Entergy Arkansas, LLC
White Bluff Steam Electric Station
Landfill Cells 1-4

2024 Annual Groundwater Monitoring and Corrective Action Report

Prepared in Compliance with the EPA Final Rule for the Disposal of Coal Combustion Residuals Title 40 CFR Part 257

Prepared for:

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Little Rock, Arkansas 72203

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Building 3, Suite A
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January 31, 2025

TABLE OF CONTENTS

LIST OF APPENDICES

EXECUTIVE SUMMARY

Entergy Arkansas, LLC (EAL), operates a coal ash disposal landfill (Landfill) for the disposal of coal combustion residuals (CCR) at the White Bluff Steam Electric Station (Plant) located near Redfield, Arkansas. The Landfill receives CCR generated from the combustion of coal at the Plant. Management of the CCR at the Landfill is performed pursuant to national criteria established in Title 40 of the Code of Federal Regulations (40 CFR), Part 257 (CCR Rule), effective April 19, 2015, and subsequent revisions to the CCR Rule.

The Plant conducted two semi-annual detection monitoring events in 2024 for the Landfill CCR Unit monitoring well network per 40 CFR §257.94. The statistical analyses completed for the second semi-annual 2023 and first semi-annual 2024 sampling event analytical data identified potential statistically significant increases (SSIs); therefore, alternate source demonstrations (ASDs) were performed for both semi-annual detection monitoring events and are attached to this report. Each of the ASDs performed were successful which resulted in the Landfill continuing to operate under the detection monitoring program. The Landfill CCR Unit operated under the detection monitoring program (40 CFR § 257.94) during the duration of 2024.

As indicated above, the potential SSIs identified during the second semi -annual 2023 and first semi-annual 2024 monitoring events are detailed in the tables below.

Table 1 Potential SSIs Second Semi-annual 2023 Monitoring Event				
Stratum	**Well**	**Date**	**Analyte**	**Confirmed SSI? (Yes/No)**
I	MW-102S	11/2023	Fluoride	No
	MW-106S	11/2023	Calcium	No
		11/2023	Fluoride	No
		11/2023	Sulfate	No
		11/2023	TDS	No
	MW-110S	11/2023	Boron	No
		11/2023	Fluoride	No
	MW-111S	11/2023	Boron	No
		11/2023	Calcium	No
		11/2023	Fluoride	No
		11/2023	Sulfate	No
		11/2023	TDS	No
III	MW-105D	11/2023	Fluoride	No
	MW-112D	11/2023	Boron	No
		11/2023	Calcium	No
		11/2023	TDS	No

Table 2 Potential SSIs First Semi-annual 2024 Monitoring Event				
Stratum	**Well**	**Date**	**Analyte**	**Confirmed SSI? (Yes/No)**
I	MW-106S	05/2024	Calcium	No
		05/2024	Fluoride	No
		05/2024	Sulfate	No
		05/2024	TDS	No
	MW-110S	05/2024	Boron	No
		05/2024	Calcium	No
		05/2024	TDS	No
	MW-111S	05/2024	Boron	No
		05/2024	Calcium	No
		05/2024	Fluoride	No
		05/2024	Sulfate	No
		05/2024	TDS	No
III	MW-112D	05/2024	Boron	No
		05/2024	Calcium	No
		05/2024	TDS	No
	MW-114D	05/2024	TDS	No

1. INTRODUCTION

Entergy Arkansas, LLC (EAL), operates the Landfill for the disposal of CCRs at the Plant located near Redfield, Arkansas (Lat: 34.421658 / Long: -92.139455). The Landfill receives CCR generated from the combustion of coal at the Plant. The CCR Landfill is managed in accordance with the national criteria established by the CCR Rule. EAL installed a groundwater monitoring system at the Landfill that is subject to the groundwater monitoring and corrective action requirements provided under §257.90 through §257.98 of the CCR rule. In accordance with §257.90(e) of the CCR rule, EAL must prepare an annual report that provides information regarding the groundwater monitoring and corrective action program at the Landfill.

2. GROUNDWATER MONITORING SYSTEM

The Landfill’s groundwater monitoring system consists of 23 monitoring wells as shown on Figure 1 included in Appendix A. Pursuant to §257.91(f) of the CCR rule, a qualified Arkansas-registered professional engineer has certified the groundwater monitoring system, which was designed and constructed to meet the requirements of §257.91.

3. INSTALLED OR DECOMISSIONED WELLS DURING 2024

EAL did not install any new wells or decommission any existing wells in the certified groundwater monitoring system during 2024.

4. GROUNDWATER MONITORING DATA

In accordance with §257.90(e)(3), all monitoring data obtained under §257.90 through §257.98 during 2024 are provided in Appendix B and C. Monitoring data includes:

- Summary of the number of groundwater samples that were collected for analysis for each background and downgradient well;
- Dates the samples were collected;
- Whether the sample was collected as part of detection or assessment monitoring;
- Potentiometric maps showing groundwater flow direction for each monitoring event and table of groundwater level measurements; and
- Summary table of CCR Rule constituent results.

5. STATUS SUMMARY OF THE 2024 GROUNDWATER MONITORING PROGRAM

Groundwater monitoring was performed in accordance with the detection monitoring requirements of §257.94. A summary of activities related to groundwater detection monitoring performed during 2024 is provided in the list below:

- In accordance with §257.94(b), semiannual detection monitoring was performed during the first half (May) and second half (November) of 2024 for analysis of Appendix III parameters (boron, calcium, chloride, fluoride, pH, sulfate and total dissolved solids (TDS)).

- Statistical evaluation of the semiannual detection monitoring data was performed in accordance with the statistical method certified by a qualified Arkansas-registered professional engineer. The certified statistical method has been posted to EAL's CCR Rule Compliance Data and Information website.

- In 2024, EAL completed a successful alternate source demonstration (ASD) per §257.94(e)(2) in response to potential statistically significant increases (SSIs) identified during the statistical evaluation of the data generated from the second half 2023 semi-annual detection monitoring event. As required by §257.94(e)(2), a copy of the ASD is included in Appendix D. Based on the successful evaluation conducted and results presented in the ASD, EAL continued with detection monitoring in accordance with §257.94.

- The first half 2024 semi-annual detection monitoring sampling was performed during May 2024. Based on statistical evaluation of the data potential SSIs were identified for boron, calcium, chloride, fluoride, and total dissolved solids (TDS). EAL completed a successful an ASD per §257.94 for the detection monitoring for the CADL CCR Unit. A copy of the ASD is provided in Appendix D.

- The second half 2024 semi-annual detection monitoring sampling was performed during November 2024. Statistical evaluation of the data will be performed during 2025 to determine if any SSIs are identified in accordance with §257.93(h).

- No problems were encountered during 2024 regarding the detection monitoring and corrective action system. Therefore, no actions were required to modify the system.

- The Landfill CCR Unit remained in detection monitoring for the duration of 2024.

6. PROJECTED ACTIVITIES FOR 2025

Planned activities for the program during 2025 are listed below:

- Statistical evaluation of the second-half 2024 and first-half 2025 detection monitoring sampling data will be performed during 2025 to determine if any SSIs are identified.
- Semi-annual detection monitoring is planned for June and December 2025.

APPENDIX A
WELL LOCATIONS

TRC - GIS

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet (Foot US)
Map Rotation: 0

Plot Date: 10/7/2020, 15:35:24 PM by SMAJOR -- LAYOUT: ANSI B(11"x17")
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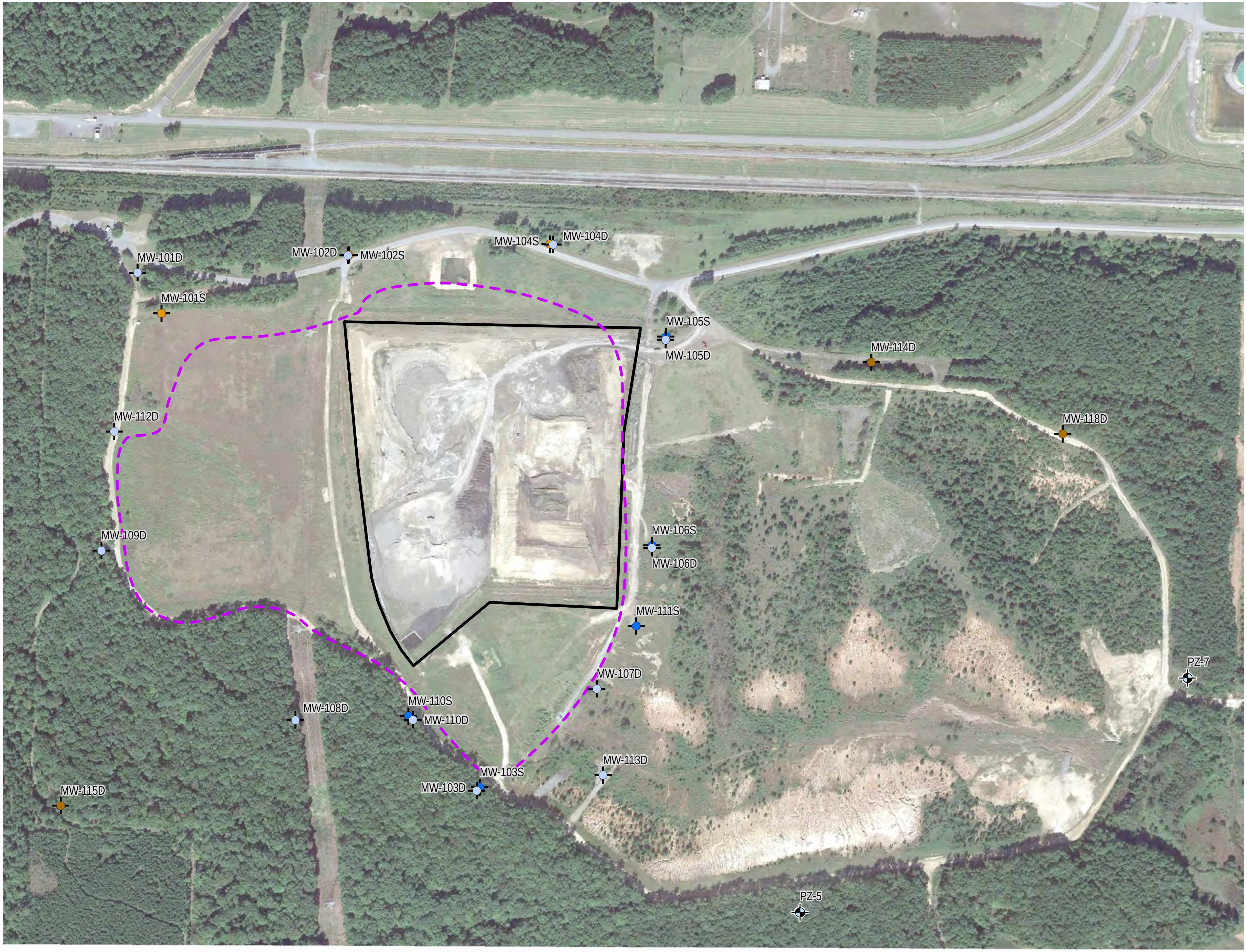


LEGEND

- STRATUM I BACKROUND WELL
- STRATUM I MONITORING WELL
- STRATUM III BACKROUND WELL
- STRATUM III MONITORING WELL
- STRATUM III PIEZOMETER
- APPROX. EXTENT OF INACTIVE AREA FILL
- APPROX. EXTENT OF ACTIVE CADL

NOTES

1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 2018.
2. COAL ASH DISPOSAL LANDFILL (CADL)

N

0 400 800
Feet
1 " = 400 '
1:4,800

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:
CADL EXTENT AND CCR GROUNDWATER MONITORING LOCATIONS

DRAWN BY:	S. MAJOR	PROJ. NO.:	341458
CHECKED BY:	S. SELLWOOD	**FIGURE 1**	
APPROVED BY:	J. HOUSE		
DATE:	OCTOBER 2020		

TRC

Two United Plaza
8550 United Plaza Blvd., Suite 502
Baton Rouge, LA
Phone: 225.216.7483

FILE NO.: 341458-002.mxd

APPENDIX B
GROUNDWATER LEVEL DATA

Water Level Measurements First and Second Semi-annual 2024 Detection Monitoring Event					
		May 20, 2024		November 18, 2024	
Well ID	TOC Elevation (ft NAVD88)	Depth to Groundwater (ft below MP)	Groundwater Elevation (ft NAVD88)	Depth to Groundwater (ft below MP)	Groundwater Elevation (ft NAVD88)
101S	385.76	36.20	349.56	38.62	347.14
102S	381.17	33.08	348.09	34.41	346.76
103S	339.34	15.55	323.79	21.18	318.16
104S	377.08	28.36	348.72	32.59	344.49
105S	370.54	26.69	343.85	28.98	341.56
106S	341.03	11.58	329.45	14.05	326.98
110S	337.36	10.67	326.69	15.91	321.45
111S	336.53	13.38	323.15	15.02	321.51
101D	387.06	96.66	290.40	96.66	290.40
102D	381.40	91.07	290.33	91.20	290.20
103D	339.18	41.36	297.82	42.23	296.95
104D	376.76	86.46	290.30	86.60	290.16
105D	370.04	79.76	290.28	79.94	290.10
106D	339.39	42.10	297.29	41.58	297.81
107D	322.26	20.90	301.36	21.25	301.01
108D	341.61	45.01	296.60	45.85	295.76
109D	371.31	78.83	292.48	79.31	292.00
110D	338.26	33.24	305.02	34.59	303.67
112D	378.29	87.52	290.77	87.63	290.66
113D	305.46	9.60	295.86	10.33	295.13
114D	350.22	60.18	290.04	60.41	289.81
115D	361.27	74.31	286.96	75.28	285.99
118D	322.81	40.79	282.02	40.81	282.00

APPENDIX C

GROUNDWATER MONITORING DATA

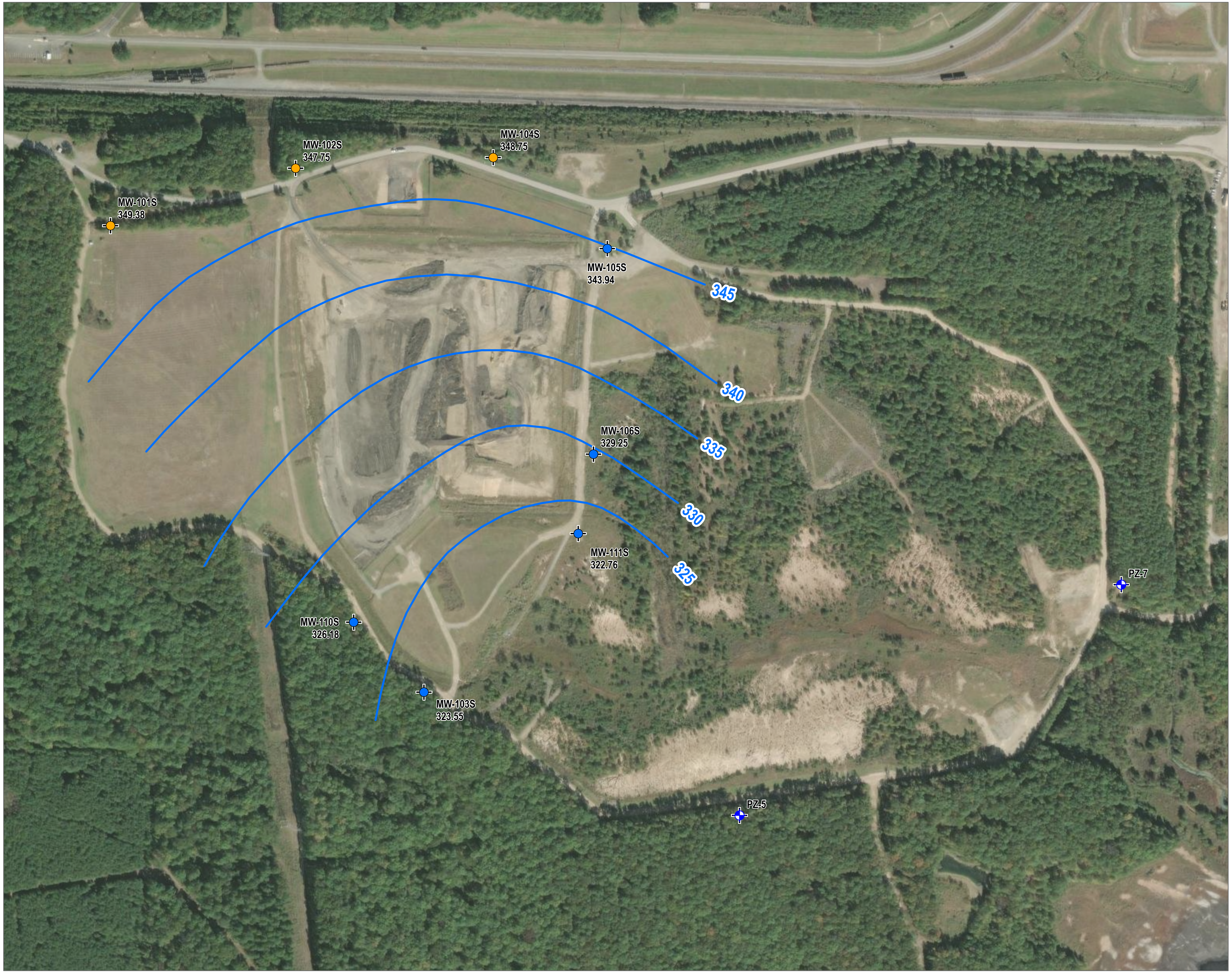
Sampling Schedule, Entergy White Bluff CADL Network			
	Detection Monitoring Sampling Dates and Wells Sampled		
Well ID	5/20-5/23/2024	11/18-11/21/2024	Number of Samples Collected
MW-101S	X	X	2
MW-102S	X	X	2
MW-103S	X	X	2
MW-104S	X	X	2
MW-105S	X	X	2
MW-106S	X	X	2
MW-110S	X	X	2
MW-111S	X	X	2
MW-101D	X	X	2
MW-102D	X	X	2
MW-103D	X	X	2
MW-104D	X	X	2
MW-105D	X	X	2
MW-106D	X	X	2
MW-107D	X	X	2
MW-108D	X	X	2
MW-109D	X	X	2
MW-110D	X	X	2
MW-112D	X	X	2
MW-113D	X	X	2
MW-114D	X	X	2
MW-115D	X	X	2
MW-118D	X	X	2

Notes: All samples collected through 2024 were part of the detection monitoring program. No samples collected through 2024 were part of an assessment monitoring program.

