Dissolved	ug/L	1000	1000	100	94-109	
Boron, Dissolved	ug/L	1000	949	95	87-109	
Calcium, Dissolved	ug/L	10000	9970	100	88-111	
Cobalt, Dissolved	ug/L	1000	1010	101	95-112	
Copper, Dissolved	ug/L	1000	983	98	91-111	
Iron, Dissolved	ug/L	10000	10100	101	92-109	
Lead, Dissolved	ug/L	1000	1010	101	94-111	
Lithium, Dissolved	ug/L	1000	992	99	85-115	
Magnesium, Dissolved	ug/L	10000	9760	98	86-111	
Manganese, Dissolved	ug/L	1000	989	99	92-111	
Molybdenum, Dissolved	ug/L	1000	1000	100	93-109	
Nickel, Dissolved	ug/L	1000	998	100	94-109	
Potassium, Dissolved	ug/L	10000	9820	98	90-108	
Silver, Dissolved	ug/L	500	490	98	93-111	
Sodium, Dissolved	ug/L	10000	9730	97	89-108	
Zinc, Dissolved	ug/L	1000	1010	101	95-111	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113820												2113821	
Parameter	Units	60264907005 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
Aluminum, Dissolved	ug/L	ND	10000	10000	9690	10100	97	101	70-130	4	20		
Barium, Dissolved	ug/L	78.4	1000	1000	1050	1100	97	102	70-130	4	20		
Beryllium, Dissolved	ug/L	ND	1000	1000	989	1030	99	103	70-130	4	20		
Boron, Dissolved	ug/L	ND	1000	1000	1030	1040	96	98	70-130	2	20		
Calcium, Dissolved	ug/L	45400	10000	10000	53200	55700	78	103	70-130	5	20		
Cobalt, Dissolved	ug/L	ND	1000	1000	986	1010	99	101	70-130	3	20		
Copper, Dissolved	ug/L	ND	1000	1000	997	1010	99	101	70-130	2	20		
Iron, Dissolved	ug/L	ND	10000	10000	9840	10300	98	103	70-130	4	20		
Lead, Dissolved	ug/L	ND	1000	1000	972	1000	97	100	70-130	3	20		
Lithium, Dissolved	ug/L	13.0	1000	1000	993	1040	98	102	70-130	4	20		
Magnesium, Dissolved	ug/L	6220	10000	10000	15700	16000	95	97	70-130	1	20		
Manganese, Dissolved	ug/L	29.1	1000	1000	1020	1030	99	100	70-130	1	20		
Molybdenum, Dissolved	ug/L	ND	1000	1000	993	1020	99	102	70-130	3	20		
Nickel, Dissolved	ug/L	ND	1000	1000	968	998	97	100	70-130	3	20		
Potassium, Dissolved	ug/L	6270	10000	10000	15500	16200	93	99	70-130	4	20		
Silver, Dissolved	ug/L	ND	500	500	496	498	99	99	70-130	1	20		
Sodium, Dissolved	ug/L	45100	10000	10000	52900	55200	78	102	70-130	4	20		
Zinc, Dissolved	ug/L	ND	1000	1000	1000	1030	99	102	70-130	3	20		

MATRIX SPIKE SAMPLE: 2113822							
Parameter	Units	60265113006 Result	Spike Conc.	MS	MS	% Rec Limits	Qualifiers
				Result	% Rec		
Aluminum, Dissolved	ug/L	27600	10000	38900	113	70-130	
Barium, Dissolved	ug/L	34.9	1000	1050	102	70-130	
Beryllium, Dissolved	ug/L	<0.16	1000	1030	103	70-130	
Boron, Dissolved	ug/L	14400	1000	16400	197	70-130	M1
Calcium, Dissolved	ug/L	21600	10000	32600	111	70-130	
Cobalt, Dissolved	ug/L	<0.73	1000	992	99	70-130	
Copper, Dissolved	ug/L	8.7J	1000	1040	103	70-130	
Iron, Dissolved	ug/L	<12.4	10000	10300	103	70-130	
Lead, Dissolved	ug/L	<2.4	1000	969	97	70-130	
Lithium, Dissolved	ug/L	12.7	1000	1080	107	70-130	
Magnesium, Dissolved	ug/L	<15.4	10000	9730	97	70-130	
Manganese, Dissolved	ug/L	<1.8	1000	1020	102	70-130	
Molybdenum, Dissolved	ug/L	677	1000	1680	101	70-130	
Nickel, Dissolved	ug/L	<2.3	1000	976	97	70-130	
Potassium, Dissolved	ug/L	52100	10000	65100	130	70-130	
Silver, Dissolved	ug/L	<1.9	500	523	104	70-130	
Sodium, Dissolved	ug/L	671000	10000	691000	205	70-130	M1
Zinc, Dissolved	ug/L	<11.2	1000	1050	105	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516348 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113343 Matrix: Water
Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/12/18 23:38	
Arsenic	ug/L	<0.052	1.0	0.052	03/12/18 23:38	
Cadmium	ug/L	<0.018	0.50	0.018	03/12/18 23:38	
Chromium	ug/L	0.096J	1.0	0.054	03/12/18 23:38	
Selenium	ug/L	<0.086	1.0	0.086	03/12/18 23:38	
Thallium	ug/L	0.072J	1.0	0.036	03/13/18 13:21	

LABORATORY CONTROL SAMPLE: 2113344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.8	97	85-115	
Arsenic	ug/L	40	39.1	98	85-115	
Cadmium	ug/L	40	38.9	97	85-115	
Chromium	ug/L	40	39.9	100	85-115	
Selenium	ug/L	40	38.0	95	85-115	
Thallium	ug/L	40	38.3	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113345 2113346

Parameter	Units	60265051001		60265051002		60265051003		60265051004		% Rec Limits	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.			
Antimony	ug/L	1.8	40	40	40.9	40.8	98	97	70-130	0	20	
Arsenic	ug/L	71.1	40	40	109	109	94	96	70-130	1	20	
Cadmium	ug/L	0.047J	40	40	38.0	37.9	95	95	70-130	0	20	
Chromium	ug/L	0.73J	40	40	39.2	39.0	96	96	70-130	1	20	
Selenium	ug/L	0.73J	40	40	36.2	35.4	89	87	70-130	2	20	
Thallium	ug/L	0.12J	40	40	39.3	39.3	98	98	70-130	0	20	

MATRIX SPIKE SAMPLE: 2113347

Parameter	Units	60264984009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	ND	40	39.2	97	70-130	
Arsenic	ug/L	2.2	40	40.2	95	70-130	
Cadmium	ug/L	0.57	40	38.4	95	70-130	
Chromium	ug/L	ND	40	40.0	98	70-130	
Selenium	ug/L	3.6	40	38.7	88	70-130	
Thallium	ug/L	ND	40	39.3	98	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516439 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113811 Matrix: Water
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	<0.026	1.0	0.026	03/13/18 01:35	
Arsenic, Dissolved	ug/L	<0.052	1.0	0.052	03/13/18 01:35	
Cadmium, Dissolved	ug/L	<0.018	0.50	0.018	03/13/18 01:35	
Chromium, Dissolved	ug/L	0.060J	1.0	0.054	03/13/18 01:35	
Selenium, Dissolved	ug/L	<0.086	1.0	0.086	03/13/18 01:35	
Thallium, Dissolved	ug/L	0.075J	1.0	0.036	03/13/18 13:55	

LABORATORY CONTROL SAMPLE: 2113812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	40	39.3	98	85-115	
Arsenic, Dissolved	ug/L	40	40.0	100	85-115	
Cadmium, Dissolved	ug/L	40	38.8	97	85-115	
Chromium, Dissolved	ug/L	40	39.4	98	85-115	
Selenium, Dissolved	ug/L	40	38.6	96	85-115	
Thallium, Dissolved	ug/L	40	38.4	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113813 2113814

Parameter	Units	60265051001		60265051002		60265051003		60265051004		% Rec Limits	Max RPD	Qual
		MS Result	MSD Result	MS Result	MSD Result	MS Result	MSD Result	MS Result	MSD Result			
Antimony, Dissolved	ug/L	1.7	40	40	41.1	41.5	98	99	70-130	1	20	
Arsenic, Dissolved	ug/L	73.9	40	40	111	111	93	93	70-130	0	20	
Cadmium, Dissolved	ug/L	<0.018	40	40	38.1	38.2	95	95	70-130	0	20	
Chromium, Dissolved	ug/L	0.78J	40	40	38.9	38.9	95	95	70-130	0	20	
Selenium, Dissolved	ug/L	0.85J	40	40	36.5	37.0	89	90	70-130	1	20	
Thallium, Dissolved	ug/L	0.11J	40	40	40.0	39.8	100	99	70-130	1	20	

MATRIX SPIKE SAMPLE: 2113815

Parameter	Units	60265113007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L		40	39.4	97	70-130	
Arsenic, Dissolved	ug/L		40	47.8	87	70-130	
Cadmium, Dissolved	ug/L		40	36.3	91	70-130	
Chromium, Dissolved	ug/L		40	155	89	70-130	
Selenium, Dissolved	ug/L		40	191	79	70-130	
Thallium, Dissolved	ug/L		40	41.8	103	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516718

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2114951

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	03/08/18 11:29	

LABORATORY CONTROL SAMPLE: 2114952

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	515	103	90-110	

SAMPLE DUPLICATE: 2114953

Parameter	Units	60264701012 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	164	165	0	10	

SAMPLE DUPLICATE: 2114954

Parameter	Units	60264851002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	86.0	78.6	9	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516574

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2114327

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/07/18 09:39	

LABORATORY CONTROL SAMPLE: 2114328

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

SAMPLE DUPLICATE: 2114329

Parameter	Units	60265051001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	575	584	2	10	

SAMPLE DUPLICATE: 2114330

Parameter	Units	60265051002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	528	524	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516400

Analysis Method: SM 4500-S-2 D

QC Batch Method: SM 4500-S-2 D

Analysis Description: 4500S2D Sulfide, Total

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113653

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	03/06/18 17:04	

LABORATORY CONTROL SAMPLE: 2113654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.50	100	80-120	

MATRIX SPIKE SAMPLE: 2113655

Parameter	Units	60265051001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	<0.0048	.5	0.51	103	75-125	

SAMPLE DUPLICATE: 2113656

Parameter	Units	60265051002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516426

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113746

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/06/18 10:11	
Fluoride	mg/L	<0.063	0.20	0.063	03/06/18 10:11	

LABORATORY CONTROL SAMPLE: 2113747

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	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113748 2113749

Parameter	Units	60264569001		MS		MSD		MS		MSD		% Rec		Max	
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual			
Chloride	mg/L	81.1	50	50	133	134	103	105	80-120	1	15				
Fluoride	mg/L	0.47	2.5	2.5	2.9	2.9	95	97	80-120	2	15				

MATRIX SPIKE SAMPLE: 2113750

Parameter	Units	60265051003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.0	5	24.4	110	80-120	E
Fluoride	mg/L	0.088J	2.5	2.5	95	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516597 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60265051001, 60265051002, 60265051003

METHOD BLANK: 2114382 Matrix: Water
 Associated Lab Samples: 60265051001, 60265051002, 60265051003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.24	1.0	0.24	03/08/18 11:21	

LABORATORY CONTROL SAMPLE: 2114383

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

MATRIX SPIKE SAMPLE: 2114386

Parameter	Units	60264701012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	35.2	25	65.7	122	80-120	M1

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516599

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60265051004, 60265051005

METHOD BLANK: 2114389

Matrix: Water

Associated Lab Samples: 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/08/18 20:23	
Sulfate	mg/L	<0.24	1.0	0.24	03/08/18 20:23	

LABORATORY CONTROL SAMPLE: 2114390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2114391 2114392

Parameter	Units	60265113007		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Sulfate	mg/L	728	500	500	1230	1240	101	103	80-120	1	15		

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516816 Analysis Method: EPA 410.4
 QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004

METHOD BLANK: 2115238 Matrix: Water
 Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/09/18 13:34	

LABORATORY CONTROL SAMPLE: 2115239

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	50.2	100	90-110	

MATRIX SPIKE SAMPLE: 2115240

Parameter	Units	60264827001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	2800	1250	3890	87	90-110	M1

MATRIX SPIKE SAMPLE: 2115242

Parameter	Units	60264838001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	11.5	50	62.5	102	90-110	

SAMPLE DUPLICATE: 2115241

Parameter	Units	60264924003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	279	219	24	25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 517028

Analysis Method: EPA 410.4

QC Batch Method: EPA 410.4

Analysis Description: 410.4 COD

Associated Lab Samples: 60265051005

METHOD BLANK: 2116048

Matrix: Water

Associated Lab Samples: 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/12/18 10:26	

LABORATORY CONTROL SAMPLE: 2116049

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	45.7	91	90-110	

MATRIX SPIKE SAMPLE: 2116050

Parameter	Units	60264843001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	681	500	1140	92	90-110	

SAMPLE DUPLICATE: 2116051

Parameter	Units	60265187002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	4840	4010	19	25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

QC Batch: 516399

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

METHOD BLANK: 2113649

Matrix: Water

Associated Lab Samples: 60265051001, 60265051002, 60265051003, 60265051004, 60265051005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	03/06/18 09:09	

LABORATORY CONTROL SAMPLE: 2113650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.2	105	80-120	

MATRIX SPIKE SAMPLE: 2113651

Parameter	Units	60265051001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	3.3	5	9.0	114	80-120	

SAMPLE DUPLICATE: 2113652

Parameter	Units	60265051002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	10.7	10.7	0	25	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

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.

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

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within 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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265051001	L-LCPA-1S	EPA 200.7	516349	EPA 200.7	516367
60265051002	L-LCPA-1D	EPA 200.7	516349	EPA 200.7	516367
60265051003	L-DUP-2	EPA 200.7	516349	EPA 200.7	516367
60265051004	L-LCPA-2S	EPA 200.7	516349	EPA 200.7	516367
60265051005	L-LCPA-2D	EPA 200.7	516349	EPA 200.7	516367
60265051001	L-LCPA-1S	EPA 200.7	516442	EPA 200.7	516482
60265051002	L-LCPA-1D	EPA 200.7	516442	EPA 200.7	516482
60265051003	L-DUP-2	EPA 200.7	516442	EPA 200.7	516482
60265051004	L-LCPA-2S	EPA 200.7	516442	EPA 200.7	516482
60265051005	L-LCPA-2D	EPA 200.7	516442	EPA 200.7	516482
60265051001	L-LCPA-1S	EPA 200.8	516348	EPA 200.8	516368
60265051002	L-LCPA-1D	EPA 200.8	516348	EPA 200.8	516368
60265051003	L-DUP-2	EPA 200.8	516348	EPA 200.8	516368
60265051004	L-LCPA-2S	EPA 200.8	516348	EPA 200.8	516368
60265051005	L-LCPA-2D	EPA 200.8	516348	EPA 200.8	516368
60265051001	L-LCPA-1S	EPA 200.8	516439	EPA 200.8	516475
60265051002	L-LCPA-1D	EPA 200.8	516439	EPA 200.8	516475
60265051003	L-DUP-2	EPA 200.8	516439	EPA 200.8	516475
60265051004	L-LCPA-2S	EPA 200.8	516439	EPA 200.8	516475
60265051005	L-LCPA-2D	EPA 200.8	516439	EPA 200.8	516475
60265051001	L-LCPA-1S	EPA 7470	517075	EPA 7470	517078
60265051002	L-LCPA-1D	EPA 7470	517075	EPA 7470	517078
60265051003	L-DUP-2	EPA 7470	517075	EPA 7470	517078
60265051004	L-LCPA-2S	EPA 7470	517075	EPA 7470	517078
60265051005	L-LCPA-2D	EPA 7470	517075	EPA 7470	517078
60265051001	L-LCPA-1S	SM 2320B	516718		
60265051002	L-LCPA-1D	SM 2320B	516718		
60265051003	L-DUP-2	SM 2320B	516718		
60265051004	L-LCPA-2S	SM 2320B	516718		
60265051005	L-LCPA-2D	SM 2320B	516718		
60265051001	L-LCPA-1S	SM 2540C	516574		
60265051002	L-LCPA-1D	SM 2540C	516574		
60265051003	L-DUP-2	SM 2540C	516574		
60265051004	L-LCPA-2S	SM 2540C	516574		
60265051005	L-LCPA-2D	SM 2540C	516574		
60265051001	L-LCPA-1S	SM 4500-S-2 D	516400		
60265051002	L-LCPA-1D	SM 4500-S-2 D	516400		
60265051003	L-DUP-2	SM 4500-S-2 D	516400		
60265051004	L-LCPA-2S	SM 4500-S-2 D	516400		
60265051005	L-LCPA-2D	SM 4500-S-2 D	516400		
60265051001	L-LCPA-1S	EPA 300.0	516426		
60265051001	L-LCPA-1S	EPA 300.0	516597		
60265051002	L-LCPA-1D	EPA 300.0	516426		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265051

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265051002	L-LCPA-1D	EPA 300.0	516597		
60265051003	L-DUP-2	EPA 300.0	516426		
60265051003	L-DUP-2	EPA 300.0	516597		
60265051004	L-LCPA-2S	EPA 300.0	516426		
60265051004	L-LCPA-2S	EPA 300.0	516599		
60265051005	L-LCPA-2D	EPA 300.0	516426		
60265051005	L-LCPA-2D	EPA 300.0	516599		
60265051001	L-LCPA-1S	EPA 410.4	516816		
60265051002	L-LCPA-1D	EPA 410.4	516816		
60265051003	L-DUP-2	EPA 410.4	516816		
60265051004	L-LCPA-2S	EPA 410.4	516816		
60265051005	L-LCPA-2D	EPA 410.4	517028		
60265051001	L-LCPA-1S	SM 5310C	516399		
60265051002	L-LCPA-1D	SM 5310C	516399		
60265051003	L-DUP-2	SM 5310C	516399		
60265051004	L-LCPA-2S	SM 5310C	516399		
60265051005	L-LCPA-2D	SM 5310C	516399		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60265051
Barcode with number 60265051

Client Name: Golder

Courier: FedEx [] UPS [] VIA [] Clay [] PEX [] ECI [] Pace [] Xroads [x] Client [] Other []

Tracking #: Pace Shipping Label Used? Yes [] No [x]

Custody Seal on Cooler/Box Present: Yes [x] No [] Seals intact: Yes [x] No []

Packing Material: Bubble Wrap [] Bubble Bags [x] Foam [] None [] Other []

Thermometer Used: T-266 / T-239 Type of Ice: Wet [x] Blue [] None []

Cooler Temperature (°C): As-read 1.8 Corr. Factor CF+0.2 CF-0.1 Corrected 2.0

Date and initials of person examining contents: JLS

Temperature should be above freezing to 6°C

Table with 2 columns: Question and Yes/No/N/A checkboxes. Rows include Chain of Custody present, Samples arrived within holding time, Short Hold Time analyses, Containers intact, etc.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Jami Ched 3/5/18

Project Manager Review: Date:

CHAIN-OF-CUSTODY / Analytical Request Document

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



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100 St Charles, MO 63301	Copy To:	Jeffrey Ingram	Company Name:	
Email To:	mhaddock@golder.com	Purchase Order No.:		Address:	
Phone:	636-724-9191	Project Name:	Ameren Labadie Energy Center	Pace Quote Reference:	
Requested Due Date/TAT:	Standard	Project Number:	1531406.0001	Pace Project Manager:	Jamie Church
				Pace Profile #:	9285, line 5

Page: _____ of _____

REGULATORY AGENCY	
NPDES	GROUND WATER
UST	RCRA
Site Location	DRINKING WATER
STATE: MO	OTHER

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW WATER PRODUCT P SOLID SL OIL OL WP AR OT TS	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE ENDING								DATE	TIME
1	L-LCPA-15				6	MS6	Unpreserved	Analysis Test ↑			001
2	L-LCPA-1B						NaOH + Zn Acetate				002
3	L-DAP-2										003
4	L-LCPA-25										004
5	L-LCPA-2D										005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Eut. Sewer	Jamie Church / Pace	3/1/18	1700	Jamie Church / Pace	3/1/18	1700	Received on Ice (Y/N) Y
	Jamie Church / Pace	3/1/18	1700	Jamie Church / Pace	3/2	0830	Custody Sealed Cooler (Y/N) Y
							Temp in °C

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Eric Schneider
SIGNATURE of SAMPLER:	<i>Eric Schneider</i>
DATE Signed (MM/DD/YYYY):	03/01/18



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
Project No.: 1531406
Project: Ameren
Email:
RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60265051

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the MDL or detected in a blank below the PQL the results were qualified as non-detects and estimates (UJ).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: _____

Laboratory: Pace Analytical

SDG #: 60265051

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: L-LCPA-1S, L-LCPA-1D, L-LCPA-2S, L-LCPA-2D, L-DUP-2

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>2/28/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Notations of unacceptable field conditions/performance from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Were hold times met for sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were the correct preservatives used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Was the correct method used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Were appropriate reporting limits achieved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Were any sample dilutions noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Were any matrix problems noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Na (43.6), TH (105), B₂ (8.9), Cr₂ (0.076), Tl₂ (0.072)</u> <u>Cr₄ (0.060), Tl₄ (0.075),</u> <hr/> <hr/>
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<hr/> <hr/> <hr/>
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>DUP-2 @ CCPA-15</u> <hr/> <u>Fe₂ (141), Fe₂ (200), Pb₂ (200), Mg₂ (45), Mn₂ (200)</u> <u>Zn₂ (50), Cd₂ (77), Cr₂ (95), Cr₂ (132), Tl₂ (20)</u> <hr/> <hr/>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<hr/> <hr/>
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>COD, Sulfate, Na₂, B₂</u> <hr/>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<hr/>

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LCPA-1S	Sulfate	267	D	DF of 25
|	Cr(t)	1.0	UJ	RPD exceeded limit; PQL > Result > MDL; Detected in Blank
|	Tl(d)	1.0	UJ	| | |
|	Tl(t)	1.0	U	Detected in Blank; PQL > Result > MDL
|	Fe(t)	138	J	RPD exceeded limit; Result > MDL
|	Fe(d)	18.8	J	| |
|	Pb(t)	2.7	J	| |
|	Mg(t)	184	J	| |
|	Mn(t)	3.2	J	| |
|	Zn(t)	13.3	J	| |
|	Cd(t)	0.047	J	| |
|	Cr(d)	0.78	J	| |
L-DUP-2	Cd(t)	0.021	J	| |
|	Zn(t)	24.1	J	| |
|	Mn(t)	1.8	UJ	; Result < MDL
|	Mg(t)	116	J	; Result > MDL
|	Pb(t)	2.4	UJ	; Result < MDL
|	Fe(d)	12.4	UJ	|
|	Fe(t)	23.8	J	; Result > MDL;
|	Cr(t)	1.0	UJ	| | |; Detected in Blank
|	Tl(d)	1.0	UJ	| | |
|	Cr(d)	1.0	UJ	| | |
|	Tl(t)	1.0	U	Detected in Blank; PQL > Result > MDL
|	Sulfate	266	D	DF of 25
L-LCPA-1D	Cr(d)	1.0	U	Blank; PQL > Result > MDL
|	Sulfate	257	D	DF of 25
L-LCPA-2S	Chloride	25.5	D	| 2
|	Sulfate	254	D	| 25
|	Tl(t)	1.0	U	Blank; PQL > Result > MDL
|	Tl(d)	1.0	U	| |
|	Cr(d)	1.0	U	| |

Signature: Tommy J. Woodruff

Date: 3/26/2018

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L- 66 PA-2D	Cr (t)	1.0	U	Blank ; PQL > Result > MDL
|	Cr (d)	1.0	U	|
	Tl (t)	1.0	U	
	Tl (d)	1.0	U	|
	Chloride	19.8	D	DF of 2
	Sulfate	306	D	L 25
	<div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 0; left: 0; bottom: 0; right: 0; border: 1px solid black; width: 100%; height: 100%;"></div> </div>			

Signature: Tommy J. Gooden Jr

Date: 3/26/2018

March 14, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265113

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 05, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60265113001	L-LCPA-3S	Water	03/02/18 08:50	03/05/18 05:30
60265113002	L-LCPA-3D	Water	03/02/18 13:00	03/05/18 05:30
60265113003	L-LCPB-1	Water	03/01/18 15:05	03/05/18 05:30
60265113004	L-LCPB-3	Water	03/01/18 17:30	03/05/18 05:30
60265113005	L-FB-2	Water	03/01/18 17:30	03/05/18 05:30
60265113006	L-DUP-3	Water	03/01/18 08:00	03/05/18 05:30
60265113007	L-LCPB-2	Water	03/01/18 16:00	03/05/18 05:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
60265113001	L-LCPA-3S	EPA 200.7	JRS	19	PASI-K		
		EPA 200.7	JRS	18	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 7470	TDS	1	PASI-K		
		SM 2320B	MJK	1	PASI-K		
		SM 2540C	OL	1	PASI-K		
		SM 4500-S-2 D	LDB	1	PASI-K		
		EPA 300.0	AGO	3	PASI-K		
		EPA 410.4	MJK	1	PASI-K		
		SM 5310C	LDF	1	PASI-K		
		60265113002	L-LCPA-3D	EPA 200.7	JRS	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
EPA 200.8	JGP			6	PASI-K		
EPA 200.8	JGP			6	PASI-K		
EPA 7470	TDS			1	PASI-K		
SM 2320B	MJK			1	PASI-K		
SM 2540C	OL			1	PASI-K		
SM 4500-S-2 D	LDB			1	PASI-K		
EPA 300.0	AGO			3	PASI-K		
EPA 410.4	MJK			1	PASI-K		
SM 5310C	LDF			1	PASI-K		
60265113003	L-LCPB-1			EPA 200.7	JRS	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
		EPA 200.8	JGP	6	PASI-K		
		EPA 200.8	JGP	6	PASI-K		
		EPA 7470	TDS	1	PASI-K		
		SM 2320B	MJK	1	PASI-K		
		SM 2540C	OL	1	PASI-K		
		SM 4500-S-2 D	LDB	1	PASI-K		
		EPA 300.0	AGO	3	PASI-K		
		EPA 410.4	MJK	1	PASI-K		
		SM 5310C	LDF	1	PASI-K		
		60265113004	L-LCPB-3	EPA 200.7	JRS	19	PASI-K
				EPA 200.7	JRS	18	PASI-K
EPA 200.8	JGP			6	PASI-K		
EPA 200.8	JGP			6	PASI-K		

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265113005	L-FB-2	EPA 200.7	JRS	19	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265113006	L-DUP-3	EPA 200.7	JRS	19	PASI-K
		EPA 200.7	JRS	18	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265113007	L-LCPB-2	EPA 200.7	JRS	19	PASI-K
		EPA 200.7	JRS	18	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265113