Summary of Analytical Results First Semi-annual 2024 Detection Monitoring Event								
Well ID	Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	TDS (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	pH (s.u.)
MW-101S	05/20/2024	<0.200	17.7	7.06	206	<0.150	47.1	5.82
MW-102S	05/20/2024	<0.200	11.3	6.53	164	<0.150	19.7	5.73
MW-103S	05/22/2024	0.218	5.99	7.94	212	<0.150	50.7	4.1
MW-104S	05/21/2024	0.911	19	4.05	232	<0.150	64.5	6.88
MW-105S	05/21/2024	<0.200	17.7	3.73	179	<0.150	21.6	7.28
MW-106S	05/21/2024	7.12	38	12.5	1120	0.901	752	5.19
MW-110S	05/22/2024	2.41	8.88	5.5	475	0.294	225	6.07
MW-111S	05/20/2024	6.45	108	12.3	1270	0.957	756	3.96
MW-101D	05/20/2024	<0.200	45.3	5.66	316	<0.150	64.4	7.33
MW-102D	05/20/2024	0.301	65.7	7.64	386	<0.150	23.9	7.62
MW-103D	05/22/2024	0.312	56.1	6.67	435	<0.150	64.3	5.02
MW-104D	05/21/2024	0.26	56.7	10.1	334	<0.150	16.2	4.55
MW-105D	05/21/2024	0.293	59	8.17	339	<0.150	26.6	7.57
MW-106D	05/21/2024	0.243	36.9	4.74	184	<0.150	10.8	10.82
MW-107D	05/22/2024	0.315	77.9	19	512	<0.150	118	7.5
MW-108D	05/22/2024	0.336	66.4	12.2	481	<0.150	35.4	7.42
MW-109D	05/22/2024	0.312	48.5	6.15	361	<0.150	44.9	7.43
MW-110D	05/22/2024	0.309	46.4	6.35	352	<0.150	39.2	7.63
MW-112D	05/23/2024	0.288	42.4	6.19	327	<0.150	<5.00	7.49
MW-113D	05/23/2024	0.491	207	13.6	1090	<0.150	608	7.05
MW-114D	05/23/2024	0.275	54.5	8.23	332	<0.150	35.5	7.43
MW-115D	05/23/2024	0.339	42.7	5	352	<0.150	5.44	7.57
MW-118D	05/23/2024	0.274	89	9.1	535	<0.150	156	6.95
DUP-1 (MW-111S)	05/20/2024	6.34	98.5	11.7	1180	1.04	814	--
DUP-2 (MW-106S)	05/21/2024	6.88	36	13.1	1000	0.941	768	--
FIELD BLANK 1	05/23/2024	<0.200	<1.00	<1.00	<10.0	<0.150	<5.00	--
FIELD BLANK 2	05/23/2024	<0.200	<1.00	<1.00	<10.0	<0.150	<5.00	--

Summary of CCR Rule Constituent Results Second Semi-annual 2024 Detection Monitoring Event

Well ID	Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	TDSs (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	pH (S.U)
MW-101S	11/20/2024	<0.200	15.4	7.02	204	<0.150	50.8	5.76
MW-102S	11/20/2024	<0.200	15.6	7.19	195	<0.150	27.5	5.87
MW-103S	11/22/2024	0.608	10.7	7.59	221	<0.750	92.3	4.96
MW-104S	11/19/2024	0.743	15.9	3.95	228	<0.150	71.1	5.2
MW-105S	11/19/2024	<0.200	17.9	4.9	199	<0.150	33.4	5.81
MW-106S	11/20/2024	6.84	41.7	11.9	1200	<1.50	802	4.12
MW-110S	11/18/2024	1.32	5.23	2.88	313	<0.150	149	4.78
MW-111S	11/22/2024	7.1	101	<100	1280	<15.0	768	3.92
MW-101D	11/22/2024	<0.200	56.3	6.39	382	<0.150	85.7	6.88
MW-102D	11/19/2024	0.269	76.6	7.47	556	<0.150	25.3	7.33
MW-103D	11/18/2024	0.218	42.9	6.17	435	0.217	98.3	7.69
MW-104D	11/19/2024	0.235	58.3	8.82	330	<0.150	23.1	7.37
MW-105D	11/19/2024	0.271	56.3	7.86	335	<0.150	29.8	7.5
MW-106D	11/20/2024	0.242	28.1	<10.0	184	<1.50	<50.0	10.59
MW-107D	11/22/2024	0.332	79.3	21.1	523	<0.150	128	7.52
MW-108D	11/20/2024	0.327	67.8	12	475	<0.150	34.9	7.35
MW-109D	11/21/2024	0.305	50.2	6.04	365	<0.150	45.9	7.37
MW-110D	11/18/2024	0.3	47.4	6.26	336	<0.150	40.4	7.53
MW-112D	11/22/2024	0.294	41.4	7.22	317	<0.150	5.08	7.46
MW-113D	11/21/2024	0.483	202	11.9	1170	<1.50	640	6.75
MW-114D	11/21/2024	0.27	54.5	7.17	321	<0.150	27.7	7.38
MW-115D	11/21/2024	0.329	44.8	4.2	333	<0.150	<5.00	7.45
MW-118D	11/21/2024	0.274	86	8.17	502	<0.150	141	7.16
DUP-1 (MW-106S)	11/20/2024	6.97	43.2	12	1200	<1.50	813	--
DUP-2 (MW-112D)	11/22/2024	0.288	41.1	6.43	321	<0.150	<5.00	--
FIELD BLANK 1	11/22/2024	<0.200	<1.00	<1.00	<10.0	<0.150	<5.00	--
FIELD BLANK 2	11/22/2024	<0.200	<1.00	<1.00	<10.0	<0.150	<5.00	--



🟠	STRATUM I BACKROUND WELL
🔵	STRATUM I MW
🟤	STRATUM III BACKROUND WELL
○	STRATUM III MW
◆	STRATUM III PIEZOMETER
—	GROUNDWATER CONTOUR

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,800
1" = 400'
0 400 800
FEET

PROJECT: **ENTERGY WHITE BLUFF PLANT**
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

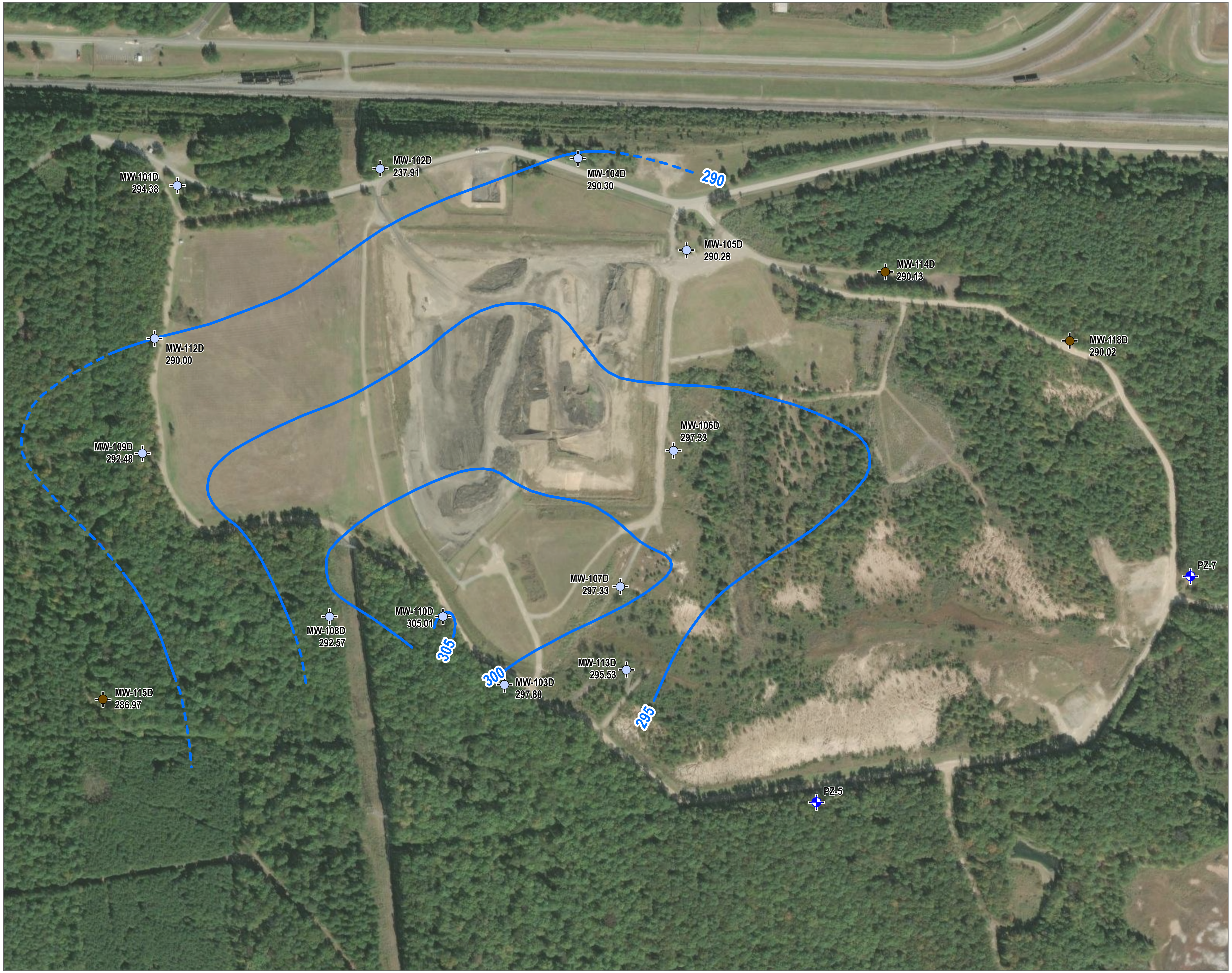
TITLE:
STRATUM 1 POTENTIOMETRIC MAP, FIRST HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.1**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.1 Stratum 1 PotMap First Half 2024



◆ STRATUM I BACKROUND WELL
◆ STRATUM I MW
◆ STRATUM III BACKROUND WELL
◆ STRATUM III MW
◆ STRATUM III PIEZOMETER
— GROUNDWATER CONTOUR
- - GROUNDWATER CONTOUR INFERRED

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,900
1" = 408'
0 400 800 FEET

PROJECT: ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

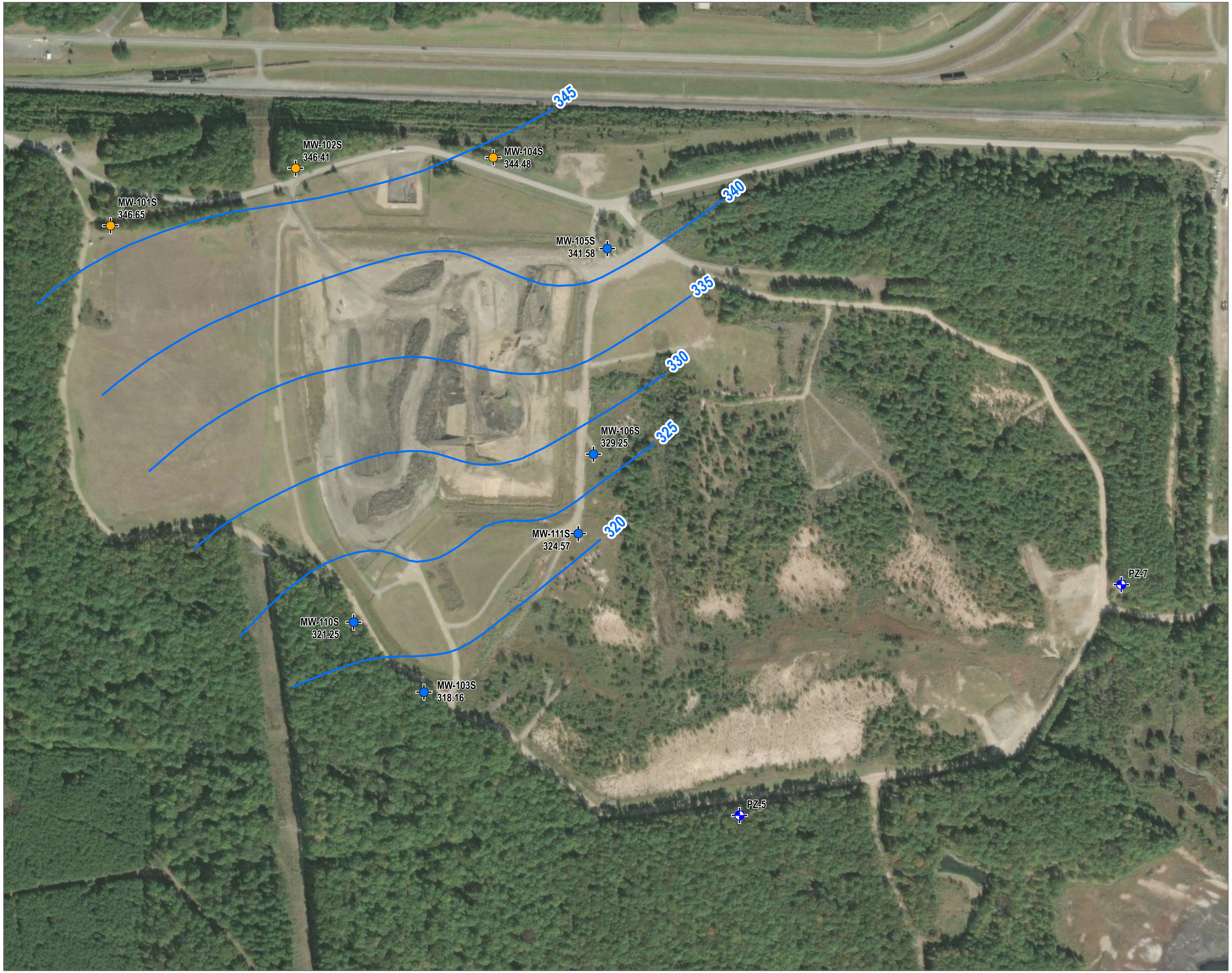
TITLE: STRATUM 3 POTENTIOMETRIC MAP,
FIRST HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.2**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.2 Stratum 3 PotMap First Half 2024



● STRATUM I BACKROUND WELL
● STRATUM I MW
● STRATUM III BACKROUND WELL
● STRATUM III MW
● STRATUM III PIEZOMETER
— GROUNDWATER CONTOUR

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,800
1" = 400'
0 400 800 FEET

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

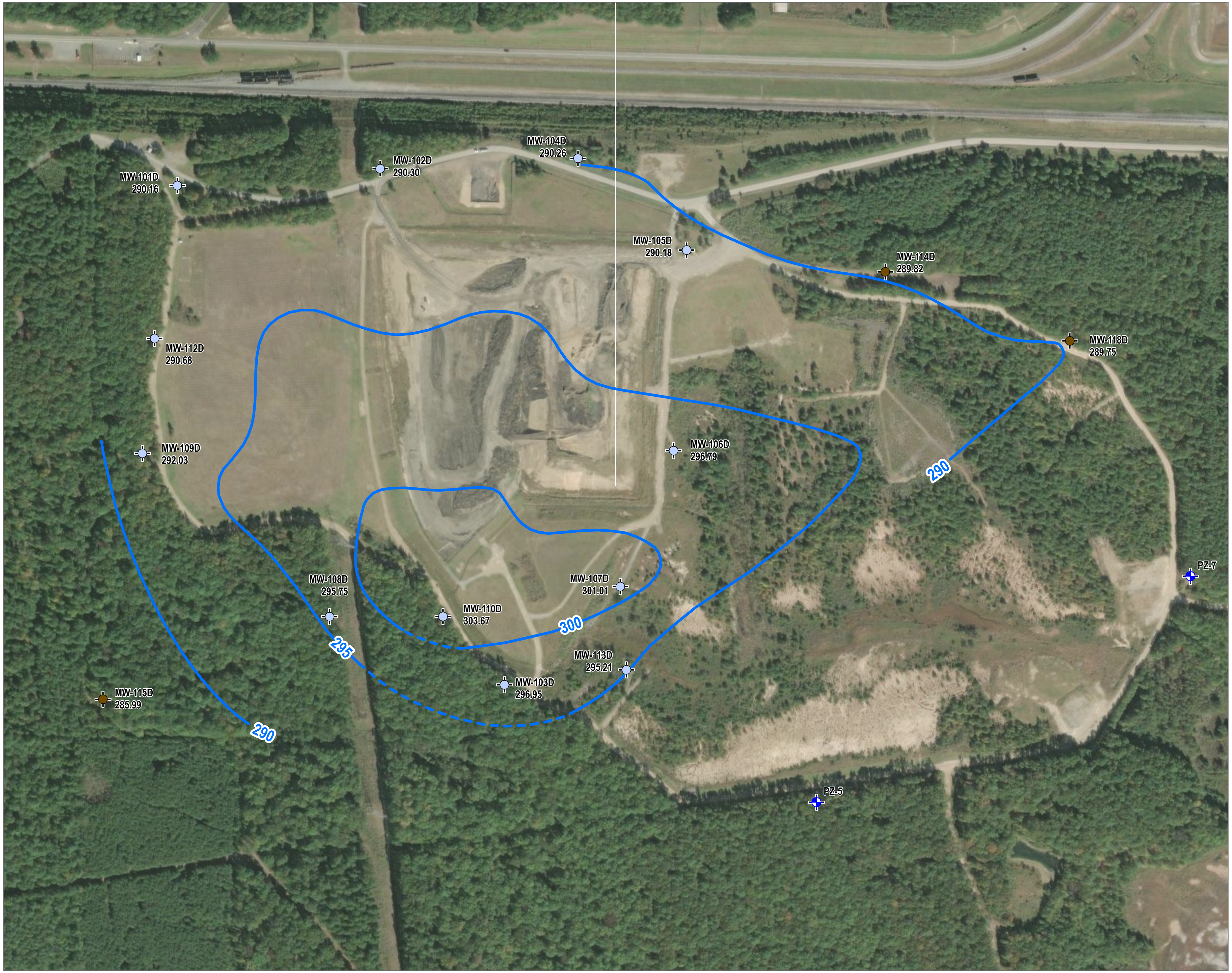
TITLE:
STRATUM 1 POTENTIOMETRIC MAP, SECOND HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.3**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.3 Stratum 1 PotMap Second Half 2024



- STRATUM I BACKROUND WELL
- STRATUM I MW
- STRATUM III BACKROUND WELL
- STRATUM III MW
- STRATUM III PIEZOMETER
- GROUNDWATER CONTOUR
- GROUNWATER CONTOUR INFERRED

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,900
1" = 408'
0 400 800 FEET

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:
STRATUM 3 POTENTIOMETRIC MAP, SECOND HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.4**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.4 Stratum 3 PotMap Second Half 2024

ANALYTICAL REPORT

July 15, 2024

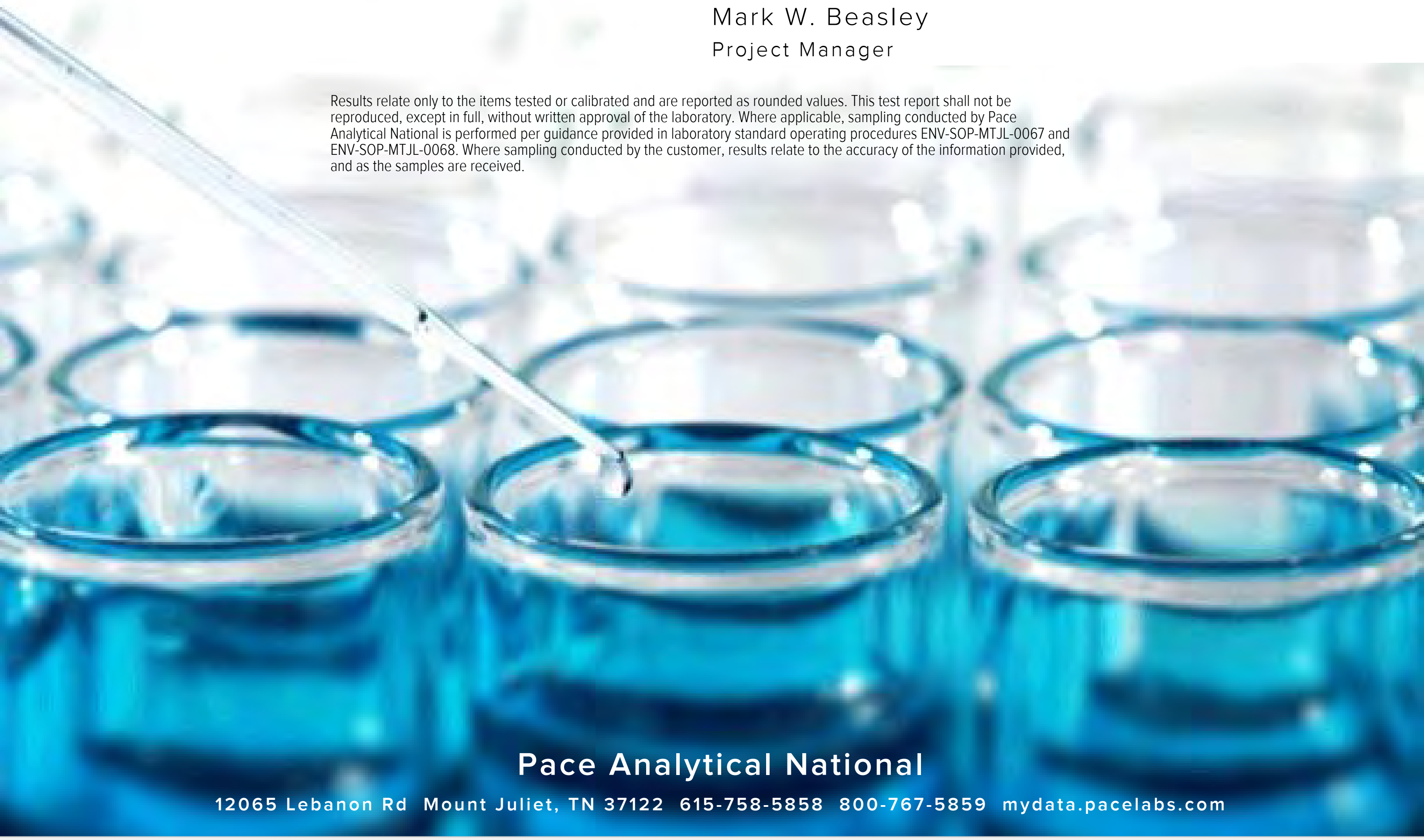
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Alliance Technical Group - Bryant, AR

Sample Delivery Group:	L1740626
Samples Received:	05/25/2024
Project Number:	1145-21-080
Description:	Entergy - White Bluff
Site:	CADL - CCR
Report To:	Jonathan Brown 219 Brown Lane Little Rock, AR 72022

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-101S L1740626-01 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 11:25	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 14:33	06/17/24 14:33	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:37	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297670	1	06/06/24 13:49	07/11/24 01:09	SJM	Mt. Juliet, TN

MW-102S L1740626-02 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 12:45	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 14:46	06/17/24 14:46	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:40	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 19:26	JPD	Mt. Juliet, TN

MW-103S L1740626-03 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 09:00	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 14:59	06/17/24 14:59	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:44	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 19:40	JPD	Mt. Juliet, TN

MW-104S L1740626-04 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 15:40	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 15:24	06/17/24 15:24	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:47	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 19:43	JPD	Mt. Juliet, TN

MW-105S L1740626-05 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 12:35	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 15:50	06/17/24 15:50	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:50	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 19:46	JPD	Mt. Juliet, TN

MW-106S L1740626-06 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 08:45	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 16:41	06/17/24 16:41	KMC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	10	06/17/24 16:54	06/17/24 16:54	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:54	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 19:50	JPD	Mt. Juliet, TN

SAMPLE SUMMARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-110S L1740626-07 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 16:45	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 17:07	06/17/24 17:07	KMC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	10	06/17/24 17:45	06/17/24 17:45	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 22:57	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:00	JPD	Mt. Juliet, TN

MW-111S L1740626-08 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 17:15	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 17:58	06/17/24 17:58	KMC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	10	06/17/24 18:11	06/17/24 18:11	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:00	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:03	JPD	Mt. Juliet, TN

MW-101D L1740626-09 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 16:00	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 18:24	06/17/24 18:24	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:04	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:06	JPD	Mt. Juliet, TN

MW-102D L1740626-10 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 14:10	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 18:36	06/17/24 18:36	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:14	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:10	JPD	Mt. Juliet, TN