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPA-3S Lab ID: 60265113001 Collected: 03/02/18 08:50 Received: 03/05/18 05:30 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									
Aluminum	1520	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:43	7429-90-5	
Barium	36.5	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:43	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:43	7440-41-7	
Boron	8440	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:43	7440-42-8	
Calcium	76900	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:43	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:43	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:43	7440-50-8	
Iron	112	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:43	7439-89-6	
Lead	2.7J	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:43	7439-92-1	
Lithium	39.8	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:43	7439-93-2	
Magnesium	445	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:43	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:43	7439-96-5	
Molybdenum	234	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:43	7439-98-7	
Nickel	2.5J	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:43	7440-02-0	
Potassium	16600	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:43	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:43	7440-22-4	
Sodium	84000	ug/L	500	28.4	1	03/06/18 11:00	03/08/18 12:43	7440-23-5	
Total Hardness by 2340B	194000	ug/L	500		1	03/06/18 11:00	03/08/18 12:43		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:43	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	1290	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:44	7429-90-5	
Barium, Dissolved	26.2	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:44	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:44	7440-41-7	
Boron, Dissolved	8610	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:44	7440-42-8	D9
Calcium, Dissolved	77800	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:44	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:44	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:44	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:44	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:44	7439-92-1	
Lithium, Dissolved	39.9	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:44	7439-93-2	D9
Magnesium, Dissolved	418	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:44	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:44	7439-96-5	
Molybdenum, Dissolved	242	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:44	7439-98-7	D9
Nickel, Dissolved	2.8J	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:44	7440-02-0	
Potassium, Dissolved	17200	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:44	7440-09-7	D9
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:44	7440-22-4	
Sodium, Dissolved	82800	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:44	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:44	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	2.0	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 19:42	7440-36-0	
Arsenic	56.5	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 19:42	7440-38-2	
Cadmium	0.066J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 19:42	7440-43-9	
Chromium	0.34J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 19:42	7440-47-3	
Selenium	2.1	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 19:42	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPA-3S **Lab ID: 60265113001** Collected: 03/02/18 08:50 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.26J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 19:42	7440-28-0	
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	2.0	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:22	7440-36-0	
Arsenic, Dissolved	54.0	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:22	7440-38-2	
Cadmium, Dissolved	<0.018	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:22	7440-43-9	
Chromium, Dissolved	0.23J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:22	7440-47-3	B
Selenium, Dissolved	2.1	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:22	7782-49-2	
Thallium, Dissolved	0.28J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:18	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:42	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	91.8	mg/L	20.0	4.9	1		03/08/18 13:27		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	569	mg/L	5.0	5.0	1		03/07/18 09:47		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:09	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	18.6	mg/L	2.0	0.92	2		03/08/18 22:29	16887-00-6	
Fluoride	0.16J	mg/L	0.20	0.063	1		03/06/18 18:04	16984-48-8	
Sulfate	272	mg/L	25.0	5.9	25		03/08/18 22:43	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	10.2	mg/L	10.0	3.1	1		03/13/18 12:42		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	4.3	mg/L	1.0	0.13	1		03/07/18 10:48	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPA-3D **Lab ID: 60265113002** Collected: 03/02/18 13:00 Received: 03/05/18 05:30 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									
Aluminum	2040	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:49	7429-90-5	
Barium	47.0	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:49	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:49	7440-41-7	
Boron	8100	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:49	7440-42-8	M1
Calcium	87700	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:49	7440-70-2	M1
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:49	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:49	7440-50-8	
Iron	122	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:49	7439-89-6	
Lead	2.4J	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:49	7439-92-1	
Lithium	59.8	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:49	7439-93-2	
Magnesium	1540	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:49	7439-95-4	
Manganese	2.3J	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:49	7439-96-5	
Molybdenum	218	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:49	7439-98-7	
Nickel	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:49	7440-02-0	
Potassium	14200	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:49	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:49	7440-22-4	
Sodium	69000	ug/L	500	28.4	1	03/06/18 11:00	03/08/18 12:49	7440-23-5	M1
Total Hardness by 2340B	225000	ug/L	500		1	03/06/18 11:00	03/08/18 12:49		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:49	7440-66-6	

200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	1990	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:46	7429-90-5	
Barium, Dissolved	49.7	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:46	7440-39-3	D9
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:46	7440-41-7	
Boron, Dissolved	8690	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:46	7440-42-8	D9
Calcium, Dissolved	95700	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:46	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:46	7440-48-4	
Copper, Dissolved	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:46	7440-50-8	
Iron, Dissolved	13.9J	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:46	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:46	7439-92-1	
Lithium, Dissolved	67.7	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:46	7439-93-2	D9
Magnesium, Dissolved	1610	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:46	7439-95-4	D9
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:46	7439-96-5	
Molybdenum, Dissolved	239	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:46	7439-98-7	D9
Nickel, Dissolved	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:46	7440-02-0	
Potassium, Dissolved	15800	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:46	7440-09-7	D9
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:46	7440-22-4	
Sodium, Dissolved	74300	ug/L	500	28.4	1	03/06/18 11:00	03/07/18 17:46	7440-23-5	D9
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:46	7440-66-6	

200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	3.5	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 19:54	7440-36-0	
Arsenic	31.7	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 19:54	7440-38-2	
Cadmium	0.065J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 19:54	7440-43-9	
Chromium	1.1	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 19:54	7440-47-3	
Selenium	1.1	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 19:54	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPA-3D **Lab ID: 60265113002** Collected: 03/02/18 13:00 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.12J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 19:54	7440-28-0	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	3.5	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:26	7440-36-0	
Arsenic, Dissolved	31.1	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:26	7440-38-2	
Cadmium, Dissolved	0.022J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:26	7440-43-9	
Chromium, Dissolved	0.92J	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:26	7440-47-3	
Selenium, Dissolved	0.64J	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:26	7782-49-2	
Thallium, Dissolved	0.11J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:21	7440-28-0	B
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:44	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	80.2	mg/L	20.0	4.9	1		03/08/18 13:31		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	577	mg/L	5.0	5.0	1		03/07/18 09:48		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:09	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	18.9	mg/L	2.0	0.92	2		03/08/18 22:56	16887-00-6	
Fluoride	0.16J	mg/L	0.20	0.063	1		03/06/18 18:18	16984-48-8	
Sulfate	295	mg/L	25.0	5.9	25		03/08/18 23:10	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	12.8	mg/L	10.0	3.1	1		03/13/18 12:42		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	3.3	mg/L	1.0	0.13	1		03/07/18 11:00	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-1 Lab ID: 60265113003 Collected: 03/01/18 15:05 Received: 03/05/18 05:30 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									
Aluminum	16000	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:52	7429-90-5	
Barium	19.4	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:52	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:52	7440-41-7	
Boron	28200	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:52	7440-42-8	
Calcium	11400	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:52	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:52	7440-48-4	
Copper	29.6	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:52	7440-50-8	
Iron	27.3J	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:52	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:52	7439-92-1	
Lithium	46.2	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:52	7439-93-2	
Magnesium	84.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:52	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:52	7439-96-5	
Molybdenum	1960	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:52	7439-98-7	
Nickel	5.2	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:52	7440-02-0	
Potassium	51000	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:52	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:52	7440-22-4	
Sodium	935000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:39	7440-23-5	
Total Hardness by 2340B	28900	ug/L	500		1	03/06/18 11:00	03/08/18 12:52		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:52	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	15300	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:49	7429-90-5	
Barium, Dissolved	16.0	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:49	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:49	7440-41-7	
Boron, Dissolved	27900	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:49	7440-42-8	
Calcium, Dissolved	11200	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:49	7440-70-2	
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:49	7440-48-4	
Copper, Dissolved	27.2	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:49	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:49	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:49	7439-92-1	
Lithium, Dissolved	47.8	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:49	7439-93-2	D9
Magnesium, Dissolved	<15.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:49	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:49	7439-96-5	
Molybdenum, Dissolved	1950	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:49	7439-98-7	
Nickel, Dissolved	5.4	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:49	7440-02-0	D9
Potassium, Dissolved	50700	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:49	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:49	7440-22-4	
Sodium, Dissolved	925000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:26	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:49	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	0.95J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 19:59	7440-36-0	
Arsenic	66.9	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 19:59	7440-38-2	
Cadmium	0.13J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 19:59	7440-43-9	
Chromium	2.7	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 19:59	7440-47-3	
Selenium	255	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 19:59	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-1 **Lab ID:** 60265113003 Collected: 03/01/18 15:05 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.53J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 19:59	7440-28-0	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	0.89J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:30	7440-36-0	
Arsenic, Dissolved	58.0	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:30	7440-38-2	
Cadmium, Dissolved	0.078J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:30	7440-43-9	
Chromium, Dissolved	2.7	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:30	7440-47-3	
Selenium, Dissolved	224	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:30	7782-49-2	
Thallium, Dissolved	0.58J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:23	7440-28-0	B
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:50	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	1070	mg/L	40.0	9.8	2		03/13/18 11:46		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	2500	mg/L	5.0	5.0	1		03/07/18 09:45		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:10	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	15.6	mg/L	1.0	0.46	1		03/06/18 18:32	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.063	1		03/06/18 18:32	16984-48-8	
Sulfate	1060	mg/L	100	23.6	100		03/08/18 23:24	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	13.5	mg/L	10.0	3.1	1		03/13/18 12:43		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	3.1	mg/L	1.0	0.13	1		03/07/18 11:13	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-3 **Lab ID:** 60265113004 Collected: 03/01/18 17:30 Received: 03/05/18 05:30 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									
Aluminum	15600	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:54	7429-90-5	
Barium	47.1	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:54	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:54	7440-41-7	
Boron	25700	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:54	7440-42-8	
Calcium	11400	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:54	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:54	7440-48-4	
Copper	45.5	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:54	7440-50-8	
Iron	384	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:54	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:54	7439-92-1	
Lithium	50.4	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:54	7439-93-2	
Magnesium	386	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:54	7439-95-4	
Manganese	2.3J	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:54	7439-96-5	
Molybdenum	2370	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:54	7439-98-7	
Nickel	35.0	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:54	7440-02-0	
Potassium	48200	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:54	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:54	7440-22-4	
Sodium	969000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 15:49	7440-23-5	
Total Hardness by 2340B	30000	ug/L	500		1	03/06/18 11:00	03/08/18 12:54		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:54	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	15500	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:51	7429-90-5	
Barium, Dissolved	9.6	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:51	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:51	7440-41-7	
Boron, Dissolved	27400	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:51	7440-42-8	D9
Calcium, Dissolved	10200	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:51	7440-70-2	
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:51	7440-48-4	
Copper, Dissolved	46.3	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:51	7440-50-8	D9
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:51	7439-89-6	
Lead, Dissolved	6.6	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:51	7439-92-1	D9
Lithium, Dissolved	51.4	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:51	7439-93-2	D9
Magnesium, Dissolved	<15.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:51	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:51	7439-96-5	
Molybdenum, Dissolved	2540	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:51	7439-98-7	D9
Nickel, Dissolved	36.9	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:51	7440-02-0	D9
Potassium, Dissolved	52000	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:51	7440-09-7	D9
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:51	7440-22-4	
Sodium, Dissolved	1080000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:32	7440-23-5	D9
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:51	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	0.62J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 20:03	7440-36-0	
Arsenic	90.4	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 20:03	7440-38-2	
Cadmium	0.26J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 20:03	7440-43-9	
Chromium	7.5	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 20:03	7440-47-3	
Selenium	361	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 20:03	7782-49-2	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-3 **Lab ID: 60265113004** Collected: 03/01/18 17:30 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.38J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 20:03	7440-28-0	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	0.58J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:35	7440-36-0	
Arsenic, Dissolved	77.1	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:35	7440-38-2	
Cadmium, Dissolved	0.086J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:35	7440-43-9	
Chromium, Dissolved	7.0	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:35	7440-47-3	
Selenium, Dissolved	317	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:35	7782-49-2	
Thallium, Dissolved	0.43J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:25	7440-28-0	B
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:53	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	1340	mg/L	40.0	9.8	2		03/13/18 14:11		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	2850	mg/L	5.0	5.0	1		03/07/18 09:45		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:10	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	18.4	mg/L	1.0	0.46	1		03/06/18 18:46	16887-00-6	
Fluoride	1.9	mg/L	0.20	0.063	1		03/06/18 18:46	16984-48-8	
Sulfate	999	mg/L	100	23.6	100		03/08/18 23:38	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	13.3	mg/L	10.0	3.1	1		03/13/18 12:43		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	5.0	mg/L	1.0	0.13	1		03/07/18 12:04	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-FB-2 **Lab ID: 60265113005** Collected: 03/01/18 17:30 Received: 03/05/18 05:30 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							
Aluminum	<28.8	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:56	7429-90-5	
Barium	<0.91	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:56	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:56	7440-41-7	
Boron	75.8J	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:56	7440-42-8	
Calcium	46.2J	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:56	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:56	7440-48-4	
Copper	<4.8	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:56	7440-50-8	
Iron	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:56	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:56	7439-92-1	
Lithium	4.3J	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:56	7439-93-2	
Magnesium	<15.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:56	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:56	7439-96-5	
Molybdenum	<1.3	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:56	7439-98-7	
Nickel	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:56	7440-02-0	
Potassium	633	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:56	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:56	7440-22-4	
Sodium	857	ug/L	500	28.4	1	03/06/18 11:00	03/08/18 12:56	7440-23-5	
Total Hardness by 2340B	151J	ug/L	500		1	03/06/18 11:00	03/08/18 12:56		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:56	7440-66-6	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.048J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 20:24	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 20:24	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 20:24	7440-43-9	
Chromium	<0.054	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 20:24	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 20:24	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 20:24	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:55	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<4.9	mg/L	20.0	4.9	1		03/13/18 12:00		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	8.5	mg/L	5.0	5.0	1		03/07/18 09:45		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:10	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	<0.46	mg/L	1.0	0.46	1		03/06/18 19:00	16887-00-6	
Fluoride	<0.063	mg/L	0.20	0.063	1		03/06/18 19:00	16984-48-8	
Sulfate	<0.24	mg/L	1.0	0.24	1		03/06/18 19:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-FB-2 **Lab ID: 60265113005** Collected: 03/01/18 17:30 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		03/13/18 12:45		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	0.16J	mg/L	1.0	0.13	1		03/07/18 12:16	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-DUP-3 Lab ID: 60265113006 Collected: 03/01/18 08:00 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
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200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7

Aluminum	29800	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 12:59	7429-90-5	
Barium	46.3	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 12:59	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 12:59	7440-41-7	
Boron	15200	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 12:59	7440-42-8	
Calcium	22800	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 12:59	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 12:59	7440-48-4	
Copper	10.5	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 12:59	7440-50-8	
Iron	91.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 12:59	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 12:59	7439-92-1	
Lithium	11.6	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 12:59	7439-93-2	
Magnesium	78.2	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 12:59	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 12:59	7439-96-5	
Molybdenum	705	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 12:59	7439-98-7	
Nickel	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 12:59	7440-02-0	
Potassium	54300	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 12:59	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 12:59	7440-22-4	
Sodium	667000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:43	7440-23-5	
Total Hardness by 2340B	57200	ug/L	500		1	03/06/18 11:00	03/08/18 12:59		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 12:59	7440-66-6	

200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7

Aluminum, Dissolved	27600	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:53	7429-90-5	
Barium, Dissolved	34.9	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:53	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:53	7440-41-7	
Boron, Dissolved	14400	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:53	7440-42-8	M1
Calcium, Dissolved	21600	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:53	7440-70-2	
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:53	7440-48-4	
Copper, Dissolved	8.7J	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:53	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:53	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:53	7439-92-1	
Lithium, Dissolved	12.7	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:53	7439-93-2	D9
Magnesium, Dissolved	<15.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:53	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:53	7439-96-5	
Molybdenum, Dissolved	677	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:53	7439-98-7	
Nickel, Dissolved	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:53	7440-02-0	
Potassium, Dissolved	52100	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:53	7440-09-7	
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:53	7440-22-4	
Sodium, Dissolved	671000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:34	7440-23-5	D9,M1
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:53	7440-66-6	

200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8

Antimony	0.47J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 20:07	7440-36-0	
Arsenic	14.7	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 20:07	7440-38-2	
Cadmium	0.056J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 20:07	7440-43-9	
Chromium	118	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 20:07	7440-47-3	
Selenium	181	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 20:07	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-DUP-3 **Lab ID: 60265113006** Collected: 03/01/18 08:00 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.42J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 20:07	7440-28-0	
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	0.46J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:39	7440-36-0	
Arsenic, Dissolved	12.5	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:39	7440-38-2	
Cadmium, Dissolved	0.031J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:39	7440-43-9	
Chromium, Dissolved	118	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:39	7440-47-3	
Selenium, Dissolved	158	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:39	7782-49-2	
Thallium, Dissolved	0.46J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:27	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:57	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	852	mg/L	20.0	4.9	1		03/13/18 12:08		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1670	mg/L	5.0	5.0	1		03/07/18 09:46		
4500S2D Sulfide, Total									
Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:11	18496-25-8	
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Chloride	16.1	mg/L	1.0	0.46	1		03/06/18 19:13	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.063	1		03/06/18 19:13	16984-48-8	
Sulfate	710	mg/L	100	23.6	100		03/08/18 23:52	14808-79-8	
410.4 COD									
Analytical Method: EPA 410.4									
Chemical Oxygen Demand	8.2J	mg/L	10.0	3.1	1		03/13/18 12:45		
5310C TOC									
Analytical Method: SM 5310C									
Total Organic Carbon	1.7	mg/L	1.0	0.13	1		03/07/18 12:29	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-2 Lab ID: 60265113007 Collected: 03/01/18 16:00 Received: 03/05/18 05:30 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									
Aluminum	28800	ug/L	75.0	28.8	1	03/06/18 11:00	03/08/18 13:05	7429-90-5	
Barium	48.4	ug/L	5.0	0.91	1	03/06/18 11:00	03/08/18 13:05	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/08/18 13:05	7440-41-7	
Boron	14800	ug/L	100	3.5	1	03/06/18 11:00	03/08/18 13:05	7440-42-8	
Calcium	22600	ug/L	100	36.0	1	03/06/18 11:00	03/08/18 13:05	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/08/18 13:05	7440-48-4	
Copper	10.9	ug/L	10.0	4.8	1	03/06/18 11:00	03/08/18 13:05	7440-50-8	
Iron	129	ug/L	50.0	12.4	1	03/06/18 11:00	03/08/18 13:05	7439-89-6	
Lead	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/08/18 13:05	7439-92-1	
Lithium	13.7	ug/L	10.0	2.9	1	03/06/18 11:00	03/08/18 13:05	7439-93-2	
Magnesium	87.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/08/18 13:05	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/08/18 13:05	7439-96-5	
Molybdenum	682	ug/L	20.0	1.3	1	03/06/18 11:00	03/08/18 13:05	7439-98-7	
Nickel	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/08/18 13:05	7440-02-0	
Potassium	52600	ug/L	500	52.3	1	03/06/18 11:00	03/08/18 13:05	7440-09-7	
Silver	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/08/18 13:05	7440-22-4	
Sodium	750000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:46	7440-23-5	
Total Hardness by 2340B	56800	ug/L	500		1	03/06/18 11:00	03/08/18 13:05		
Zinc	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/08/18 13:05	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	29500	ug/L	75.0	28.8	1	03/06/18 11:00	03/07/18 17:58	7429-90-5	D9
Barium, Dissolved	37.4	ug/L	5.0	0.91	1	03/06/18 11:00	03/07/18 17:58	7440-39-3	
Beryllium, Dissolved	<0.16	ug/L	1.0	0.16	1	03/06/18 11:00	03/07/18 17:58	7440-41-7	
Boron, Dissolved	15500	ug/L	100	3.5	1	03/06/18 11:00	03/07/18 17:58	7440-42-8	D9
Calcium, Dissolved	22800	ug/L	100	36.0	1	03/06/18 11:00	03/07/18 17:58	7440-70-2	D9
Cobalt, Dissolved	<0.73	ug/L	5.0	0.73	1	03/06/18 11:00	03/07/18 17:58	7440-48-4	
Copper, Dissolved	10.1	ug/L	10.0	4.8	1	03/06/18 11:00	03/07/18 17:58	7440-50-8	
Iron, Dissolved	<12.4	ug/L	50.0	12.4	1	03/06/18 11:00	03/07/18 17:58	7439-89-6	
Lead, Dissolved	<2.4	ug/L	5.0	2.4	1	03/06/18 11:00	03/07/18 17:58	7439-92-1	
Lithium, Dissolved	12.3	ug/L	10.0	2.9	1	03/06/18 11:00	03/07/18 17:58	7439-93-2	
Magnesium, Dissolved	<15.4	ug/L	50.0	15.4	1	03/06/18 11:00	03/07/18 17:58	7439-95-4	
Manganese, Dissolved	<1.8	ug/L	5.0	1.8	1	03/06/18 11:00	03/07/18 17:58	7439-96-5	
Molybdenum, Dissolved	724	ug/L	20.0	1.3	1	03/06/18 11:00	03/07/18 17:58	7439-98-7	D9
Nickel, Dissolved	<2.3	ug/L	5.0	2.3	1	03/06/18 11:00	03/07/18 17:58	7440-02-0	
Potassium, Dissolved	55400	ug/L	500	52.3	1	03/06/18 11:00	03/07/18 17:58	7440-09-7	D9
Silver, Dissolved	<1.9	ug/L	7.0	1.9	1	03/06/18 11:00	03/07/18 17:58	7440-22-4	
Sodium, Dissolved	691000	ug/L	5000	284	10	03/06/18 11:00	03/08/18 13:37	7440-23-5	
Zinc, Dissolved	<11.2	ug/L	50.0	11.2	1	03/06/18 11:00	03/07/18 17:58	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	0.47J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 20:11	7440-36-0	
Arsenic	15.0	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 20:11	7440-38-2	
Cadmium	0.072J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 20:11	7440-43-9	
Chromium	120	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 20:11	7440-47-3	
Selenium	182	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 20:11	7782-49-2	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Sample: L-LCPB-2 **Lab ID: 60265113007** Collected: 03/01/18 16:00 Received: 03/05/18 05:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Thallium	0.42J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 20:11	7440-28-0	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony, Dissolved	0.45J	ug/L	1.0	0.026	1	03/06/18 11:00	03/13/18 02:43	7440-36-0	
Arsenic, Dissolved	13.1	ug/L	1.0	0.052	1	03/06/18 11:00	03/13/18 02:43	7440-38-2	
Cadmium, Dissolved	0.032J	ug/L	0.50	0.018	1	03/06/18 11:00	03/13/18 02:43	7440-43-9	
Chromium, Dissolved	119	ug/L	1.0	0.054	1	03/06/18 11:00	03/13/18 02:43	7440-47-3	
Selenium, Dissolved	159	ug/L	1.0	0.086	1	03/06/18 11:00	03/13/18 02:43	7782-49-2	
Thallium, Dissolved	0.48J	ug/L	1.0	0.036	1	03/06/18 11:00	03/13/18 14:29	7440-28-0	B
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.090	ug/L	0.20	0.090	1	03/11/18 11:15	03/11/18 16:59	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	861	mg/L	20.0	4.9	1		03/13/18 12:17		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1860	mg/L	5.0	5.0	1		03/07/18 09:46		
4500S2D Sulfide, Total Analytical Method: SM 4500-S-2 D									
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/06/18 17:11	18496-25-8	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	16.2	mg/L	1.0	0.46	1		03/06/18 19:27	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.063	1		03/06/18 19:27	16984-48-8	
Sulfate	728	mg/L	100	23.6	100		03/09/18 00:34	14808-79-8	
410.4 COD Analytical Method: EPA 410.4									
Chemical Oxygen Demand	5.4J	mg/L	10.0	3.1	1		03/13/18 12:46		
5310C TOC Analytical Method: SM 5310C									
Total Organic Carbon	1.8	mg/L	1.0	0.13	1		03/07/18 12:42	7440-44-0	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 517075

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2116742

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	03/11/18 16:06	

LABORATORY CONTROL SAMPLE: 2116743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2116744 2116745

Parameter	Units	60264894001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Conc.	Spike Conc.	Conc.						
Mercury	ug/L	ND	5	5	4.8	4.5	96	90	75-125	6	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516447

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2113828

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	<21.1	75.0	21.1	03/08/18 12:39	
Barium	ug/L	<1.5	5.0	1.5	03/08/18 12:39	
Beryllium	ug/L	<0.16	1.0	0.16	03/08/18 12:39	
Boron	ug/L	<12.5	100	12.5	03/08/18 12:39	
Calcium	ug/L	<53.5	200	53.5	03/08/18 12:39	
Cobalt	ug/L	<0.87	5.0	0.87	03/08/18 12:39	
Copper	ug/L	<4.5	10.0	4.5	03/08/18 12:39	
Iron	ug/L	<6.1	50.0	6.1	03/08/18 12:39	
Lead	ug/L	<3.0	10.0	3.0	03/08/18 12:39	
Lithium	ug/L	<4.6	10.0	4.6	03/08/18 12:39	
Magnesium	ug/L	<14.0	50.0	14.0	03/08/18 12:39	
Manganese	ug/L	<0.73	5.0	0.73	03/08/18 12:39	
Molybdenum	ug/L	<0.90	20.0	0.90	03/08/18 12:39	
Nickel	ug/L	<1.4	5.0	1.4	03/08/18 12:39	
Potassium	ug/L	<79.3	500	79.3	03/08/18 12:39	
Silver	ug/L	<2.0	7.0	2.0	03/08/18 12:39	
Sodium	ug/L	<157	500	157	03/08/18 12:39	
Total Hardness by 2340B	ug/L	69.7J	500		03/08/18 12:39	
Zinc	ug/L	<3.5	50.0	3.5	03/08/18 12:39	

LABORATORY CONTROL SAMPLE: 2113829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9810	98	85-115	
Barium	ug/L	1000	974	97	85-115	
Beryllium	ug/L	1000	988	99	85-115	
Boron	ug/L	1000	944	94	85-115	
Calcium	ug/L	10000	9670	97	85-115	
Cobalt	ug/L	1000	987	99	85-115	
Copper	ug/L	1000	989	99	85-115	
Iron	ug/L	10000	9800	98	85-115	
Lead	ug/L	1000	958	96	85-115	
Lithium	ug/L	1000	987	99	85-115	
Magnesium	ug/L	10000	9740	97	85-115	
Manganese	ug/L	1000	975	98	85-115	
Molybdenum	ug/L	1000	978	98	85-115	
Nickel	ug/L	1000	952	95	85-115	
Potassium	ug/L	10000	9310	93	85-115	
Silver	ug/L	500	498	100	85-115	
Sodium	ug/L	10000	9740	97	85-115	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