MW-103D L1740626-11 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 10:00	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 18:49	06/17/24 18:49	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:17	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:13	JPD	Mt. Juliet, TN

MW-104D L1740626-12 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 17:05	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 19:15	06/17/24 19:15	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:20	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:16	JPD	Mt. Juliet, TN

SAMPLE SUMMARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-105D L1740626-13 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 11:45	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 19:28	06/17/24 19:28	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:24	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:20	JPD	Mt. Juliet, TN

MW-106D L1740626-14 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 10:30	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293955	1	05/27/24 17:13	05/28/24 09:38	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 19:41	06/17/24 19:41	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297626	1	06/04/24 10:56	06/04/24 23:27	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:23	JPD	Mt. Juliet, TN

MW-107D L1740626-15 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 14:40	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 20:32	06/17/24 20:32	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:37	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:26	JPD	Mt. Juliet, TN

MW-108D L1740626-16 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 11:10	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 20:57	06/17/24 20:57	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:39	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:30	JPD	Mt. Juliet, TN

MW-109D L1740626-17 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 12:30	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 21:10	06/17/24 21:10	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:40	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:40	JPD	Mt. Juliet, TN

MW-110D L1740626-18 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/22/24 15:55	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2294503	1	05/29/24 08:48	05/29/24 15:03	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 21:36	06/17/24 21:36	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:42	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:43	JPD	Mt. Juliet, TN

SAMPLE SUMMARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-112D L1740626-19 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 15:05	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295104	1	05/29/24 21:10	05/30/24 08:35	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 22:14	06/17/24 22:14	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:47	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:46	JPD	Mt. Juliet, TN

MW-113D L1740626-20 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 12:25	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295292	1	05/30/24 08:57	05/30/24 13:52	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	1	06/17/24 22:27	06/17/24 22:27	KMC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304430	10	06/17/24 22:40	06/17/24 22:40	KMC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:49	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:50	JPD	Mt. Juliet, TN

MW-114D L1740626-21 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 10:35	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295292	1	05/30/24 08:57	05/30/24 13:52	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 18:28	06/17/24 18:28	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:50	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297688	1	06/05/24 10:22	06/14/24 20:53	JPD	Mt. Juliet, TN

MW-115D L1740626-22 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 14:00	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295104	1	05/29/24 21:10	05/30/24 08:35	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 19:21	06/17/24 19:21	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:52	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:31	LD	Mt. Juliet, TN

MW-118D L1740626-23 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 11:30	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295096	1	05/29/24 21:35	05/30/24 09:53	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 19:35	06/17/24 19:35	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:54	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:35	LD	Mt. Juliet, TN

FIELD BLANK 1 L1740626-24 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 15:15	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2298935	1	06/05/24 11:40	06/05/24 13:45	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 20:02	06/17/24 20:02	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:55	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:38	LD	Mt. Juliet, TN

SAMPLE SUMMARY

DUPLICATE 1 L1740626-25 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/20/24 17:15	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2293857	1	05/27/24 09:56	05/27/24 12:46	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 20:15	06/17/24 20:15	JDG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/18/24 18:37	06/18/24 18:37	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	10	06/17/24 20:28	06/17/24 20:28	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:57	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:42	LD	Mt. Juliet, TN

FIELD BLANK 2 L1740626-26 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/23/24 15:15	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2295096	1	05/29/24 21:35	05/30/24 09:53	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 21:09	06/17/24 21:09	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 18:59	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:54	LD	Mt. Juliet, TN

DUPLICATE 2 L1740626-27 GW

Collected by	Collected date/time	Received date/time
Jacob Colbert	05/21/24 08:45	05/25/24 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2296707	1	06/01/24 09:59	06/02/24 09:57	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/17/24 21:22	06/17/24 21:22	JDG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	1	06/18/24 18:50	06/18/24 18:50	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2304442	10	06/17/24 21:35	06/17/24 21:35	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2297627	1	06/05/24 10:46	06/07/24 19:00	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2297689	1	06/05/24 17:15	06/25/24 21:57	LD	Mt. Juliet, TN

CASE NARRATIVE

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	206	J4	10.0	1	05/27/2024 12:46	WG2293857

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.06		1.00	1	06/17/2024 14:33	WG2304430
Fluoride	ND		0.150	1	06/17/2024 14:33	WG2304430
Sulfate	47.1		5.00	1	06/17/2024 14:33	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/04/2024 22:37	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	17.7		1.00	1	07/11/2024 01:09	WG2297670

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	164	J4	10.0	1	05/27/2024 12:46	WG2293857

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.53		1.00	1	06/17/2024 14:46	WG2304430
Fluoride	ND		0.150	1	06/17/2024 14:46	WG2304430
Sulfate	19.7		5.00	1	06/17/2024 14:46	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/04/2024 22:40	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	11.3		1.00	1	06/14/2024 19:26	WG2297688

MW-103S

Collected date/time: 05/22/24 09:00

SAMPLE RESULTS - 03

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	212		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.94		1.00	1	06/17/2024 14:59	WG2304430
Fluoride	ND		0.150	1	06/17/2024 14:59	WG2304430
Sulfate	50.7		5.00	1	06/17/2024 14:59	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.218		0.200	1	06/04/2024 22:44	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	5.99		1.00	1	06/14/2024 19:40	WG2297688

MW-104S

Collected date/time: 05/21/24 15:40

SAMPLE RESULTS - 04

L1740626

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	232		10.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	4.05		1.00	1	06/17/2024 15:24	WG2304430
Fluoride	ND		0.150	1	06/17/2024 15:24	WG2304430
Sulfate	64.5		5.00	1	06/17/2024 15:24	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.911		0.200	1	06/04/2024 22:47	WG2297626

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	19.0		1.00	1	06/14/2024 19:43	WG2297688

MW-105S
Collected date/time: 05/21/24 12:35

SAMPLE RESULTS - 05
L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	179		10.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	3.73		1.00	1	06/17/2024 15:50	WG2304430
Fluoride	ND	P1	0.150	1	06/17/2024 15:50	WG2304430
Sulfate	21.6		5.00	1	06/17/2024 15:50	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/04/2024 22:50	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	17.7		1.00	1	06/14/2024 19:46	WG2297688

MW-106S

Collected date/time: 05/21/24 08:45

SAMPLE RESULTS - 06

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	1120		20.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	12.5		1.00	1	06/17/2024 16:41	WG2304430
Fluoride	0.901		0.150	1	06/17/2024 16:41	WG2304430
Sulfate	752		50.0	10	06/17/2024 16:54	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	7.12		0.200	1	06/04/2024 22:54	WG2297626

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	38.0		1.00	1	06/14/2024 19:50	WG2297688

MW-110S

Collected date/time: 05/22/24 16:45

SAMPLE RESULTS - 07

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	475		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	5.50		1.00	1	06/17/2024 17:07	WG2304430
Fluoride	0.294		0.150	1	06/17/2024 17:07	WG2304430
Sulfate	225		50.0	10	06/17/2024 17:45	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	2.41		0.200	1	06/04/2024 22:57	WG2297626

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	8.88		1.00	1	06/14/2024 20:00	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1270	J4	20.0	1	05/27/2024 12:46	WG2293857

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	12.3		1.00	1	06/17/2024 17:58	WG2304430
Fluoride	0.957		0.150	1	06/17/2024 17:58	WG2304430
Sulfate	756		50.0	10	06/17/2024 18:11	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	6.45		0.200	1	06/04/2024 23:00	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	108		1.00	1	06/14/2024 20:03	WG2297688

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	316	J4	10.0	1	05/27/2024 12:46	WG2293857

Sample Narrative:

L1740626-09 WG2293857: QC failure, but confirms with later data

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	5.66		1.00	1	06/17/2024 18:24	WG2304430
Fluoride	ND		0.150	1	06/17/2024 18:24	WG2304430
Sulfate	64.4		5.00	1	06/17/2024 18:24	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	ND		0.200	1	06/04/2024 23:04	WG2297626

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	45.3		1.00	1	06/14/2024 20:06	WG2297688

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	386	J4	10.0	1	05/27/2024 12:46	WG2293857

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	7.64		1.00	1	06/17/2024 18:36	WG2304430
Fluoride	ND		0.150	1	06/17/2024 18:36	WG2304430
Sulfate	23.9		5.00	1	06/17/2024 18:36	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.301		0.200	1	06/04/2024 23:14	WG2297626

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	65.7		1.00	1	06/14/2024 20:10	WG2297688

MW-103D

Collected date/time: 05/22/24 10:00

SAMPLE RESULTS - 11

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	435		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.67		1.00	1	06/17/2024 18:49	WG2304430
Fluoride	ND		0.150	1	06/17/2024 18:49	WG2304430
Sulfate	64.3		5.00	1	06/17/2024 18:49	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.312		0.200	1	06/04/2024 23:17	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	56.1		1.00	1	06/14/2024 20:13	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	334		10.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	10.1		1.00	1	06/17/2024 19:15	WG2304430
Fluoride	ND		0.150	1	06/17/2024 19:15	WG2304430
Sulfate	16.2		5.00	1	06/17/2024 19:15	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.260		0.200	1	06/04/2024 23:20	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	56.7		1.00	1	06/14/2024 20:16	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	339		10.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	8.17		1.00	1	06/17/2024 19:28	WG2304430
Fluoride	ND		0.150	1	06/17/2024 19:28	WG2304430
Sulfate	26.6		5.00	1	06/17/2024 19:28	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.293		0.200	1	06/04/2024 23:24	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	59.0		1.00	1	06/14/2024 20:20	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	184		10.0	1	05/28/2024 09:38	WG2293955

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	4.74		1.00	1	06/17/2024 19:41	WG2304430
Fluoride	ND		0.150	1	06/17/2024 19:41	WG2304430
Sulfate	10.8		5.00	1	06/17/2024 19:41	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.243		0.200	1	06/04/2024 23:27	WG2297626

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	36.9		1.00	1	06/14/2024 20:23	WG2297688

SAMPLE RESULTS - 15

L1740626

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	512		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	19.0		1.00	1	06/17/2024 20:32	WG2304430
Fluoride	ND		0.150	1	06/17/2024 20:32	WG2304430
Sulfate	118		5.00	1	06/17/2024 20:32	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.315		0.200	1	06/07/2024 18:37	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	77.9		1.00	1	06/14/2024 20:26	WG2297688

MW-108D

Collected date/time: 05/22/24 11:10

SAMPLE RESULTS - 16

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	481		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	12.2		1.00	1	06/17/2024 20:57	WG2304430
Fluoride	ND		0.150	1	06/17/2024 20:57	WG2304430
Sulfate	35.4		5.00	1	06/17/2024 20:57	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.336		0.200	1	06/07/2024 18:39	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	66.4		1.00	1	06/14/2024 20:30	WG2297688

MW-109D

Collected date/time: 05/22/24 12:30

SAMPLE RESULTS - 17

L1740626

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	361		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.15		1.00	1	06/17/2024 21:10	WG2304430
Fluoride	ND		0.150	1	06/17/2024 21:10	WG2304430
Sulfate	44.9		5.00	1	06/17/2024 21:10	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.312		0.200	1	06/07/2024 18:40	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	48.5		1.00	1	06/14/2024 20:40	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	352		10.0	1	05/29/2024 15:03	WG2294503

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.35		1.00	1	06/17/2024 21:36	WG2304430
Fluoride	ND		0.150	1	06/17/2024 21:36	WG2304430
Sulfate	39.2	J6	5.00	1	06/17/2024 21:36	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.309		0.200	1	06/07/2024 18:42	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	46.4		1.00	1	06/14/2024 20:43	WG2297688

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	327		10.0	1	05/30/2024 08:35	WG2295104

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	6.19		1.00	1	06/17/2024 22:14	WG2304430
Fluoride	ND		0.150	1	06/17/2024 22:14	WG2304430
Sulfate	ND		5.00	1	06/17/2024 22:14	WG2304430

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.288		0.200	1	06/07/2024 18:47	WG2297627

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	42.4		1.00	1	06/14/2024 20:46	WG2297688

MW-113D

Collected date/time: 05/23/24 12:25

SAMPLE RESULTS - 20

L1740626

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1090		20.0	1	05/30/2024 13:52	WG2295292

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	13.6		1.00	1	06/17/2024 22:27	WG2304430
Fluoride	ND		0.150	1	06/17/2024 22:27	WG2304430
Sulfate	608		50.0	10	06/17/2024 22:40	WG2304430

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.491		0.200	1	06/07/2024 18:49	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	207		1.00	1	06/14/2024 20:50	WG2297688

MW-114D

Collected date/time: 05/23/24 10:35

SAMPLE RESULTS - 21

L1740626

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	332		10.0	1	05/30/2024 13:52	WG2295292

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	8.23		1.00	1	06/17/2024 18:28	WG2304442
Fluoride	ND		0.150	1	06/17/2024 18:28	WG2304442
Sulfate	35.5		5.00	1	06/17/2024 18:28	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.275		0.200	1	06/07/2024 18:50	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	54.5		1.00	1	06/14/2024 20:53	WG2297688

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	352		10.0	1	05/30/2024 08:35	WG2295104

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	5.00		1.00	1	06/17/2024 19:21	WG2304442
Fluoride	ND		0.150	1	06/17/2024 19:21	WG2304442
Sulfate	5.44		5.00	1	06/17/2024 19:21	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.339		0.200	1	06/07/2024 18:52	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	42.7		1.00	1	06/25/2024 21:31	WG2297689

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	535		10.0	1	05/30/2024 09:53	WG2295096

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	9.10		1.00	1	06/17/2024 19:35	WG2304442
Fluoride	ND		0.150	1	06/17/2024 19:35	WG2304442
Sulfate	156		5.00	1	06/17/2024 19:35	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.274		0.200	1	06/07/2024 18:54	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	89.0		1.00	1	06/25/2024 21:35	WG2297689

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Collected date/time: 05/23/24 15:15

SAMPLE RESULTS - 24

L1740626

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	ND		10.0	1	06/05/2024 13:45	WG2298935

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	ND		1.00	1	06/17/2024 20:02	WG2304442
Fluoride	ND		0.150	1	06/17/2024 20:02	WG2304442
Sulfate	ND		5.00	1	06/17/2024 20:02	WG2304442

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	ND		0.200	1	06/07/2024 18:55	WG2297627

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	ND		1.00	1	06/25/2024 21:38	WG2297689

DUPLICATE 1

Collected date/time: 05/20/24 17:15

SAMPLE RESULTS - 25

L1740626

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1180	J4	20.0	1	05/27/2024 12:46	WG2293857

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	11.7		1.00	1	06/17/2024 20:15	WG2304442
Fluoride	1.04		0.150	1	06/18/2024 18:37	WG2304442
Sulfate	814		50.0	10	06/17/2024 20:28	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	6.34		0.200	1	06/07/2024 18:57	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	98.5		1.00	1	06/25/2024 21:42	WG2297689

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Collected date/time: 05/23/24 15:15

SAMPLE RESULTS - 26

L1740626

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	ND		10.0	1	05/30/2024 09:53	WG2295096

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	ND		1.00	1	06/17/2024 21:09	WG2304442
Fluoride	ND		0.150	1	06/17/2024 21:09	WG2304442
Sulfate	ND		5.00	1	06/17/2024 21:09	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	06/07/2024 18:59	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	ND		1.00	1	06/25/2024 21:54	WG2297689

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1000	Q	20.0	1	06/02/2024 09:57	WG2296707

Sample Narrative:

L1740626-27 WG2296707: in hold data was not valid

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	13.1		1.00	1	06/17/2024 21:22	WG2304442
Fluoride	0.941		0.150	1	06/18/2024 18:50	WG2304442
Sulfate	768		50.0	10	06/17/2024 21:35	WG2304442

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	6.88		0.200	1	06/07/2024 19:00	WG2297627

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	36.0		1.00	1	06/25/2024 21:57	WG2297689

WG2293955

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L1740626-04,05,06,12,13,14

Method Blank (MB)

(MB) R40754261 05/28/24 09:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1739276-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1739276-02 05/28/24 09:38 • (DUP) R4075426-3 05/28/24 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1360	1430	1	5.44		10

L1739276-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1739276-03 05/28/24 09:38 • (DUP) R4075426-4 05/28/24 09:38

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	359	374	1	4.09		10

Laboratory Control Sample (LCS)

(LCS) R4075426-2 05/28/24 09:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8590	97.6	85.0-115	

Method Blank (MB)

(MB) R4076338-1 05/29/24 15:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1740405-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1740405-07 05/29/24 15:03 • (DUP) R4076338-3 05/29/24 15:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	445	468	1	5.04		10

L1740405-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1740405-08 05/29/24 15:03 • (DUP) R4076338-4 05/29/24 15:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	446	443	1	0.675		10

Laboratory Control Sample (LCS)

(LCS) R4076338-2 05/29/24 15:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8530	96.9	85.0-115	

Method Blank (MB)

(MB) R4076344-1 05/30/24 09:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1740626-23 Original Sample (OS) • Duplicate (DUP)

(OS) L1740626-23 05/30/24 09:53 • (DUP) R4076344-3 05/30/24 09:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	535	551	1	2.95		10

L1740727-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1740727-02 05/30/24 09:53 • (DUP) R4076344-4 05/30/24 09:53

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	479	480	1	0.209		10

Laboratory Control Sample (LCS)

(LCS) R4076344-2 05/30/24 09:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8650	98.3	85.0-115	

Method Blank (MB)

(MB) R4076341-1 05/30/24 08:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1740158-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1740158-08 05/30/24 08:35 • (DUP) R4076341-3 05/30/24 08:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	367	375	1	2.16		10

L1740158-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1740158-09 05/30/24 08:35 • (DUP) R4076341-4 05/30/24 08:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	426	430	1	0.935		10

Laboratory Control Sample (LCS)

(LCS) R4076341-2 05/30/24 08:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8630	98.1	85.0-115	

Method Blank (MB)

(MB) R4077063-1 05/30/24 13:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1740200-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1740200-03 05/30/24 13:52 • (DUP) R4077063-3 05/30/24 13:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	576	591	1	2.57		10

L1740200-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1740200-04 05/30/24 13:52 • (DUP) R4077063-4 05/30/24 13:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	401	413	1	2.95		10

Laboratory Control Sample (LCS)

(LCS) R4077063-2 05/30/24 13:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8560	97.3	85.0-115	

Method Blank (MB)

(MB) R4077040-1 06/02/24 09:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1740443-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1740443-01 06/02/24 09:57 • (DUP) R4077040-3 06/02/24 09:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1050	1090	1	3.36		10

L1740443-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1740443-02 06/02/24 09:57 • (DUP) R4077040-4 06/02/24 09:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1000	1070	1	6.19		10

Laboratory Control Sample (LCS)

(LCS) R4077040-2 06/02/24 09:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8480	96.4	85.0-115	

Method Blank (MB)

(MB) R4078877-1 06/05/24 13:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1742730-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1742730-01 06/05/24 13:45 • (DUP) R4078877-3 06/05/24 13:45

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	598	602	1	0.667		10

Laboratory Control Sample (LCS)

(LCS) R4078877-2 06/05/24 13:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8580	97.5	85.0-115	

Method Blank (MB)

(MB) R4083701-1 06/17/24 10:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1740626-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1740626-05 06/17/24 15:50 • (DUP) R4083701-3 06/17/24 16:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	3.73	3.86	1	3.55		15
Fluoride	ND	ND	1	200	P1	15
Sulfate	21.6	21.6	1	0.155		15

L1740626-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1740626-18 06/17/24 21:36 • (DUP) R4083701-6 06/17/24 21:49

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	6.35	6.26	1	1.41		15
Fluoride	ND	ND	1	5.09		15
Sulfate	39.2	39.3	1	0.343		15

Laboratory Control Sample (LCS)

(LCS) R4083701-2 06/17/24 10:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.6	80.0-120	
Fluoride	8.00	8.24	103	80.0-120	
Sulfate	40.0	39.1	97.6	80.0-120	

L1740626-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740626-05 06/17/24 15:50 • (MS) R4083701-4 06/17/24 16:16 • (MSD) R4083701-5 06/17/24 16:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	3.73	40.7	40.5	92.4	91.9	1	80.0-120			0.414	15
Fluoride	8.00	ND	7.99	7.96	99.9	99.5	1	80.0-120			0.419	15
Sulfate	40.0	21.6	55.9	55.5	85.8	84.7	1	80.0-120			0.797	15

L1740626-18 Original Sample (OS) • Matrix Spike (MS)

(OS) L1740626-18 06/17/24 21:36 • (MS) R4083701-7 06/17/24 22:01

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40.0	6.35	43.6	93.1	1	80.0-120	
Fluoride	8.00	ND	8.09	100	1	80.0-120	
Sulfate	40.0	39.2	70.6	78.7	1	80.0-120	J6

QUALITY CONTROL SUMMARY

L1740626-21,22,23,24,25,26,27

Method Blank (MB)

(MB) R4083272-1 06/17/24 10:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1740626-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1740626-21 06/17/24 18:28 • (DUP) R4083272-3 06/17/24 18:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	8.23	8.02	1	2.57		15
Fluoride	ND	ND	1	0.000		15
Sulfate	35.5	35.1	1	1.20		15

L1740754-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1740754-03 06/18/24 00:56 • (DUP) R4083272-6 06/18/24 01:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	66.7	73.7	1	9.87		15
Fluoride	ND	ND	1	12.8		15
Sulfate	36.9	40.7	1	9.86		15

Laboratory Control Sample (LCS)