LABORATORY CONTROL SAMPLE: 2113829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness by 2340B	ug/L		64200			
Zinc	ug/L	1000	978	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113830 2113831

Parameter	Units	60265113002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Aluminum	ug/L	2040	10000	10000	12400	11600	103	95	70-130	7	20		
Barium	ug/L	47.0	1000	1000	1050	996	101	95	70-130	6	20		
Beryllium	ug/L	<0.16	1000	1000	1020	963	102	96	70-130	6	20		
Boron	ug/L	8100	1000	1000	9540	9380	144	128	70-130	2	20	M1	
Calcium	ug/L	87700	10000	10000	101000	94200	129	66	70-130	7	20	M1	
Cobalt	ug/L	<0.73	1000	1000	1000	942	100	94	70-130	6	20		
Copper	ug/L	<4.8	1000	1000	1010	1000	101	100	70-130	1	20		
Iron	ug/L	122	10000	10000	10300	9790	101	97	70-130	5	20		
Lead	ug/L	2.4J	1000	1000	965	934	96	93	70-130	3	20		
Lithium	ug/L	59.8	1000	1000	1110	1040	105	98		6			
Magnesium	ug/L	1540	10000	10000	11400	10400	98	89	70-130	8	20		
Manganese	ug/L	2.3J	1000	1000	993	929	99	93	70-130	7	20		
Molybdenum	ug/L	218	1000	1000	1240	1160	102	94	70-130	7	20		
Nickel	ug/L	<2.3	1000	1000	967	931	97	93	70-130	4	20		
Potassium	ug/L	14200	10000	10000	24700	23500	105	93	70-130	5	20		
Silver	ug/L	<1.9	500	500	509	499	102	100	70-130	2	20		
Sodium	ug/L	69000	10000	10000	82300	75600	132	66	70-130	8	20	M1	
Total Hardness by 2340B	ug/L	225000			298000	278000				7			
Zinc	ug/L	<11.2	1000	1000	1000	946	100	94	70-130	6	20		

MATRIX SPIKE SAMPLE: 2113832

Parameter	Units	60265164001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	ND	10000	9890	99	70-130	
Barium	ug/L	72.5	1000	1050	98	70-130	
Beryllium	ug/L	ND	1000	1000	100	70-130	
Boron	ug/L	139	1000	1090	96	70-130	
Calcium	ug/L	60400	10000	70600	102	70-130	
Cobalt	ug/L	ND	1000	970	97	70-130	
Copper	ug/L	ND	1000	982	98	70-130	
Iron	ug/L	55.5	10000	9940	99	70-130	
Lead	ug/L	ND	1000	944	94	70-130	
Lithium	ug/L	ND	1000	1010	100		
Magnesium	ug/L	20800	10000	30600	98	70-130	
Manganese	ug/L	176	1000	1140	96	70-130	
Molybdenum	ug/L	ND	1000	981	98	70-130	
Nickel	ug/L	ND	1000	942	94	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

MATRIX SPIKE SAMPLE:		2113832					
Parameter	Units	60265164001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	6970	10000	16600	96	70-130	
Silver	ug/L	ND	500	492	98	70-130	
Sodium	ug/L	52700	10000	63300	106	70-130	
Total Hardness by 2340B	ug/L	236000		302000			
Zinc	ug/L	ND	1000	970	97	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516442 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

METHOD BLANK: 2113818 Matrix: Water
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	<21.1	75.0	21.1	03/07/18 17:20	
Barium, Dissolved	ug/L	<1.5	5.0	1.5	03/07/18 17:20	
Beryllium, Dissolved	ug/L	<0.16	1.0	0.16	03/07/18 17:20	
Boron, Dissolved	ug/L	<12.5	100	12.5	03/07/18 17:20	
Calcium, Dissolved	ug/L	<53.5	200	53.5	03/07/18 17:20	
Cobalt, Dissolved	ug/L	<0.87	5.0	0.87	03/07/18 17:20	
Copper, Dissolved	ug/L	<4.5	15.0	4.5	03/07/18 17:20	
Iron, Dissolved	ug/L	<6.1	50.0	6.1	03/07/18 17:20	
Lead, Dissolved	ug/L	<3.0	10.0	3.0	03/07/18 17:20	
Lithium, Dissolved	ug/L	<4.6	10.0	4.6	03/07/18 17:20	
Magnesium, Dissolved	ug/L	<14.0	50.0	14.0	03/07/18 17:20	
Manganese, Dissolved	ug/L	<0.73	5.0	0.73	03/07/18 17:20	
Molybdenum, Dissolved	ug/L	<0.90	20.0	0.90	03/07/18 17:20	
Nickel, Dissolved	ug/L	<1.4	5.0	1.4	03/07/18 17:20	
Potassium, Dissolved	ug/L	<79.3	500	79.3	03/07/18 17:20	
Silver, Dissolved	ug/L	<2.0	7.0	2.0	03/07/18 17:20	
Sodium, Dissolved	ug/L	<157	500	157	03/07/18 17:20	
Zinc, Dissolved	ug/L	<3.5	50.0	3.5	03/07/18 17:20	

LABORATORY CONTROL SAMPLE: 2113819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9880	99	93-108	
Barium, Dissolved	ug/L	1000	1000	100	93-109	
Beryllium, Dissolved	ug/L	1000	1000	100	94-109	
Boron, Dissolved	ug/L	1000	949	95	87-109	
Calcium, Dissolved	ug/L	10000	9970	100	88-111	
Cobalt, Dissolved	ug/L	1000	1010	101	95-112	
Copper, Dissolved	ug/L	1000	983	98	91-111	
Iron, Dissolved	ug/L	10000	10100	101	92-109	
Lead, Dissolved	ug/L	1000	1010	101	94-111	
Lithium, Dissolved	ug/L	1000	992	99	85-115	
Magnesium, Dissolved	ug/L	10000	9760	98	86-111	
Manganese, Dissolved	ug/L	1000	989	99	92-111	
Molybdenum, Dissolved	ug/L	1000	1000	100	93-109	
Nickel, Dissolved	ug/L	1000	998	100	94-109	
Potassium, Dissolved	ug/L	10000	9820	98	90-108	
Silver, Dissolved	ug/L	500	490	98	93-111	
Sodium, Dissolved	ug/L	10000	9730	97	89-108	
Zinc, Dissolved	ug/L	1000	1010	101	95-111	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113820												2113821	
Parameter	Units	60264907005 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
Aluminum, Dissolved	ug/L	ND	10000	10000	9690	10100	97	101	70-130	4	20		
Barium, Dissolved	ug/L	78.4	1000	1000	1050	1100	97	102	70-130	4	20		
Beryllium, Dissolved	ug/L	ND	1000	1000	989	1030	99	103	70-130	4	20		
Boron, Dissolved	ug/L	ND	1000	1000	1030	1040	96	98	70-130	2	20		
Calcium, Dissolved	ug/L	45400	10000	10000	53200	55700	78	103	70-130	5	20		
Cobalt, Dissolved	ug/L	ND	1000	1000	986	1010	99	101	70-130	3	20		
Copper, Dissolved	ug/L	ND	1000	1000	997	1010	99	101	70-130	2	20		
Iron, Dissolved	ug/L	ND	10000	10000	9840	10300	98	103	70-130	4	20		
Lead, Dissolved	ug/L	ND	1000	1000	972	1000	97	100	70-130	3	20		
Lithium, Dissolved	ug/L	13.0	1000	1000	993	1040	98	102	70-130	4	20		
Magnesium, Dissolved	ug/L	6220	10000	10000	15700	16000	95	97	70-130	1	20		
Manganese, Dissolved	ug/L	29.1	1000	1000	1020	1030	99	100	70-130	1	20		
Molybdenum, Dissolved	ug/L	ND	1000	1000	993	1020	99	102	70-130	3	20		
Nickel, Dissolved	ug/L	ND	1000	1000	968	998	97	100	70-130	3	20		
Potassium, Dissolved	ug/L	6270	10000	10000	15500	16200	93	99	70-130	4	20		
Silver, Dissolved	ug/L	ND	500	500	496	498	99	99	70-130	1	20		
Sodium, Dissolved	ug/L	45100	10000	10000	52900	55200	78	102	70-130	4	20		
Zinc, Dissolved	ug/L	ND	1000	1000	1000	1030	99	102	70-130	3	20		

MATRIX SPIKE SAMPLE: 2113822							
Parameter	Units	60265113006 Result	Spike Conc.	MS	MS	% Rec Limits	Qualifiers
				Result	% Rec		
Aluminum, Dissolved	ug/L	27600	10000	38900	113	70-130	
Barium, Dissolved	ug/L	34.9	1000	1050	102	70-130	
Beryllium, Dissolved	ug/L	<0.16	1000	1030	103	70-130	
Boron, Dissolved	ug/L	14400	1000	16400	197	70-130	M1
Calcium, Dissolved	ug/L	21600	10000	32600	111	70-130	
Cobalt, Dissolved	ug/L	<0.73	1000	992	99	70-130	
Copper, Dissolved	ug/L	8.7J	1000	1040	103	70-130	
Iron, Dissolved	ug/L	<12.4	10000	10300	103	70-130	
Lead, Dissolved	ug/L	<2.4	1000	969	97	70-130	
Lithium, Dissolved	ug/L	12.7	1000	1080	107	70-130	
Magnesium, Dissolved	ug/L	<15.4	10000	9730	97	70-130	
Manganese, Dissolved	ug/L	<1.8	1000	1020	102	70-130	
Molybdenum, Dissolved	ug/L	677	1000	1680	101	70-130	
Nickel, Dissolved	ug/L	<2.3	1000	976	97	70-130	
Potassium, Dissolved	ug/L	52100	10000	65100	130	70-130	
Silver, Dissolved	ug/L	<1.9	500	523	104	70-130	
Sodium, Dissolved	ug/L	671000	10000	691000	205	70-130	M1
Zinc, Dissolved	ug/L	<11.2	1000	1050	105	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516445 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2113823 Matrix: Water
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/13/18 19:33	
Arsenic	ug/L	<0.052	1.0	0.052	03/13/18 19:33	
Cadmium	ug/L	<0.018	0.50	0.018	03/13/18 19:33	
Chromium	ug/L	<0.054	1.0	0.054	03/13/18 19:33	
Selenium	ug/L	<0.086	1.0	0.086	03/13/18 19:33	
Thallium	ug/L	<0.036	1.0	0.036	03/13/18 19:33	

LABORATORY CONTROL SAMPLE: 2113824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	85-115	
Arsenic	ug/L	40	38.4	96	85-115	
Cadmium	ug/L	40	39.1	98	85-115	
Chromium	ug/L	40	39.6	99	85-115	
Selenium	ug/L	40	36.8	92	85-115	
Thallium	ug/L	40	37.2	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113825 2113826

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60265113001 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	2.0	40	40	41.2	41.7	98	99	70-130	1	20
Arsenic	ug/L	56.5	40	40	94.5	95.2	95	97	70-130	1	20
Cadmium	ug/L	0.066J	40	40	37.5	38.2	94	95	70-130	2	20
Chromium	ug/L	0.34J	40	40	38.0	38.8	94	96	70-130	2	20
Selenium	ug/L	2.1	40	40	38.0	38.2	90	90	70-130	0	20
Thallium	ug/L	0.26J	40	40	38.0	38.5	94	96	70-130	1	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516439 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

METHOD BLANK: 2113811 Matrix: Water
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	<0.026	1.0	0.026	03/13/18 01:35	
Arsenic, Dissolved	ug/L	<0.052	1.0	0.052	03/13/18 01:35	
Cadmium, Dissolved	ug/L	<0.018	0.50	0.018	03/13/18 01:35	
Chromium, Dissolved	ug/L	0.060J	1.0	0.054	03/13/18 01:35	
Selenium, Dissolved	ug/L	<0.086	1.0	0.086	03/13/18 01:35	
Thallium, Dissolved	ug/L	0.075J	1.0	0.036	03/13/18 13:55	

LABORATORY CONTROL SAMPLE: 2113812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	40	39.3	98	85-115	
Arsenic, Dissolved	ug/L	40	40.0	100	85-115	
Cadmium, Dissolved	ug/L	40	38.8	97	85-115	
Chromium, Dissolved	ug/L	40	39.4	98	85-115	
Selenium, Dissolved	ug/L	40	38.6	96	85-115	
Thallium, Dissolved	ug/L	40	38.4	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113813 2113814

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Spike Conc.	Result	Spike Conc.	Result						
Antimony, Dissolved	ug/L	40	1.7	40	41.1	98	99	70-130	1	20	
Arsenic, Dissolved	ug/L	40	73.9	40	111	93	93	70-130	0	20	
Cadmium, Dissolved	ug/L	40	<0.018	40	38.1	95	95	70-130	0	20	
Chromium, Dissolved	ug/L	40	0.78J	40	38.9	95	95	70-130	0	20	
Selenium, Dissolved	ug/L	40	0.85J	40	36.5	89	90	70-130	1	20	
Thallium, Dissolved	ug/L	40	0.11J	40	40.0	100	99	70-130	1	20	

MATRIX SPIKE SAMPLE: 2113815

Parameter	Units	60265113007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	0.45J	40	39.4	97	70-130	
Arsenic, Dissolved	ug/L	13.1	40	47.8	87	70-130	
Cadmium, Dissolved	ug/L	0.032J	40	36.3	91	70-130	
Chromium, Dissolved	ug/L	119	40	155	89	70-130	
Selenium, Dissolved	ug/L	159	40	191	79	70-130	
Thallium, Dissolved	ug/L	0.48J	40	41.8	103	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516718

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60265113001, 60265113002

METHOD BLANK: 2114951

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	03/08/18 11:29	

LABORATORY CONTROL SAMPLE: 2114952

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	515	103	90-110	

SAMPLE DUPLICATE: 2114953

Parameter	Units	60264701012 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	164	165	0	10	

SAMPLE DUPLICATE: 2114954

Parameter	Units	60264851002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	86.0	78.6	9	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 517340

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2117385

Matrix: Water

Associated Lab Samples: 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	03/13/18 11:39	

LABORATORY CONTROL SAMPLE: 2117386

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 2117387

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	519	543	4	10	

SAMPLE DUPLICATE: 2117388

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	404	414	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516574

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2114327

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/07/18 09:39	

LABORATORY CONTROL SAMPLE: 2114328

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

SAMPLE DUPLICATE: 2114329

Parameter	Units	60265051001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	575	584	2	10	

SAMPLE DUPLICATE: 2114330

Parameter	Units	60265051002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	528	524	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516400

Analysis Method: SM 4500-S-2 D

QC Batch Method: SM 4500-S-2 D

Analysis Description: 4500S2D Sulfide, Total

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2113653

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	03/06/18 17:04	

LABORATORY CONTROL SAMPLE: 2113654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.50	100	80-120	

MATRIX SPIKE SAMPLE: 2113655

Parameter	Units	60265051001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	<0.0048	.5	0.51	103	75-125	

SAMPLE DUPLICATE: 2113656

Parameter	Units	60265051002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch:	516426	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007		

METHOD BLANK: 2113746 Matrix: Water
Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/06/18 10:11	
Fluoride	mg/L	<0.063	0.20	0.063	03/06/18 10:11	
Sulfate	mg/L	<0.24	1.0	0.24	03/06/18 10:11	

LABORATORY CONTROL SAMPLE: 2113747

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113748 2113749

Parameter	Units	60264569001		2113748		2113749		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.						
Chloride	mg/L	81.1	50	50	133	134	103	105	80-120	1	15		
Fluoride	mg/L	0.47	2.5	2.5	2.9	2.9	95	97	80-120	2	15		
Sulfate	mg/L	247	100	100	339	344	92	97	80-120	1	15		

MATRIX SPIKE SAMPLE: 2113750

Parameter	Units	60265051003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.0	5	24.4	110	80-120 E	
Fluoride	mg/L	0.088J	2.5	2.5	95	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516599 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

METHOD BLANK: 2114389 Matrix: Water
 Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/08/18 20:23	
Sulfate	mg/L	<0.24	1.0	0.24	03/08/18 20:23	

LABORATORY CONTROL SAMPLE: 2114390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2114391 2114392

Parameter	Units	60265113007		2114391		2114392		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Sulfate	mg/L	728	500	500	500	1230	1240	101	103	80-120	1	15

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch:	517187	Analysis Method:	EPA 410.4
QC Batch Method:	EPA 410.4	Analysis Description:	410.4 COD
Associated Lab Samples:	60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007		

METHOD BLANK:	2116996	Matrix:	Water
Associated Lab Samples:	60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/13/18 12:36	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	53.1	106	90-110	

Parameter	Units	60265514001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	27.8	50	77.9	100	90-110	

Parameter	Units	60264993002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	16.2	50	65.0	98	90-110	

Parameter	Units	60264915001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	629	647	3	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

QC Batch: 516552

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Total Organic Carbon

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

METHOD BLANK: 2114256

Matrix: Water

Associated Lab Samples: 60265113001, 60265113002, 60265113003, 60265113004, 60265113005, 60265113006, 60265113007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	03/07/18 09:31	

LABORATORY CONTROL SAMPLE: 2114257

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.0	100	80-120	

MATRIX SPIKE SAMPLE: 2114258

Parameter	Units	7582853001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.3	5	9.3	98	80-120	

SAMPLE DUPLICATE: 2114259

Parameter	Units	7582855001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	3.5	3.5	0	25	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

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.

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

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within 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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265113001	L-LCPA-3S	EPA 200.7	516447	EPA 200.7	516485
60265113002	L-LCPA-3D	EPA 200.7	516447	EPA 200.7	516485
60265113003	L-LCPB-1	EPA 200.7	516447	EPA 200.7	516485
60265113004	L-LCPB-3	EPA 200.7	516447	EPA 200.7	516485
60265113005	L-FB-2	EPA 200.7	516447	EPA 200.7	516485
60265113006	L-DUP-3	EPA 200.7	516447	EPA 200.7	516485
60265113007	L-LCPB-2	EPA 200.7	516447	EPA 200.7	516485
60265113001	L-LCPA-3S	EPA 200.7	516442	EPA 200.7	516482
60265113002	L-LCPA-3D	EPA 200.7	516442	EPA 200.7	516482
60265113003	L-LCPB-1	EPA 200.7	516442	EPA 200.7	516482
60265113004	L-LCPB-3	EPA 200.7	516442	EPA 200.7	516482
60265113006	L-DUP-3	EPA 200.7	516442	EPA 200.7	516482
60265113007	L-LCPB-2	EPA 200.7	516442	EPA 200.7	516482
60265113001	L-LCPA-3S	EPA 200.8	516445	EPA 200.8	516477
60265113002	L-LCPA-3D	EPA 200.8	516445	EPA 200.8	516477
60265113003	L-LCPB-1	EPA 200.8	516445	EPA 200.8	516477
60265113004	L-LCPB-3	EPA 200.8	516445	EPA 200.8	516477
60265113005	L-FB-2	EPA 200.8	516445	EPA 200.8	516477
60265113006	L-DUP-3	EPA 200.8	516445	EPA 200.8	516477
60265113007	L-LCPB-2	EPA 200.8	516445	EPA 200.8	516477
60265113001	L-LCPA-3S	EPA 200.8	516439	EPA 200.8	516475
60265113002	L-LCPA-3D	EPA 200.8	516439	EPA 200.8	516475
60265113003	L-LCPB-1	EPA 200.8	516439	EPA 200.8	516475
60265113004	L-LCPB-3	EPA 200.8	516439	EPA 200.8	516475
60265113006	L-DUP-3	EPA 200.8	516439	EPA 200.8	516475
60265113007	L-LCPB-2	EPA 200.8	516439	EPA 200.8	516475
60265113001	L-LCPA-3S	EPA 7470	517075	EPA 7470	517078
60265113002	L-LCPA-3D	EPA 7470	517075	EPA 7470	517078
60265113003	L-LCPB-1	EPA 7470	517075	EPA 7470	517078
60265113004	L-LCPB-3	EPA 7470	517075	EPA 7470	517078
60265113005	L-FB-2	EPA 7470	517075	EPA 7470	517078
60265113006	L-DUP-3	EPA 7470	517075	EPA 7470	517078
60265113007	L-LCPB-2	EPA 7470	517075	EPA 7470	517078
60265113001	L-LCPA-3S	SM 2320B	516718		
60265113002	L-LCPA-3D	SM 2320B	516718		
60265113003	L-LCPB-1	SM 2320B	517340		
60265113004	L-LCPB-3	SM 2320B	517340		
60265113005	L-FB-2	SM 2320B	517340		
60265113006	L-DUP-3	SM 2320B	517340		
60265113007	L-LCPB-2	SM 2320B	517340		
60265113001	L-LCPA-3S	SM 2540C	516574		
60265113002	L-LCPA-3D	SM 2540C	516574		
60265113003	L-LCPB-1	SM 2540C	516574		
60265113004	L-LCPB-3	SM 2540C	516574		
60265113005	L-FB-2	SM 2540C	516574		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265113

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265113006	L-DUP-3	SM 2540C	516574		
60265113007	L-LCPB-2	SM 2540C	516574		
60265113001	L-LCPA-3S	SM 4500-S-2 D	516400		
60265113002	L-LCPA-3D	SM 4500-S-2 D	516400		
60265113003	L-LCPB-1	SM 4500-S-2 D	516400		
60265113004	L-LCPB-3	SM 4500-S-2 D	516400		
60265113005	L-FB-2	SM 4500-S-2 D	516400		
60265113006	L-DUP-3	SM 4500-S-2 D	516400		
60265113007	L-LCPB-2	SM 4500-S-2 D	516400		
60265113001	L-LCPA-3S	EPA 300.0	516426		
60265113001	L-LCPA-3S	EPA 300.0	516599		
60265113002	L-LCPA-3D	EPA 300.0	516426		
60265113002	L-LCPA-3D	EPA 300.0	516599		
60265113003	L-LCPB-1	EPA 300.0	516426		
60265113003	L-LCPB-1	EPA 300.0	516599		
60265113004	L-LCPB-3	EPA 300.0	516426		
60265113004	L-LCPB-3	EPA 300.0	516599		
60265113005	L-FB-2	EPA 300.0	516426		
60265113006	L-DUP-3	EPA 300.0	516426		
60265113006	L-DUP-3	EPA 300.0	516599		
60265113007	L-LCPB-2	EPA 300.0	516426		
60265113007	L-LCPB-2	EPA 300.0	516599		
60265113001	L-LCPA-3S	EPA 410.4	517187		
60265113002	L-LCPA-3D	EPA 410.4	517187		
60265113003	L-LCPB-1	EPA 410.4	517187		
60265113004	L-LCPB-3	EPA 410.4	517187		
60265113005	L-FB-2	EPA 410.4	517187		
60265113006	L-DUP-3	EPA 410.4	517187		
60265113007	L-LCPB-2	EPA 410.4	517187		
60265113001	L-LCPA-3S	SM 5310C	516552		
60265113002	L-LCPA-3D	SM 5310C	516552		
60265113003	L-LCPB-1	SM 5310C	516552		
60265113004	L-LCPB-3	SM 5310C	516552		
60265113005	L-FB-2	SM 5310C	516552		
60265113006	L-DUP-3	SM 5310C	516552		
60265113007	L-LCPB-2	SM 5310C	516552		

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Sample Condition Upon Receipt

WO#: 60265113



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-266 CF+0.2 T-239 CF-0.1 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 14 2.0 Corr. Factor CF+0.2 CF-0.1 Corrected 16 2.2

Date and initials of person examining contents: AC 3/5/18

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples for L-LCPB-1 are labeled L-LCPB-3, but the time matches 1505 on the COC. Missing filtered volume for sample L-FB-2
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Check _____ Date: 3/5/18



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:		Section B Required Project Information:		Section C Invoice Information:	
Company: Golder Associates		Report To: Mark Haddock (mhaddock@golder.com)		Attention:	
Address: 820 South Main Street, Suite 100		Copy To: Jeffrey Ingram		Company Name:	
St Charles, MO 63301				Address:	
Email To: mhaddock@golder.com		Purchase Order No.:		NPDES	
Phone: 636-724-9191 Fax: 636-724-9323		Project Name: Ameren Labadie Energy Center		GROUND WATER	
Requested Due Date/AT: Standard		Project Number: 1531406.0001		UST	
		Site Location: Jamie Church		RCRA	
		Pace Profile #: 9285, line 5		OTHER	
		MO		DRINKING WATER	

ITEM #	Valid Matrix Codes		COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES	Requested Analysis Filtered (Y/N)	Temp in °C	Received on	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	MATRIX	CODE	COMPOSITE START	COMPOSITE END/GRAB									
1	L-LCPA-3S	DW	3/2/18	0850	L6	7	Unpreserved	Analysis Test: [X] Metals, [X] Dis., [X] COD, [X] Alkalinity, [X] Chloride/Fluoride/Sulfate, [X] TDS, [X] TOC, [X] Sulfide	Y				
2	L-LCPA-3D	WW	J	1300	L6	1	NaOH + Zn Acetate	Residual Chlorine (Y/N)	N	60065113			
3	L-LCPB-1	WW	3/1/18	1505	L6	1							
4	L-LCPB-3	P	3/1/18	1730	L6	1							
5	L-FB-2	SL	J	1730	L6	1							
6	L-DUP-3	WP	J	1600	L6	1							
7	L-LCPB-2	AR			L6	1							
8		OT											
9		TS											
10													
11													
12													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
EPA 200.7: Al, Pb, Li, Ba, Be, B, Ca, Co, Cu, Fe, Mg, Mn, Mo, Ni, K, Ag, Na, Zn, Hardness	E.C. Sam. by Golder	3/2/18	1540	[Signature]	3/2/18	1540	
EPA 200.8: As, Cd, Cr, Se, Sb, Ti	[Signature]	3/1/18	1700	[Signature]	3/1/18	1700	
	[Signature]	3/1/18	1700	[Signature]	3/1/18	1700	

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER: Eric Shore, Sr	DATE Signed (MM/DD/YYYY): 03/02/18
SIGNATURE of SAMPLER: [Signature]	



MEMORANDUM

Date: March 26, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
Project No.: 1531406
Project: Ameren
Email:
RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60265113

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/26/18

Laboratory: Pace Analytical

SDG #: 60265113

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: L-LCPA-3S, L-LCPA-3D, L-LCPB-1, L-LCPB-3, L-FB-2, L-DUP-3, L-LCPB-2

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>3/2/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>TH(69.7), Cd(0.060), Tl₁(0.075)</u>
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>B(75.8), Ca(46.2), Li(4.3), K(633), Na(857), Tl(157)</u> <u>Sb(0.048), TDS(8.5)</u>
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>DUP-3 @ L-LCPB-2</u>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>FB-2 @ L-LCPB-3</u> <u>Fe(34.1), Cd(25), COD(41.2)</u>
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>B, Na</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Ca, Na</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Max
N=6