(LCS) R4083272-2 06/17/24 10:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	40.9	102	80.0-120	
Fluoride	8.00	8.42	105	80.0-120	
Sulfate	40.0	41.5	104	80.0-120	

L1740626-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740626-21 06/17/24 18:28 • (MS) R4083272-4 06/17/24 18:54 • (MSD) R4083272-5 06/17/24 19:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	8.23	47.1	46.3	97.0	95.1	1	80.0-120			1.66	15
Fluoride	8.00	ND	8.50	8.34	106	104	1	80.0-120			1.88	15
Sulfate	40.0	35.5	69.0	68.5	83.5	82.3	1	80.0-120			0.714	15

L1740754-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1740754-03 06/18/24 00:56 • (MS) R4083272-7 06/18/24 01:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40.0	66.7	101	86.5	1	80.0-120	
Fluoride	8.00	ND	8.39	104	1	80.0-120	
Sulfate	40.0	36.9	73.9	92.5	1	80.0-120	

Method Blank (MB)

(MB) R4077414-1 06/04/24 21:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R4077414-2 06/04/24 21:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.960	96.0	80.0-120	

L1740578-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740578-01 06/04/24 22:00 • (MS) R4077414-4 06/04/24 22:07 • (MSD) R4077414-5 06/04/24 22:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.01	1.03	99.1	100	1	75.0-125			1.07	20

Method Blank (MB)

(MB) R4078964-1 06/07/24 18:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R4078964-2 06/07/24 18:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.962	96.2	80.0-120	

L1740630-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740630-01 06/07/24 18:30 • (MS) R4078964-4 06/07/24 18:33 • (MSD) R4078964-5 06/07/24 18:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.02	1.03	98.3	99.4	1	75.0-125			1.00	20

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R4092377-1 07/10/24 23:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0936	1.00

Laboratory Control Sample (LCS)

(LCS) R4092377-2 07/10/24 23:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	5.03	101	80.0-120	

L1740435-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740435-04 07/10/24 23:49 • (MS) R4092377-4 07/10/24 23:56 • (MSD) R4092377-5 07/10/24 23:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	112	115	118	56.8	133	1	75.0-125	V	V	3.27	20

Method Blank (MB)

(MB) R4082014-1 06/14/24 19:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0936	1.00

Laboratory Control Sample (LCS)

(LCS) R4082014-2 06/14/24 19:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	4.96	99.2	80.0-120	

L1740626-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740626-02 06/14/24 19:26 • (MS) R4082014-4 06/14/24 19:33 • (MSD) R4082014-5 06/14/24 19:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	11.3	17.0	16.6	113	106	1	75.0-125			2.06	20

Method Blank (MB)

(MB) R4086428-1 06/25/24 21:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0936	1.00

Laboratory Control Sample (LCS)

(LCS) R4086428-2 06/25/24 21:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	4.91	98.3	80.0-120	

L1740630-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1740630-02 06/25/24 21:17 • (MS) R4086428-4 06/25/24 21:24 • (MSD) R4086428-5 06/25/24 21:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	10.6	16.2	15.9	111	105	1	75.0-125			1.99	20

GLOSSARY OF TERMS

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address: **Alliance Technical Group - Bryant, AR** 219 Brown Lane Little Rock, AR 72022	Billing Information: Accounts Payable 219 Brown Ln. Bryant, AR 72022	Pres Chk
Report to: Jonathan Brown	Email To: Jonathan.Brown@AllianceTG.com;Jhouse@trcc	
Project Description: Entergy - White Bluff	City/State Collected:	Please Circle: PT MT CT ET
Phone: 501-847-7077	Client Project # 1145-21-080	Lab Project # GBMCBAR-ENTERGYWB
Collected by (print): Jacob Colbert	Site/Facility ID # CADL - CCR	P.O. #
Collected by (signature): Jacob Colbert Immediately Packed on Ice N ___ Y ✓	*Rush?* (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	Quote # Date Results Needed

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
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SDG # L1740226

1239

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1076127**
PM: **829 - Brittnie L Boyd**
PB:
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4, PH 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks pH	Sample # (lab only)
MW-101S	G	GW		5.20.24	1125	3	X	X	X	5.82	-01
MW-102S		GW		5.20.24	1245		X	X	X	5.73	-02
MW-103S		GW		5.22.24	0900		X	X	X	5.02	-03
MW-104S		GW		5.21.24	1540		X	X	X	5.19	-04
MW-105S		GW		5.21.24	1235		X	X	X	6.07	-05
MW-106S		GW		5.21.24	0845		X	X	X	3.96	-06
MW-110S		GW		5.22.24	1645		X	X	X	4.55	-07
MW-111S		GW		5.20.24	1715		X	X	X	4.10	-08
MW-101D		GW		5.20.24	1600		X	X	X	6.88	-09
MW-102D		GW		5.20.24	1410		X	X	X	7.28	-10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature) Jacob Colbert	Date: 5.24.24	Time: 1245	Received by: (Signature)	Trip Blank Received: Yes / [✓ No] HCL / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 81
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Jamcam	Date: 5-25-25 Time: 1130

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / [✓ OK]

Company Name/Address:
Alliance Technical Group - Bryant, AR

219 Brown Lane
Little Rock, AR 72022

Billing Information:
Accounts Payable
219 Brown Ln.
Bryant, AR 72022

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
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Report to: **Jonathan Brown**

Email To: Jonathan.Brown@AllianceTG.com;Jhouse@trcc

Project Description: **Entergy - White Bluff**

City/State Collected:

Please Circle: PT MT CT ET

Phone: **501-847-7077**

Client Project # **1145-21-080**

Lab Project # **GBMCBAR-ENTERGYWB**

Collected by (print): Jacob Colbert

Site/Facility ID # **CADL - CCR**

P.O. #

Collected by (signature): Jacob Colbert

Quote #

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Immediately Packed on Ice N ___ Y ✓

SDG # L1740626

Table #

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1076127**
PM: **829 - Brittnie L Boyd**
PB:
Shipped Via: **FedEX Ground**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4, PH 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks pH	Sample # (lab only)
MW-103D	G	GW		5.22.24	1000	3	X	X	X	7.57	-11
MW-104D		GW		5.21.24	1705		X	X	X	7.33	-12
MW-105D		GW		5.21.24	1145		X	X	X	7.62	-13
MW-106D		GW		5.21.24	1030		X	X	X	10.82	-14
MW-107D		GW		5.22.24	1440		X	X	X	7.50	-15
MW-108D		GW		5.22.24	1110		X	X	X	7.42	-16
MW-109D		GW		5.22.24	1230		X	X	X	7.43	-17
MW-110D		GW		5.22.24	1555		X	X	X	7.63	-18
MW-112D		GW		5.23.24	1505		X	X	X	7.49	-19
MW-113D		GW		5.23.24	1225		X	X	X	7.05	-20

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH _______ Temp _______

Flow _______ Other _______

Samples returned via:
__ UPS __ FedEx __ Courier ___________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Jacob Colbert	5-24-24	1245	

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)

Temp: °C Bottles Received:

If preservation required by Login: Date/Time

Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Jameson

Date: 5-25-25 Time: 1130

Hold:

Condition: NCF / [✓ OK]

Company Name/Address:
Alliance Technical Group - Bryant, AR

219 Brown Lane
Little Rock, AR 72022

Billing Information:
Accounts Payable
219 Brown Ln.
Bryant, AR 72022

Pres Chk

Report to:
Jonathan Brown

Email To:
Jonathan.Brown@AllianceTG.com;Jhouse@trcc

Project Description:
Entergy - White Bluff

City/State Collected:

Please Circle:
PT MT CT ET

Phone: **501-847-7077**

Client Project #
1145-21-080

Lab Project #
GBMCBAR-ENTERGYWB

Collected by (print):
Jacob Colbert

Site/Facility ID #
CADL - CCR

P.O. #

Collected by (signature):
Jacob Colbert

Immediately Packed on Ice N ____ Y __+__

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Chain of Custody Page ___ of ___

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SDG # L1740626

Table #

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1076127**
PM: **829 - Brittnie L Boyd**
PB: [illegible]

Shipped Via: **FedEX Ground**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4, PH 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks pH	Sample # (lab only)
MW-114D		GW		5.23.24	1035	3	X	X	X	7.43	-21
MW-115D		GW		5.23.24	1400		X	X	✓	7.57	-22
MW-118D		GW		5.23.24	1130		X	X	✓	6.95	-23
FIELD BLANK 1		GW		5.23.24	1515		X	✓	X	—	-24
DUPLICATE 1		GW		5.20.24	1715		X	X	✓	4.10	-25
FIELD BLANK 2		GW		5.23.24	1515		X	X	X	—	-26
DUPLICATE 2		GW		5.21.24	0845		X	X	X	3.96	-27
		GW									
		GW									
		GW									

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature) Jacob Colbert	Date: 5.24.24	Time: 1245	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Jamcem	Date: 5-25-25

Time: 1130

If preservation required by Login: Date/Time

Hold:

Condition: NCF / [✓ OK]

LIT406026

Tracking Numbers	[redacted]	EDAG Temperature
7315 3196 1660	[redacted]	1.7 + 0.1 = 1.8
7315 3196 1692	[redacted]	5.2 + 0.1 = 5.3
7315 3196 1676	[redacted]	2.9 + 0.1 = 3.0
7315 3196 1681	[redacted]	3.1 + 0.1 = 3.2
7315 3196 1659	[redacted]	0.1 + 0.1 = 0.2
7315 3196 0117	[redacted]	2.3 + 0.1 = 2.4
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	
	[redacted]	

Name

Date

ANALYTICAL REPORT

December 11, 2024

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Alliance Technical Group - Bryant, AR

Sample Delivery Group: L1803484
Samples Received: 11/23/2024
Project Number: 1145-21-080
Description: Entergy - White Bluff
Site: CADL - CCR

Report To: Jonathan Brown
219 Brown Lane
Little Rock, AR 72022

Entire Report Reviewed By: Brittnie Boyd

Brittnie L Boyd
Project Manager

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-101S L1803484-01 GW

Collected by	Collected date/time	Received date/time
	11/20/24 16:25	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/29/24 23:35	11/29/24 23:35	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:01	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 17:41	UNP	Mt. Juliet, TN

MW-102S L1803484-02 GW

Collected by	Collected date/time	Received date/time
	11/20/24 10:40	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/29/24 23:47	11/29/24 23:47	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:03	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 17:44	UNP	Mt. Juliet, TN

MW-104S L1803484-03 GW

Collected by	Collected date/time	Received date/time
	11/19/24 13:00	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 00:00	11/30/24 00:00	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:05	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:02	UNP	Mt. Juliet, TN

MW-105S L1803484-04 GW

Collected by	Collected date/time	Received date/time
	11/19/24 11:30	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 00:13	11/30/24 00:13	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:07	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:05	UNP	Mt. Juliet, TN

MW-106S L1803484-05 GW

Collected by	Collected date/time	Received date/time
	11/20/24 12:00	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	10	11/30/24 00:26	11/30/24 00:26	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:12	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:09	UNP	Mt. Juliet, TN

MW-110S L1803484-06 GW

Collected by	Collected date/time	Received date/time
	11/18/24 16:10	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 00:38	11/30/24 00:38	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:14	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:12	UNP	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/19/24 16:05	11/23/24 09:00

MW-102D L1803484-07 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 00:51	11/30/24 00:51	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:15	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:15	UNP	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/18/24 13:05	11/23/24 09:00

MW-103D L1803484-08 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 01:04	11/30/24 01:04	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:17	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411326	1	12/05/24 02:38	12/06/24 18:18	UNP	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/19/24 14:05	11/23/24 09:00

MW-104D L1803484-09 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 01:17	11/30/24 01:17	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:19	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:16	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/19/24 10:20	11/23/24 09:00

MW-105D L1803484-10 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 01:29	11/30/24 01:29	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:21	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:19	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/20/24 13:30	11/23/24 09:00

MW-106D L1803484-11 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	10	11/30/24 02:08	11/30/24 02:08	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:23	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:23	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/20/24 15:00	11/23/24 09:00

MW-108D L1803484-12 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 02:20	11/30/24 02:20	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:24	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:26	JPD	Mt. Juliet, TN

SAMPLE SUMMARY

Collected by	Collected date/time	Received date/time
	11/21/24 16:00	11/23/24 09:00

MW-109D L1803484-13 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 02:33	11/30/24 02:33	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:26	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:04	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/18/24 14:55	11/23/24 09:00

MW-110D L1803484-14 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 02:46	11/30/24 02:46	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:28	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:35	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/21/24 13:15	11/23/24 09:00

MW-113D L1803484-15 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	10	11/30/24 02:58	11/30/24 02:58	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:33	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:38	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/21/24 10:30	11/23/24 09:00

MW-114D L1803484-16 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 03:11	11/30/24 03:11	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:35	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:41	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/21/24 14:40	11/23/24 09:00

MW-115D L1803484-17 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 03:24	11/30/24 03:24	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:37	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:45	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	11/21/24 11:50	11/23/24 09:00

MW-118D L1803484-18 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	1	11/30/24 03:37	11/30/24 03:37	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/04/24 23:54	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:48	JPD	Mt. Juliet, TN

SAMPLE SUMMARY

	Collected by	Collected date/time	Received date/time
DUPLICATE 1 L1803484-19 GW		11/20/24 12:00	11/23/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2408035	1	11/25/24 12:17	11/25/24 14:41	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2407625	10	11/30/24 03:49	11/30/24 03:49	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411307	1	12/04/24 11:15	12/05/24 00:39	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411327	1	12/05/24 02:40	12/06/24 04:51	JPD	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brittnie Boyd

Brittnie L Boyd
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	204		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.02		1.00	1	11/29/2024 23:35	WG2407625
Fluoride	ND	P1	0.150	1	11/29/2024 23:35	WG2407625
Sulfate	50.8	J6	5.00	1	11/29/2024 23:35	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/05/2024 00:01	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	15.4		1.00	1	12/06/2024 17:41	WG2411326

MW-102S

Collected date/time: 11/20/24 10:40

SAMPLE RESULTS - 02

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	195		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.19		1.00	1	11/29/2024 23:47	WG2407625
Fluoride	ND		0.150	1	11/29/2024 23:47	WG2407625
Sulfate	27.5		5.00	1	11/29/2024 23:47	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/05/2024 00:03	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	15.6		1.00	1	12/06/2024 17:44	WG2411326

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	228		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	3.95		1.00	1	11/30/2024 00:00	WG2407625
Fluoride	ND		0.150	1	11/30/2024 00:00	WG2407625
Sulfate	71.1		5.00	1	11/30/2024 00:00	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.743		0.200	1	12/05/2024 00:05	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	15.9		1.00	1	12/06/2024 18:02	WG2411326

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	199		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	4.90		1.00	1	11/30/2024 00:13	WG2407625
Fluoride	ND		0.150	1	11/30/2024 00:13	WG2407625
Sulfate	33.4		5.00	1	11/30/2024 00:13	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/05/2024 00:07	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	17.9		1.00	1	12/06/2024 18:05	WG2411326

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1200		20.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	11.9		10.0	10	11/30/2024 00:26	WG2407625
Fluoride	ND		1.50	10	11/30/2024 00:26	WG2407625
Sulfate	802		50.0	10	11/30/2024 00:26	WG2407625

Sample Narrative:

L1803484-05 WG2407625: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	6.84		0.200	1	12/05/2024 00:12	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	41.7		1.00	1	12/06/2024 18:09	WG2411326

MW-110S
Collected date/time: 11/18/24 16:10

SAMPLE RESULTS - 06

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	313		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	2.88		1.00	1	11/30/2024 00:38	WG2407625
Fluoride	ND		0.150	1	11/30/2024 00:38	WG2407625
Sulfate	149		5.00	1	11/30/2024 00:38	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	1.32		0.200	1	12/05/2024 00:14	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	5.23		1.00	1	12/06/2024 18:12	WG2411326

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	556		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.47		1.00	1	11/30/2024 00:51	WG2407625
Fluoride	ND		0.150	1	11/30/2024 00:51	WG2407625
Sulfate	25.3		5.00	1	11/30/2024 00:51	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.269		0.200	1	12/05/2024 00:15	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	76.6		1.00	1	12/06/2024 18:15	WG2411326

MW-103D
Collected date/time: 11/18/24 13:05

SAMPLE RESULTS - 08

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	435		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	6.17		1.00	1	11/30/2024 01:04	WG2407625
Fluoride	0.217	B	0.150	1	11/30/2024 01:04	WG2407625
Sulfate	98.3		5.00	1	11/30/2024 01:04	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.218		0.200	1	12/05/2024 00:17	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	42.9		1.00	1	12/06/2024 18:18	WG2411326

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	330		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	8.82		1.00	1	11/30/2024 01:17	WG2407625
Fluoride	ND		0.150	1	11/30/2024 01:17	WG2407625
Sulfate	23.1		5.00	1	11/30/2024 01:17	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.235		0.200	1	12/05/2024 00:19	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	58.3		1.00	1	12/06/2024 04:16	WG2411327

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	335		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	7.86		1.00	1	11/30/2024 01:29	WG2407625
Fluoride	ND		0.150	1	11/30/2024 01:29	WG2407625
Sulfate	29.8		5.00	1	11/30/2024 01:29	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.271		0.200	1	12/05/2024 00:21	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	56.3		1.00	1	12/06/2024 04:19	WG2411327

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

MW-106D

Collected date/time: 11/20/24 13:30

SAMPLE RESULTS - 11

L1803484

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	184		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	ND		10.0	10	11/30/2024 02:08	WG2407625
Fluoride	ND		1.50	10	11/30/2024 02:08	WG2407625
Sulfate	ND		50.0	10	11/30/2024 02:08	WG2407625

Sample Narrative:

L1803484-11 WG2407625: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.242		0.200	1	12/05/2024 00:23	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	28.1		1.00	1	12/06/2024 04:23	WG2411327

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	475		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	12.0		1.00	1	11/30/2024 02:20	WG2407625
Fluoride	ND		0.150	1	11/30/2024 02:20	WG2407625
Sulfate	34.9		5.00	1	11/30/2024 02:20	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.327		0.200	1	12/05/2024 00:24	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	67.8		1.00	1	12/06/2024 04:26	WG2411327

MW-109D

Collected date/time: 11/21/24 16:00

SAMPLE RESULTS - 13

L1803484

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	365		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	6.04		1.00	1	11/30/2024 02:33	WG2407625
Fluoride	ND		0.150	1	11/30/2024 02:33	WG2407625
Sulfate	45.9		5.00	1	11/30/2024 02:33	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.305		0.200	1	12/05/2024 00:26	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	50.2		1.00	1	12/06/2024 04:04	WG2411327

MW-110D

Collected date/time: 11/18/24 14:55

SAMPLE RESULTS - 14

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	336		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	6.26		1.00	1	11/30/2024 02:46	WG2407625
Fluoride	ND		0.150	1	11/30/2024 02:46	WG2407625
Sulfate	40.4		5.00	1	11/30/2024 02:46	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.300		0.200	1	12/05/2024 00:28	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	47.4		1.00	1	12/06/2024 04:35	WG2411327

MW-113D
Collected date/time: 11/21/24 13:15

SAMPLE RESULTS - 15

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1170		20.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	11.9		10.0	10	11/30/2024 02:58	WG2407625
Fluoride	ND		1.50	10	11/30/2024 02:58	WG2407625
Sulfate	640		50.0	10	11/30/2024 02:58	WG2407625

Sample Narrative:

L1803484-15 WG2407625: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.483		0.200	1	12/05/2024 00:33	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	202		1.00	1	12/06/2024 04:38	WG2411327

MW-114D

Collected date/time: 11/21/24 10:30

SAMPLE RESULTS - 16

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	321		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	7.17		1.00	1	11/30/2024 03:11	WG2407625
Fluoride	ND		0.150	1	11/30/2024 03:11	WG2407625
Sulfate	27.7		5.00	1	11/30/2024 03:11	WG2407625

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.270		0.200	1	12/05/2024 00:35	WG2411307

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	54.5		1.00	1	12/06/2024 04:41	WG2411327

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	333		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	4.20		1.00	1	11/30/2024 03:24	WG2407625
Fluoride	ND		0.150	1	11/30/2024 03:24	WG2407625
Sulfate	ND		5.00	1	11/30/2024 03:24	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.329		0.200	1	12/05/2024 00:37	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	44.8		1.00	1	12/06/2024 04:45	WG2411327

MW-118D

Collected date/time: 11/21/24 11:50

SAMPLE RESULTS - 18

L1803484

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	502		10.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	8.17		1.00	1	11/30/2024 03:37	WG2407625
Fluoride	ND		0.150	1	11/30/2024 03:37	WG2407625
Sulfate	141		5.00	1	11/30/2024 03:37	WG2407625

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.274		0.200	1	12/04/2024 23:54	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	86.0		1.00	1	12/06/2024 04:48	WG2411327

DUPLICATE 1

Collected date/time: 11/20/24 12:00

SAMPLE RESULTS - 19

L1803484

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1200		20.0	1	11/25/2024 14:41	WG2408035

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	12.0		10.0	10	11/30/2024 03:49	WG2407625
Fluoride	ND		1.50	10	11/30/2024 03:49	WG2407625
Sulfate	813		50.0	10	11/30/2024 03:49	WG2407625

Sample Narrative:

L1803484-19 WG2407625: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	6.97		0.200	1	12/05/2024 00:39	WG2411307

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	43.2		1.00	1	12/06/2024 04:51	WG2411327

QUALITY CONTROL SUMMARY

L1803484-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19

Method Blank (MB)