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LCPA-3S	Chloride	18.6	D	DF of 2
|	Sulfate	272	D	↓ 25
|	Cr(d)	1.0	U	Detected in Blank; PQL > Result > MDL
|	Tl(d)	1.0	U	
L-LCPA-3D	Cr(d)	1.0	U	| |
|	Tl(d)	1.0	U	
|	Chloride	18.9	D	DF of 2
|	Sulfate	295	D	↓ 25
L-LCPB-1	Sulfate	1060	D	↓ 100
↓	Tl(d)	1.0	U	Blank; PQL > Result > MDL
L-LCPB-2	Sulfate	728	D	DF of 100
|	Tl(d)	1.0	U	Blank; PQL > Result > MDL
|	Fe(t)	129	J	RPD exceeded limit; Result > MDL
|	Cd(t)	0.072	J	| |
|	COD	5.4	J	
L-DUP-3	Fe(t)	91.4	J	| |
|	Cd(t)	0.056	J	
|	COD	8.2	J	
|	Tl(d)	1.0	U	Blank; PQL > Result > MDL
|	Sulfate	710	D	DF of 100
L-LCPB-3	Na(t)	969000	D	↓ 10
|	Na(d)	1080000	D	↓ 10
|	Sulfate	999	D	↓ 100
|	Tl(d)	1.0	U	Blank; PQL > Result > MDL
|	Sb(t)	1.0	U	| |
|	Sb(d)	1.0	U	
L-FB-2	TH	500	U	| |
L-LCPB-1	Na(d)	925000	D	DF of 10
↓	Na(t)	935000	D	↓ 10

Signature: Tommy J. Jordan

Date: 3/26/2018

March 15, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265443

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 08, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60265443001	PZ-3S	Water	03/06/18 10:40	03/08/18 03:05
60265443002	PZ-3D	Water	03/06/18 12:45	03/08/18 03:05
60265443003	PZ-1S	Water	03/06/18 15:00	03/08/18 03:05
60265443004	DUP-4	Water	03/06/18 08:00	03/08/18 03:05
60265443005	PZ-1D	Water	03/07/18 08:45	03/08/18 03:05
60265443006	PZ-6S	Water	03/07/18 10:35	03/08/18 03:05
60265443007	PZ-6D	Water	03/07/18 13:10	03/08/18 03:05

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60265443001	PZ-3S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265443002	PZ-3D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265443003	PZ-1S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265443004	DUP-4	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265443005	PZ-1D	EPA 200.7	SMW	14	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60265443006	PZ-6S	EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
60265443007	PZ-6D	EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-3S **Lab ID: 60265443001** Collected: 03/06/18 10:40 Received: 03/08/18 03:05 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							
Barium	167	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:08	7440-39-3	
Beryllium	0.52J	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:08	7440-41-7	
Boron	478	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:08	7440-42-8	
Calcium	164000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:08	7440-70-2	
Cobalt	2.3J	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:08	7440-48-4	
Iron	1970	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:08	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:08	7439-92-1	
Lithium	40.3	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:08	7439-93-2	
Magnesium	25100	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:08	7439-95-4	
Manganese	579	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:08	7439-96-5	
Molybdenum	20.7	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:08	7439-98-7	
Potassium	3940	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:08	7440-09-7	
Sodium	27900	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:08	7440-23-5	
Total Hardness by 2340B	513000	ug/L	500		1	03/12/18 16:15	03/13/18 15:08		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.055J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:43	7440-36-0	
Arsenic	1.7	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:43	7440-38-2	
Cadmium	0.074J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:43	7440-43-9	
Chromium	0.15J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:43	7440-47-3	
Selenium	0.19J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:43	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:43	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 10:49	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	455	mg/L	20.0	4.9	1		03/13/18 12:32		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	624	mg/L	5.0	5.0	1		03/10/18 13:27		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:11	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	26.5	mg/L	5.0	2.3	5		03/14/18 18:13	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		03/13/18 20:42	16984-48-8	
Sulfate	92.6	mg/L	5.0	1.2	5		03/14/18 18:13	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	<3.1	mg/L	10.0	3.1	1		03/14/18 10:49		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	1.4	mg/L	1.0	0.13	1		03/09/18 18:17	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-3D **Lab ID: 60265443002** Collected: 03/06/18 12:45 Received: 03/08/18 03:05 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							
Barium	124	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:11	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:11	7440-41-7	
Boron	1080	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:11	7440-42-8	
Calcium	97100	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:11	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:11	7440-48-4	
Iron	2310	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:11	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:11	7439-92-1	
Lithium	25.9	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:11	7439-93-2	
Magnesium	23900	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:11	7439-95-4	
Manganese	328	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:11	7439-96-5	
Molybdenum	28.2	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:11	7439-98-7	
Potassium	5940	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:11	7440-09-7	
Sodium	51800	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:11	7440-23-5	
Total Hardness by 2340B	341000	ug/L	500		1	03/12/18 16:15	03/13/18 15:11		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.094J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:46	7440-36-0	
Arsenic	1.2	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:46	7440-38-2	
Cadmium	0.049J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:46	7440-43-9	
Chromium	0.29J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:46	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:46	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:46	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 10:56	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	267	mg/L	20.0	4.9	1		03/13/18 12:44		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	520	mg/L	5.0	5.0	1		03/10/18 13:27		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:11	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	26.9	mg/L	5.0	2.3	5		03/14/18 18:41	16887-00-6	
Fluoride	0.29	mg/L	0.20	0.063	1		03/13/18 20:55	16984-48-8	
Sulfate	136	mg/L	20.0	4.7	20		03/14/18 18:55	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	5.0J	mg/L	10.0	3.1	1		03/14/18 10:49		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	1.5	mg/L	1.0	0.13	1		03/09/18 18:29	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-1S **Lab ID: 60265443003** Collected: 03/06/18 15:00 Received: 03/08/18 03:05 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							
Barium	104	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:13	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:13	7440-41-7	
Boron	19400	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:13	7440-42-8	
Calcium	94500	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:13	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:13	7440-48-4	
Iron	2670	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:13	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:13	7439-92-1	
Lithium	18.1	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:13	7439-93-2	
Magnesium	18600	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:13	7439-95-4	
Manganese	536	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:13	7439-96-5	
Molybdenum	1540	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:13	7439-98-7	
Potassium	7270	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:13	7440-09-7	
Sodium	310000	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:13	7440-23-5	
Total Hardness by 2340B	312000	ug/L	500		1	03/12/18 16:15	03/13/18 15:13		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.13J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:49	7440-36-0	
Arsenic	5.4	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:49	7440-38-2	
Cadmium	0.28J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:49	7440-43-9	
Chromium	0.43J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:49	7440-47-3	
Selenium	10.0	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:49	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:49	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 10:58	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	229	mg/L	20.0	4.9	1		03/13/18 12:50		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1390	mg/L	5.0	5.0	1		03/10/18 13:27		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:12	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.7	mg/L	1.0	0.46	1		03/13/18 21:09	16887-00-6	
Fluoride	3.1	mg/L	0.20	0.063	1		03/13/18 21:09	16984-48-8	
Sulfate	755	mg/L	100	23.6	100		03/14/18 19:09	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	32.4	mg/L	10.0	3.1	1		03/14/18 10:50		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	9.3	mg/L	1.0	0.13	1		03/09/18 18:42	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: DUP-4 **Lab ID: 60265443004** Collected: 03/06/18 08:00 Received: 03/08/18 03:05 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							
Barium	105	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:16	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:16	7440-41-7	
Boron	19200	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:16	7440-42-8	
Calcium	94600	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:16	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:16	7440-48-4	
Iron	2660	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:16	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:16	7439-92-1	
Lithium	16.7	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:16	7439-93-2	
Magnesium	18100	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:16	7439-95-4	
Manganese	524	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:16	7439-96-5	
Molybdenum	1540	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:16	7439-98-7	
Potassium	7300	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:16	7440-09-7	
Sodium	310000	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:16	7440-23-5	
Total Hardness by 2340B	311000	ug/L	500		1	03/12/18 16:15	03/13/18 15:16		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.15J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:52	7440-36-0	
Arsenic	5.5	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:52	7440-38-2	
Cadmium	0.28J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:52	7440-43-9	
Chromium	0.84J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:52	7440-47-3	
Selenium	10.8	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:52	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:52	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:00	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	227	mg/L	20.0	4.9	1		03/13/18 12:55		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1400	mg/L	5.0	5.0	1		03/10/18 13:28		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:12	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.5	mg/L	1.0	0.46	1		03/13/18 21:23	16887-00-6	
Fluoride	3.0	mg/L	0.20	0.063	1		03/13/18 21:23	16984-48-8	
Sulfate	800	mg/L	100	23.6	100		03/14/18 19:23	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	33.0	mg/L	10.0	3.1	1		03/14/18 10:54		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	9.4	mg/L	1.0	0.13	1		03/09/18 18:55	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-1D **Lab ID: 60265443005** Collected: 03/07/18 08:45 Received: 03/08/18 03:05 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							
Barium	485	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:18	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:18	7440-41-7	
Boron	174	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:18	7440-42-8	
Calcium	125000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:18	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:18	7440-48-4	
Iron	20200	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:18	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:18	7439-92-1	
Lithium	31.3	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:18	7439-93-2	
Magnesium	29500	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:18	7439-95-4	
Manganese	330	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:18	7439-96-5	
Molybdenum	2.7J	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:18	7439-98-7	
Potassium	4790	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:18	7440-09-7	
Sodium	11000	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:18	7440-23-5	
Total Hardness by 2340B	433000	ug/L	500		1	03/12/18 16:15	03/13/18 15:18		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	<0.026	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:56	7440-36-0	
Arsenic	47.3	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:56	7440-38-2	
Cadmium	0.021J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:56	7440-43-9	
Chromium	0.080J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:56	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:56	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:56	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:03	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	450	mg/L	20.0	4.9	1		03/13/18 13:01		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	420	mg/L	5.0	5.0	1		03/14/18 11:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:12	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	12.4	mg/L	1.0	0.46	1		03/13/18 21:37	16887-00-6	
Fluoride	0.18J	mg/L	0.20	0.063	1		03/13/18 21:37	16984-48-8	
Sulfate	1.5	mg/L	1.0	0.24	1		03/13/18 21:37	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	18.3	mg/L	10.0	3.1	1		03/14/18 10:54		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.7	mg/L	1.0	0.13	1		03/09/18 19:07	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-6S **Lab ID: 60265443006** Collected: 03/07/18 10:35 Received: 03/08/18 03:05 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							
Barium	261	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:21	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:21	7440-41-7	
Boron	4560	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:21	7440-42-8	
Calcium	170000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:21	7440-70-2	M1
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:21	7440-48-4	
Iron	20300	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:21	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:21	7439-92-1	
Lithium	30.5	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:21	7439-93-2	
Magnesium	35300	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:21	7439-95-4	
Manganese	1950	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:21	7439-96-5	
Molybdenum	162	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:21	7439-98-7	
Potassium	7510	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:21	7440-09-7	
Sodium	43300	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:21	7440-23-5	
Total Hardness by 2340B	569000	ug/L	500		1	03/12/18 16:15	03/13/18 15:21		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	<0.026	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 17:59	7440-36-0	
Arsenic	45.7	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 17:59	7440-38-2	
Cadmium	0.037J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 17:59	7440-43-9	
Chromium	0.080J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 17:59	7440-47-3	
Selenium	0.088J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 17:59	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 17:59	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:05	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	519	mg/L	20.0	4.9	1		03/13/18 13:07		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	701	mg/L	5.0	5.0	1		03/14/18 11:38		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:13	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	10.8	mg/L	1.0	0.46	1		03/13/18 21:51	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.063	1		03/13/18 21:51	16984-48-8	
Sulfate	138	mg/L	20.0	4.7	20		03/14/18 19:37	14808-79-8	M1
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	13.2	mg/L	10.0	3.1	1		03/14/18 10:55		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.5	mg/L	1.0	0.13	1		03/09/18 19:20	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Sample: PZ-6D **Lab ID: 60265443007** Collected: 03/07/18 13:10 Received: 03/08/18 03:05 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							
Barium	53.3	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:33	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:33	7440-41-7	
Boron	5230	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:33	7440-42-8	
Calcium	163000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:33	7440-70-2	M1
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:33	7440-48-4	
Iron	6720	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:33	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:33	7439-92-1	
Lithium	28.1	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:33	7439-93-2	
Magnesium	25800	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:33	7439-95-4	
Manganese	1090	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:33	7439-96-5	
Molybdenum	216	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:33	7439-98-7	
Potassium	5900	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:33	7440-09-7	
Sodium	58300	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:33	7440-23-5	
Total Hardness by 2340B	513000	ug/L	500		1	03/12/18 16:15	03/13/18 15:33		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.040J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:09	7440-36-0	
Arsenic	0.65J	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:09	7440-38-2	
Cadmium	0.12J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:09	7440-43-9	
Chromium	0.36J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:09	7440-47-3	
Selenium	0.097J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:09	7782-49-2	
Thallium	0.043J	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:09	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:11	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	404	mg/L	20.0	4.9	1		03/13/18 13:19		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	718	mg/L	5.0	5.0	1		03/14/18 11:39		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/12/18 15:14	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	12.5	mg/L	1.0	0.46	1		03/13/18 23:01	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.063	1		03/13/18 23:01	16984-48-8	
Sulfate	239	mg/L	25.0	5.9	25		03/14/18 20:46	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	10.4	mg/L	10.0	3.1	1		03/14/18 10:55		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.3	mg/L	1.0	0.13	1		03/09/18 19:45	7440-44-0	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517449 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117801 Matrix: Water
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	03/14/18 10:45	

LABORATORY CONTROL SAMPLE: 2117802

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117803 2117804

Parameter	Units	60265443006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	4.8	4.9	97	98	75-125	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117805 2117806

Parameter	Units	60265443007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	5.3	5.5	106	110	75-125	4	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517295 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117213 Matrix: Water
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<1.5	5.0	1.5	03/13/18 15:04	
Beryllium	ug/L	<0.16	1.0	0.16	03/13/18 15:04	
Boron	ug/L	<12.5	100	12.5	03/13/18 15:04	
Calcium	ug/L	<53.5	200	53.5	03/13/18 15:04	
Cobalt	ug/L	<0.87	5.0	0.87	03/13/18 15:04	
Iron	ug/L	<6.1	50.0	6.1	03/13/18 15:04	
Lead	ug/L	<3.0	10.0	3.0	03/13/18 15:04	
Lithium	ug/L	<4.6	10.0	4.6	03/13/18 15:04	
Magnesium	ug/L	<14.0	50.0	14.0	03/13/18 15:04	
Manganese	ug/L	1.3J	5.0	0.73	03/13/18 15:04	
Molybdenum	ug/L	<0.90	20.0	0.90	03/13/18 15:04	
Potassium	ug/L	<79.3	500	79.3	03/13/18 15:04	
Sodium	ug/L	<157	500	157	03/13/18 15:04	
Total Hardness by 2340B	ug/L	81.6J	500		03/13/18 15:04	

LABORATORY CONTROL SAMPLE: 2117214

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1050	105	85-115	
Boron	ug/L	1000	992	99	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Cobalt	ug/L	1000	1040	104	85-115	
Iron	ug/L	10000	10400	104	85-115	
Lead	ug/L	1000	1040	104	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Molybdenum	ug/L	1000	1030	103	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Total Hardness by 2340B	ug/L		67800			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117215 2117216

Parameter	Units	60265443006 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result					
Barium	ug/L	261	1000	1000	1290	1300	103	104	70-130	1	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117215												2117216	
Parameter	Units	60265443006		MS	MSD	MS		MSD	% Rec	Max	RPD	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits			
Beryllium	ug/L	<0.16	1000	1000	1040	1050	104	105	70-130	1	20		
Boron	ug/L	4560	1000	1000	5490	5530	94	97	70-130	1	20		
Calcium	ug/L	170000	10000	10000	177000	178000	69	85	70-130	1	20	M1	
Cobalt	ug/L	<0.87	1000	1000	1000	1010	100	101	70-130	0	20		
Iron	ug/L	20300	10000	10000	30000	30500	97	102	70-130	2	20		
Lead	ug/L	<3.0	1000	1000	998	1010	100	101	70-130	1	20		
Lithium	ug/L	30.5	1000	1000	1060	1080	103	105			2		
Magnesium	ug/L	35300	10000	10000	44600	44800	93	95	70-130	0	20		
Manganese	ug/L	1950	1000	1000	2940	2960	98	101	70-130	1	20		
Molybdenum	ug/L	162	1000	1000	1180	1190	102	103	70-130	1	20		
Potassium	ug/L	7510	10000	10000	17600	17800	101	103	70-130	1	20		
Sodium	ug/L	43300	10000	10000	52700	53200	94	99	70-130	1	20		
Total Hardness by 2340B	ug/L	569000			625000	630000					1		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117217												2117218	
Parameter	Units	60265443007		MS	MSD	MS		MSD	% Rec	Max	RPD	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits			
Barium	ug/L	53.3	1000	1000	1100	1110	104	105	70-130	1	20		
Beryllium	ug/L	<0.16	1000	1000	1040	1050	104	105	70-130	1	20		
Boron	ug/L	5230	1000	1000	6050	6310	82	107	70-130	4	20		
Calcium	ug/L	163000	10000	10000	168000	174000	51	113	70-130	4	20	M1	
Cobalt	ug/L	<0.87	1000	1000	1010	1020	101	102	70-130	1	20		
Iron	ug/L	6720	10000	10000	16700	17000	99	103	70-130	2	20		
Lead	ug/L	<3.0	1000	1000	1000	1020	100	102	70-130	1	20		
Lithium	ug/L	28.1	1000	1000	1060	1070	103	105			1		
Magnesium	ug/L	25800	10000	10000	34700	36000	89	102	70-130	4	20		
Manganese	ug/L	1090	1000	1000	2080	2140	98	105	70-130	3	20		
Molybdenum	ug/L	216	1000	1000	1240	1260	103	105	70-130	2	20		
Potassium	ug/L	5900	10000	10000	16000	16400	101	105	70-130	3	20		
Sodium	ug/L	58300	10000	10000	66900	69200	86	109	70-130	3	20		
Total Hardness by 2340B	ug/L	513000			563000	584000					4		

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517296 Analysis Method: EPA 200.8
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117223 Matrix: Water
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/14/18 17:39	
Arsenic	ug/L	<0.052	1.0	0.052	03/14/18 17:39	
Cadmium	ug/L	<0.018	0.50	0.018	03/14/18 17:39	
Chromium	ug/L	<0.054	1.0	0.054	03/14/18 17:39	
Selenium	ug/L	<0.086	1.0	0.086	03/14/18 17:39	
Thallium	ug/L	<0.036	1.0	0.036	03/14/18 17:39	

LABORATORY CONTROL SAMPLE: 2117224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	85-115	
Arsenic	ug/L	40	40.5	101	85-115	
Cadmium	ug/L	40	39.8	100	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Thallium	ug/L	40	36.4	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117225 2117226

Parameter	Units	60265443006 Result	MS Spike Conc.	MSD Spike Conc.	2117225		2117226		% Rec Limits	Max RPD	Qual
					MS Result	MSD Result	MS % Rec	MSD % Rec			
Antimony	ug/L	<0.026	40	40	38.7	39.0	97	97	70-130	1	20
Arsenic	ug/L	45.7	40	40	84.0	84.8	96	98	70-130	1	20
Cadmium	ug/L	0.037J	40	40	37.3	37.2	93	93	70-130	0	20
Chromium	ug/L	0.080J	40	40	38.1	38.7	95	97	70-130	1	20
Selenium	ug/L	0.088J	40	40	36.3	36.6	91	91	70-130	1	20
Thallium	ug/L	<0.036	40	40	36.6	36.9	91	92	70-130	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117227 2117228

Parameter	Units	60265443007 Result	MS Spike Conc.	MSD Spike Conc.	2117227		2117228		% Rec Limits	Max RPD	Qual
					MS Result	MSD Result	MS % Rec	MSD % Rec			
Antimony	ug/L	0.040J	40	40	40.0	40.1	100	100	70-130	0	20
Arsenic	ug/L	0.65J	40	40	41.5	41.5	102	102	70-130	0	20
Cadmium	ug/L	0.12J	40	40	38.5	38.5	96	96	70-130	0	20
Chromium	ug/L	0.36J	40	40	39.9	40.1	99	99	70-130	1	20
Selenium	ug/L	0.097J	40	40	37.7	37.8	94	94	70-130	0	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Parameter	Units	2117227		2117228		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		60265443007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Thallium	ug/L	0.043J	40	40	37.5	38.2	94	95	70-130	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517340 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117385 Matrix: Water
 Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.9	20.0	4.9	03/13/18 11:39	

LABORATORY CONTROL SAMPLE: 2117386

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 2117387

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	519	543	4	10	

SAMPLE DUPLICATE: 2117388

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	404	414	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517068

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004

METHOD BLANK: 2116385

Matrix: Water

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/10/18 13:19	

LABORATORY CONTROL SAMPLE: 2116386

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

SAMPLE DUPLICATE: 2116387

Parameter	Units	60265281002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1020	1020	1	10	

SAMPLE DUPLICATE: 2116388

Parameter	Units	60265281003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517481

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117939

Matrix: Water

Associated Lab Samples: 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/14/18 11:35	

LABORATORY CONTROL SAMPLE: 2117940

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2117941

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	701	715	2	10	

SAMPLE DUPLICATE: 2117942

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	718	697	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517099

Analysis Method: SM 4500-S-2 D

QC Batch Method: SM 4500-S-2 D

Analysis Description: 4500S2D Sulfide, Total

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2116799

Matrix: Water

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	03/12/18 14:58	

LABORATORY CONTROL SAMPLE: 2116800

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.53	106	80-120	

MATRIX SPIKE SAMPLE: 2116801

Parameter	Units	60265281002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.55	110	75-125	

SAMPLE DUPLICATE: 2116802

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

SAMPLE DUPLICATE: 2116803

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 516935

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2115789

Matrix: Water

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/13/18 15:22	
Fluoride	mg/L	<0.063	0.20	0.063	03/13/18 15:22	
Sulfate	mg/L	<0.24	1.0	0.24	03/13/18 15:22	

LABORATORY CONTROL SAMPLE: 2115790

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	2.7	106	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2115791 2115792

Parameter	Units	60265443006		MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	10.8	5	5	5	16.2	16.3	110	111	80-120	0	15		
Fluoride	mg/L	0.22	2.5	2.5	2.5	2.4	2.4	87	89	80-120	2	15		

MATRIX SPIKE SAMPLE: 2115793

Parameter	Units	60265443007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	5	17.9	109	80-120	
Fluoride	mg/L	0.27	2.5	2.5	88	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517538

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443006, 60265443007

METHOD BLANK: 2118137

Matrix: Water

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/14/18 21:56	
Sulfate	mg/L	<0.24	1.0	0.24	03/14/18 21:56	

LABORATORY CONTROL SAMPLE: 2118138

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2118139 2118140

Parameter	Units	60265443006		2118139		2118140		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Sulfate	mg/L	138	100	100	260	249	122	111	80-120	4	15 M1

MATRIX SPIKE SAMPLE: 2118141

Parameter	Units	60265443007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	239	125	362	99	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

QC Batch: 517440

Analysis Method: EPA 410.4

QC Batch Method: EPA 410.4

Analysis Description: 410.4 COD

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2117768

Matrix: Water

Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/14/18 10:46	

LABORATORY CONTROL SAMPLE: 2117769

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	52.5	105	90-110	

MATRIX SPIKE SAMPLE: 2117770

Parameter	Units	60265668001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	53.8	105	90-110	

MATRIX SPIKE SAMPLE: 2117772

Parameter	Units	60265443007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	10.4	50	64.6	108	90-110	

SAMPLE DUPLICATE: 2117771

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	13.2	16.0	19	25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265443

QC Batch: 517001 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

METHOD BLANK: 2115998 Matrix: Water
Associated Lab Samples: 60265443001, 60265443002, 60265443003, 60265443004, 60265443005, 60265443006, 60265443007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	03/09/18 15:32	

LABORATORY CONTROL SAMPLE: 2115999

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.8	97	80-120	

MATRIX SPIKE SAMPLE: 2116000

Parameter	Units	60265443006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	3.5	5	8.6	102	80-120	

SAMPLE DUPLICATE: 2116001

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	2.3	2.3	1	25	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

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.

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265443001	PZ-3S	EPA 200.7	517295	EPA 200.7	517312
60265443002	PZ-3D	EPA 200.7	517295	EPA 200.7	517312
60265443003	PZ-1S	EPA 200.7	517295	EPA 200.7	517312
60265443004	DUP-4	EPA 200.7	517295	EPA 200.7	517312
60265443005	PZ-1D	EPA 200.7	517295	EPA 200.7	517312
60265443006	PZ-6S	EPA 200.7	517295	EPA 200.7	517312
60265443007	PZ-6D	EPA 200.7	517295	EPA 200.7	517312
60265443001	PZ-3S	EPA 200.8	517296	EPA 200.8	517315
60265443002	PZ-3D	EPA 200.8	517296	EPA 200.8	517315
60265443003	PZ-1S	EPA 200.8	517296	EPA 200.8	517315
60265443004	DUP-4	EPA 200.8	517296	EPA 200.8	517315
60265443005	PZ-1D	EPA 200.8	517296	EPA 200.8	517315
60265443006	PZ-6S	EPA 200.8	517296	EPA 200.8	517315
60265443007	PZ-6D	EPA 200.8	517296	EPA 200.8	517315
60265443001	PZ-3S	EPA 7470	517449	EPA 7470	517457
60265443002	PZ-3D	EPA 7470	517449	EPA 7470	517457
60265443003	PZ-1S	EPA 7470	517449	EPA 7470	517457
60265443004	DUP-4	EPA 7470	517449	EPA 7470	517457
60265443005	PZ-1D	EPA 7470	517449	EPA 7470	517457
60265443006	PZ-6S	EPA 7470	517449	EPA 7470	517457
60265443007	PZ-6D	EPA 7470	517449	EPA 7470	517457
60265443001	PZ-3S	SM 2320B	517340		
60265443002	PZ-3D	SM 2320B	517340		
60265443003	PZ-1S	SM 2320B	517340		
60265443004	DUP-4	SM 2320B	517340		
60265443005	PZ-1D	SM 2320B	517340		
60265443006	PZ-6S	SM 2320B	517340		
60265443007	PZ-6D	SM 2320B	517340		
60265443001	PZ-3S	SM 2540C	517068		
60265443002	PZ-3D	SM 2540C	517068		
60265443003	PZ-1S	SM 2540C	517068		
60265443004	DUP-4	SM 2540C	517068		
60265443005	PZ-1D	SM 2540C	517481		
60265443006	PZ-6S	SM 2540C	517481		
60265443007	PZ-6D	SM 2540C	517481		
60265443001	PZ-3S	SM 4500-S-2 D	517099		
60265443002	PZ-3D	SM 4500-S-2 D	517099		
60265443003	PZ-1S	SM 4500-S-2 D	517099		
60265443004	DUP-4	SM 4500-S-2 D	517099		
60265443005	PZ-1D	SM 4500-S-2 D	517099		
60265443006	PZ-6S	SM 4500-S-2 D	517099		
60265443007	PZ-6D	SM 4500-S-2 D	517099		
60265443001	PZ-3S	EPA 300.0	516935		
60265443001	PZ-3S	EPA 300.0	517538		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265443002	PZ-3D	EPA 300.0	516935		
60265443002	PZ-3D	EPA 300.0	517538		
60265443003	PZ-1S	EPA 300.0	516935		
60265443003	PZ-1S	EPA 300.0	517538		
60265443004	DUP-4	EPA 300.0	516935		
60265443004	DUP-4	EPA 300.0	517538		
60265443005	PZ-1D	EPA 300.0	516935		
60265443006	PZ-6S	EPA 300.0	516935		
60265443006	PZ-6S	EPA 300.0	517538		
60265443007	PZ-6D	EPA 300.0	516935		
60265443007	PZ-6D	EPA 300.0	517538		
60265443001	PZ-3S	EPA 410.4	517440		
60265443002	PZ-3D	EPA 410.4	517440		
60265443003	PZ-1S	EPA 410.4	517440		
60265443004	DUP-4	EPA 410.4	517440		
60265443005	PZ-1D	EPA 410.4	517440		
60265443006	PZ-6S	EPA 410.4	517440		
60265443007	PZ-6D	EPA 410.4	517440		
60265443001	PZ-3S	SM 5310C	517001		
60265443002	PZ-3D	SM 5310C	517001		
60265443003	PZ-1S	SM 5310C	517001		
60265443004	DUP-4	SM 5310C	517001		
60265443005	PZ-1D	SM 5310C	517001		
60265443006	PZ-6S	SM 5310C	517001		
60265443007	PZ-6D	SM 5310C	517001		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60265443



Client Name: Goldner

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-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.8/1.0 Corr. Factor CF +0.3 CF -0.1 Corrected 2.0/1.2

Date and initials of person examining contents: Am
3/8/18

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS, TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A	
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Jamie Chock _____ Date: 3/8/18

Project Manager Review: _____ Date: _____



CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: | of ()

Section A Required Client Information: Company: Golder Associates
Section B Required Project Information: Report To: Mark Haddock (mhaddock@golder.com)
Section C Invoice Information: Attention:

Address: 820 South Main Street, Suite 100
 St Charles, MO 63301
 Email To: mhaddock@golder.com
 Phone: 636-724-9191 Fax: 636-724-9323
 Requested Due Date/TAT: Standard

Copy To: Jeffrey Ingram
 Company Name: Jeffrey Ingram
 Address: 9285, line 4
 Project Name: Ameren Labadie Energy Center
 Project Number: 1531406.0001

REGULATORY AGENCY: NPDES, RCRA, ES, DRINKING WATER, OTHER

Site Location: MO
 STATE: MO

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW POLYMER P SOILSOLID SL OIL OL WP WP AR AR OT OT TS TS	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	SAMPLE TEMP AT COLLECTION	Preservatives										Requested Analysis Filtered (Y/N)					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.				
			DATE	TIME			DATE	TIME	UNPRESERVED	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other	ASD Metals*	ASD Metals, Diss.*	COD	Alkalinity	Chloride/Fuoride/Sulfate	TDS			TOC	Sulfide		
1	PZ-35	W5	3/18	1040	G																					60065443	AG35
2	PZ-30			1245																							AG35
3	PZ-15			1500																							AG35
4	DUP-4		3/18	0845																							AG35
5	PZ-ID			1035																							AG35
6	PZ-65																										AG35
7	PZ-65-MS																										AG35
8	PZ-65-MSD																										AG35
9	PZ-60			1310																							AG35
10																											AG35
11																											AG35
12																											AG35

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Mark Haddock	3/18	1630	Jeffrey Ingram	3/18	1630	Y Y Y Y Y
Jeffrey Ingram	3/18	1700	Mark Haddock	3/18	1700	Y Y Y Y Y

ADDITIONAL COMMENTS

*EPA 200.7: Pb, Li, Ba, Be, B, Ca, Co, Fe, Mg, Mn, Mo, K, Na, Hardness
 *EPA 200.8: As, Cd, Cr, Se, Sb, Tl

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Eric Schneider
 SIGNATURE of SAMPLER: Eric Schneider
 DATE Signed (MM/DD/YYYY): 03/07/18



MEMORANDUM

Date: March 27, 2018

Project No.: 1531406

To: Project File

Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram

Email:

RE: DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60265443

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/27/2018

Laboratory: Pace Analytical

SDG #: 60265443

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide, 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: PZ-3S, PZ-3D, PZ-1S, DUP-4, PZ-1D, PZ-6S, PZ-6D

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>3/6/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Mn(1.3), TH(81.6),</u>
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>DUP-4 @ P2-15</u>
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Cr(64.6)</u>
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>sulfate, Ca</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
PZ-3S	Chloride	26.5	D	DF of 5
L	Sulfate	92.6	D	| 5
PZ-3D	Chloride	26.9	D	| 5
L	Sulfate	136	D	| 20
PZ-1S	Sulfate	755	D	+ 100
L	Cr	0.43	J	RPD exceeded limit; Result > MDL
DUP-4	Cr	0.84	J	L L
L	Sulfate	800	D	DF of 100
PZ-1D	None	—	—	—
PZ-6S	Sulfate	138	D	DF of 20
PZ-6D	Sulfate	239	D	L 25

Signature: *Tommy Goodin*

Date: 3/27/2018

March 19, 2018

Mark Haddock
Golder Associates
820 S. Main St
Suite 100
Saint Charles, MO 63301

RE: Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265641

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 10, 2018. 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.

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
Jeffrey Ingram, Golder Associates
John Suozzi, Golder Associates



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60265641001	PZ-4S	Water	03/08/18 11:20	03/10/18 03:55
60265641002	PZ-4D	Water	03/08/18 14:30	03/10/18 03:55
60265641003	PZ-5S	Water	03/07/18 09:10	03/10/18 03:55
60265641004	PZ-5D	Water	03/07/18 10:35	03/10/18 03:55
60265641005	PZ-2S	Water	03/07/18 13:15	03/10/18 03:55
60265641006	PZ-2D	Water	03/07/18 16:30	03/10/18 03:55

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60265641001	PZ-4S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265641002	PZ-4D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265641003	PZ-5S	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265641004	PZ-5D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265641005	PZ-2S	EPA 200.7	SMW	14	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60265641006	PZ-2D	EPA 200.7	SMW	14	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	OL	1	PASI-K
		SM 4500-S-2 D	MJK	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-4S **Lab ID: 60265641001** Collected: 03/08/18 11:20 Received: 03/10/18 03:55 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							
Barium	84.9	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:43	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:43	7440-41-7	
Boron	5330	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:43	7440-42-8	
Calcium	132000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:43	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:43	7440-48-4	
Iron	3070	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:43	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:43	7439-92-1	
Lithium	24.1	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:43	7439-93-2	
Magnesium	18100	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:43	7439-95-4	
Manganese	1080	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:43	7439-96-5	
Molybdenum	77.5	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:43	7439-98-7	
Potassium	6450	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:43	7440-09-7	
Sodium	91700	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:43	7440-23-5	
Total Hardness by 2340B	405000	ug/L	500		1	03/12/18 16:15	03/13/18 15:43		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.044J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:29	7440-36-0	
Arsenic	11.7	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:29	7440-38-2	
Cadmium	0.11J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:29	7440-43-9	
Chromium	0.23J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:29	7440-47-3	
Selenium	0.12J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:29	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:29	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:31	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	215	mg/L	20.0	4.9	1		03/15/18 14:55		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	759	mg/L	5.0	5.0	1		03/14/18 12:14		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:49	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	28.2	mg/L	5.0	2.3	5		03/16/18 13:57	16887-00-6	
Fluoride	0.39	mg/L	0.20	0.063	1		03/16/18 13:43	16984-48-8	
Sulfate	369	mg/L	50.0	11.8	50		03/16/18 14:11	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	8.6J	mg/L	10.0	3.1	1		03/15/18 11:08		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.8	mg/L	1.0	0.13	1		03/13/18 12:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-4D **Lab ID: 60265641002** Collected: 03/08/18 14:30 Received: 03/10/18 03:55 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							
Barium	105	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:45	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:45	7440-41-7	
Boron	7580	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:45	7440-42-8	
Calcium	82500	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:45	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:45	7440-48-4	
Iron	419	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:45	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:45	7439-92-1	
Lithium	21.7	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:45	7439-93-2	
Magnesium	4940	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:45	7439-95-4	
Manganese	187	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:45	7439-96-5	
Molybdenum	213	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:45	7439-98-7	
Potassium	11400	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:45	7440-09-7	
Sodium	81400	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:45	7440-23-5	
Total Hardness by 2340B	226000	ug/L	500		1	03/12/18 16:15	03/13/18 15:45		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.065J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:32	7440-36-0	
Arsenic	41.6	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:32	7440-38-2	
Cadmium	0.10J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:32	7440-43-9	
Chromium	0.59J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:32	7440-47-3	
Selenium	0.21J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:32	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:32	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:33	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	109	mg/L	20.0	4.9	1		03/15/18 14:59		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	545	mg/L	5.0	5.0	1		03/14/18 12:14		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:49	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	20.2	mg/L	2.0	0.92	2		03/16/18 23:51	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.063	1		03/16/18 14:25	16984-48-8	
Sulfate	303	mg/L	50.0	11.8	50		03/17/18 00:05	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	9.7J	mg/L	10.0	3.1	1		03/15/18 11:08		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.4	mg/L	1.0	0.13	1		03/13/18 12:57	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-5S **Lab ID: 60265641003** Collected: 03/07/18 09:10 Received: 03/10/18 03:55 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							
Barium	71.8	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:48	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:48	7440-41-7	
Boron	5780	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:48	7440-42-8	
Calcium	87600	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:48	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:48	7440-48-4	
Iron	4990	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:48	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:48	7439-92-1	
Lithium	29.2	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:48	7439-93-2	
Magnesium	8310	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:48	7439-95-4	
Manganese	521	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:48	7439-96-5	
Molybdenum	75.7	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:48	7439-98-7	
Potassium	6550	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:48	7440-09-7	
Sodium	172000	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:48	7440-23-5	
Total Hardness by 2340B	253000	ug/L	500		1	03/12/18 16:15	03/13/18 15:48		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.85J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:36	7440-36-0	
Arsenic	8.1	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:36	7440-38-2	
Cadmium	0.032J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:36	7440-43-9	
Chromium	0.44J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:36	7440-47-3	
Selenium	0.13J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:36	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:36	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:36	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	352	mg/L	20.0	4.9	1		03/15/18 15:05		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	781	mg/L	5.0	5.0	1		03/14/18 12:07		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:47	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	22.6	mg/L	2.0	0.92	2		03/16/18 16:58	16887-00-6	
Fluoride	0.47	mg/L	0.20	0.063	1		03/15/18 19:21	16984-48-8	
Sulfate	269	mg/L	50.0	11.8	50		03/16/18 17:11	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	11.7	mg/L	10.0	3.1	1		03/15/18 11:09		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	4.4	mg/L	1.0	0.13	1		03/13/18 13:09	7440-44-0	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-5D **Lab ID: 60265641004** Collected: 03/07/18 10:35 Received: 03/10/18 03:55 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							
Barium	70.3	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:50	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:50	7440-41-7	
Boron	4020	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:50	7440-42-8	
Calcium	64400	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:50	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:50	7440-48-4	
Iron	637	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:50	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:50	7439-92-1	
Lithium	27.4	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:50	7439-93-2	
Magnesium	3120	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:50	7439-95-4	
Manganese	231	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:50	7439-96-5	
Molybdenum	137	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:50	7439-98-7	
Potassium	10400	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:50	7440-09-7	
Sodium	79700	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:50	7440-23-5	
Total Hardness by 2340B	174000	ug/L	500		1	03/12/18 16:15	03/13/18 15:50		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	<0.026	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:39	7440-36-0	
Arsenic	0.16J	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:39	7440-38-2	
Cadmium	0.042J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:39	7440-43-9	
Chromium	0.47J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:39	7440-47-3	
Selenium	0.090J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:39	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:39	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:38	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	54.6	mg/L	20.0	4.9	1		03/15/18 15:16		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	493	mg/L	5.0	5.0	1		03/14/18 12:09		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:47	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	19.3	mg/L	2.0	0.92	2		03/16/18 17:53	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.063	1		03/15/18 19:35	16984-48-8	
Sulfate	284	mg/L	50.0	11.8	50		03/16/18 18:07	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	3.5J	mg/L	10.0	3.1	1		03/15/18 11:09		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	2.3	mg/L	1.0	0.13	1		03/13/18 13:22	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-2S **Lab ID: 60265641005** Collected: 03/07/18 13:15 Received: 03/10/18 03:55 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							
Barium	395	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:53	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:53	7440-41-7	
Boron	1000	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:53	7440-42-8	
Calcium	124000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:53	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:53	7440-48-4	
Iron	16000	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:53	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:53	7439-92-1	
Lithium	32.5	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:53	7439-93-2	
Magnesium	32500	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:53	7439-95-4	
Manganese	451	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:53	7439-96-5	
Molybdenum	1.8J	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:53	7439-98-7	
Potassium	6170	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:53	7440-09-7	
Sodium	49000	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:53	7440-23-5	
Total Hardness by 2340B	444000	ug/L	500		1	03/12/18 16:15	03/13/18 15:53		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	0.17J	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:42	7440-36-0	
Arsenic	81.9	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:42	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:42	7440-43-9	
Chromium	0.35J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:42	7440-47-3	
Selenium	0.13J	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:42	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:42	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:40	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	427	mg/L	20.0	4.9	1		03/15/18 15:23		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	568	mg/L	5.0	5.0	1		03/14/18 12:09		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:48	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	23.9	mg/L	5.0	2.3	5		03/16/18 18:21	16887-00-6	
Fluoride	0.28	mg/L	0.20	0.063	1		03/15/18 20:03	16984-48-8	
Sulfate	101	mg/L	10.0	2.4	10		03/16/18 18:35	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	20.6	mg/L	10.0	3.1	1		03/15/18 11:10		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	6.2	mg/L	1.0	0.13	1		03/13/18 13:35	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Sample: PZ-2D **Lab ID: 60265641006** Collected: 03/07/18 16:30 Received: 03/10/18 03:55 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							
Barium	264	ug/L	5.0	1.5	1	03/12/18 16:15	03/13/18 15:55	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/12/18 16:15	03/13/18 15:55	7440-41-7	
Boron	828	ug/L	100	12.5	1	03/12/18 16:15	03/13/18 15:55	7440-42-8	
Calcium	142000	ug/L	200	53.5	1	03/12/18 16:15	03/13/18 15:55	7440-70-2	
Cobalt	<0.87	ug/L	5.0	0.87	1	03/12/18 16:15	03/13/18 15:55	7440-48-4	
Iron	12500	ug/L	50.0	6.1	1	03/12/18 16:15	03/13/18 15:55	7439-89-6	
Lead	<3.0	ug/L	10.0	3.0	1	03/12/18 16:15	03/13/18 15:55	7439-92-1	
Lithium	33.0	ug/L	10.0	4.6	1	03/12/18 16:15	03/13/18 15:55	7439-93-2	
Magnesium	28100	ug/L	50.0	14.0	1	03/12/18 16:15	03/13/18 15:55	7439-95-4	
Manganese	1240	ug/L	5.0	0.73	1	03/12/18 16:15	03/13/18 15:55	7439-96-5	
Molybdenum	16.1J	ug/L	20.0	0.90	1	03/12/18 16:15	03/13/18 15:55	7439-98-7	
Potassium	5620	ug/L	500	79.3	1	03/12/18 16:15	03/13/18 15:55	7440-09-7	
Sodium	31200	ug/L	500	157	1	03/12/18 16:15	03/13/18 15:55	7440-23-5	
Total Hardness by 2340B	471000	ug/L	500		1	03/12/18 16:15	03/13/18 15:55		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	<0.026	ug/L	1.0	0.026	1	03/12/18 16:15	03/14/18 18:46	7440-36-0	
Arsenic	16.1	ug/L	1.0	0.052	1	03/12/18 16:15	03/14/18 18:46	7440-38-2	
Cadmium	0.030J	ug/L	0.50	0.018	1	03/12/18 16:15	03/14/18 18:46	7440-43-9	
Chromium	0.73J	ug/L	1.0	0.054	1	03/12/18 16:15	03/14/18 18:46	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	03/12/18 16:15	03/14/18 18:46	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/12/18 16:15	03/14/18 18:46	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.090	ug/L	0.20	0.090	1	03/13/18 15:15	03/14/18 11:42	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	521	mg/L	20.0	4.9	1		03/15/18 15:35		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	514	mg/L	5.0	5.0	1		03/14/18 12:09		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D							
Sulfide, Total	<0.0048	mg/L	0.050	0.0048	1		03/14/18 14:48	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	9.5	mg/L	1.0	0.46	1		03/15/18 20:16	16887-00-6	
Fluoride	0.35	mg/L	0.20	0.063	1		03/15/18 20:16	16984-48-8	
Sulfate	9.8	mg/L	1.0	0.24	1		03/15/18 20:16	14808-79-8	
410.4 COD		Analytical Method: EPA 410.4							
Chemical Oxygen Demand	12.4	mg/L	10.0	3.1	1		03/15/18 11:10		
5310C TOC		Analytical Method: SM 5310C							
Total Organic Carbon	3.6	mg/L	1.0	0.13	1		03/13/18 13:47	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517449 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117801 Matrix: Water
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	03/14/18 10:45	

LABORATORY CONTROL SAMPLE: 2117802

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117803 2117804

Parameter	Units	60265443006 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Mercury	ug/L	<0.090	5	5	4.8	4.9	97	98	75-125	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117805 2117806

Parameter	Units	60265443007 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Mercury	ug/L	<0.090	5	5	5.3	5.5	106	110	75-125	4	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517295 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117213 Matrix: Water
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<1.5	5.0	1.5	03/13/18 15:04	
Beryllium	ug/L	<0.16	1.0	0.16	03/13/18 15:04	
Boron	ug/L	<12.5	100	12.5	03/13/18 15:04	
Calcium	ug/L	<53.5	200	53.5	03/13/18 15:04	
Cobalt	ug/L	<0.87	5.0	0.87	03/13/18 15:04	
Iron	ug/L	<6.1	50.0	6.1	03/13/18 15:04	
Lead	ug/L	<3.0	10.0	3.0	03/13/18 15:04	
Lithium	ug/L	<4.6	10.0	4.6	03/13/18 15:04	
Magnesium	ug/L	<14.0	50.0	14.0	03/13/18 15:04	
Manganese	ug/L	1.3J	5.0	0.73	03/13/18 15:04	
Molybdenum	ug/L	<0.90	20.0	0.90	03/13/18 15:04	
Potassium	ug/L	<79.3	500	79.3	03/13/18 15:04	
Sodium	ug/L	<157	500	157	03/13/18 15:04	
Total Hardness by 2340B	ug/L	81.6J	500		03/13/18 15:04	

LABORATORY CONTROL SAMPLE: 2117214

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1050	105	85-115	
Boron	ug/L	1000	992	99	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Cobalt	ug/L	1000	1040	104	85-115	
Iron	ug/L	10000	10400	104	85-115	
Lead	ug/L	1000	1040	104	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Molybdenum	ug/L	1000	1030	103	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Total Hardness by 2340B	ug/L		67800			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117215 2117216

Parameter	Units	60265443006 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Barium	ug/L	261	1000	1000	1290	1300	103	104	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117215												2117216	
Parameter	Units	60265443006		MS	MSD	MS		MSD	% Rec	Max	RPD	RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits				
Beryllium	ug/L	<0.16	1000	1000	1040	1050	104	105	70-130	1	20		
Boron	ug/L	4560	1000	1000	5490	5530	94	97	70-130	1	20		
Calcium	ug/L	170000	10000	10000	177000	178000	69	85	70-130	1	20	M1	
Cobalt	ug/L	<0.87	1000	1000	1000	1010	100	101	70-130	0	20		
Iron	ug/L	20300	10000	10000	30000	30500	97	102	70-130	2	20		
Lead	ug/L	<3.0	1000	1000	998	1010	100	101	70-130	1	20		
Lithium	ug/L	30.5	1000	1000	1060	1080	103	105			2		
Magnesium	ug/L	35300	10000	10000	44600	44800	93	95	70-130	0	20		
Manganese	ug/L	1950	1000	1000	2940	2960	98	101	70-130	1	20		
Molybdenum	ug/L	162	1000	1000	1180	1190	102	103	70-130	1	20		
Potassium	ug/L	7510	10000	10000	17600	17800	101	103	70-130	1	20		
Sodium	ug/L	43300	10000	10000	52700	53200	94	99	70-130	1	20		
Total Hardness by 2340B	ug/L	569000			625000	630000					1		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117217												2117218	
Parameter	Units	60265443007		MS	MSD	MS		MSD	% Rec	Max	RPD	RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits				
Barium	ug/L	53.3	1000	1000	1100	1110	104	105	70-130	1	20		
Beryllium	ug/L	<0.16	1000	1000	1040	1050	104	105	70-130	1	20		
Boron	ug/L	5230	1000	1000	6050	6310	82	107	70-130	4	20		
Calcium	ug/L	163000	10000	10000	168000	174000	51	113	70-130	4	20	M1	
Cobalt	ug/L	<0.87	1000	1000	1010	1020	101	102	70-130	1	20		
Iron	ug/L	6720	10000	10000	16700	17000	99	103	70-130	2	20		
Lead	ug/L	<3.0	1000	1000	1000	1020	100	102	70-130	1	20		
Lithium	ug/L	28.1	1000	1000	1060	1070	103	105			1		
Magnesium	ug/L	25800	10000	10000	34700	36000	89	102	70-130	4	20		
Manganese	ug/L	1090	1000	1000	2080	2140	98	105	70-130	3	20		
Molybdenum	ug/L	216	1000	1000	1240	1260	103	105	70-130	2	20		
Potassium	ug/L	5900	10000	10000	16000	16400	101	105	70-130	3	20		
Sodium	ug/L	58300	10000	10000	66900	69200	86	109	70-130	3	20		
Total Hardness by 2340B	ug/L	513000			563000	584000					4		

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER
Pace Project No.: 60265641

QC Batch: 517296 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117223 Matrix: Water
Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/14/18 17:39	
Arsenic	ug/L	<0.052	1.0	0.052	03/14/18 17:39	
Cadmium	ug/L	<0.018	0.50	0.018	03/14/18 17:39	
Chromium	ug/L	<0.054	1.0	0.054	03/14/18 17:39	
Selenium	ug/L	<0.086	1.0	0.086	03/14/18 17:39	
Thallium	ug/L	<0.036	1.0	0.036	03/14/18 17:39	

LABORATORY CONTROL SAMPLE: 2117224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	85-115	
Arsenic	ug/L	40	40.5	101	85-115	
Cadmium	ug/L	40	39.8	100	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Thallium	ug/L	40	36.4	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117225 2117226

Parameter	Units	60265443006		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.								
Antimony	ug/L	<0.026	40	40	40	38.7	39.0	97	97	70-130	1	20
Arsenic	ug/L	45.7	40	40	40	84.0	84.8	96	98	70-130	1	20
Cadmium	ug/L	0.037J	40	40	40	37.3	37.2	93	93	70-130	0	20
Chromium	ug/L	0.080J	40	40	40	38.1	38.7	95	97	70-130	1	20
Selenium	ug/L	0.088J	40	40	40	36.3	36.6	91	91	70-130	1	20
Thallium	ug/L	<0.036	40	40	40	36.6	36.9	91	92	70-130	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2117227 2117228

Parameter	Units	60265443007		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.								
Antimony	ug/L	0.040J	40	40	40	40.0	40.1	100	100	70-130	0	20
Arsenic	ug/L	0.65J	40	40	40	41.5	41.5	102	102	70-130	0	20
Cadmium	ug/L	0.12J	40	40	40	38.5	38.5	96	96	70-130	0	20
Chromium	ug/L	0.36J	40	40	40	39.9	40.1	99	99	70-130	1	20
Selenium	ug/L	0.097J	40	40	40	37.7	37.8	94	94	70-130	0	20

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Parameter	Units	2117227		2117228		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		60265443007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Thallium	ug/L	0.043J	40	40	37.5	38.2	94	95	70-130	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517632

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2118666

Matrix: Water

Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	<4.9	20.0	4.9	03/15/18 14:25	

LABORATORY CONTROL SAMPLE: 2118667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	514	103	90-110	

SAMPLE DUPLICATE: 2118668

Parameter	Units	60265091010 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	292	298	2	10	

SAMPLE DUPLICATE: 2118669

Parameter	Units	60265641005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	427	442	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517481

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265641003

METHOD BLANK: 2117939

Matrix: Water

Associated Lab Samples: 60265641003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/14/18 11:35	

LABORATORY CONTROL SAMPLE: 2117940

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2117941

Parameter	Units	60265443006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	701	715	2	10	

SAMPLE DUPLICATE: 2117942

Parameter	Units	60265443007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	718	697	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517482

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60265641001, 60265641002, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117943

Matrix: Water

Associated Lab Samples: 60265641001, 60265641002, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/14/18 12:08	

LABORATORY CONTROL SAMPLE: 2117944

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	966	97	80-120	

SAMPLE DUPLICATE: 2117945

Parameter	Units	60265641004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	493	476	4	10	

SAMPLE DUPLICATE: 2117946

Parameter	Units	60265552005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	998	1010	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517493 Analysis Method: SM 4500-S-2 D
 QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117999 Matrix: Water
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfide, Total	mg/L	<0.0048	0.050	0.0048	03/14/18 14:46	

LABORATORY CONTROL SAMPLE: 2118000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.52	104	80-120	

MATRIX SPIKE SAMPLE: 2118001

Parameter	Units	60265641003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	<0.0048	.5	0.40	80	75-125	

SAMPLE DUPLICATE: 2118002

Parameter	Units	60265641004 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	<0.0048	<0.0048		20	

SAMPLE DUPLICATE: 2118003

Parameter	Units	60265681001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	<0.0048		20	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517687 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2118839 Matrix: Water
 Associated Lab Samples: 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/15/18 10:20	
Fluoride	mg/L	<0.063	0.20	0.063	03/15/18 10:20	
Sulfate	mg/L	<0.24	1.0	0.24	03/15/18 10:20	

LABORATORY CONTROL SAMPLE: 2118840

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2118841 2118842

Parameter	Units	60264852001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Chloride	mg/L	2750	1000	1000	3950	3880	120	113	80-120	2	15				
Fluoride	mg/L	72.2	500	500	622	635	110	112	80-120	2	15				
Sulfate	mg/L	ND	1000	1000	1150	1180	105	107	80-120	2	15				

MATRIX SPIKE SAMPLE: 2118843

Parameter	Units	60265641004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.34	2.5	2.9	103	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517889 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005

METHOD BLANK: 2119627 Matrix: Water
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	03/16/18 09:31	
Fluoride	mg/L	<0.063	0.20	0.063	03/16/18 09:31	
Sulfate	mg/L	<0.24	1.0	0.24	03/16/18 09:31	

LABORATORY CONTROL SAMPLE: 2119628

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2119629 2119630

Parameter	Units	60265490002		2119629		2119630		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.				
Chloride	mg/L	102	50	50	155	154	106	104	80-120	1	15
Fluoride	mg/L	<2.0	25	25	27.0	27.6	108	110	80-120	2	15
Sulfate	mg/L	<10.0	50	50	59.1	59.7	104	105	80-120	1	15

MATRIX SPIKE SAMPLE: 2119631

Parameter	Units	60265640001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	23.0	25	48.3	101	80-120	
Sulfate	mg/L	165	250	430	106	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 518010

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60265641002

METHOD BLANK: 2120100

Matrix: Water

Associated Lab Samples: 60265641002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.69J	1.0	0.46	03/16/18 22:14	
Sulfate	mg/L	<0.24	1.0	0.24	03/16/18 22:14	

LABORATORY CONTROL SAMPLE: 2120101

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2120102 2120103

Parameter	Units	60265285001		2120102		2120103		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Chloride	mg/L	5.3	25	25	28.7	29.0	93	95	80-120	1	15

MATRIX SPIKE SAMPLE: 2120104

Parameter	Units	60265612001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	1330	1000	2390	106	80-120	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517567

Analysis Method: EPA 410.4

QC Batch Method: EPA 410.4

Analysis Description: 410.4 COD

Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2118343

Matrix: Water

Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	03/15/18 11:05	

LABORATORY CONTROL SAMPLE: 2118344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	52.4	105	90-110	

MATRIX SPIKE SAMPLE: 2118345

Parameter	Units	60265807001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	34.3	50	84.2	100	90-110	

MATRIX SPIKE SAMPLE: 2118347

Parameter	Units	60265124002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	2280	1250	3320	83	90-110	M1

SAMPLE DUPLICATE: 2118346

Parameter	Units	60265640001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	7.2J	7.3J		25	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

QC Batch: 517342 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

METHOD BLANK: 2117392 Matrix: Water
 Associated Lab Samples: 60265641001, 60265641002, 60265641003, 60265641004, 60265641005, 60265641006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	03/13/18 09:59	

LABORATORY CONTROL SAMPLE: 2117393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.2	104	80-120	

MATRIX SPIKE SAMPLE: 2117394

Parameter	Units	7583298001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.8	5	9.9	102	80-120	

SAMPLE DUPLICATE: 2117395

Parameter	Units	7583298002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	4.2	4.2	2	25	

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

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.