(MB) R4151535-1 11/25/24 14:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1803278-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1803278-01 11/25/24 14:41 • (DUP) R4151535-3 11/25/24 14:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	373	376	1	0.801		10

L1803484-19 Original Sample (OS) • Duplicate (DUP)

(OS) L1803484-19 11/25/24 14:41 • (DUP) R4151535-4 11/25/24 14:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1200	1220	1	1.32		10

Laboratory Control Sample (LCS)

(LCS) R4151535-2 11/25/24 14:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8710	99.0	85.0-115	

Method Blank (MB)

(MB) R4152117-1 11/29/24 23:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.547	1.00
Fluoride	0.0784	J	0.0761	0.150
Sulfate	U		0.637	5.00

L1803484-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1803484-01 11/29/24 23:35 • (DUP) R4152117-3 11/30/24 05:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	7.02	6.88	1	2.07		15
Fluoride	ND	ND	1	200	P1	15
Sulfate	50.8	51.1	1	0.542		15

L1803484-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1803484-02 11/29/24 23:47 • (DUP) R4152117-6 11/30/24 06:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	7.19	7.08	1	1.66		15
Fluoride	ND	ND	1	11.1		15
Sulfate	27.5	26.7	1	2.89		15

Laboratory Control Sample (LCS)

(LCS) R4152117-2 11/29/24 23:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	37.0	92.4	80.0-120	
Fluoride	8.00	7.43	92.9	80.0-120	
Sulfate	40.0	37.5	93.8	80.0-120	

L1803484-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1803484-01 11/29/24 23:35 • (MS) R4152117-4 11/30/24 05:57 • (MSD) R4152117-5 11/30/24 06:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	7.02	45.4	45.5	96.1	96.2	1	80.0-120			0.117	15
Fluoride	8.00	ND	8.12	8.10	102	101	1	80.0-120			0.301	15
Sulfate	40.0	50.8	82.2	81.7	78.4	77.3	1	80.0-120	J6	J6	0.516	15

L1803484-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1803484-02 11/29/24 23:47 • (MS) R4152117-7 11/30/24 06:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40.0	7.19	45.3	95.3	1	80.0-120	
Fluoride	8.00	ND	8.07	99.5	1	80.0-120	
Sulfate	40.0	27.5	62.9	88.4	1	80.0-120	

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R4153817-1 12/04/24 23:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R4153817-2 12/04/24 23:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.951	95.1	80.0-120	

L1803484-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1803484-18 12/04/24 23:54 • (MS) R4153817-4 12/04/24 23:58 • (MSD) R4153817-5 12/05/24 00:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	0.274	1.22	1.22	94.8	95.0	1	75.0-125			0.164	20

Method Blank (MB)

(MB) R4154837-1 12/06/24 16:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0925	1.00

Laboratory Control Sample (LCS)

(LCS) R4154837-2 12/06/24 16:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	5.32	106	80.0-120	

L1803478-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1803478-11 12/06/24 16:45 • (MS) R4154837-4 12/06/24 16:51 • (MSD) R4154837-5 12/06/24 16:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	ND	5.22	5.16	104	103	1	75.0-125			1.09	20

Method Blank (MB)

(MB) R4154551-1 12/06/24 03:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0925	1.00

Laboratory Control Sample (LCS)

(LCS) R4154551-2 12/06/24 04:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	5.27	105	80.0-120	

L1803484-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1803484-13 12/06/24 04:04 • (MS) R4154551-4 12/06/24 04:10 • (MSD) R4154551-5 12/06/24 04:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	50.2	55.0	54.6	96.5	87.3	1	75.0-125			0.836	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address: **Alliance Technical Group - Bryant, AR** **219 Brown Lane** **Little Rock, AR 72022**	Billing Information: **Accounts Payable** **219 Brown Ln.** **Bryant, AR 72022**	Pres Chk
Report to: **Jonathan Brown**	Email To: **Jonathan.Brown@AllianceTG.com;Jhouse@trcc**	
Project Description: **Entergy - White Bluff**	City/State Collected:	Please Circle: PT MT CT ET
Phone: **501-847-7077**	Client Project # **1145-21-080**	Lab Project # **GBMCBAR-ENTERGYWB**
Collected by (print):	Site/Facility ID # **CADL - CCR**	P.O. #
Collected by (signature): Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	Quote # Date Results Needed

Chain of Custody Page ___ of ___

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MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1803484
H207
Table #
Acctnum: **GBMCBAR**
Template:**T198831**
Prelogin: **P1112374**
PM: **829 - Brittnie L Boyd**
PB: 11/11/24 BK
Shipped Via: **FedEX Priority**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs 3	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks	Sample # (lab only)
MW-101S	G	GW		11/20/24	1625	3	✓	✓	✓	5.76	-01
MW-102S	G	GW		11/20/24	1040	3	✓	✓	—	5.87	-02
~~MW-103S~~		GW									
MW-104S	G	GW		11/19/24	1300	3	✓	—	—	5.20	-03
MW-105S	G	GW		11/19/24	1130	3	—	—	✓	5.81	-04
MW-106S	G	GW		11/20/24	1200	3	—	✓	✓	4.12	-05
MW-110S	G	GW		11/18/24	1610	3	—	-	—	4.78	-04
~~MW-111S~~		GW									
~~MW-101D~~		GW									
MW-102D	G	GW		11/19/24	1605	3	—	✓	—	7.33	-07

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
___ UPS ___ FedEx ___ Courier ________

Tracking # Multi

Sample Receipt Checklist
COC Seal Present/Intact: ✓NP _Y _N
COC Signed/Accurate: ✓Y _N
Bottles arrive intact: ✓Y _N
Correct bottles used: ✓Y _N
Sufficient volume sent: ✓Y _N
If Applicable
VOA Zero Headspace: ✓Y _N
Preservation Correct/Checked: ✓Y _N
RAD Screen <0.5 mR/hr: ✓Y _N

Relinquished by : (Signature)	Date: 11/22/24	Time: 1100	Received by: (Signature)	Trip Blank Received: Yes / [✓ No] HCL / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: Mult: °C Bottles Received: 57
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Easton Oram	Date: 11/23/24 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK

Company Name/Address: **Alliance Technical Group - Bryant, AR** 219 Brown Lane Little Rock, AR 72022	Billing Information: **Accounts Payable** 219 Brown Ln. Bryant, AR 72022	Pres Chk	Chain of Custody Page ___ of ___
Report to: **Jonathan Brown**	Email To: Jonathan.Brown@AllianceTG.com;Jhouse@trcc		
Project Description: **Entergy - White Bluff**	City/State Collected:	Please Circle: PT MT CT ET	
Phone: **501-847-7077**	Client Project # **1145-21-080**	Lab Project # **GBMCBAR-ENTERGYWB**	
Collected by (print):	Site/Facility ID # **CADL - CCR**	P.O. #	
Collected by (signature): Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	**Quote #** Date Results Needed	

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SDG # L1803484

Table #

Acctnum: **GBMCBAR**
Template:**T198831**
Prelogin: **P1112374**
PM: **829 - Brittnie L Boyd**
PB: 11/11/24 BK
Shipped Via: **FedEX Priority**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks	Sample # (lab only)
MW-103D	G	GW	-	11/18/24	1305	3	-	-	-	7.69	-08
MW-104D	G	GW	-	11/19/24	1405	3	-	-	-	7.37	-09
MW-105D	G	GW	-	11/19/24	1020	3	-	-	-	7.50	-10
MW-106D	G	GW	-	11/20/24	1330	3	-	-	-	10.59	-11
~~MW-107D~~		GW									
MW-108D	G	GW	-	11/20/24	1500	3	-	-	-	7.35	-12
MW-109D	G	GW	-	11/21/24	1600	3	-	-	-	7.37	-13
MW-110D	G	GW	-	11/14/24	1455	3	-	-	-	7.53	-14
~~MW-112D~~		GW									
MW-113D	G	GW	-	11/21/24	1315	3	-	-	-	6.75	-15

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______

Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP _Y __N
COC Signed/Accurate: _Y __N
Bottles arrive intact: _Y __N
Correct bottles used: _Y __N
Sufficient volume sent: _Y __N
If Applicable
VOA Zero Headspace: _Y __N
Preservation Correct/Checked: _Y __N
RAD Screen <0.5 mR/hr: _Y __N

Relinquished by : (Signature)	Date: 11/22/24	Time: 1100	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Easton Orm	Date: 11/23/24 Time: 0900	Hold: Condition: NCF / OK

Company Name/Address:
Alliance Technical Group - Bryant, AR

219 Brown Lane
Little Rock, AR 72022

Billing Information:
Accounts Payable
219 Brown Ln.
Bryant, AR 72022

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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MT JULIET, TN

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Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at:
https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Report to:
Jonathan Brown

Email To:
Jonathan.Brown@AllianceTG.com;Jhouse@trcc

Project Description:
Entergy - White Bluff

City/State Collected:

Please Circle:
PT MT CT ET

Phone: **501-847-7077**

Client Project #
1145-21-080

Lab Project #
GBMCBAR-ENTERGYWB

Collected by (print):

Site/Facility ID #
CADL - CCR

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice N ___ Y ✓

SDG # L1883484

Table #

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1112374**
PM: **829 - Brittnie L Boyd**
PB: 11/11/24 BK

Shipped Via: **FedEX Priority**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks	Sample # (lab only)
MW-114D	G	GW		11/21/24	1030	3	-	-	-	7.38	-16
MW-115D	G	GW		11/21/24	1440	3	-	-	-	7.45	-12
MW-118D	G	GW		11/21/24	1150	3	-	-	-	7.16	-8
~~FIELD BLANK~~ 1		GW									
DUPLICATE 1 1065	G	GW		11/20/24	1200	3	-	-	-	4.12	[illegible]
~~FIELD BLANK~~ 2		GW									
~~DUPLICATE 2~~		GW									
		GW									
		GW									
		GW									

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______

Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: ✓NP _Y _N
COC Signed/Accurate: ✓Y _N
Bottles arrive intact: ✓Y _N
Correct bottles used: ✓Y _N
Sufficient volume sent: ✓Y _N
If Applicable
VOA Zero Headspace: _Y _N
Preservation Correct/Checked: _Y _N
RAD Screen <0.5 mR/hr: ✓Y _N

Relinquished by : (Signature) Jonathan Brown	Date: 11/22/24	Time: 1100	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Easton Orgn	Date: 11/23/24 Time: 0900	Hold: Condition: NCF / OK

Fed Ex tracking #	Gun ID	Temperature
7464 0843 7354	TLA9	3.1+0=3.1
7464 0843 7365	TLA9	1.0+0=1.0
7464 0843 7376	TLA9	2.3+0=2.3

Easton Organ
Name

11/23/24
Date

L1803484

ANALYTICAL REPORT

December 11, 2024

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Alliance Technical Group - Bryant, AR

Sample Delivery Group:	L1804133
Samples Received:	11/26/2024
Project Number:	1145-21-080
Description:	Entergy - White Bluff
Site:	CADL - CCR
Report To:	Jonathan Brown 219 Brown Lane Little Rock, AR 72022

Entire Report Reviewed By: Brittnie Boyd

Brittnie L Boyd
Project Manager

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-103S L1804133-01 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 15:30	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	5	11/30/24 22:13	11/30/24 22:13	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:22	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 22:03	UNP	Mt. Juliet, TN

MW-101D L1804133-02 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 13:15	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	1	11/30/24 22:48	11/30/24 22:48	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:24	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:17	UNP	Mt. Juliet, TN

MW-111S L1804133-03 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 09:55	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	100	11/30/24 23:05	11/30/24 23:05	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:26	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:20	UNP	Mt. Juliet, TN

MW-107D L1804133-04 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 11:25	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	1	11/30/24 23:40	11/30/24 23:40	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:27	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:23	UNP	Mt. Juliet, TN

MW-112D L1804133-05 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 14:30	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	1	11/30/24 23:58	11/30/24 23:58	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:29	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:26	UNP	Mt. Juliet, TN

FIELD BLANK 1 L1804133-06 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 13:50	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409502	1	12/01/24 00:15	12/01/24 00:15	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:31	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:30	UNP	Mt. Juliet, TN

SAMPLE SUMMARY

FIELD BLANK 2 L1804133-07 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 13:50	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409507	1	11/30/24 17:23	11/30/24 17:23	AJC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:32	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:33	UNP	Mt. Juliet, TN

DUPLICATE 2 (MW-112D) L1804133-08 GW

Collected by	Collected date/time	Received date/time
JLC/KRS	11/22/24 14:30	11/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2409320	1	11/26/24 21:40	11/27/24 12:07	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2409507	1	11/30/24 17:36	11/30/24 17:36	AJC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2411848	1	12/05/24 08:50	12/05/24 14:34	MAP	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG2411861	1	12/05/24 12:22	12/05/24 21:36	UNP	Mt. Juliet, TN

CASE NARRATIVE

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brittnie Boyd

Brittnie L Boyd
Project Manager

Additional Information - Results for field analyses are not accredited to ISO 17025

Analyte	Result	Units
pH (On Site)	4.96	su

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	221		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.59		5.00	5	11/30/2024 22:13	WG2409502
Fluoride	ND		0.750	5	11/30/2024 22:13	WG2409502
Sulfate	92.3		25.0	5	11/30/2024 22:13	WG2409502

Sample Narrative:

L1804133-01 WG2409502: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.608		0.200	1	12/05/2024 14:22	WG2411848

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	10.7		1.00	1	12/05/2024 22:03	WG2411861

Additional Information - Results for field analyses are not accredited to ISO 17025

	Result	Units
Analyte		
pH (On Site)	6.88	su

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	382		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	6.39		1.00	1	11/30/2024 22:48	WG2409502
Fluoride	ND		0.150	1	11/30/2024 22:48	WG2409502
Sulfate	85.7		5.00	1	11/30/2024 22:48	WG2409502

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	ND		0.200	1	12/05/2024 14:24	WG2411848

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	56.3		1.00	1	12/05/2024 21:17	WG2411861

Additional Information - Results for field analyses are not accredited to ISO 17025

Analyte	Result	Units
pH (On Site)	3.92	su

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1280		20.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	ND		100	100	11/30/2024 23:05	WG2409502
Fluoride	ND		15.0	100	11/30/2024 23:05	WG2409502
Sulfate	768		500	100	11/30/2024 23:05	WG2409502

Sample Narrative:

L1804133-03 WG2409502: Dilution due to matrix impact on instrumentation at lower dilution

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	7.10		0.200	1	12/05/2024 14:26	WG2411848

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	101		1.00	1	12/05/2024 21:20	WG2411861

MW-107D

Collected date/time: 11/22/24 11:25

SAMPLE RESULTS - 04

L1804133

Additional Information - Results for field analyses are not accredited to ISO 17025

	Result	Units
Analyte		
pH (On Site)	7.52	su

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	523		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	21.1		1.00	1	11/30/2024 23:40	WG2409502
Fluoride	ND		0.150	1	11/30/2024 23:40	WG2409502
Sulfate	128		5.00	1	11/30/2024 23:40	WG2409502

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.332		0.200	1	12/05/2024 14:27	WG2411848

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	79.3		1.00	1	12/05/2024 21:23	WG2411861

MW-112D

Collected date/time: 11/22/24 14:30

SAMPLE RESULTS - 05

L1804133

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Additional Information - Results for field analyses are not accredited to ISO 17025

Analyte	Result	Units
pH (On Site)	7.46	su

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	317		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	7.22		1.00	1	11/30/2024 23:58	WG2409502
Fluoride	ND		0.150	1	11/30/2024 23:58	WG2409502
Sulfate	5.08		5.00	1	11/30/2024 23:58	WG2409502

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	0.294		0.200	1	12/05/2024 14:29	WG2411848

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	41.4		1.00	1	12/05/2024 21:26	WG2411861

FIELD BLANK 1

Collected date/time: 11/22/24 13:50

SAMPLE RESULTS - 06

L1804133

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	ND		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	ND		1.00	1	12/01/2024 00:15	WG2409502
Fluoride	ND		0.150	1	12/01/2024 00:15	WG2409502
Sulfate	ND		5.00	1	12/01/2024 00:15	WG2409502

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	12/05/2024 14:31	WG2411848

Metals (ICPMS) by Method 6020B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Calcium	ND		1.00	1	12/05/2024 21:30	WG2411861

FIELD BLANK 2

Collected date/time: 11/22/24 13:50

SAMPLE RESULTS - 07

L1804133

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	ND		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	ND	P1	1.00	1	11/30/2024 17:23	WG2409507
Fluoride	ND		0.150	1	11/30/2024 17:23	WG2409507
Sulfate	ND		5.00	1	11/30/2024 17:23	WG2409507

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	ND		0.200	1	12/05/2024 14:32	WG2411848

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	ND		1.00	1	12/05/2024 21:33	WG2411861

DUPLICATE 2 (MW-112D)

Collected date/time: 11/22/24 14:30

SAMPLE RESULTS - 08

L1804133

Additional Information - Results for field analyses are not accredited to ISO 17025

	Result	Units
Analyte		
pH (On Site)	7.46	su

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Dissolved Solids	321		10.0	1	11/27/2024 12:07	WG2409320

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Chloride	6.43		1.00	1	11/30/2024 17:36	WG2409507
Fluoride	ND	P1	0.150	1	11/30/2024 17:36	WG2409507
Sulfate	ND		5.00	1	11/30/2024 17:36	WG2409507

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Boron	0.288		0.200	1	12/05/2024 14:34	WG2411848

Metals (ICPMS) by Method 6020B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Calcium	41.1		1.00	1	12/05/2024 21:36	WG2411861

Method Blank (MB)

(MB) R4152204-1 11/27/24 12:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1803945-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1803945-01 11/27/24 12:07 • (DUP) R4152204-3 11/27/24 12:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	791	807	1	2.00		10

L1804133-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1804133-08 11/27/24 12:07 • (DUP) R4152204-4 11/27/24 12:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	321	322	1	0.311		10

Laboratory Control Sample (LCS)

(LCS) R4152204-2 11/27/24 12:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8860	101	85.0-115	

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R4153016-1 11/30/24 14:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.547	1.00
Fluoride	U		0.0761	0.150
Sulfate	U		0.637	5.00

L1804082-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1804082-01 11/30/24 15:15 • (DUP) R4153016-3 12/01/24 00:32

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	43.1	43.9	1	1.74		15
Fluoride	ND	ND	1	4.53		15
Sulfate	71.5	71.5	1	0.106		15

L1804082-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1804082-02 11/30/24 15:33 • (DUP) R4153016-6 12/01/24 01:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	7.93	7.78	1	1.89		15
Fluoride	ND	ND	1	3.05		15
Sulfate	15.5	15.3	1	0.797		15

Laboratory Control Sample (LCS)

(LCS) R4153016-2 11/30/24 14:41

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	38.6	96.6	80.0-120	
Fluoride	8.00	8.05	101	80.0-120	
Sulfate	40.0	39.3	98.3	80.0-120	

L1804082-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1804082-01 11/30/24 15:15 • (MS) R4153016-4 12/01/24 00:50 • (MSD) R4153016-5 12/01/24 01:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	43.1	74.2	74.5	77.5	78.4	1	80.0-120	J6	J6	0.496	15
Fluoride	8.00	ND	8.26	8.30	102	103	1	80.0-120			0.470	15
Sulfate	40.0	71.5	97.6	97.9	65.0	65.9	1	80.0-120	J6	J6	0.357	15

L1804082-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1804082-02 11/30/24 15:33 • (MS) R4153016-7 12/01/24 01:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40.0	7.93	45.6	94.2	1	80.0-120	
Fluoride	8.00	ND	8.35	103	1	80.0-120	
Sulfate	40.0	15.5	52.8	93.3	1	80.0-120	

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R4153173-1 11/30/24 16:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.547	1.00
Fluoride	U		0.0761	0.150
Sulfate	U		0.637	5.00

L1804133-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1804133-07 11/30/24 17:23 • (DUP) R4153173-3 12/01/24 00:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	ND	ND	1	200	P1	15
Fluoride	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

L1804133-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1804133-08 11/30/24 17:36 • (DUP) R4153173-6 12/01/24 00:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	6.43	6.23	1	3.28		15
Fluoride	ND	ND	1	16.1	P1	15
Sulfate	ND	ND	1	2.14		15

Laboratory Control Sample (LCS)

(LCS) R4153173-2 11/30/24 17:10

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	42.7	107	80.0-120	
Fluoride	8.00	8.76	109	80.0-120	
Sulfate	40.0	43.6	109	80.0-120	

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

L1804133-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1804133-07 11/30/24 17:23 • (MS) R4153173-4 12/01/24 00:25 • (MSD) R4153173-5 12/01/24 00:38

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	ND	40.6	40.0	100	98.7	1	80.0-120			1.37	15
Fluoride	8.00	ND	8.23	8.15	103	102	1	80.0-120			0.968	15
Sulfate	40.0	ND	41.1	40.7	103	102	1	80.0-120			0.965	15

L1804133-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1804133-08 11/30/24 17:36 • (MS) R4153173-7 12/01/24 01:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40.0	6.43	47.3	102	1	80.0-120	
Fluoride	8.00	ND	8.61	106	1	80.0-120	
Sulfate	40.0	ND	46.6	105	1	80.0-120	

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R4154238-1 12/05/24 14:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R4154238-2 12/05/24 14:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.996	99.6	80.0-120	

L1804042-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1804042-01 12/05/24 14:04 • (MS) R4154238-4 12/05/24 14:07 • (MSD) R4154238-5 12/05/24 14:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	1.09	1.07	102	99.9	1	75.0-125			2.27	20