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

SAMPLE QUALIFIERS

Sample: 60265641002

[1] rr CL @2X

ANALYTE QUALIFIERS

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 CENTER

Pace Project No.: 60265641

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265641001	PZ-4S	EPA 200.7	517295	EPA 200.7	517312
60265641002	PZ-4D	EPA 200.7	517295	EPA 200.7	517312
60265641003	PZ-5S	EPA 200.7	517295	EPA 200.7	517312
60265641004	PZ-5D	EPA 200.7	517295	EPA 200.7	517312
60265641005	PZ-2S	EPA 200.7	517295	EPA 200.7	517312
60265641006	PZ-2D	EPA 200.7	517295	EPA 200.7	517312
60265641001	PZ-4S	EPA 200.8	517296	EPA 200.8	517315
60265641002	PZ-4D	EPA 200.8	517296	EPA 200.8	517315
60265641003	PZ-5S	EPA 200.8	517296	EPA 200.8	517315
60265641004	PZ-5D	EPA 200.8	517296	EPA 200.8	517315
60265641005	PZ-2S	EPA 200.8	517296	EPA 200.8	517315
60265641006	PZ-2D	EPA 200.8	517296	EPA 200.8	517315
60265641001	PZ-4S	EPA 7470	517449	EPA 7470	517457
60265641002	PZ-4D	EPA 7470	517449	EPA 7470	517457
60265641003	PZ-5S	EPA 7470	517449	EPA 7470	517457
60265641004	PZ-5D	EPA 7470	517449	EPA 7470	517457
60265641005	PZ-2S	EPA 7470	517449	EPA 7470	517457
60265641006	PZ-2D	EPA 7470	517449	EPA 7470	517457
60265641001	PZ-4S	SM 2320B	517632		
60265641002	PZ-4D	SM 2320B	517632		
60265641003	PZ-5S	SM 2320B	517632		
60265641004	PZ-5D	SM 2320B	517632		
60265641005	PZ-2S	SM 2320B	517632		
60265641006	PZ-2D	SM 2320B	517632		
60265641001	PZ-4S	SM 2540C	517482		
60265641002	PZ-4D	SM 2540C	517482		
60265641003	PZ-5S	SM 2540C	517481		
60265641004	PZ-5D	SM 2540C	517482		
60265641005	PZ-2S	SM 2540C	517482		
60265641006	PZ-2D	SM 2540C	517482		
60265641001	PZ-4S	SM 4500-S-2 D	517493		
60265641002	PZ-4D	SM 4500-S-2 D	517493		
60265641003	PZ-5S	SM 4500-S-2 D	517493		
60265641004	PZ-5D	SM 4500-S-2 D	517493		
60265641005	PZ-2S	SM 4500-S-2 D	517493		
60265641006	PZ-2D	SM 4500-S-2 D	517493		
60265641001	PZ-4S	EPA 300.0	517889		
60265641002	PZ-4D	EPA 300.0	517889		
60265641002	PZ-4D	EPA 300.0	518010		
60265641003	PZ-5S	EPA 300.0	517687		
60265641003	PZ-5S	EPA 300.0	517889		
60265641004	PZ-5D	EPA 300.0	517687		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CENTER

Pace Project No.: 60265641

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60265641004	PZ-5D	EPA 300.0	517889		
60265641005	PZ-2S	EPA 300.0	517687		
60265641005	PZ-2S	EPA 300.0	517889		
60265641006	PZ-2D	EPA 300.0	517687		
60265641001	PZ-4S	EPA 410.4	517567		
60265641002	PZ-4D	EPA 410.4	517567		
60265641003	PZ-5S	EPA 410.4	517567		
60265641004	PZ-5D	EPA 410.4	517567		
60265641005	PZ-2S	EPA 410.4	517567		
60265641006	PZ-2D	EPA 410.4	517567		
60265641001	PZ-4S	SM 5310C	517342		
60265641002	PZ-4D	SM 5310C	517342		
60265641003	PZ-5S	SM 5310C	517342		
60265641004	PZ-5D	SM 5310C	517342		
60265641005	PZ-2S	SM 5310C	517342		
60265641006	PZ-2D	SM 5310C	517342		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60265641



Client Name: Goldner

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: 266 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.9 Corr. Factor +0.2 Corrected 2.1
Temperature should be above freezing to 6°C 0.8 1.4

Date and initials of person examining contents: 3/10/18

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Chok _____ Date: 3/12/18



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: **820 South Main Street, Suite 100 St Charles, MO 63301** Email To: **maddock@golder.com** Phone: **636-724-9191** Fax: **636-724-9323** Requested Due Date/TAT: **Standard**

Section B Required Project Information: Report To: **Mark Haddock (mhaddock@golder.com)** Copy To: **Jeffrey Ingram** Purchase Order No.: Project Name: **Ameren Labadie Energy Center** Project Number: **1531406.0001**

Section C Invoice Information: Attention: Company Name: Address: **REGULATORY AGENCY** **NPDES** **GROUND WATER** **RCRA** **DRINKING WATER** **OTHER** Site Location: **UST** **MO** State: **MO** Pace Quote Reference: **Jamie Church** Pace Project Manager: **9285, line 4** Pace Profile #:

Page: | of |

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE	COLLECTED		SAMPLE TYPE (G=RAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)												Temp in °C	Received on	Custody Sealed Cooler	Samples Intact (Y/N)											
				COMPOSITE START	COMPOSITE END/GRAB						ASD Metals*	ASD Metals, Diss.*	COD	Alkalinity	Chloride/Fluoride/Sulfate	TDS	TOC	Sulfide	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																	
		DRINKING WATER WASTE WATER PRODUCT SOIL/SOLID OIL	DW WT WW P SL OL AR OT TS	DATE	TIME	DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HOI	NaOH + Zn Acetate	Na ₂ S ₂ O ₈	Methanol	Other	ASD Metals*	ASD Metals, Diss.*	COD	Alkalinity	Chloride/Fluoride/Sulfate	TDS	TOC	Sulfide														
1	PZ-45			3/18	1120			6								Y																					
2	PZ-4D			3/18	1430			1								Y																					
3	PZ-55			3/18	0910			1								Y																					
4	PZ-5B				1035			1								Y																					
5	PZ-25				1315			1								Y																					
6	PZ-2D				1630			1								Y																					
7																																					
8																																					
9																																					
10																																					
11																																					
12																																					
ADDITIONAL COMMENTS				RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS												Temp in °C	Received on	Custody Sealed Cooler	Samples Intact (Y/N)												
				<i>Eric Schneider</i>	3/19/18	1815	<i>Eric Schneider</i>	3/16/18	0955	2.1 Y N Y Y												1.0 Y N	Y	Y	Y												

SAMPLER NAME AND SIGNATURE: *Eric Schneider*

PRINT Name of SAMPLER: *Eric Schneider*

SIGNATURE of SAMPLER: *Eric Schneider*

DATE Signed (MM/DD/YY): *03/09/18*



MEMORANDUM

Date: March 27, 2018
To: Project File
From: Tommy Goodwin
cc: Amanda Derhake, Jeff Ingram
RE: **DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – ASD - 60265641**

Project No.: 1531406
Project: Ameren
Email:

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
 Project Name: Ameren-LEC-ASD
 Reviewer: T Goodwin

Project Manager: J Ingram
 Project Number: 1531406.0001H
 Validation Date: 3/27/2018

Laboratory: Pace Analytical

SDG #: 60265641

Analytical Method (type and no.): 200.7 Metals & Diss., 200.8 MET ICPMS & Diss., 7470 Hg, 2320B Alk., 2540C TDS,
 Matrix: Air Soil/Sed. Water Waste 4500S2D Sulfide. 300.0 IC Anions, 410.4 COD, 5310C TOC
 Sample Names: PZ-4S, PZ-4D, PZ-5S, PZ-5D, PZ-2S, PZ-2D

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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>3/7/18</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Flow, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Ma(1.3), TH(81.6), Chloride(0.67)</u>
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>CoD, Ca</u>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason	
PZ-4S	Chloride	28.2	D	Result had a dilution factor of 5	
┆	Sulfate	369	D		50
PZ-4D	Chloride	20.2	D		2
┆	Sulfate	303	D		50
PZ-5S	Chloride	22.6	D		2
┆	Sulfate	269	D		50
PZ-5D	Chloride	19.3	D		2
┆	Sulfate	284	D		50
PZ-2S	Chloride	23.9	D		5
┆	Sulfate	101	D		10
PZ-2D	None	—	—	—	

Signature: Tommy J. Goodrich

Date: 3/27/2018

APPENDIX D

FALCON Analysis

Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

1.0 Objective

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

2.0 Fingerprint Analysis of Leachate Contaminants (FALCON) Method

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

3.0 Selection of Constituents to Use

The first step in completing the FALCON analysis is to select a subset of constituents that are representative of the potential source areas. When selecting these constituents, it is important to include constituents that are mobile in the hydrogeological environment and that can uniquely characterize each water type. Constituents selected included major cation and anion constituents that represent groundwater chemistry and selected key indicators of CCR impacts. Data from the background monitoring wells were averaged based on available data (LCPA and LCPB Annual Reports). Values of the three different sources were compared to see which constituents fit the criteria. A summary table of the values used for the three sources is provided in Attachment 1. The following constituents were selected to complete the FALCON analysis:

- Alkalinity
- Total Barium
- Total Boron
- Total Calcium
- Total Chloride
- Total Chromium
- Total Lithium
- Total Magnesium
- Total Molybdenum
- Total Potassium
- Total Selenium
- Total Sodium
- Total Sulfate

Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
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4.0 Data Tabulation and Normalization

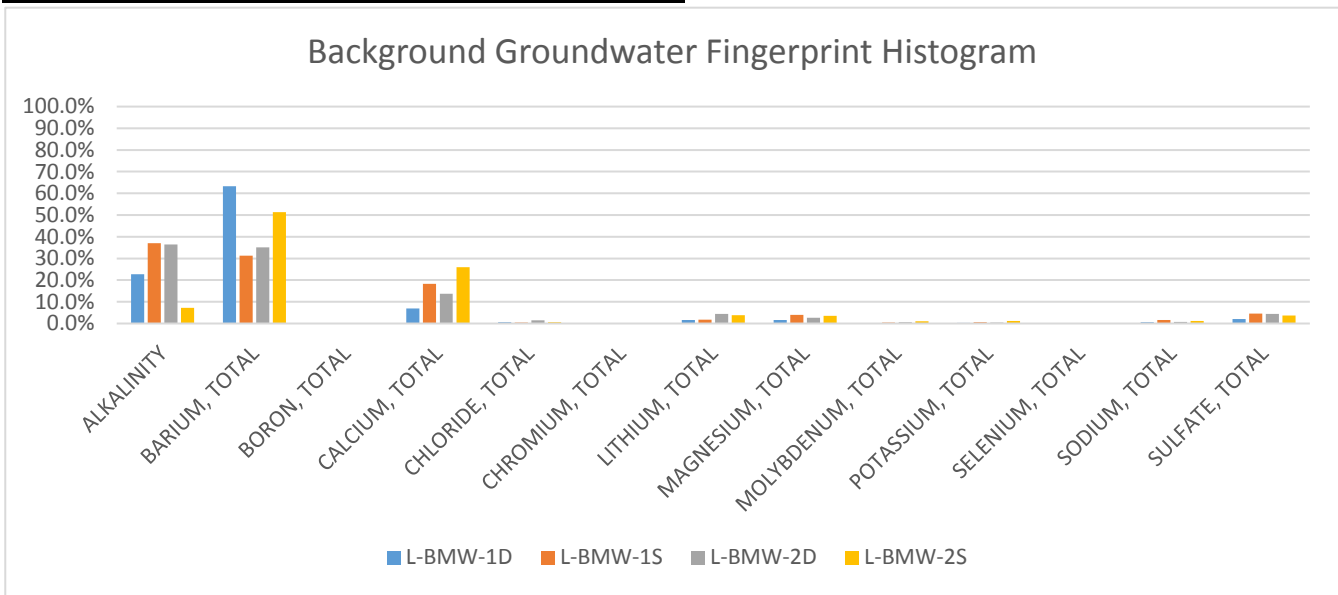
Once the constituents were selected, the data were tabulated, normalized and a graphical presentation of the fingerprint was produced. These steps are provided below for the three different sources (background groundwater, LCPA pore-water and LCPB pore-water). As suggested in EPRI 2012, greater power was given to CCR impact parameters by keeping them in ug/L units (except boron due to its high values). If all units were converted to mg/L, CCR indicator parameters would hold less power and the results would mostly represent major ion chemistry.

4.1 Background Groundwater

Constituent	Units	CCR Rule Monitoring Wells			
		L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S
ALKALINITY	mg/L	424	410	362	35.8
BARIUM, TOTAL	µg/L	1180	347	349	253
BORON, TOTAL	mg/L	0.081	0.105	0.071	0.051
CALCIUM, TOTAL	mg/L	130	202	136	128
CHLORIDE, TOTAL	mg/L	9.75	5.53	14.7	2.83
CHROMIUM, TOTAL	µg/L	0.554	0.764	0.525	0.520
LITHIUM, TOTAL	µg/L	30.3	19.4	43.3	18.9
MAGNESIUM, TOTAL	mg/L	30.8	44.5	26.1	17.8
MOLYBDENUM, TOTAL	µg/L	2.5	4.55	5.45	5.23
POTASSIUM, TOTAL	mg/L	4.57	5.91	3.79	5.78
SELENIUM, TOTAL	µg/L	0.5	0.5	0.5	1.08
SODIUM, TOTAL	mg/L	10.1	17.4	6.64	5.54
SULFATE, TOTAL	mg/L	39.5	51	44.4	18.4
Sum 1-10		1862.7	1109.3	992.4	493.0
Constituent	CCR Rule Monitoring Wells				Average
	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	
ALKALINITY	22.8%	37.0%	36.5%	7.3%	25.9%
BARIUM, TOTAL	63.4%	31.3%	35.1%	51.3%	45.3%
BORON, TOTAL	0.004%	0.010%	0.007%	0.010%	0.01%
CALCIUM, TOTAL	7.0%	18.2%	13.7%	26.0%	16.2%
CHLORIDE, TOTAL	0.5%	0.5%	1.5%	0.6%	0.8%
CHROMIUM, TOTAL	0.03%	0.07%	0.05%	0.11%	0.1%
LITHIUM, TOTAL	1.6%	1.7%	4.4%	3.8%	2.9%
MAGNESIUM, TOTAL	1.7%	4.0%	2.6%	3.6%	3.0%
MOLYBDENUM, TOTAL	0.1%	0.4%	0.5%	1.1%	0.5%
POTASSIUM, TOTAL	0.2%	0.5%	0.4%	1.2%	0.6%
SELENIUM, TOTAL	0.03%	0.05%	0.05%	0.22%	0.09%
SODIUM, TOTAL	0.5%	1.6%	0.7%	1.1%	1.0%
SULFATE, TOTAL	2.1%	4.6%	4.5%	3.7%	3.7%
Sum 1-10	100%	100%	100%	100%	100%

Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

Background Groundwater Correlations				
	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S
L-BMW-1D				
L-BMW-1S	80.6%			
L-BMW-2D	86.3%	98.9%		
L-BMW-2S	89.7%	71.4%	73.4%	
Average Fingerprint Reproducibility			83.4%	



4.2 LCPB Pore-Water

Constituent	Units	LCPB Temporary Piezometers		
		L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	mg/L	1070	861	1340
BARIUM, TOTAL	µg/L	19.4	48.4	47.1
BORON, TOTAL	mg/L	28.2	14.8	25.7
CALCIUM, TOTAL	mg/L	11.4	22.6	11.4
CHLORIDE, TOTAL	mg/L	15.6	16.2	18.4
CHROMIUM, TOTAL	µg/L	2.7	120	7.5
LITHIUM, TOTAL	µg/L	46.2	13.7	50.4
MAGNESIUM, TOTAL	mg/L	0.084	0.087	0.386
MOLYBDENUM, TOTAL	µg/L	1960	682	2370
POTASSIUM, TOTAL	mg/L	51.0	52.6	48.2
SELENIUM, TOTAL	µg/L	255	182	361
SODIUM, TOTAL	mg/L	935	750	969
SULFATE, TOTAL	mg/L	1060	728	999
Sum 1-10		5454.6	3491.4	6248.1



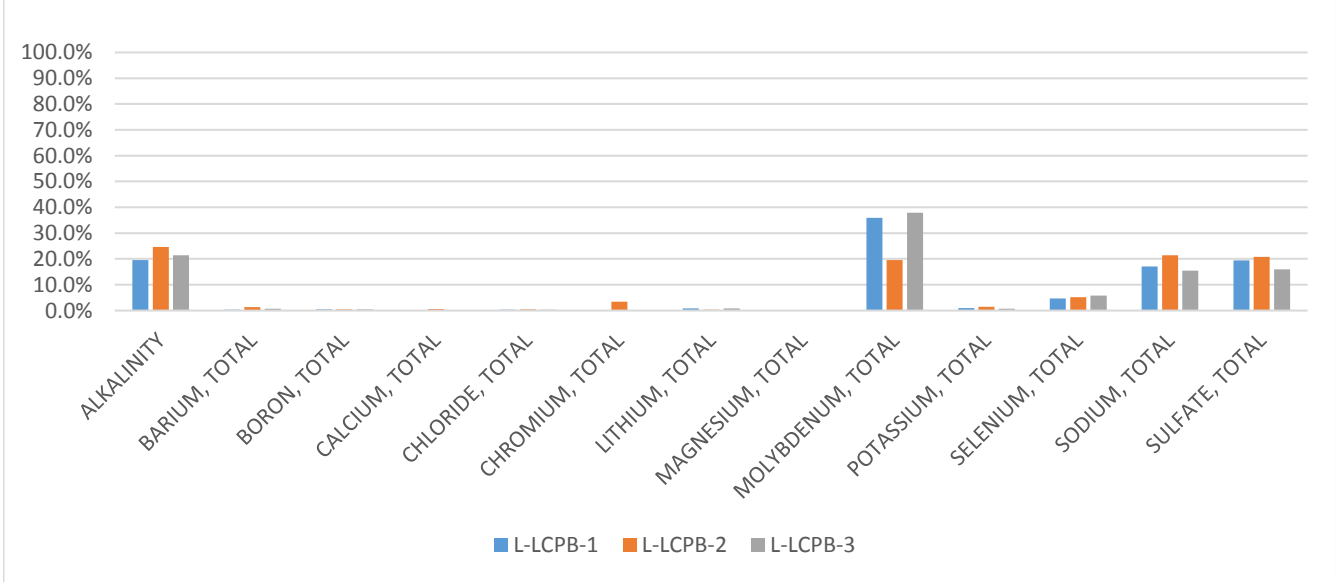
Subject: Ameren CCR Rule Groundwater
Date: April 13, 2018
Project No.: 153-1406
Project Short Title: LCPB ASD - FALCON Analysis

Prepared: J. Ingram
Checked: E. Schneider / R. Feldmann
Reviewed: M. Haddock

Constituent	LCPB Temporary Piezometers			LCPB Average
	L-LCPB-1	L-LCPB-2	L-LCPB-3	
ALKALINITY	19.6%	24.7%	21.4%	21.9%
BARIUM, TOTAL	0.4%	1.4%	0.8%	0.8%
BORON, TOTAL	0.5%	0.4%	0.4%	0.45%
CALCIUM, TOTAL	0.2%	0.6%	0.2%	0.3%
CHLORIDE, TOTAL	0.3%	0.5%	0.3%	0.3%
CHROMIUM, TOTAL	0.05%	3.44%	0.12%	1.2%
LITHIUM, TOTAL	0.8%	0.4%	0.8%	0.7%
MAGNESIUM, TOTAL	0.002%	0.003%	0.006%	0.003%
MOLYBDENUM, TOTAL	35.9%	19.5%	37.9%	31.1%
POTASSIUM, TOTAL	0.9%	1.5%	0.8%	1.1%
SELENIUM, TOTAL	4.67%	5.21%	5.78%	5.22%
SODIUM, TOTAL	17.1%	21.5%	15.5%	18.0%
SULFATE, TOTAL	19.4%	20.9%	16.0%	18.8%
Sum 1-10	100%	100%	100%	100%

LCPB Pore-water Correlations			
	L-LCPB-1	L-LCPB-2	L-LCPB-3
L-LCPB-1			
L-LCPB-2	89.2%		
L-LCPB-3	99.3%	86.5%	
Average Fingerprint Reproducibility			91.7%

LCPB Pore-Water Fingerprint Histogram



Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

4.3 LCPA Pore-Water

Constituent	Units	LCPA Piezometers					
		L-LCPA-1D	L-LCPA-1S	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S
ALKALINITY	mg/L	77.6	120	128	208	80.2	91.8
BARIUM, TOTAL	µg/L	45.6	45.7	71	89.5	47	36.5
BORON, TOTAL	mg/L	10.0	10.3	21.7	3.36	8.1	8.44
CALCIUM, TOTAL	mg/L	78.2	97.1	106	76.5	87.7	76.9
CHLORIDE, TOTAL	mg/L	15.2	18.9	19.8	25.5	18.9	18.6
CHROMIUM, TOTAL	µg/L	1.4	0.73	0.61	1.7	1.1	0.34
LITHIUM, TOTAL	µg/L	34.6	40.6	61.4	5.5	59.8	39.8
MAGNESIUM, TOTAL	mg/L	4.47	0.184	5.43	45.5	1.54	0.445
MOLYBDENUM, TOTAL	µg/L	231	235	1430	83.7	218	234
POTASSIUM, TOTAL	mg/L	14.0	17.8	42.1	3.54	14.2	16.6
SELENIUM, TOTAL	µg/L	6.0	0.73	0.95	1.5	1.1	2.1
SODIUM, TOTAL	mg/L	60	71	50.5	67.2	69	84
SULFATE, TOTAL	mg/L	257	267	306	254	295	272
Sum 1-10		835.1	925.1	2243.7	865.5	901.6	881.5

Constituent	LCPA Piezometers						LCPA Average
	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	
ALKALINITY	9.3%	13.0%	5.7%	24.0%	8.9%	10.4%	11.9%
BARIUM, TOTAL	5.5%	4.9%	3.2%	10.3%	5.2%	4.1%	5.5%
BORON, TOTAL	1.2%	1.1%	1.0%	0.4%	0.9%	1.0%	0.92%
CALCIUM, TOTAL	9.4%	10.5%	4.7%	8.8%	9.7%	8.7%	8.6%
CHLORIDE, TOTAL	1.8%	2.0%	0.9%	2.9%	2.1%	2.1%	2.0%
CHROMIUM, TOTAL	0.17%	0.08%	0.03%	0.20%	0.12%	0.04%	0.1%
LITHIUM, TOTAL	4.1%	4.4%	2.7%	0.6%	6.6%	4.5%	3.8%
MAGNESIUM, TOTAL	0.54%	0.02%	0.24%	5.26%	0.17%	0.05%	1.046%
MOLYBDENUM, TOTAL	27.7%	25.4%	63.7%	9.7%	24.2%	26.5%	29.5%
POTASSIUM, TOTAL	1.7%	1.9%	1.9%	0.4%	1.6%	1.9%	1.6%
SELENIUM, TOTAL	0.72%	0.08%	0.04%	0.17%	0.12%	0.24%	0.23%
SODIUM, TOTAL	7.2%	7.7%	2.3%	7.8%	7.7%	9.5%	7.0%
SULFATE, TOTAL	30.8%	28.9%	13.6%	29.3%	32.7%	30.9%	27.7%
Sum 1-10	100%	100%	100%	100%	100%	100%	100%