QUALITY CONTROL SUMMARY

Method Blank (MB)

(MB) R4154341-1 12/05/24 20:37

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0925	1.00

Laboratory Control Sample (LCS)

(LCS) R4154341-2 12/05/24 20:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	5.00	4.90	98.0	80.0-120	

L1804103-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1804103-01 12/05/24 20:44 • (MS) R4154341-4 12/05/24 20:50 • (MSD) R4154341-5 12/05/24 20:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	5.00	162	167	166	105	90.0	1	75.0-125			0.453	20

GLOSSARY OF TERMS

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1,6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1,4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:

Alliance Technical Group - Bryant, AR

219 Brown Lane
Little Rock, AR 72022

Billing Information:

Accounts Payable
219 Brown Ln.
Bryant, AR 72022

Pres Chk: ✓

Report to: **Jonathan Brown**

Email To: **Jonathan.Brown@AllianceTG.com;Jhouse@trcc**

Project Description: **Entergy - White Bluff**

City/State Collected: Redfield, AR

Please Circle: PT MT [✓ CT] ET

Phone: **501-847-7077**

Client Project # **1145-21-080**

Lab Project # **GBMCBAR-ENTERGYWB**

Collected by (print): JLC/KRS

Site/Facility ID # **CADL - CCR**

P.O. #

Collected by (signature): [illegible] Colbert

Immediately Packed on Ice N____ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Chain of Custody Page ___ of ___

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

~~L1803995~~

SDG # **D011** L1804133
60
11-27-24

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1112374**
PM: **829 - Brittnie L Boyd**
PB:

Shipped Via: **FedEX Priority**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks pH	Sample # (lab only)
MW-101S		GW									
MW-102S		GW									
MW-103S	G	GW		11-22-24	1530	3	X	X	X	4.96	-01
MW-104S		GW									
MW-105S		GW									
MW-106S		GW									
MW-110S		GW									
~~**MW-111S**~~ MW-101D	G	GW		11-22-24	1315	3	X	X	X	6.88	-02
~~**MW-101D**~~ MW-111S	G	GW		11-22-24	0955	3	X	X	X	3.92	-03
MW-102D		GW									

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other______

Remarks:

pH ______ Temp ______

Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ______

Tracking # 4212 6475 4531

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: ✓Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature) Jacen Colbert	Date: 11-25-24	Time: 1130	Received by: (Signature)	Trip Blank Received: Yes / [✓ No] HCL / MeoH TBR 0
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.4 t0=3.4 °C Bottles Received: 25
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11-26-24 Time: 0980

If pr[illegible] /Time

PH -- 10BDH0941
TRC -- 3327A333

Hold:

Condition: NCF / OK

Company Name/Address: **Alliance Technical Group - Bryant, AR** 219 Brown Lane Little Rock, AR 72022	Billing Information: Accounts Payable 219 Brown Ln. Bryant, AR 72022
Report to: Jonathan Brown	Email To: Jonathan.Brown@AllianceTG.com;Jhouse@trcc
Project Description: Entergy - White Bluff	City/State Collected: Redfield, AR Please Circle: PT MT [✓ CT] ET
Phone: **501-847-7077**	Client Project # 1145-21-080
Lab Project # GBMCBAR-ENTERGYWB	
Collected by (print): JLC / KRS	Site/Facility ID # CADL - CCR
P.O. #	Quote #
Collected by (signature): Brandi Colbert Immediately Packed on Ice N ___ Y [✓]	*Rush?* (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day Date Results Needed

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # ~~L1807995~~

Table # L1804133 GP 11-27-24

Acctnum: **GBMCBAR**

Template: **T198831**

Prelogin: **P1112374**

PM: **829 - Brittnie L Boyd**

PB:

Shipped Via: **FedEX Priority**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks pH	Sample # (lab only)
MW-103D		GW									
MW-104D		GW									
MW-105D		GW									
MW-106D		GW									
MW-107D	G	GW		11-22-24	1125	3	X	X	X	7.52	-04
MW-108D		GW									
MW-109D		GW									
MW-110D		GW									
MW-112D	G	GW		11-22-24	1430	3	X	X	X	7.46	-05
MW-113D		GW									

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______

Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ~~Y~~ __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature) Brandi Colbert	Date: 11-25-24	Time: 1130	Received by: (Signature)	Trip Blank Received: Yes [✓ No] 0 HCL / MeOH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.4+0=3.4 °C Bottles Received: 25
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11-26-24 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Company Name/Address:
Alliance Technical Group - Bryant, AR

219 Brown Lane
Little Rock, AR 72022

Billing Information:
Accounts Payable
219 Brown Ln.
Bryant, AR 72022

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Report to: **Jonathan Brown**

Email To: **Jonathan.Brown@AllianceTG.com;Jhouse@trcc**

Project Description: **Entergy - White Bluff**

City/State Collected: Redfield, AR

Please Circle: PT MT [✓ CT] ET

Phone: **501-847-7077**

Client Project # **1145-21-080**

Lab Project # **GBMCBAR-ENTERGYWB**

Collected by (print): JLC/KRS

Site/Facility ID # **CADL - CCR**

P.O. #

Collected by (signature): Bendo Colbert

Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

SDG # ~~L1804093~~

Table # L1804133 SP 11-27-24

Acctnum: **GBMCBAR**
Template: **T198831**
Prelogin: **P1112374**
PM: **829 - Brittnie L Boyd**
PB:

Shipped Via: **FedEX Priority**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	B, Ca 250mlHDPE-HNO3	Cl, F, SO4 250mlHDPE-NoPres	TDS 1L-HDPE NoPres	Remarks	Sample # (lab only)
										pH	
MW-114D		GW									
MW-115D		GW									
MW-118D		GW									
FIELD BLANK 1	G	GW		11-22-24	1350	3	✓	✓	✓		-06
DUPLICATE 1		GW									
FIELD BLANK 2	G	GW		11-22-24	1350	3	✓	✓	✓		-07
DUPLICATE 2 (MW-112D)	G	GW		11-22-24	1430	3	✓	✓	✓	7.46	-08
		GW									
		GW									
		GW									

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_________

Remarks:

pH _______ Temp _______

Flow _______ Other _______

Samples returned via:
__ UPS __ FedEx __ Courier ___________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature) Bendo Colbert
Date: 11-25-24
Time: 1130
Received by: (Signature)
Trip Blank Received: Yes [✓ No] HCL / MeoH TBR

Relinquished by : (Signature)
Date:
Time:
Received by: (Signature)
Temp: 3.4+0=3.4 °C
Bottles Received: 28
If preservation required by Login: Date/Time

Relinquished by : (Signature)
Date:
Time:
Received for lab by: (Signature)
Date: 112624
Time: 0900
Hold:
Condition: NCF / OK

APPENDIX D
FIELD SAMPLING FORMS

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION:

WELL NO: 101D	SAMPLE ID:	DATE: 5-20-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 9718	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1450	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or [✓ μS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1510					6.91	33.29	398	1.07	32	277	Clear
1515					6.82	33.72	389	0.76	19	247	
1320					6.91	33.72	386	0.70	6	171	
1525					6.84	33.67	385	0.60	-8	139	
1530					6.80	33.49	383	0.49	-29	11.1	
1535					6.86	33.39	385	0.45	-41	10.5	
1540					6.82	33.36	389	0.42	-54	8.8	
1545					6.83	33.42	388	0.39	-58	7.36	
1550					6.85	33.37	392	0.38	-62	6.25	
1555					6.85	33.32	392	0.34	-68	5.94	
1600					6.88	33.24	387	0.32	-69	5.40	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1600	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ μm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Well considered stabilized @ 1600

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: 101S	SAMPLE ID:	DATE: 5.20.24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 36.38	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1035	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1045					6.12	25.25	233	1.19	142	6.26	Clear
1050					6.07	25.25	263	1.06	128	10.7	
1055					5.89	24.43	244	0.94	129	11.1	
1100					5.84	24.82	237	2.20	128	9.39	
1105					5.79	25.26	233	1.92	127	9.55	
1110					5.87	25.75	230	1.84	124	5.03	
1115					5.76	25.93	227	1.67	124	2.88	
1120					5.81	26.03	226	1.56	123	4.87	
1125					5.82	26.40	225	1.52	123	1.46	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1125	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N FILTER SIZE: _____ µm Filtration Equipment Type:

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba calibrated – reading 0.0 NTU taking measurements w/ HACH meter

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

HACH meter calibrated prior to measurement taken.

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield, AR
WELL NO: 1020	SAMPLE ID:	DATE: 5.20.24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 93.49	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1305	PURGING ENDED AT: [illegible]	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1320					6.62	34.35	383	0.46	-64	31.4	Turbid
1325					6.90	33.75	450	0.32	-87	57.2	
1330					7.07	33.43	459	0.23	-103	97.4	
1335					7.17	33.18	478	0.23	-114	105	
1340					7.21	33.03	482	0.22	-120	91.0	
1345					7.22	32.65	486	0.19	-123	68.1	
1350					7.23	32.55	500	0.22	-124	62.8	
1355					7.26	32.65	503	0.22	-129	48.7	
1400					7.26	32.61	505	0.25	-129	35.3	
1405					7.28	32.56	508	0.19	-130	33.3	
1410					7.28	32.55	509	0.21	-130	31.9	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1410	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: 1025 White Bluff

SITE LOCATION: Redfield, AR

WELL NO: 1025

SAMPLE ID:

DATE: 5.20.24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 33.42	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1150	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1210					5.75	34.01	155	4.25	116	124	Clear
1215					5.73	33.97	152	3.83	117	18.8	
1220					5.72	33.99	151	3.56	119	16.3	
1225					5.72	33.94	152	3.21	119	13.0	
1230					5.73	33.75	153	3.00	114	11.9	
1235					5.73	33.80	153	2.74	117	9.65	
1240					5.74	34.51	152	2.50	114	10.2	
1245					5.73	34.83	151	2.47	113	8.69	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLL / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1245	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Turbidity taken with HACH meter

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: 103D - White Bluff

SITE LOCATION: Redfield, AR

WELL NO: 103D

SAMPLE ID:

DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 41.38

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 0915

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
0935											
0940					7.35	23.25	604	5.19	-89	15.7	Clear
0945					7.45	23.33	618	4.85	-96	7.41	|
0950					7.50	23.44	620	4.55	-99	5.20	|
0955					7.53	23.43	620	4.27	-99	4.18	|
1000					7.55	23.52	621	4.01	-99	3.93	|
					7.57	23.61	619	3.89	-99	3.98	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1000

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N

FILTER SIZE: _____ µm

Filtration Equipment Type:

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION:
WELL NO: 1035	SAMPLE ID:	DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 15.79	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 0825	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
0845					5.10	21.6	152	1.67	312	227	Slight Turbidity
0850					5.02	21.17	164	1.56	326	202	|
0855					5.02	21.06	167	1.59	328	201	|
0900					5.02	21.00	161	1.60	327	200	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 0900	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Horiba + HACH recalibrated prior to measurements

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION:

WELL NO: 164D

SAMPLE ID:

DATE: 5.21.24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 86.46

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1600

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1620					7.07	20.62	467	0.10	-109	267	Turbid
1625					7.09	20.47	469	0.13	-109	181	
1630					7.11	20.23	470	0.14	-110	119	
1635					7.19	20.40	470	0.09	-112	123	
1640					7.22	20.26	471	0.18	-111	135	
1645					7.27	20.20	471	0.40	-104	94.2	
1650					7.30	20.17	473	0.49	-99	69.5	
1655					7.31	20.34	475	0.39	-103	61.3	
1700					7.34	20.36	475	0.41	-108	55.6	
1705					7.33	20.20	479	0.13	-107	51.5	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1705

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N
Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: **1. The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION:
WELL NO: 1045	SAMPLE ID:	DATE: 5-21-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 28.33	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1500	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1520					5.23	26.84	238	0.13	140	1.73	Clear
1525					5.23	26.45	235	0.08	133	1.47	|
1530					5.22	26.43	233	0.08	126	0.99	|
1535					5.21	26.03	230	0.06	119	1.15	|
1540					5.19	25.85	229	0.06	120	0.99	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1540	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION: 〃

WELL NO: 1105 D	SAMPLE ID:	DATE: 5-21-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 79.76	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1055	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1120					7.77	22.80	504	0.21	-145	20.7	Clear
1125					7.69	23.52	503	0.19	-144	15.9	
1130					7.67	21.48	495	0.13	-147	13.6	
1135					7.62	21.31	497	0.09	-149	10.7	
1140					7.60	21.49	496	0.05	-152	10.3	
1145					7.62	21.49	495	0.22	-154	9.72	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1145	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR	
WELL NO: 105 S	SAMPLE ID:	DATE: 5-21-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 26.60	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1205	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1225					6.16	28.85	189	0.48	74	3.71	Clear
1230					6.11	28.45	188	0.32	72	3.24	|
1235					6.07	28.96	188	0.22	73	2.43	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: B = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1235	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: AG = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION:

WELL NO: 106D	SAMPLE ID:	DATE: 5-21-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 42.06	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 0915	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
0950					11.20	22.43	518	2.45	-94	33.8	Clear
0955					11.16	22.44	497	2.44	-92	27.4	
1000					11.10	22.63	474	2.34	-94	29.6	
1005					11.04	22.51	442	2.19	-91	22.5	
1010					10.98	22.82	428	2.17	-92	28.2	
1015					10.97	22.91	430	2.15	-92	17.4	
1020					10.92	23.01	411	2.10	-91	16.1	
1025					10.82	23.22	398	2.03	-89	14.9	
1030					10.82	23.25	395	2.00	-87	15.7	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1030	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: pH exceeded 7-10 range on both YSI and Horiba.

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION:
WELL NO: 1065	SAMPLE ID:	DATE: 5-21-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 11.78	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 0830	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or [✓ μS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
0835					3.94	22.70	1,650	0.28	376	1.03	Clear
0840					3.94	22.55	1,660	0.22	371	1.20	|
0845					3.96	23.06	1,660	0.17	367	0.98	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 0845	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ μm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba + HACH calibrated - Horiba reading 0.0 NTU, using Hach for turb.

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION:
WELL NO: 107 D
SAMPLE ID:
DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):
TUBING DIAMETER (inches):
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 20.90
PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1332
PURGING ENDED AT:
TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1405					7.65	25.76	605	3.05	81	2.05	Clear
1410					7.83	25.31	584	4.63	76	2.20	|
1415					7.86	25.61	595	5.50	89	1.68	|
1420					7.52	25.91	608	1.58	-109	4.79	|
1425					7.51	25.08	719	0.72	-124	3.17	|
1430					7.45	24.64	730	0.39	-139	2.86	|
1435					7.46	24.60	730	0.29	-146	1.58	|
1440					7.50	24.70	728	0.30	-149	3.62	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1440
SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):
TUBING MATERIAL CODE:
FIELD-FILTERED: Y N
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)
DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: 108D - White Bluff	SITE LOCATION:	
WELL NO: 108D	SAMPLE ID:	DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 45.04	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1032	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1100					7.42	24.44	699	0.09	-135	4.35	Clear
1105					7.42	24.27	698	0.05	-139	3.54	
1110					7.42	24.30	699	0.04	-140	2.48	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1110	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ______ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION:

WELL NO: 109 D

SAMPLE ID:

DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 78.83

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1140

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1205					7.40	22.03	519	0.49	-111	3.67	Clear
1210					7.39	22.28	526	0.67	-94	2.55	
1215					7.46	22.16	526	0.73	-115	2.03	
1220					7.39	22.56	521	0.09	-127	1.47	
1225					7.39	21.57	521	0.00	-133	1.19	
1230					7.43	21.77	520	0.03	-133	1.19	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP =** Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1230

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N

Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	SITE LOCATION:

WELL NO: 110D	SAMPLE ID:	DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 33.25	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1508	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1535					7.57	24.02	490	2.60	44	0.54	Clear
1540					7.58	23.80	489	2.55	52	0.73	|
1545					7.60	23.75	489	2.62	60	1.90	|
1550					7.61	23.68	490	2.67	65	0.77	|
1555					7.63	23.58	490	2.76	70	0.82	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1555	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION:

WELL NO: 1105	SAMPLE ID:	DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 11.18	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1608	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1630					4.58	24.11	523	0.04	224	2.54	
1635					4.60	24.20	528	0.02	216	1.76	
1640					4.58	24.33	529	0.01	211	1.74	
1645					4.55	24.17	518	0.00	212	1.52	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1645	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: **1. The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION:
WELL NO: 111S	SAMPLE ID:	DATE: 5-20-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 13.77	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1640	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1700					4.14	35.15	1,380	1.30	385	6.75	Clear
1705					4.13	34.96	1,370	1.32	391	3.44	|
1710					4.14	34.79	1,370	1.35	396	2.40	|
1715					4.10	34.61	1,370	1.33	400	1.94	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1715	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: DUP

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION:

WELL NO: 112D

SAMPLE ID:

DATE: 5-23-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 87.49

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1433

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1435					7.46	20.67	457	0.05	-143	1.50	Clear
1500					7.46	20.71	458	0.01	-145	0.93	|
1505					7.49	20.72	457	0.00	-150	0.66	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1505

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N
Filtration Equipment Type:

FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION:

WELL NO: 113 D

SAMPLE ID:

DATE: 5-22-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 9.63

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1153

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1215					7.05	21.26	1,460	2.21	133	0.39	Clear
1220					7.04	21.51	1,450	2.19	135	0.49	|
1225					7.05	23.38	1,460	2.24	136	0.43	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1225

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N
Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION: E. Redfield, AR

WELL NO: 114 U

SAMPLE ID:

DATE: 5-23-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 60.08

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet − feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1006

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1025					7.36	19.14	475	0.18	-119	0.57	Clear
1030					7.40	19.14	474	0.10	-118	0.42	}
1035					7.43	19.15	474	0.08	-119	0.45	}

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1035

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N
Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Horiba + HACH recalibrated prior to sampling/purging

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION:

WELL NO: 115 17

SAMPLE ID:

DATE: 5-23-24

PURGING DATA

WELL DIAMETER (inches):

TUBING DIAMETER (inches):

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 74.36

PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1320

PURGING ENDED AT:

TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1340					7.54	21.07	503	0.02	-123	11.1	clear
1345					7.53	21.21	503	0.02	-122	6.00	}
1350					7.56	21.20	502	0.00	-121	4.31	}
1355					7.57	21.10	500	0.00	-120	4.22	}
1400					7.57	20.90	501	0.00	-122	2.95	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1400

SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):

TUBING MATERIAL CODE:

FIELD-FILTERED: Y N
Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)

DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION:

WELL NO: 1181?	SAMPLE ID:	DATE: 5-23-24

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 40.68	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet):	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1100	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1120					6.95	20.49	702	0.75	101	036	Clear
1125					6.95	20.58	702	0.69	104	0.35	〃
1130					6.95	20.64	704	0.69	104	0.49	〃

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1130	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-101S	SAMPLE ID: MW-101S	DATE: 11-20-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 39.11	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 47	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1534	PURGING ENDED AT: 1625	TOTAL VOLUME PURGED (gallons): 0.8

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1600	0.4	0.4		39.35	5.75	15.09	235	0.77	60	1.2	Clear
1605				39.35	5.81	15.06	234	0.66	70	0.0	
1610				39.42	5.78	14.79	233	0.60	71	0.0	
1615				39.45	5.77	14.69	234	0.50	74	0.0	
1620				39.46	5.77	14.60	234	0.52	78	0.0	
1625		0.8		34.48	5.76	19.51	234	0.47	76	0.0	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC/KRS	SAMPLER(S) SIGNATURE(S): Jacob	SAMPLING INITIATED AT: 1625	SAMPLING ENDED AT: 1642

PUMP OR TUBING DEPTH IN WELL (feet): 47	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth : 39.47 ft

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION: Redfield, AR

WELL NO: MW-101 D

SAMPLE ID: MW-101 D

DATE: 11-22-24

PURGING DATA

WELL DIAMETER (inches): 2

TUBING DIAMETER (inches): 1/4

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 96.90

PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 112

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1200

PURGING ENDED AT: 1315

TOTAL VOLUME PURGED (gallons): 2.4

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1230	0.9	0.9		97.24	6.88	17.90	577	8.76	-37	19.7	Clear
1235				97.32	6.97	17.92	580	7.88	-54	14.7	
1240				97.32	6.86	18.03	586	7.28	-76	14.3	
1245				97.34	6.89	18.00	591	7.02	-78	11.9	
1250				97.34	6.85	17.84	582	6.37	-92	11.3	
1255				97.39	6.89	17.90	582	6.06	-97	8.7	
1300				97.39	6.90	17.87	582	5.70	-101	8.7	
1305				97.39	6.84	17.97	583	5.36	-105	6.8	
1310				97.39	6.89	17.96	583	5.03	-108	7.2	
1315		2.4		97.39	6.88	18.03	584	4.92	-111	6.6	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS

SAMPLER(S) SIGNATURE(S): Sarah Coker

SAMPLING INITIATED AT: 1315

SAMPLING ENDED AT: 1335

PUMP OR TUBING DEPTH IN WELL (feet): 112

TUBING MATERIAL CODE:

FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:

FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)

DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth: 97.39 ft

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: **1. The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: MW-1025
SAMPLE ID: MW-1025
DATE: 11-20-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 34.76
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 48.00
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 0940
PURGING ENDED AT: 1040
TOTAL VOLUME PURGED (gallons): 1.65

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1010	0.80	0.80		35.96	5.90	23.08	208	1.04	83	83.0	Slightly turbid
1015				36.15	5.89	23.46	204	0.89	82	65.9	
1020				36.15	5.91	23.64	203	0.56	81	53.0	
1025				36.16	5.92	23.59	202	0.81	82	38.4	
1030				36.19	5.90	23.46	200	0.80	84	32.7	
1035				36.30	5.92	23.07	198	0.78	84	32.9	
1040		1.65		36.33	5.87	23.76	198	0.79	85	32.3	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC/KRS
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1040
SAMPLING ENDED AT: 1100
PUMP OR TUBING DEPTH IN WELL (feet): 48.00
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba calibrated prior to purging Final depth: 36.86

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield
WELL NO: MW-102D
SAMPLE ID: MW-102D
DATE: 11-19-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 91.10
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 105
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1445
PURGING ENDED AT: 1605
TOTAL VOLUME PURGED (gallons): 2.6

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1520	1.00	1.00		94.87	7.33	22.52	581	1.44	-123	395	Turbid
1525				95.46	7.32	22.43	581	0.88	-123	354	
1530				95.79	7.29	22.20	585	0.93	-117	312	
1535				96.34	7.32	22.08	582	0.94	-119	922	
1540				96.87	7.32	21.81	584	0.92	-115	555	
1545				97.42	7.27	21.47	583	1.39	-119	445	
1550				97.76	7.32	21.64	580	1.63	-119	409	
1555				98.23	7.31	21.56	582	2.05	-117	425	
1600				98.75	7.31	21.10	581	1.74	-113	734	
1605	1	2.6		99.20	7.33	21.06	580	1.57	-111	71000	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC/KRS
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1605
SAMPLING ENDED AT: 1625
PUMP OR TUBING DEPTH IN WELL (feet): 105
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Well did not stabilize. Proceeded with sample as done -

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

*Final depth: 100.86

- in the past.