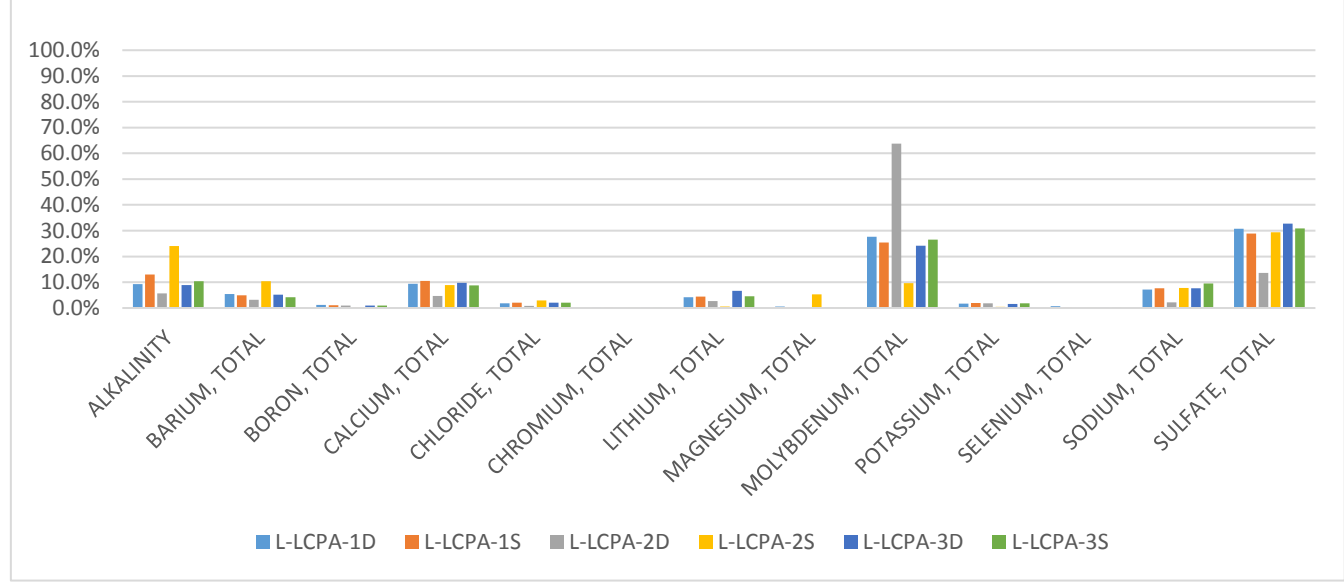


Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

LCPA Pore-water Correlations

	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S
L-LCPA-1D						
L-LCPA-1S	99.1%					
L-LCPA-2D	74.8%	71.7%				
L-LCPA-2S	73.5%	79.2%	25.0%			
L-LCPA-3D	99.0%	98.4%	66.5%	76.0%		
L-LCPA-3S	99.6%	99.3%	72.1%	75.4%	99.1%	
Average Fingerprint Reproducibility						80.6%
Average Fingerprint Reproducibility with LCPA-1S, LCPA-1D, LCPA-3S and LCPA-3D						99.1%

LCPA Pore-water Fingerprint Histogram



Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

4.3.1 LCPA Pore-Water Sources

After reviewing the correlations for the LCPA pore-water, it is evident that there are some poor correlations (less than 80% on all correlations) between the different source water sampling points. This is likely caused by the historical placement of ash in the CCR unit and pore-water flow within the LCPA. The LCPA has been in operation since 1970 and there have been many changes to what the LCPA receives during this time including the types of coal used onsite, types of CCR placed in the facility (pre LCPB construction vs post LCPB construction) and where different types of CCR have been placed within the unit. LCPA-1 and LCPA-3 locations have a strong correlation and are both located in the northern portion of the pond and are both screened in fly ash. LCPA-2 is located in the southern portion of the pond and the two piezometers in this area are screened in mixtures of fly and bottom ash.

Due to this lack of correlation, the LCPA will be divided into three separate sources for comparison which include (1) an average of the northern locations (LCPA-1S, LCPA-1D, LCPA-3S, and LCPA-3D), (2) LCPA-2D, and (3) LCPA-2S. Separating the LCPA into three potential sources more accurately reflects the conditions within the LCPA, due to its spatial variation.

5.0 Correlating Alluvial Aquifer Samples with Sources

A correlation between the average groundwater concentration and the different source waters was completed to demonstrate which source better correlates with each alluvial aquifer groundwater sample. Results from this correlation are provided below. Groundwater concentrations used for this analysis are the averages from available samples collected at that monitoring point if more than one sample was collected. Values used for this correlation are provided in Attachment 2. The results demonstrate that groundwater in the alluvial aquifer either correlates better with the LCPA pore-water or background groundwater than it does with the LCPB pore-water. In no case did a downgradient alluvial aquifer sample correlate better with the LCPB pore-water than with the LCPA pore-water or background groundwater.

Subject:	Ameren CCR Rule Groundwater	Prepared:	J. Ingram
Date:	April 13, 2018	Checked:	E. Schneider / R. Feldmann
Project No.:	153-1406	Reviewed:	M. Haddock
Project Short Title:	LCPB ASD - FALCON Analysis		

Piezometer or Well ID	Percent Correlation					Highest (Best) Correlation
	Background Groundwater Average	LCPB Average	LCPA Average (LCPA-1 & LCPA-3)	LCPA-2D	LCPA-2S	
L-ASD-1D	-5%	55%	89%	39%	75%	LCPA-1&3
L-ASD-1M	16%	71%	96%	66%	75%	LCPA-1&3
L-ASD-1S	-2%	74%	98%	72%	69%	LCPA-1&3
L-ASD-2D	1%	61%	94%	52%	76%	LCPA-1&3
L-ASD-2M	1%	76%	96%	82%	63%	LCPA-1&3
L-ASD-2S	-4%	79%	98%	81%	66%	LCPA-1&3
L-ASD-3D	45%	76%	88%	68%	81%	LCPA-1&3
L-ASD-3M	38%	69%	89%	43%	96%	LCPA-2S
L-ASD-3S	72%	59%	52%	22%	86%	LCPA-2S
L-ASD-4D	22%	71%	96%	57%	88%	LCPA-1&3
L-ASD-4M	5%	80%	96%	81%	66%	LCPA-1&3
L-ASD-4S	74%	35%	14%	3%	58%	Background
L-ASD-5D	52%	53%	76%	24%	97%	LCPA-2S
L-ASD-5M	0%	85%	77%	98%	40%	LCPA-2D
L-ASD-5S	74%	42%	22%	16%	60%	Background
L-LMW-1S	61%	35%	18%	-5%	66%	LCPA-2S
L-LMW-2S	3%	59%	93%	47%	78%	LCPA-1&3
L-LMW-3S	25%	85%	91%	54%	92%	LCPA-2S
L-LMW-4S	54%	63%	63%	23%	94%	LCPA-2S
L-LMW-5S	91%	16%	5%	-9%	52%	Background
L-LMW-6S	83%	23%	14%	-7%	62%	Background
L-LMW-7S	87%	25%	19%	-4%	66%	Background
L-LMW-8S	64%	50%	53%	15%	89%	LCPA-2S
L-MW-26	80%	22%	8%	-8%	56%	Background
L-TMW-1	82%	23%	12%	-9%	61%	Background
L-TMW-2	68%	30%	15%	-8%	64%	Background
L-TMW-3	79%	24%	12%	-8%	61%	Background
L-UMW-1D	93%	13%	1%	-11%	49%	Background
L-UMW-2D	57%	50%	63%	10%	96%	LCPA-2S
L-UMW-3D	18%	51%	88%	35%	84%	LCPA-1&3
L-UMW-4D	3%	66%	93%	48%	78%	LCPA-1&3
L-UMW-5D	15%	64%	94%	46%	85%	LCPA-1&3
L-UMW-6D	0%	77%	91%	90%	53%	LCPA-1&3
L-UMW-7D	50%	70%	77%	42%	94%	LCPA-2S
L-UMW-8D	95%	11%	1%	-9%	46%	Background
L-UMW-9D	97%	5%	-2%	-11%	41%	Background
PZ-1D	96%	8%	-1%	-11%	44%	Background
PZ-1S	-11%	85%	87%	95%	46%	LCPA-2D
PZ-2D	79%	24%	6%	-7%	54%	Background
PZ-2S	93%	18%	12%	-10%	60%	Background
PZ-3D	69%	43%	41%	1%	85%	LCPA-2S
PZ-3S	70%	32%	21%	-5%	67%	Background
PZ-4D	19%	75%	97%	62%	84%	LCPA-1&3
PZ-4S	29%	56%	80%	19%	97%	LCPA-2S
PZ-5D	9%	64%	94%	48%	81%	LCPA-1&3
PZ-5S	36%	68%	61%	14%	92%	LCPA-2S
PZ-6D	36%	74%	69%	43%	86%	LCPA-2S
PZ-6S	74%	49%	38%	21%	73%	Background

Notes

- 1) Values display percent correlation between each sampling point and the LCPA, LCPB or Background fingerprints.
- 2) The higher values are shaded darker and indicate better correlation.

Attachment 1
Summary of Source Water Concentrations
LCPB Alternative Source Demonstration - FALCON Analysis
Labadie Energy Center, Franklin County, MO

Analyte	Units	Background Groundwater				LCPA Pore-Water						LCPB Pore-Water		
		L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	mg/L	424	410	362	35.8	77.6	120	128	208	80.2	91.8	1070	861	1340
ANTIMONY, TOTAL	µg/L	0.442	0.441	0.441	0.212	10.4	1.8	3.6	3.8	3.5	2	0.95	0.47	0.62
ARSENIC, TOTAL	µg/L	0.566	28	30.7	0.391	22.1	71.1	40.8	9.2	31.7	56.5	66.9	15	90.4
BARIUM, TOTAL	µg/L	1180	347	349	253	45.6	45.7	71.2	89.5	47	36.5	19.4	48.4	47.1
BERYLLIUM, TOTAL	µg/L	0.5	0.5	0.459	0.469	0.5	0.24	0.27	0.5	0.5	0.5	0.5	0.5	0.5
BORON, TOTAL	µg/L	81.5	105	70.6	51	10000	10300	21700	3360	8100	8440	28200	14800	25700
CADMIUM, TOTAL	µg/L	0.25	0.25	0.25	0.067	0.072	0.047	0.12	0.25	0.065	0.066	0.13	0.072	0.26
CALCIUM, TOTAL	µg/L	130000	202000	136000	128000	78200	97100	106000	76500	87700	76900	11400	22600	11400
CHLORIDE, TOTAL	mg/L	9.76	5.53	14.7	2.83	15.2	18.9	19.8	25.5	18.9	18.6	15.6	16.2	18.4
CHROMIUM, TOTAL	µg/L	0.554	0.764	0.525	0.52	1.4	0.73	0.61	1.7	1.1	0.34	2.7	120	7.5
COBALT, TOTAL	µg/L	2.5	1.29	2.5	2.29	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
FLUORIDE, TOTAL	mg/L	0.19	0.137	0.23	0.178	0.2	0.088	0.14	0.17	0.16	0.16	2.4	1	1.9
IRON, TOTAL	µg/L	12400	28000	7640	25	178	138	86.9	27.9	122	112	27.3	129	384
LEAD, TOTAL	µg/L	2.55	2.53	2.51	2.58	3.5	2.7	2.7	2.5	2.4	2.7	2.5	2.5	2.5
LITHIUM, TOTAL	µg/L	30.3	19.4	43.3	18.9	34.6	40.6	61.4	5.5	59.8	39.8	46.2	13.7	50.4
MAGNESIUM, TOTAL	µg/L	30800	44500	26100	17800	4470	184	5430	45500	1540	445	84.4	87.4	386
MANGANESE, TOTAL	µg/L	656	2440	292	2.5	4.1	3.2	2.5	39.2	2.3	2.5	2.5	2.5	2.3
MERCURY, TOTAL	µg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MOLYBDENUM, TOTAL	µg/L	2.53	4.55	5.45	5.23	231	235	1430	83.7	218	234	1960	682	2370
POTASSIUM, TOTAL	µg/L	4570	5910	3790	5780	14000	17800	42100	3540	14200	16600	51000	52600	48200
SELENIUM, TOTAL	µg/L	0.5	0.5	0.5	1.08	6	0.73	0.95	1.5	1.1	2.1	255	182	361
SODIUM, TOTAL	µg/L	10100	17400	6640	5540	60000	71100	50500	67200	69000	84000	935000	750000	969000
SULFATE, TOTAL	mg/L	39.5	51	44.4	18.4	257	267	306	254	295	272	1060	728	999
THALLIUM, TOTAL	µg/L	0.5	0.5	0.5	0.443	1.6	0.12	0.24	0.61	0.12	0.26	0.53	0.42	0.38
TOTAL DISSOLVED SOLIDS	mg/L	508	729	503	443	528	575	642	606	577	569	2500	1860	2850

Notes:

- 1) Values for background groundwater monitoring wells represent an average from samples collected at that monitoring well as a part of the CCR Rule.
- 2) Unit abbreviations - µg/L - micrograms per liter, mg/L - milligrams per liter.
- 3) One half the value of the Practical Quantitation Limit (PQL) is used for non-detect values (values less than the Method Detection Limit (MDL)).

Prepared By: RJF
Checked By: EMS
Reviewed By: MNH

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-ASD-1D	L-ASD-1M	L-ASD-1S	L-ASD-2D	L-ASD-2M	L-ASD-2S	L-ASD-3D
ALKALINITY	mg/L	55.4	89.9	82.7	69.9	64.9	85.6	138
BARIUM, TOTAL	µg/L	95	177	136	136	125	58.9	138
BORON, TOTAL	mg/L	5.28	5.53	7.37	8.13	8.55	9.52	5.85
CALCIUM, TOTAL	mg/L	189	95.6	156	173	101	110	70.5
CHLORIDE, TOTAL	mg/L	18.7	10	14.5	17.8	10.8	11.6	13.9
CHROMIUM, TOTAL	µg/L	0.5	1.1	0.29	0.45	1.2	0.12	0.058
LITHIUM, TOTAL	µg/L	18.3	39.6	5	26.4	23.6	5.2	34.5
MAGNESIUM, TOTAL	mg/L	19.4	11.4	9.29	10.1	2.62	0.655	12.9
MOLYBDENUM, TOTAL	µg/L	336	334	593	392	490	445	196
POTASSIUM, TOTAL	mg/L	26.6	16.3	11.9	19.4	14.5	17.5	12.2
SELENIUM, TOTAL	µg/L	0.17	0.74	0.23	0.18	4.2	0.34	0.73
SODIUM, TOTAL	mg/L	234	124	187	151	102	87.3	50.4
SULFATE, TOTAL	mg/L	978	433	708	792	450	421	185
Sum		1976.4	1338.2	1911.3	1796.4	1398.4	1252.7	858.0

Analyte	L-ASD-1D	L-ASD-1M	L-ASD-1S	L-ASD-2D	L-ASD-2M	L-ASD-2S	L-ASD-3D
ALKALINITY	2.8%	6.7%	4.3%	3.9%	4.6%	6.8%	16%
BARIUM, TOTAL	4.8%	13%	7.1%	7.6%	8.9%	4.7%	16%
BORON, TOTAL	0.27%	0.41%	0.39%	0.45%	0.61%	0.76%	0.68%
CALCIUM, TOTAL	9.6%	7.1%	8.2%	9.6%	7.2%	8.8%	8.2%
CHLORIDE, TOTAL	0.95%	0.75%	0.76%	0.99%	0.77%	0.93%	1.6%
CHROMIUM, TOTAL	0.025%	0.082%	0.015%	0.025%	0.086%	0.0096%	0.0068%
LITHIUM, TOTAL	0.93%	3%	0.26%	1.5%	1.7%	0.42%	4%
MAGNESIUM, TOTAL	0.98%	0.85%	0.49%	0.56%	0.19%	0.052%	1.5%
MOLYBDENUM, TOTAL	17%	25%	31%	22%	35%	36%	23%
POTASSIUM, TOTAL	1.3%	1.2%	0.62%	1.1%	1%	1.4%	1.4%
SELENIUM, TOTAL	0.0086%	0.055%	0.012%	0.01%	0.3%	0.027%	0.085%
SODIUM, TOTAL	12%	9.3%	9.8%	8.4%	7.3%	7%	5.9%
SULFATE, TOTAL	49%	32%	37%	44%	32%	34%	22%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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

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

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-ASD-3M	L-ASD-3S	L-ASD-4D	L-ASD-4M	L-ASD-4S	L-ASD-5D	L-ASD-5M
ALKALINITY	mg/L	113	274	158	64.5	295	218	181
BARIUM, TOTAL	µg/L	70.6	169	123	91.2	127	160	65.5
BORON, TOTAL	mg/L	3.05	2.61	5.62	6.63	1.05	2.74	12.3
CALCIUM, TOTAL	mg/L	70.2	75.7	119	53.4	72.2	114	51.8
CHLORIDE, TOTAL	mg/L	15	15.5	15.4	20.3	4.9	9	21.7
CHROMIUM, TOTAL	µg/L	0.12	0.33	0.083	0.5	0.5	0.5	0.25
LITHIUM, TOTAL	µg/L	18.1	18	24.1	15.7	10.9	27.7	25.5
MAGNESIUM, TOTAL	mg/L	6.19	20	18.8	7.03	21.4	29.1	11.1
MOLYBDENUM, TOTAL	µg/L	90.3	93.7	249	309	39.3	93.1	636
POTASSIUM, TOTAL	mg/L	10.8	5.19	7.25	5.72	5.19	8.2	4.37
SELENIUM, TOTAL	µg/L	0.2	0.34	0.18	0.1	0.13	0.24	0.18
SODIUM, TOTAL	mg/L	46.8	80.2	68.7	87	15	51	88.2
SULFATE, TOTAL	mg/L	173	145	400	279	14.3	311	176
Sum		617.4	899.6	1189.1	940.1	606.9	1024.6	1273.9

Analyte	L-ASD-3M	L-ASD-3S	L-ASD-4D	L-ASD-4M	L-ASD-4S	L-ASD-5D	L-ASD-5M
ALKALINITY	18%	30%	13%	6.9%	49%	21%	14%
BARIUM, TOTAL	11%	19%	10%	9.7%	21%	16%	5.1%
BORON, TOTAL	0.49%	0.29%	0.47%	0.71%	0.17%	0.27%	0.97%
CALCIUM, TOTAL	11%	8.4%	10%	5.7%	12%	11%	4.1%
CHLORIDE, TOTAL	2.4%	1.7%	1.3%	2.2%	0.81%	0.88%	1.7%
CHROMIUM, TOTAL	0.019%	0.037%	0.007%	0.053%	0.082%	0.049%	0.02%
LITHIUM, TOTAL	2.9%	2%	2%	1.7%	1.8%	2.7%	2%
MAGNESIUM, TOTAL	1%	2.2%	1.6%	0.75%	3.5%	2.8%	0.87%
MOLYBDENUM, TOTAL	15%	10%	21%	33%	6.5%	9.1%	50%
POTASSIUM, TOTAL	1.7%	0.58%	0.61%	0.61%	0.86%	0.8%	0.34%
SELENIUM, TOTAL	0.032%	0.038%	0.015%	0.011%	0.021%	0.023%	0.014%
SODIUM, TOTAL	7.6%	8.9%	5.8%	9.3%	2.5%	5%	6.9%
SULFATE, TOTAL	28%	16%	34%	30%	2.4%	30%	14%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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

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

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-ASD-5S	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-LCPA-1D	L-LCPA-1S
ALKALINITY	mg/L	318	424	410	362	35.8	77.6	120
BARIUM, TOTAL	µg/L	151	1180	347	349	253	45.6	45.7
BORON, TOTAL	mg/L	1.44	0.0815	0.105	0.0706	0.051	10	10.3
CALCIUM, TOTAL	mg/L	79.5	130	202	136	128	78.2	97.1
CHLORIDE, TOTAL	mg/L	5.1	9.76	5.53	14.7	2.83	15.2	18.9
CHROMIUM, TOTAL	µg/L	0.078	0.554	0.764	0.525	0.52	1.4	0.73
LITHIUM, TOTAL	µg/L	12.1	30.3	19.4	43.3	18.9	34.6	40.6
MAGNESIUM, TOTAL	mg/L	20.2	30.8	44.5	26.1	17.8	4.47	0.184
MOLYBDENUM, TOTAL	µg/L	87.4	2.53	4.55	5.45	5.23	231	235
POTASSIUM, TOTAL	mg/L	3.99	4.57	5.91	3.79	5.78	14	17.8
SELENIUM, TOTAL	µg/L	0.33	0.5	0.5	0.5	1.08	6	0.73
SODIUM, TOTAL	mg/L	14.4	10.1	17.4	6.64	5.54	60	71.1
SULFATE, TOTAL	mg/L	19.8	39.5	51	44.4	18.4	257	267
Sum		713.3	1862.7	1108.7	992.5	492.9	835.1	925.1

Analyte	L-ASD-5S	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-LCPA-1D	L-LCPA-1S
ALKALINITY	45%	23%	37%	36%	7.3%	9.3%	13%
BARIUM, TOTAL	21%	63%	31%	35%	51%	5.5%	4.9%
BORON, TOTAL	0.2%	0.0044%	0.0095%	0.0071%	0.01%	1.2%	1.1%
CALCIUM, TOTAL	11%	7%	18%	14%	26%	9.4%	10%
CHLORIDE, TOTAL	0.71%	0.52%	0.5%	1.5%	0.57%	1.8%	2%
CHROMIUM, TOTAL	0.011%	0.03%	0.069%	0.053%	0.11%	0.17%	0.079%
LITHIUM, TOTAL	1.7%	1.6%	1.7%	4.4%	3.8%	4.1%	4.4%
MAGNESIUM, TOTAL	2.8%	1.7%	4%	2.6%	3.6%	0.54%	0.02%
MOLYBDENUM, TOTAL	12%	0.14%	0.41%	0.55%	1.1%	28%	25%
POTASSIUM, TOTAL	0.56%	0.25%	0.53%	0.38%	1.2%	1.7%	1.9%
SELENIUM, TOTAL	0.046%	0.027%	0.045%	0.05%	0.22%	0.72%	0.079%
SODIUM, TOTAL	2%	0.54%	1.6%	0.67%	1.1%	7.2%	7.7%
SULFATE, TOTAL	2.8%	2.1%	4.6%	4.5%	3.7%	31%	29%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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- 2) Unit abbreviations - µg/L - micrograms per liter, mg/L - milligrams per liter.
- 3) One-half the value of the Practical Quantitation Limit (PQL) is used for non-detect values (values less than the Method Detection Limit (MDL)).