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-103S	SAMPLE ID: MW-103S	DATE: 11-18-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 21.18	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 22.5	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1045	PURGING ENDED AT: 1135	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1110					4.98	22.23	257	3.74	320	174	Turbid
1115					4.97	22.22	257	3.49	323	157	〃
1120					4.97	22.29	256	3.16	326	155	〃
1125					4.97	22.31	257	2.84	327	153	〃
1130					4.96	22.34	257	2.80	328	151	〃
1135					4.96	22.36	257	2.73	329	146	〃

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S): Jacob Collins	SAMPLING INITIATED AT: 1335	SAMPLING ENDED AT: —

PUMP OR TUBING DEPTH IN WELL (feet): 22.5	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION:	PUMP [✓ Y] N	TUBING Y [✓ N] (replaced)	DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Horiba calibrated prior to purging

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. <u>STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS</u>

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

- Allowed well to recharge in order to fill sample bottles
- Ran out of water again. Allowing to recharge overnight

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield
WELL NO: MW-103S	SAMPLE ID: MW-103S	DATE: 11-22-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet): 23.10	STATIC DEPTH TO WATER (feet): 20.82	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 22.5	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1525	PURGING ENDED AT: 1530	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1530	SAMPLING ENDED AT: 1540
PUMP OR TUBING DEPTH IN WELL (feet): 22.5	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final static depth after sample: 21.59

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

Due to shallow total depth (23.1 ft), quick drawdown and low recharge rate (>40 hours and well still hadn't fully recharged), a sample was taken without restabilizing the well. Allowed well to purge for 5 min before samples taken.

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: 103D
SAMPLE ID: MW-103D
DATE: 11-18-24

PURGING DATA

WELL DIAMETER (inches): 2 in
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 42.23
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 45.00
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1210
PURGING ENDED AT: 1305
TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1240					7.66	22.32	675	6.12	241	60.6	Turbid
1245					7.68	22.53	677	6.06	294	29.1	Slightly turbid
1250					7.67	22.73	676	5.84	297	38.1	
1255					7.67	23.21	679	5.92	299	9.0	Clear
1300					7.68	23.76	684	6.01	299	8.6	Clear
1305					7.69	23.74	683	6.24	299	8.3	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: KRS / JLC
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1305
SAMPLING ENDED AT: 1328
PUMP OR TUBING DEPTH IN WELL (feet): 45.00
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR	
WELL NO: MW-104S	SAMPLE ID: MW-104S	DATE: 11-19-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 32.60	PURGE PUMP TYPE OR BAILER: bp

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 37.00	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1208	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons): 1.46

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1235	0.83	0.83		33.03	5.06	24.17	226	0.99	160	22.0	clear
1240	0.125			33.06	5.11	24.04	226	0.92	154	20.1	|
1245	0.125			33.09	5.17	23.49	229	0.89	149	14.9	|
1250	0.125			33.14	5.20	23.41	232	0.85	144	10.5	|
1255	0.125			33.15	5.21	23.39	232	0.85	141	10.1	|
1300	0.125	1.46		33.22	5.20	23.12	234	0.85	134	9.6	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / LRS	SAMPLER(S) SIGNATURE(S): Jacob [illegible]	SAMPLING INITIATED AT: 1300	SAMPLING ENDED AT: 1320
PUMP OR TUBING DEPTH IN WELL (feet): 37.00	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth: 33.26

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White	SITE LOCATION: Redfield, AR	
WELL NO: MW-104D	SAMPLE ID: MW-104D	DATE: 11-14-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 86.5	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 100	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1330	PURGING ENDED AT: 1405	TOTAL VOLUME PURGED (gallons): 0.95

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1355	0.68	0.68		89.83	7.34	24.27	520	0.75	-131	57.6	Turbid
1400	0.135	0.82		90.41	7.37	24.22	520	0.77	-138	52.4	{
1405	0.135	0.95		91.14	7.37	24.15	520	0.80	-138	52.7	{

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1405	SAMPLING ENDED AT: 1425
PUMP OR TUBING DEPTH IN WELL (feet): 100	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth: 93.67

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: MW-105 S
SAMPLE ID: MW-105 S
DATE: 11-19-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 28.96
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 43.5
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1051
PURGING ENDED AT: 1130
TOTAL VOLUME PURGED (gallons): 1.11

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1115	0.69	0.69		29.92	5.83	28.01	222	4.84	104	3.8	Clear
1120	0.14			29.93	5.82	28.29	220	4.41	109	3.9	
1125	0.14			29.96	5.82	28.49	219	4.30	109	4.9	
1130	0.14	1.11		29.97	5.81	28.83	218	4.07	110	4.8	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / HR
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1130
SAMPLING ENDED AT: 1149
PUMP OR TUBING DEPTH IN WELL (feet): 43.5
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final depth : 30.02

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield, AR
WELL NO: MW-105D	SAMPLE ID: MW105D	DATE: 11-19-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 79.86	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 87.00	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 0945	PURGING ENDED AT: 1020	TOTAL VOLUME PURGED (gallons): 1.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1010	0.90	0.90		83.65	7.40	20.02	548	8.01	-111	9.8	Clear
1015	0.175	1.075		84.10	7.49	20.47	550	7.60	-105	10.0	)
1020	0.175	1.25		84.71	7.50	20.31	556	7.30	-109	9.6	)

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S): Jacob Colbert	SAMPLING INITIATED AT: 1020	SAMPLING ENDED AT: 1040
PUMP OR TUBING DEPTH IN WELL (feet): 87.00	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba calibrated prior to sampling

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

Final depth: 86.43 ft

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-106 S	SAMPLE ID: MW-106S	DATE: 11-20-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 13.68	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 18.00	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1120	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons): 1.3

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1150	1.0	1.0		13.76	4.12	26.21	1,700	0.82	332	4.3	Clear
1155				13.81	4.12	26.26	1,700	0.81	336	2.0	(
1200	1	1.3		13.84	4.12	26.15	1,670	0.81	342	0.0	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / MRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1200	SAMPLING ENDED AT: 1237

PUMP OR TUBING DEPTH IN WELL (feet): 18.00	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)

DUPLICATE: [✓ Y] N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Dup. 1 taken Final depth: 14.08

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: **1. The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: MW-106D
SAMPLE ID: MW-106D
DATE: 11-20-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 42.60
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 60
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1250
PURGING ENDED AT:
TOTAL VOLUME PURGED (gallons): 1.66

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1320	1.45	1.45		49.85	10.57	24.54	411	6.62	-49	4.9	Clear
1325				49.73	10.63	24.77	409	6.31	-48	5.1	(
1330		1.66		50.35	10.59	24.95	409	6.01	-49	4.6	(

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / FCRS
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1330
SAMPLING ENDED AT: 1350
PUMP OR TUBING DEPTH IN WELL (feet): 60
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth: 53.42

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR	
WELL NO: MW-107D	SAMPLE ID: MW-107D	DATE: 11-22-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 21.25	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 36	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1026	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons): 1.4

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or [✓ μS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1055	0.6	0.6		25.72	7.39	21.58	837	1.20	-161	0.0	Clear
1100				26.62	7.40	21.70	842	1.84	-154	2.2	
1105				27.17	7.42	21.75	838	1.32	-161	0.0	
1110				28.01	7.45	21.89	836	1.12	-164	0.0	
1115				28.96	7.47	22.04	833	1.01	-166	0.0	
1120				29.58	7.50	22.21	831	0.96	-163	0.0	
1125		1.4		30.06	7.52	22.45	827	0.91	-163	0.0	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S): Jacob Colbert	SAMPLING INITIATED AT: 1125	SAMPLING ENDED AT: 1141
PUMP OR TUBING DEPTH IN WELL (feet): 36	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ μm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final depth: 33.37

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR	
WELL NO: MW-108D	SAMPLE ID: MW-108D	DATE: 11-20-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 45.86	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 62	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1410	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1440	0.8	0.8		51.41	7.36	16.08	721	1.22	-159	0.3	Clear
1445				51.81	7.34	15.87	720	1.27	-160	0.8	
1450				52.79	7.36	15.87	724	1.07	-160	0.0	
1455				53.95	7.34	15.79	721	1.02	-163	4.6	
1500		1.5		55.09	7.35	15.87	726	1.01	-159	0.0	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1500	SAMPLING ENDED AT: 1521
PUMP OR TUBING DEPTH IN WELL (feet): 62	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Sulphur smell to water Final depth: 58.61 ft

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-109D	SAMPLE ID: MW-109D	DATE: 11-21-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 79.38	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 95	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1515	PURGING ENDED AT: 1600	TOTAL VOLUME PURGED (gallons): 0.9

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1545	0.6	0.6		83.15	7.26	16.47	558	0.53	-142	0.5	Clear
1550				84.10	7.31	16.37	559	0.47	-146	0.4	}
1555				84.84	7.36	16.34	562	0.43	-150	0.3	}
1600		0.9		85.77	7.37	16.31	562	0.40	-153	0.0	|

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S): Jacob Colbert	SAMPLING INITIATED AT: 1600	SAMPLING ENDED AT: 1618

PUMP OR TUBING DEPTH IN WELL (feet): 95	TUBING MATERIAL CODE:	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Sulphur smell to water. Final depth: 84.26

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield, AR
WELL NO: MW-110S	SAMPLE ID: MW-110 S	DATE: 11-18-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 15.91	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 18.00	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1517	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1545					4.62	22.47	394	5.80	318	5.0	Clear
1550					4.62	22.25	381	5.54	312	3.6	}
1555					4.71	22.26	372	5.21	301	4.3	}
1600					4.77	22.22	362	4.82	294	4.3	}
1605					4.78	22.20	363	4.61	292	4.2	}
1610					4.78	22.21	363	4.63	291	3.5	}

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC/RRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1610	SAMPLING ENDED AT: 1625
PUMP OR TUBING DEPTH IN WELL (feet): 18.00	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-110 D	SAMPLE ID: MW-110D	DATE: 11-18-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 34.59	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

PUMP OR TUBING DEPTH IN WELL (feet): 40	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1355	PURGING ENDED AT: 1455	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1425					7.42	23.75	544	0.98	-118	70.7	Turbid
1430					7.42	23.46	542	0.94	-121	70.7	
1435					7.43	23.21	543	0.92	-121	25.9	Clear
1440					7.44	23.20	542	0.95	-116	18.5	
1445					7.48	22.99	542	1.11	-98	18.3	
1450					7.52	23.00	540	1.10	-93	17.8	
1455					7.53	22.84	541	1.18	-89	17.4	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JL / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1455	SAMPLING ENDED AT: 1510
PUMP OR TUBING DEPTH IN WELL (feet): 40	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: ______ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING [✓ Y] N (replaced)	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield, AR
WELL NO: MW-111 5	SAMPLE ID: MW-1115	DATE: 11-22-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 14.96	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 20	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 0850	PURGING ENDED AT: 0955	TOTAL VOLUME PURGED (gallons): 1.7

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
0920	0.80	0.80		15.19	3.91	15.23	1,720	1.88	361	9.5	Clear
0925				15.24	3.19	15.60	1,710	1.85	364	6.7	
0930				15.25	3.91	16.05	1,690	1.82	369	4.8	
0935				15.25	3.90	16.43	1,690	1.71	374	2.7	
0940				15.25	3.93	16.84	1,710	1.70	377	1.3	
0945				15.25	3.91	17.36	1,690	1.70	382	0.1	
0950				15.26	3.90	17.57	1,670	1.67	385	0.1	
0955		1.7		15.26	3.92	17.84	1,680	1.70	389	0.0	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / HRS	SAMPLER(S) SIGNATURE(S): Brook Colbert	SAMPLING INITIATED AT: 0955	SAMPLING ENDED AT: 1011
PUMP OR TUBING DEPTH IN WELL (feet): 20	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N	TUBING Y [✓ N (replaced)]	DUPLICATE: Y [✓ N]	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba calibrated prior to purging Final depth: 15.29

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff	SITE LOCATION: Redfield, AR

WELL NO: MW-112D	SAMPLE ID: MW-112D	DATE: 11-22-24

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 87.61	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 103	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1350	PURGING ENDED AT: 1430	TOTAL VOLUME PURGED (gallons): 1.2

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1420	0.9	0.9		88.77	7.44	16.29	509	1.66	-156	0.0	Clear
1425				89.04	7.46	16.37	507	1.74	-165	0.0	(
1430		1.2		89.31	7.46	16.27	509	1.61	-165	0.0	)

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / KRS	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1430	SAMPLING ENDED AT: 1510
PUMP OR TUBING DEPTH IN WELL (feet): 103	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)

DUPLICATE: [✓ Y] N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final depth: 91 ft

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: MW-113 D
SAMPLE ID: MW-113D
DATE: 11-21-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 10.25
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 27
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 1235
PURGING ENDED AT: 1315
TOTAL VOLUME PURGED (gallons): 1.2

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1305	0.8	0.8		10.55	6.75	26.24	1,490	0.48	-6	3.7	clear
1310				11.72	6.73	26.21	1,490	0.45	-4	2.8	)
1315		1.2		11.94	6.75	26.21	1,490	0.44	-1	2.5	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / K-RS
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1315
SAMPLING ENDED AT: 1333
PUMP OR TUBING DEPTH IN WELL (feet): 27
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS:
Final depth: 12.75

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff
SITE LOCATION: Redfield, AR
WELL NO: MW-114D
SAMPLE ID: MW-1140
DATE: 11-21-24

PURGING DATA

WELL DIAMETER (inches): 2
TUBING DIAMETER (inches): 1/4
TOTAL WATER DEPTH (feet):
STATIC DEPTH TO WATER (feet): 60.4
PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 80
WELL SCREEN INTERVAL DEPTH: feet to feet
PURGING INITIATED AT: 0955
PURGING ENDED AT: 1070
TOTAL VOLUME PURGED (gallons): 1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1015	0.6	0.6		61.08	7.34	13.51	517	0.45	-142	0.5	Clear
1020				61.16	7.37	13.86	516	0.44	-145	0.3	}
1025				61.34	7.37	14.04	516	0.41	-147	0.1	}
1030		1.0		61.41	7.38	14.22	513	0.40	-149	0.1	}

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC/KRS
SAMPLER(S) SIGNATURE(S):
SAMPLING INITIATED AT: 1030
SAMPLING ENDED AT: 1049
PUMP OR TUBING DEPTH IN WELL (feet): 80
TUBING MATERIAL CODE:
FIELD-FILTERED: Y [✓ N]
Filtration Equipment Type:
FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING Y [✓ N] (replaced)
DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Horiba calibrated prior to sampling Final depth: 61.79 ft

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff

SITE LOCATION: Redfield, Ak

WELL NO: MW-115 17

SAMPLE ID: MW-115 17

DATE: 11-21-24

PURGING DATA

WELL DIAMETER (inches): 2

TUBING DIAMETER (inches): 1/4

TOTAL WATER DEPTH (feet):

STATIC DEPTH TO WATER (feet): 75.28

PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 90

WELL SCREEN INTERVAL DEPTH: feet to feet

PURGING INITIATED AT: 1355

PURGING ENDED AT: 1440

TOTAL VOLUME PURGED (gallons): 1.3

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS/cm]	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1425	0.8	0.8		76.36	7.45	17.45	522	0.44	-71	5.4	Clear
1430				76.59	7.44	17.39	523	0.42	-68	4.8	Clear
1435				76.80	7.46	17.33	524	0.44	-71	4.5	Clear
1440		1.3		77.07	7.45	17.13	524	0.41	-68	4.5	

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JL/KRS

SAMPLER(S) SIGNATURE(S):

SAMPLING INITIATED AT: 1440

SAMPLING ENDED AT: 1500

PUMP OR TUBING DEPTH IN WELL (feet): 90

TUBING MATERIAL CODE:

FIELD-FILTERED: Y [✓ N]

Filtration Equipment Type:

FILTER SIZE: _____ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced)

DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final depth: 77.15

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: White Bluff		SITE LOCATION: Redfield, AR
WELL NO: MW-118D	SAMPLE ID: MW-118	DATE: 11-21-24

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4	TOTAL WATER DEPTH (feet):	STATIC DEPTH TO WATER (feet): 40.95	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X gallons/foot = N/A gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = N/A gallons

PUMP OR TUBING DEPTH IN WELL (feet): 60	WELL SCREEN INTERVAL DEPTH: feet to feet	PURGING INITIATED AT: 1105	PURGING ENDED AT: 1150	TOTAL VOLUME PURGED (gallons): 1.4

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or [✓ µS]/cm	DISSOLVED OXYGEN (circle units) [✓ mg/L] or % saturation	Redox (mV)	Turbidity (NTU)	COLOR / ODOR (describe)
1135	0.9	0.9		41.36	7.21	20.40	764	0.65	27	5.8	Clear
1140				41.38	7.20	20.68	755	0.60	25	4.0	}
1145				41.40	7.19	20.85	753	0.57	20	4.1	}
1150		1.4		41.43	7.16	20.96	747	0.54	15	4.7	}

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: JLC / Hrs	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1150	SAMPLING ENDED AT: 1211
PUMP OR TUBING DEPTH IN WELL (feet): 60	TUBING MATERIAL CODE:	FIELD-FILTERED: Y [✓ N] Filtration Equipment Type:	FILTER SIZE: ______ µm

FIELD DECONTAMINATION: PUMP [✓ Y] N TUBING [✓ Y] N (replaced) DUPLICATE: Y [✓ N]

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Final pH/ Temp			

REMARKS: Final depth: 41.53

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

APPENDIX E

ALTERNATE SOURCE DEMONSTRATIONS

Alternate Source Demonstration

2nd Half 2023 Sampling Event

Entergy White Bluff Plant
Coal Ash Disposal Landfill
Redfield, Jefferson County, Arkansas

January 2025

Prepared For

Entergy Arkansas, LLC
White Bluff Plant
1100 White Bluff Road
Redfield, Arkansas 72132

Submitted By

TRC Environmental Corporation
4545 Sherwood Common Blvd.
Building 3, Suite A
Baton Rouge, LA 70816

Jason S. House
Senior Project Manager

Nakia W. Addison, P.E.
Operations Manager

Executive Summary

Entergy Arkansas, LLC (EAL) performed the most recent semiannual detection monitoring sampling (2nd Half 2023) in November 2023 for Cells 1 through 4 of the coal ash disposal landfill (CADL) pursuant to the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, 40 CFR Part 257 (CCR Rule). Cells 1 through 4 of the CADL constitute the coal combustion residuals (CCR) Unit per the CCR Rule. Per 40 CFR 257.94, the samples were analyzed for the Appendix III detection monitoring parameters. Upon receipt of the laboratory analytical results, statistical analysis was performed.

In accordance with the statistical analyses, the following 16 statistically significant increases (SSI) above background concentrations were identified in three monitoring wells in Stratum I and three monitoring wells in Stratum III, based on either increasing trends at 98% confidence levels using Sen's Slope test and/or intrawell prediction limits statistical analyses:

- Fluoride (MW-102S);
- Calcium, fluoride, sulfate and TDS (MW-106S);
- Boron and fluoride (MW-110S);
- Boron, calcium, fluoride, sulfate, and TDS (MW-111S);
- Fluoride (MW-105D);
- Boron, calcium, and TDS (MW-112D).

The information provided in this report serves as EAL's alternate source demonstration (ASD) prepared in accordance with 40 CFR 257.94(e)(2) and successfully demonstrates that the SSIs are not due to a release from the CCR Unit to groundwater, but are due to the following:

- Natural groundwater geochemistry conditions such as pH, electrical conductivity (EC), oxidation-reduction potential (ORP) and the naturally occurrence of sulfide minerals;

- Natural variation in groundwater quality;

- Releases from historic fill or portions of the CADL closed before the effective date of the CCR Rule (October 19, 2015); and/or

- Surface water that has come into contact with on-site CCR and has migrated into the subsurface.