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

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	mg/L	128	208	80.2	91.8	1070	861	1340
BARIUM, TOTAL	µg/L	71.2	89.5	47	36.5	19.4	48.4	47.1
BORON, TOTAL	mg/L	21.7	3.36	8.1	8.44	28.2	14.8	25.7
CALCIUM, TOTAL	mg/L	106	76.5	87.7	76.9	11.4	22.6	11.4
CHLORIDE, TOTAL	mg/L	19.8	25.5	18.9	18.6	15.6	16.2	18.4
CHROMIUM, TOTAL	µg/L	0.61	1.7	1.1	0.34	2.7	120	7.5
LITHIUM, TOTAL	µg/L	61.4	5.5	59.8	39.8	46.2	13.7	50.4
MAGNESIUM, TOTAL	mg/L	5.43	45.5	1.54	0.445	0.0844	0.0874	0.386
MOLYBDENUM, TOTAL	µg/L	1430	83.7	218	234	1960	682	2370
POTASSIUM, TOTAL	mg/L	42.1	3.54	14.2	16.6	51	52.6	48.2
SELENIUM, TOTAL	µg/L	0.95	1.5	1.1	2.1	255	182	361
SODIUM, TOTAL	mg/L	50.5	67.2	69	84	935	750	969
SULFATE, TOTAL	mg/L	306	254	295	272	1060	728	999
Sum		2243.7	865.5	901.6	881.5	5454.6	3491.4	6248.1

Analyte	L-LCPA-2D	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	5.7%	24%	8.9%	10%	20%	25%	21%
BARIUM, TOTAL	3.2%	10%	5.2%	4.1%	0.36%	1.4%	0.75%
BORON, TOTAL	0.97%	0.39%	0.9%	0.96%	0.52%	0.42%	0.41%
CALCIUM, TOTAL	4.7%	8.8%	9.7%	8.7%	0.21%	0.65%	0.18%
CHLORIDE, TOTAL	0.88%	2.9%	2.1%	2.1%	0.29%	0.46%	0.29%
CHROMIUM, TOTAL	0.027%	0.2%	0.12%	0.039%	0.049%	3.4%	0.12%
LITHIUM, TOTAL	2.7%	0.64%	6.6%	4.5%	0.85%	0.39%	0.81%
MAGNESIUM, TOTAL	0.24%	5.3%	0.17%	0.05%	0.0015%	0.0025%	0.0062%
MOLYBDENUM, TOTAL	64%	9.7%	24%	27%	36%	20%	38%
POTASSIUM, TOTAL	1.9%	0.41%	1.6%	1.9%	0.93%	1.5%	0.77%
SELENIUM, TOTAL	0.042%	0.17%	0.12%	0.24%	4.7%	5.2%	5.8%
SODIUM, TOTAL	2.3%	7.8%	7.7%	9.5%	17%	21%	16%
SULFATE, TOTAL	14%	29%	33%	31%	19%	21%	16%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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- 2) Unit abbreviations - µg/L - micrograms per liter, mg/L - milligrams per liter.
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Prepared By: JSI
Checked By: EMS
Reviewed By: MNH

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	mg/L	633	34	199	344	381	496	464
BARIUM, TOTAL	µg/L	148	54.5	80.8	131	297	291	319
BORON, TOTAL	mg/L	3.7	6.74	4.88	8.97	0.0724	2.29	3.01
CALCIUM, TOTAL	mg/L	151	70.5	66.8	119	122	165	159
CHLORIDE, TOTAL	mg/L	4.11	19.1	20.9	24	3.01	6.34	11.4
CHROMIUM, TOTAL	µg/L	0.529	0.481	0.694	0.661	0.634	0.509	0.886
LITHIUM, TOTAL	µg/L	18.5	15.1	24.7	38.9	10.8	38.6	37.4
MAGNESIUM, TOTAL	mg/L	31.8	0.143	7.86	26.8	15.4	29.5	38.8
MOLYBDENUM, TOTAL	µg/L	6.19	131	185	110	6.04	12.4	31.1
POTASSIUM, TOTAL	mg/L	5.59	8.62	7.12	7.55	3.26	6.25	6.69
SELENIUM, TOTAL	µg/L	0.485	0.366	0.411	0.453	0.593	0.825	0.476
SODIUM, TOTAL	mg/L	10.8	62	115	80.1	8.45	10.9	20.9
SULFATE, TOTAL	mg/L	99.4	293	261	242	13.8	77.4	111
Sum		1113.1	695.6	974.2	1133.4	862.1	1137.0	1203.7

Analyte	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	57%	4.9%	20%	30%	44%	44%	39%
BARIUM, TOTAL	13%	7.8%	8.3%	12%	34%	26%	27%
BORON, TOTAL	0.33%	0.97%	0.5%	0.79%	0.0084%	0.2%	0.25%
CALCIUM, TOTAL	14%	10%	6.9%	10%	14%	15%	13%
CHLORIDE, TOTAL	0.37%	2.7%	2.1%	2.1%	0.35%	0.56%	0.95%
CHROMIUM, TOTAL	0.048%	0.069%	0.071%	0.058%	0.074%	0.045%	0.074%
LITHIUM, TOTAL	1.7%	2.2%	2.5%	3.4%	1.3%	3.4%	3.1%
MAGNESIUM, TOTAL	2.9%	0.021%	0.81%	2.4%	1.8%	2.6%	3.2%
MOLYBDENUM, TOTAL	0.56%	19%	19%	9.7%	0.7%	1.1%	2.6%
POTASSIUM, TOTAL	0.5%	1.2%	0.73%	0.67%	0.38%	0.55%	0.56%
SELENIUM, TOTAL	0.044%	0.053%	0.042%	0.04%	0.069%	0.073%	0.04%
SODIUM, TOTAL	0.97%	8.9%	12%	7.1%	0.98%	0.96%	1.7%
SULFATE, TOTAL	8.9%	42%	27%	21%	1.6%	6.8%	9.2%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

- 1) Values for CCR Rule monitoring wells represent average from samples collected for the CCR Rule.
- 2) Unit abbreviations - µg/L - micrograms per liter, mg/L - milligrams per liter.
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Checked By: EMS
Reviewed By: MNH

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-8S	L-MW-26	L-TMW-1	L-TMW-2	L-TMW-3	L-UMW-1D	L-UMW-2D
ALKALINITY	mg/L	411	408	483	583	592	447	211
BARIUM, TOTAL	µg/L	172	203	269	184	289	401	116
BORON, TOTAL	mg/L	4.77	0.0759	0.0945	0.106	0.118	0.547	1.84
CALCIUM, TOTAL	mg/L	165	139	150	174	179	124	101
CHLORIDE, TOTAL	mg/L	14.1	6.2	2.47	6.27	7.19	10.9	30.7
CHROMIUM, TOTAL	µg/L	0.548	0.5	0.504	0.5	0.604	0.72	0.486
LITHIUM, TOTAL	µg/L	24.7	28.7	34.9	46.2	47.4	24.8	27.8
MAGNESIUM, TOTAL	mg/L	28.3	24.4	42.2	49.3	42.2	35.1	20.6
MOLYBDENUM, TOTAL	µg/L	93	6.46	4.5	3.7	4.54	3.79	43.7
POTASSIUM, TOTAL	mg/L	5.84	3.93	5.82	6.76	6.79	6.34	7.45
SELENIUM, TOTAL	µg/L	0.418	7.01	4.35	0.4	0.456	0.5	0.5
SODIUM, TOTAL	mg/L	31.8	4.98	10.6	25.2	9	23.6	67.6
SULFATE, TOTAL	mg/L	247	26	69.8	83.6	74.1	12.7	207
Sum		1198.5	858.3	1077.2	1163.0	1252.4	1091.0	835.7

Analyte	L-LMW-8S	L-MW-26	L-TMW-1	L-TMW-2	L-TMW-3	L-UMW-1D	L-UMW-2D
ALKALINITY	34%	48%	45%	50%	47%	41%	25%
BARIUM, TOTAL	14%	24%	25%	16%	23%	37%	14%
BORON, TOTAL	0.4%	0.0088%	0.0088%	0.0091%	0.0094%	0.05%	0.22%
CALCIUM, TOTAL	14%	16%	14%	15%	14%	11%	12%
CHLORIDE, TOTAL	1.2%	0.72%	0.23%	0.54%	0.57%	1%	3.7%
CHROMIUM, TOTAL	0.046%	0.058%	0.047%	0.043%	0.048%	0.066%	0.058%
LITHIUM, TOTAL	2.1%	3.3%	3.2%	4%	3.8%	2.3%	3.3%
MAGNESIUM, TOTAL	2.4%	2.8%	3.9%	4.2%	3.4%	3.2%	2.5%
MOLYBDENUM, TOTAL	7.8%	0.75%	0.42%	0.32%	0.36%	0.35%	5.2%
POTASSIUM, TOTAL	0.49%	0.46%	0.54%	0.58%	0.54%	0.58%	0.89%
SELENIUM, TOTAL	0.035%	0.82%	0.4%	0.034%	0.036%	0.046%	0.06%
SODIUM, TOTAL	2.7%	0.58%	0.98%	2.2%	0.72%	2.2%	8.1%
SULFATE, TOTAL	21%	3%	6.5%	7.2%	5.9%	1.2%	25%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

- 1) Values for CCR Rule monitoring wells represent average from samples collected for the CCR Rule.
- 2) Unit abbreviations - µg/L - micrograms per liter, mg/L - milligrams per liter.
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Checked By: EMS
Reviewed By: MNH

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-UMW-3D	L-UMW-4D	L-UMW-5D	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D
ALKALINITY	mg/L	100	48.9	71.1	54.1	333	470	418
BARIUM, TOTAL	µg/L	129	65.3	67	135	142	472	522
BORON, TOTAL	mg/L	9.29	3.51	5.48	16.2	5.84	0.438	0.105
CALCIUM, TOTAL	mg/L	149	47	73.4	83.4	161	131	116
CHLORIDE, TOTAL	mg/L	13.4	21.1	19.4	21.9	13	9.12	20.7
CHROMIUM, TOTAL	µg/L	0.5	0.651	0.515	0.55	0.578	0.581	0.594
LITHIUM, TOTAL	µg/L	23.5	33	19.9	7.14	19.3	31.7	17.2
MAGNESIUM, TOTAL	mg/L	10.3	7.7	0.0842	6.26	28.6	33.1	32.3
MOLYBDENUM, TOTAL	µg/L	158	146	119	584	195	12.8	3.81
POTASSIUM, TOTAL	mg/L	10.5	7.61	12.2	13.8	6.18	4.81	4.04
SELENIUM, TOTAL	µg/L	0.378	0.5	0.409	0.313	0.449	0.5	0.5
SODIUM, TOTAL	mg/L	69.4	107	67.2	88.1	62.7	12.2	13.3
SULFATE, TOTAL	mg/L	496	301	261	390	282	9.3	1.95
Sum		1169.3	789.3	716.7	1400.8	1249.6	1187.5	1150.5

Analyte	L-UMW-3D	L-UMW-4D	L-UMW-5D	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D
ALKALINITY	8.6%	6.2%	9.9%	3.9%	27%	40%	36%
BARIUM, TOTAL	11%	8.3%	9.3%	9.6%	11%	40%	45%
BORON, TOTAL	0.79%	0.44%	0.76%	1.2%	0.47%	0.037%	0.0091%
CALCIUM, TOTAL	13%	6%	10%	6%	13%	11%	10%
CHLORIDE, TOTAL	1.1%	2.7%	2.7%	1.6%	1%	0.77%	1.8%
CHROMIUM, TOTAL	0.043%	0.082%	0.072%	0.039%	0.046%	0.049%	0.052%
LITHIUM, TOTAL	2%	4.2%	2.8%	0.51%	1.5%	2.7%	1.5%
MAGNESIUM, TOTAL	0.88%	0.98%	0.012%	0.45%	2.3%	2.8%	2.8%
MOLYBDENUM, TOTAL	14%	18%	17%	42%	16%	1.1%	0.33%
POTASSIUM, TOTAL	0.9%	0.96%	1.7%	0.99%	0.49%	0.41%	0.35%
SELENIUM, TOTAL	0.032%	0.063%	0.057%	0.022%	0.036%	0.042%	0.043%
SODIUM, TOTAL	5.9%	14%	9.4%	6.3%	5%	1%	1.2%
SULFATE, TOTAL	42%	38%	36%	28%	23%	0.78%	0.17%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

- 1) Values for CCR Rule monitoring wells represent average from samples collected for the CCR Rule.
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Checked By: EMS
Reviewed By: MNH

Attachment 2
Summary of Alluvial Aquifer Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	PZ-1D	PZ-1S	PZ-2D	PZ-2S	PZ-3D	PZ-3S	PZ-4D
ALKALINITY	mg/L	450	229	521	427	267	455	109
BARIUM, TOTAL	µg/L	485	104	264	395	124	167	105
BORON, TOTAL	mg/L	0.174	19.4	0.828	1	1.08	0.478	7.58
CALCIUM, TOTAL	mg/L	125	94.5	142	124	97.1	164	82.5
CHLORIDE, TOTAL	mg/L	12.4	8.7	9.5	23.9	26.9	26.5	20.2
CHROMIUM, TOTAL	µg/L	0.08	0.43	0.73	0.35	0.29	0.15	0.59
LITHIUM, TOTAL	µg/L	31.3	18.1	33	32.5	25.9	40.3	21.7
MAGNESIUM, TOTAL	mg/L	29.5	18.6	28.1	32.5	23.9	25.1	4.94
MOLYBDENUM, TOTAL	µg/L	2.7	1540	16.1	1.8	28.2	20.7	213
POTASSIUM, TOTAL	mg/L	4.79	7.27	5.62	6.17	5.94	3.94	11.4
SELENIUM, TOTAL	µg/L	0.5	10	0.5	0.13	0.5	0.19	0.21
SODIUM, TOTAL	mg/L	11	310	31.2	49	51.8	27.9	81.4
SULFATE, TOTAL	mg/L	1.5	755	9.8	101	136	92.6	303
Sum		1153.9	3115.0	1062.4	1194.4	788.6	1023.9	960.5

Analyte	PZ-1D	PZ-1S	PZ-2D	PZ-2S	PZ-3D	PZ-3S	PZ-4D
ALKALINITY	39%	7.4%	49%	36%	34%	44%	11%
BARIUM, TOTAL	42%	3.3%	25%	33%	16%	16%	11%
BORON, TOTAL	0.015%	0.62%	0.078%	0.084%	0.14%	0.047%	0.79%
CALCIUM, TOTAL	11%	3%	13%	10%	12%	16%	8.6%
CHLORIDE, TOTAL	1.1%	0.28%	0.89%	2%	3.4%	2.6%	2.1%
CHROMIUM, TOTAL	0.0069%	0.014%	0.069%	0.029%	0.037%	0.015%	0.061%
LITHIUM, TOTAL	2.7%	0.58%	3.1%	2.7%	3.3%	3.9%	2.3%
MAGNESIUM, TOTAL	2.6%	0.6%	2.6%	2.7%	3%	2.5%	0.51%
MOLYBDENUM, TOTAL	0.23%	49%	1.5%	0.15%	3.6%	2%	22%
POTASSIUM, TOTAL	0.42%	0.23%	0.53%	0.52%	0.75%	0.38%	1.2%
SELENIUM, TOTAL	0.043%	0.32%	0.047%	0.011%	0.063%	0.019%	0.022%
SODIUM, TOTAL	0.95%	10%	2.9%	4.1%	6.6%	2.7%	8.5%
SULFATE, TOTAL	0.13%	24%	0.92%	8.5%	17%	9%	32%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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Analyte	Units	PZ-4S	PZ-5D	PZ-5S	PZ-6D	PZ-6S
ALKALINITY	mg/L	215	54.6	352	404	519
BARIUM, TOTAL	µg/L	84.9	70.3	71.8	53.3	261
BORON, TOTAL	mg/L	5.33	4.02	5.78	5.23	4.56
CALCIUM, TOTAL	mg/L	132	64.4	87.6	163	170
CHLORIDE, TOTAL	mg/L	28.2	19.3	22.6	12.5	10.8
CHROMIUM, TOTAL	µg/L	0.23	0.47	0.44	0.36	0.08
LITHIUM, TOTAL	µg/L	24.1	27.4	29.2	28.1	30.5
MAGNESIUM, TOTAL	mg/L	18.1	3.12	8.31	25.8	35.3
MOLYBDENUM, TOTAL	µg/L	77.5	137	75.7	216	162
POTASSIUM, TOTAL	mg/L	6.45	10.4	6.55	5.9	7.51
SELENIUM, TOTAL	µg/L	0.12	0.09	0.13	0.097	0.088
SODIUM, TOTAL	mg/L	91.7	79.7	172	58.3	43.3
SULFATE, TOTAL	mg/L	369	284	269	239	138
Sum		1052.6	754.8	1101.1	1211.6	1382.1

Analyte	PZ-4S	PZ-5D	PZ-5S	PZ-6D	PZ-6S
ALKALINITY	20%	7.2%	32%	33%	38%
BARIUM, TOTAL	8.1%	9.3%	6.5%	4.4%	19%
BORON, TOTAL	0.51%	0.53%	0.52%	0.43%	0.33%
CALCIUM, TOTAL	13%	8.5%	8%	13%	12%
CHLORIDE, TOTAL	2.7%	2.6%	2.1%	1%	0.78%
CHROMIUM, TOTAL	0.022%	0.062%	0.04%	0.03%	0.0058%
LITHIUM, TOTAL	2.3%	3.6%	2.7%	2.3%	2.2%
MAGNESIUM, TOTAL	1.7%	0.41%	0.75%	2.1%	2.6%
MOLYBDENUM, TOTAL	7.4%	18%	6.9%	18%	12%
POTASSIUM, TOTAL	0.61%	1.4%	0.59%	0.49%	0.54%
SELENIUM, TOTAL	0.011%	0.012%	0.012%	0.008%	0.0064%
SODIUM, TOTAL	8.7%	11%	16%	4.8%	3.1%
SULFATE, TOTAL	35%	38%	24%	20%	10%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

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

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



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APPENDIX C

**Alternative Source Demonstration –
May 2018 Sampling Event**

TECHNICAL MEMORANDUM

DATE November 1, 2018

Project No. 1531406

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

FROM Golder Associates, Inc

LCPB – ALTERNATIVE SOURCE DEMONSTRATION – MAY 2018 SAMPLING EVENT

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates ("Golder") has prepared this Technical Memorandum that indicates Statistically Significant Increases (SSIs) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), fly ash surface impoundment (LCPB) result from an alternative source. This LCPB Alternative Source Demonstration satisfies the requirements of §257.94(e)(2) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

2.0 BACKGROUND

In November 2017, the first round of detection monitoring was completed at the Labadie Energy Center's LCPB Coal Combustion Residual (CCR) Unit in Franklin County, Missouri. This sampling was completed in accordance with the CCR Rule and SSIs were identified and verified. In February/March 2018, additional drilling and a detailed analysis of results were completed for the LCPB and it was determined that the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. The SSIs observed in LCPB wells were caused by an alternative source, which is the unlined, adjacent LCPA surface impoundment. A copy of the Alternative Source Demonstration (ASD) report for the November 2017 sampling event is provided in **Appendix B** of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report.

3.0 MAY 2018 SAMPLING EVENT

A summary of the May 2018 sampling results can be found in **Table 3** of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report. **Figure 1** of this Technical Memorandum displays where May 2018 LCPB CCR Rule groundwater monitoring well samples plot in comparison to cations and anions for the LCPA pore-water, LCPB pore-water, and background groundwater zones. As displayed in this figure, the monitoring wells around the LCPB plot in similar locations to those from 2017. These results also display that monitoring wells that have SSIs in the May 2018 sampling event plot between the background groundwater quality and the LCPA pore-water. Like the November 2017 Sampling Event ASD, results from this diagram demonstrate that groundwater data from the monitoring wells around the LCPB are impacted by the LCPA and not the LCPB.

Additional supporting lines of evidence from the November 2017 Sampling Event ASD are also applicable in this May 2018 Sampling Event ASD. Summaries of supporting lines of evidence include:

- Potentiometric surface mapping from 2018 continue to show that while groundwater conditions can be variable, net groundwater flow is toward the north/northeast, flowing from the bluffs toward the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring because impacted monitoring wells around the LCPB are frequently downgradient from the LCPA.
- The LCPB was constructed with an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner with a bottom elevation of approximately 460 FT MSL at its lowest point. The LCPA was built in the early 1970's and has a bottom elevation estimated to be at approximately 410 FT MSL. Additionally, as shown in the LCPA Annual report, there are elevated concentrations of CCR indicators in the intermediate and deep zones of the alluvial aquifer. Since impacts are present in the shallow, middle, and deep alluvial zones and are not isolated to the shallow zone, the impacts are most likely from the LCPA, which extends to deeper depths in the aquifer.

In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction and hydrogeological evidence all demonstrate that impacts (SSIs) calculated during the May 2018 Sampling Event for the LCPB CCR Unit were not caused by impacts from the LCPB surface impoundment, and the LCPA surface impoundment is the source of the LCPB SSIs.

CERTIFICATION STATEMENT

This *LCPB – Alternative Source Demonstration – May 2018 Sampling Event* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *LCPB – Alternative Source Demonstration – May 2018 Sampling Event* located at 226 Labadie Power Plant Road, Labadie Missouri 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

GOLDER ASSOCIATES INC.



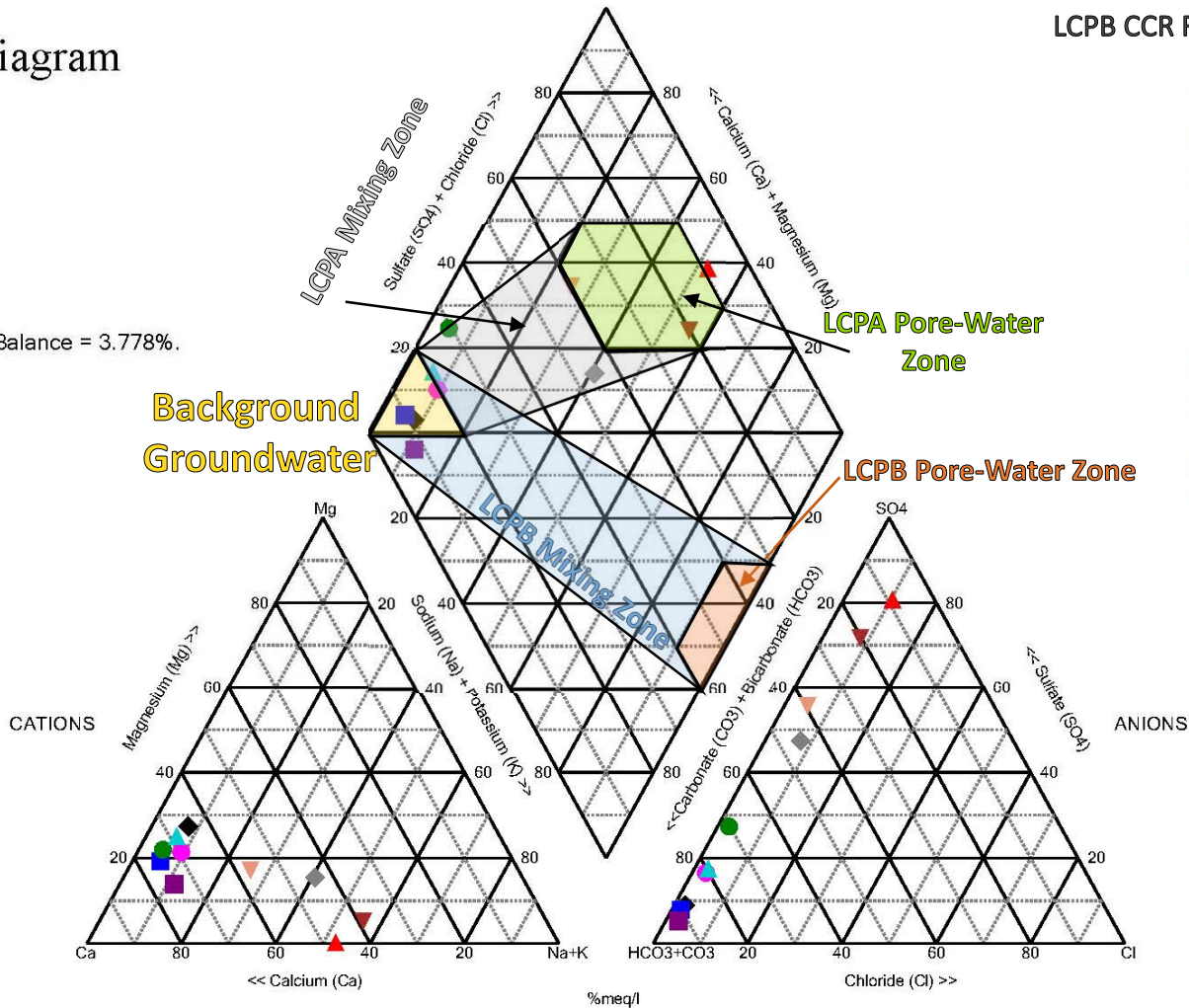
Mark Haddock, P.E., R.G.

Principal, Practice Leader

Piper Diagram

LCPB CCR Rule Monitoring Wells

Cation-Anion Balance = 3.778%.



Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in LCPB Annual Report.

CLIENT/PROJECT
**AMEREN MISSOURI
 LABADIE LCPB ASD**



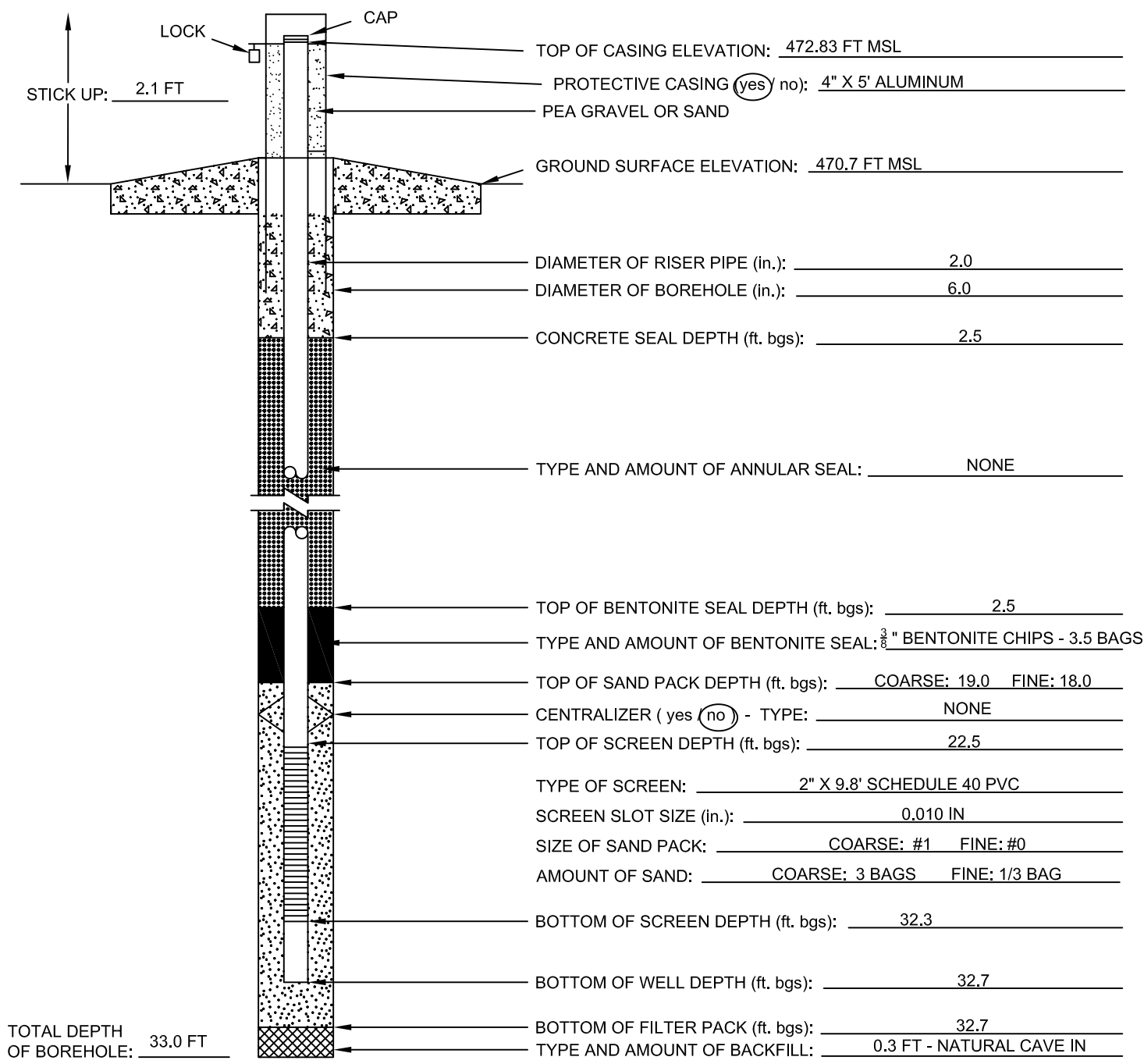
TITLE
LCPB PIPER DIAGRAM FOR MAY 2018

PREPARED JSI	CHECKED JAP	REVIEWED MNH	DATE 11/1/2018	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 1
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APPENDIX D

Well Construction Diagram

PROJECT NAME: AMEREN CCR GW MONITORING		PROJECT NUMBER: 153-1406.0001	
SITE NAME: LABADIE ENERGY CENTER		LOCATION: LMW-4S	
CLIENT: AMEREN MISSOURI		SURFACE ELEVATION: 470.7 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 994194.9	EASTING: 725624.1	
DRILLER: J. DRABEK	STATIC WATER LEVEL: 14.89 FT BTOC	COMPLETION DATE: 11/18/2015	
DRILLING COMPANY: CASCADE		DRILLING METHODS: SONIC	



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL. 150 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 (2000) MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC. ON NOVEMBER 13, 2018. FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH. ON OCTOBER 25, 2018 WELL REPAIRED. THIS LOG REPRESENTS CURRENT CONDITIONS.

CHECKED BY: J. PEREZ
 DATE CHECKED: 01/02/2019
 PREPARED BY: R. FELDMANN



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