Therefore, based on the information provided in this ASD report, EAL will continue to conduct semiannual detection monitoring for Appendix III constituents in accordance with 40 CFR 257.94 at the certified groundwater monitoring well system (Certified Monitoring Well Network) for the CCR Unit and will continue to implement improvements to stormwater management practices at the CADL.

Table of Contents

List of Tables

List of Figures

Section 1
Introduction

1.1 Background

Entergy Arkansas, LLC (EAL) operates the Entergy White Bluff Plant (Plant), a coal-fired power plant, to generate electricity. The Plant is located at 1100 White Bluff Road in Redfield, Jefferson County, Arkansas as shown on (**Figure 1)**. Coal combustion residuals (CCR) are produced as part of the electrical generation operations. The Plant has been generating and disposing of CCR in a portion of the on-site coal ash disposal landfill (CADL) since it began operations in 1981. The CADL is a Class 3N non-commercial industrial landfill and operates under Arkansas Division of Environmental Quality (ADEQ) Solid Waste Permit No. 0199-S3N-R3.

The ADEQ-permitted CADL consists of approximately 153-acres at the Plant and encompasses the following three areas:

- Approximately 50-acre portion of the CADL historically used for CCR disposal from 1981 until prior to the effective date of the CCR Rule (October 19, 2015). CCR was placed into ravines. This area was closed in accordance with the Plant's original solid waste permit (TRC, 2018a);

- Cells 1 through 4, which are the current cells used for CCR disposal and were constructed on top of, and adjacent to, the above-noted closed CCR disposal areas prior to the effective date of the CCR Rule. Cells 1 through 4 encompass approximately 30 acres and were constructed as follows:

    - Cells 1, 2, and 3 were constructed with an 18-inch thick compacted clay bottom liner;

    - Cell 4 was constructed with a two-foot thick compacted clay bottom liner and a leachate collection system; and

- Approximately 100-acre portion of the CADL that is currently undeveloped and may be used for CCR and/or non-CCR disposal.

In addition to the current 153-acre permitted landfill, there is an approximately 25 acre area to the immediate west of Cells 1 through 4 where during the initial period of operation of the Plant, ash was placed pursuant to the permits issued at that time. This historic fill area is covered with soil and vegetated.

Cells 1 through 4 accept CCR for disposal in accordance with the federal *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule* (CCR Rule), effective October 19, 2015, and subsequent Final Rules promulgated by the United States Environmental Protection Agency (USEPA). Cells 1 through 4 comprise the CCR management unit (CCR Unit) per the CCR Rule and are the focus of this ASD. The approximate limits of Cells 1 through 4, the closed disposal areas, and the undeveloped, future disposal areas within the ADEQ-permitted footprint of the CADL are shown in (**Figure 2)**.

Historical CCR management by EAL has consisted of the following activities:

- Beneficial use in local construction projects;
- Beneficial use as roadbed material at the CADL; and
- Placement into the CADL.

1.1.1 Groundwater Monitoring and Statistical Analysis

In accordance with 40 CFR 257.90 through 257.94, EAL installed a groundwater monitoring system for Cells 1 through 4, collected samples from the Certified Monitoring Well Network for laboratory analysis for CCR constituents and performed statistical analysis of the collected samples. EAL installed a Certified Monitoring Well Network for the CCR Unit in accordance with 40 CFR 257.90 and 257.91. The Certified Monitoring Well Network consists of 23 wells installed into two stratigraphic units as follows:

- Eight wells are installed into an upper silty and clayey sand unit (Stratum I), which are designated as "S" monitoring wells; and
- Fifteen wells are installed into a lower silty and clayey sand and clay unit (Stratum III), which are designated as "D" monitoring wells.

Pursuant to 40 CFR 257.91(f), EAL obtained certification by a qualified Arkansas-registered professional engineer (P.E.) stating that the Certified Monitoring Well Network has been designed and constructed to meet the requirements of 40 CFR 257.91 (see Groundwater Monitoring System Certification, TRC, February 26, 2018) of the CCR Rule (TRC 2018b).

As discussed above, Stratum I and Stratum III are currently being monitored pursuant to the CCR Rule. A groundwater sampling and analysis program including selection of statistical procedures to evaluate groundwater data was prepared per the CCR Rule (see Groundwater Sampling and Analysis Plan (FTN, 2017b)). Eight quarterly background CCR detection monitoring events were performed from October 2015 through June 2017 in accordance with 40 CFR 257.93(d) and 257.94(b). The eight quarterly detection monitoring background samples were analyzed for Appendix III to Part 257 – Constituents for Detection Monitoring and for Appendix IV to Part 257 – Constituents for Assessment Monitoring.

Following completion of quarterly background detection monitoring in June 2017, EAL implemented semiannual detection monitoring per 40 CFR 257.94(b) for the CCR Unit. The first semiannual detection monitoring event was performed in August 2017 (2nd Half 2017). Subsequent detection monitoring events, with associated verification sampling when appropriate, have been performed on a semiannual basis since August 2017. EAL performed the most recent semiannual detection monitoring event (2nd Half 2023) in November 2023. Per the CCR Rule, the semiannual detection monitoring event samples were analyzed for Appendix III constituents.

After completion of each semiannual detection monitoring event, the Appendix III laboratory analytical data were statistically evaluated to identify potential SSIs for Appendix III constituents above background levels. In accordance with 40 CFR 257.93(f)(6), EAL obtained certification by a qualified Arkansas-registered P.E. stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR Unit (see Statistical Methods Certification, TRC, October 16, 2017).

Pursuant to 40 CFR 257.93(h), statistical analysis and re-analysis of the laboratory analytical data were performed to identify potential SSIs for the 2nd Half 2023 semiannual detection monitoring event. A total of 16 SSIs were identified for five Appendix III constituents: boron, calcium, fluoride, sulfate, and TDS. SSIs were identified in four Stratum I and two Stratum III monitoring wells.

1.2 Purpose

Pursuant to 40 CFR 257.94(e)(2), EAL may demonstrate that a source other than the CCR Unit caused the SSIs identified or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The purpose of this report is to provide written documentation of the successful ASD for the SSIs identified for the 2nd Half 2023 semiannual detection monitoring event, pursuant to 40 CFR 257.94(e)(2) of the CCR Rule.

Section 2
Hydrogeology and Geochemistry

2.1 Site Hydrogeology

Historical subsurface investigations have identified the following four stratigraphic horizons of the Jackson Group (Kresse, et. al., 2014) and their associated hydrogeology for the CCR Unit and the CADL:

- **Stratum I. Interbedded Clay, Silt, and Sand** Stratum I ranges from approximately 10 to 54-feet thick and consists of interbedded silty sand (SM), clayey sand (SC), silts (ML and MH), and clay (CL and CH). Occasional deposits of carbonaceous material are present throughout Stratum I. Based on the results of in-situ slug tests, hydraulic conductivity values range from 4.0 x 10^{-5} to 4.0 x 10^{-4} cm/sec;

- **Stratum II. Clay** Stratum II ranges from approximately 14 to 49-feet thick and consists of a very stiff clay (CH) with occasional silt and/or very fine-grained sand laminations. Occasional deposits of carbonaceous mater are present throughout Stratum II. Based on the results of in-situ slug tests, hydraulic conductivity values range from 4.7 x 10^{-6} to 1.4 x 10^{-8} cm/sec;

- **Stratum III. Clayey and Silty Sand** Stratum III ranges from approximately 5 to 19-feet thick and consists primarily of clayey sand (SC) and/or silty sand (SM). A poorly graded, fine-grained sand (SM) was identified in one piezometer. The upper limits of Stratum III were encountered at elevations of 263 to 289-feet NGVD (depths ranging from 19 to 97-feet bgs). Based on results of in-situ slug tests, hydraulic conductivity was determined to be spatially variable and ranged from 4.2 x 10^{-7} to 2.5 x 10^{-4} cm/sec; and
- **Lower Confining Unit below Stratum III.** is a very dark grey, fat clay that is highly laminated with light grey silt and very fine-grained sand. In-situ permeability testing of this unit determined a vertical hydraulic conductivity of 3.7 x 10^{-8} cm/s. This Lower Confining Unit was encountered during aquifer characterization efforts around the recycle ponds conducted in 2018.

It was concluded that Stratum I was not laterally continuous across the approximately 153-acre landfill. The estimated calculated seepage velocities in Stratums I and III were as follows:

- Stratum I: 2 to 20 feet/year; and
- Stratum III: <1 to 10 feet/year.

While Stratum I and Stratum III have been monitored per the CCR Rule since October 2015, it is unclear whether Stratum I and Stratum III are aquifers that are capable of providing sustainable well yields consistent with USEPA aquifer use criteria (*e.g.*, 0.1 gallons per minute). This uncertainty is based on the following evidence:

- Stratum I is present to the west of the CADL and only present within the western portion of the ADEQ-permitted boundaries of the CADL, approximately corresponding to the boundaries of the closed portions of the CADL. The CCR Unit and Stratum I are not continuous to the east across the entire footprint of the CADL;
- In-situ hydraulic conductivities are low to very low for both Stratum I and Stratum III, indicating that sustainable well yields may not be obtainable from Stratum I and Stratum III at volumes that meet the minimum USEPA well use criteria (*e.g.*, 0.1 gallons per minute); and
- During the quarterly and semiannual detection monitoring events performed from October 2015 through November 2023, which have been performed using the low-flow purge and sample methodology, the sampling teams have consistently documented that turbidity values are often greater than 10 Nephelometric Turbidity Units (NTU). Furthermore, wells have been pumped dry during sampling for both Stratum I and Stratum III, indicating that neither sustainable well yields nor useable drinking water are associated with Stratum I and Stratum III.

To evaluate this uncertainty, EAL began performing hydrogeologic investigations during 2019 and 2020, continuing through 2024 to evaluate both the stratigraphy and hydrogeology beneath the CCR Unit and to identify the aquifer(s) making up the uppermost aquifer system at the CCR Unit and CADL and the appropriateness of the current Certified Monitoring Well Network.

2.2 General Groundwater Quality

Regionally, groundwater quality in the Jackson Group consists of a sodium- and calcium-sulfate water type, with generally poor water quality (FTN 2014, Kresse et. al 2014). Reported water quality concentrations for select secondary drinking water contaminants compared to USEPA secondary maximum contaminant levels (MCLs) are provided in the table below.

Jackson Group Groundwater Water Quality

Constituent	Concentration Range Low	Concentration Range High	USEPA Secondary MCL
Iron (mg/L)	0.05	19	0.3
pH (s.u.)	2.9	8.0	6.5 - 8.5
Sulfate (mg/L)	0.6	3,080	250
TDS (mg/L)	11	5,330	500

As noted in the table above, the natural range of groundwater quality within the Jackson Group, which includes both Stratum I and Stratum III, exceeds the secondary drinking water MCLs established by the USEPA for drinking water or, in the case of pH, is less than its secondary MCL. Finally, the results of historical groundwater monitoring at the Plant conducted from 1991 through 1996 showed that normal indicator parameters were masked by naturally elevated concentrations of the monitored constituents (FTN 2014, TRC 2018a).

2.3 Groundwater Geochemistry

Understanding the geochemistry of groundwater is essential to examining the groundwater monitoring data, explaining the relationships between the characteristics, and analyzing natural as well as anthropogenic impacts on groundwater systems. Source apart, geochemical processes play an important role in controlling the chemical composition of groundwater, including carbonate equilibrium, oxidation-reduction reactions and adsorption-desorption processes. Based the site geological conditions, several groundwater parameters are discussed as follows, including boron, fluoride, sulfate, calcium, TDS and pH.

2.3.1 Boron in Groundwater

Boron is normally considered as a minor constituent in groundwater as it is generally present in low concentrations (Palmucci & Rusi, 2014). Source apart, the primary origin of boron in groundwater is the process of sorption and desorption to the mineral surfaces including rocks and soils (Ravenscroft & McArthur, 2004). The regulatory guideline values of boron in drinking water are given at 0.5 mg/L by the World Health Organization (WHO) and 0.9 mg/L by USEPA in human consumption for long-term exposure (WHO, 2008; USEPA, 2008). Boron is often cited as contamination tracer and usually occurs as a non-ionized form as H_3BO_3 in soils at pH<8.5, but above this pH, it exists as an anion, $B(OH)_4^-$ (Upadhyaya et al., 2014).

The factors that may influence the boron concentration in groundwater include weathering, human activity, evaporative concentration, ion-exchange, electrical conductivity (EC), and pH. Ravenscroft & McArthur (2004) studied the mechanism of regional boron enrichment in groundwater and the results indicated that the main process caused high boron enrichment in groundwater was the flushing by fresh groundwater rather than geological setting, climate or age. The desorption of Boron from mineral surfaces could be affected by pH, ionic strength, salinity and HCO_3/CO_3. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron adsorption favors high pH and boron desorption favors low pH on rocks, soils and organic matters (Hollis et al., 1988; Keren & Communar, 2009; Tabelin et al., 2014).

A few more research studies confirmed that the presence of boron in groundwater depends on the EC (salinity), such that it increases with increasing EC. Halim et al. (2010) reported that the increasing of Cl^- concentration contributes to increase in EC value since a strong linear correlation ($R^2 = 0.88$) between EC and Cl^- was observed. Palmucci & Rusi (2014) observed a clear correlation between the high concentrations of boron and the chloride-sodium facies, which are characterized by high saline content, negative redox potential, and low value of the SO_4^{2-}/Cl^- ratio. Rodriguez-Espinosa et al. (2020) found that the Boron concentration in groundwater was related to the SO_4^{2-} and age affect.

Regarding the Boron concentration level on the sites, the main source of Boron is more natural than anthropogenic. Therefore, the detected increasing of Boron concentration is likely due to the geochemistry condition changes, such as pH, ion exchanges, EC and salinity.

2.3.2 Fluoride in Groundwater

The common natural source of fluoride in groundwater is the dissolution of natural fluoride-bearing mineral, such as fluorspar, fluorapatite, amphiboles, hornblende, tremolite and biotite (Luo et al., 2018). The natural concentration of fluoride in groundwater depends on the geological, chemical and physical characteristics of the aquifer, the porosity and acidity of the soil and rocks, the surrounding temperature, the action of other chemical elements, depth of the aquifer and intensity of weathering (Brindha & Elango, 2011). Due to the concentration range of this site, geochemical process is the main factor controlling fluoride in groundwater.

Ion exchange, evaporation, adsorption-desorption, ion competition, mixing, salinization and anthropogenic pollution are geochemical processes that can take place and cause the occurrence of fluoride in groundwater (Luo et al., 2018). Main factors that might cause the increase of fluoride concentration in groundwater include alkaline pH, high concentration of sodium and bicarbonate, and low concentration of calcium.

Alkaline pH can increase the fluoride dissolution from mineral surfaces into groundwater. Saxena & Ahmed (2001) observed that alkaline conditions with pH ranging between 7.6 and 8.6 are favorable for dissolution of fluorite mineral from the host rocks.

Sodium bicarbonate type waters are typical of high fluoride waters. Many research studies have demonstrated positive correlations between fluoride and both bicarbonate and sodium as well as an inverse relation between fluoride and calcium (Mondal et al., 2014; Guo et al., 2012; Chen et al., 2020). The chemical reactions for the dissolution of fluoride in the presence of high bicarbonate and sodium, and low calcium content is described as follows (Kimambo et al., 2019):

$$\mathrm{Na^+ + \ +HCO_3^- - \rightarrow NaHCO_3}$$

$$\mathrm{CaF_2 + \ +2NaHCO_3 \ \rightarrow CaCO_3 + 2Na^+ + 2F^- + \ H_2O + CO_2}$$

Luo et al. (2018) reported that cation exchange can increase the fluoride concentration when increasing the Na/Ca molar ratio via ion complexation, and salt effect can further increase the fluoride dissolution from mineral surfaces.

In addition, evaporation is another potential reason for increases in the fluoride concentration in shallow groundwater. Evaporation could directly remove water from shallow aquifers and elevate the fluoride concentration. Evaporation could increase ion concentrations, leading to the precipitation of some major minerals, reducing the calcium concentration, and favoring the dissolution of fluoride. Anthropogenic sources may also increase the fluoride in groundwater, such as pesticide and fertilizer use, and industrial waste discharge.

2.3.3 Sulfate in Groundwater

Sulfate is ubiquitous in groundwater, with both natural and anthropogenic sources. There are many potential sources of sulfate including mineral dissolution, atmospheric deposition, and other anthropogenic sources (mining, fertilizer, synthetic detergents, industrial wastewater etc.) (Miao et al., 2012). As water moves through soil and rock formations that contain sulfate minerals, some of the sulfate dissolves into the groundwater. Minerals that contain sulfate include magnesium sulfate (Epsom salt), sodium sulfate (Glauber's salt), and calcium sulfate (gypsum). Gypsum is an important contributor to the high levels of sulfate in many aquifers around the world. Higher levels of sulfate in groundwater are common in the western part of the United States (MDH, 2008).

Sulfate is mobile in soil and inputs to soil will impact groundwater eventually. Many research studies indicated that atmospheric deposition, dissolution of gypsum, oxidation of sulfide mineral and anthropogenic inputs will contribute to sulfate. Based on the geological condition of the site, atmospheric deposition and anthropogenic activities could be the main factors (Einsiedl & Mayer, 2005; Pu et al., 2012).

2.3.4 Calcium in Groundwater

Calcium is one of the most important ionic constituents in groundwater (Razowska-jaworek, 2014). Water-rock interaction occurs when water meets rocks or minerals, such as limestone, marble, calcite, dolomite, gypsum, fluorite and apatite. Natural dissolution of carbonate rocks and minerals is the primary source of calcium in groundwater (Jiang et al., 2009). Calcium is an important determinant of water hardness (Ca^{2+}), while magnesium is the other hardness determinant. The most common shallow groundwater type is Ca-HCO_3 dominated and Ca(Mg)-HCO_3 dominated.

A literature review indicates the major factors that may influence the calcium concentration in groundwater include rock weathering, pH, electrical conductivity and anthropogenic activities (mining, concrete material dissolution, fertilizer etc.) (Hájek et al., 2021; Schot & Wassen, 1993; Shi et al., 2018). Based on the geological condition of the site, pH, electrical conductivity and anthropogenic activities could be the potential reasons for the calcium concentrations.

2.3.5 TDS in Groundwater

Total dissolved solids represent the combined total of inorganic and organic substances contained in the groundwater, and it can be a general indicator of water quality. These solids are primarily minerals, salts, and organic matters, which may originate from sources such as the weathering of minerals, urban runoff, sewage, effluent discharges, agriculture, decaying organisms, and other human activities (de-icing roads, water softer use). Common salts that contribute to TDS are sodium, chloride, calcium, magnesium, potassium, sulfates, and bicarbonates (Olumuyiwa I. Ojo, 2012).

TDS levels in groundwater is usually higher than surface water due to the longer contact time with the underlying rocks and sediments. Since many minerals are water soluble, high concentrations can accumulate over time, through the constantly reoccurring process of precipitation and evaporation.

TDS is related to other water quality parameters like hardness, which may occur if the high TDS content is due to the presence of carbonates. A few research studies simulated the relationship between TDS and other groundwater parameters such as EC and salinity, using different models. Due to the complicated geological conditions, the observation was not consistent at different study sites (Atekwana et al., 2004; Banadkooki et al., 2020; Poursaeid et al., 2020).

2.3.6 pH in Groundwater

Groundwater pH is an important aspect to consider in the monitoring and management of CCR landfill sites, as changes in pH can affect the quality of groundwater and the potential for release of contaminants. The potential reasons for pH changes in groundwater are as following:

- Changes in water flow patterns. Changes in the flow patterns of groundwater can cause the mixing of different water sources with varying pH levels, resulting in an overall increase in the pH of the groundwater at the site.

- Drainage from adjacent areas. Groundwater from adjacent areas with higher pH levels may be flowing into the landfill site and raising the overall pH of the groundwater at the site.

- Changes in geochemistry conditions. Geochemistry can play a role in affecting the pH of groundwater at a landfill site, such as mineral dissolution, pH buffering capacity, redox reactions, and groundwater-rock interactions (Edmunds & Smedley, 1996; Wilkin & DiGiulio, 2010).

    - Mineral dissolution. Minerals present in the surrounding soil can dissolve and release basic or acidic compounds into the groundwater, affecting the pH, e.g., the dissolution of calcium carbonate can increase the pH of the groundwater by releasing carbonate ions, the dissolution and oxidation of pyrite can decrease the pH of groundwater by releasing hydrogen ions.

    - pH buffering capacity. The presence of minerals with a high buffering capacity in the surrounding soil can help to regulate the pH of the groundwater, preventing drastic changes in response to other factors. For example, the presence of minerals like calcite and dolomite can buffer the groundwater pH, helping to maintain a relatively stable pH even in the presence of acidic compounds.

- Redox reactions. The oxidation-reduction reactions that occur in the surrounding soil can impact the pH of the groundwater. The oxidation of iron-sulfide minerals can result in the release of sulfuric acid, which can lower the pH of groundwater. The oxidation of reduced sulfur species to sulfate, which can increase the pH of groundwater (Jacks, 2017).

- Groundwater-rock interactions. The interaction between groundwater and the rocks and minerals in the surrounding soil can affect the pH of the groundwater. For example, groundwater can dissolve or release basic or acidic compounds from the minerals in the rock, affecting the pH.

Section 3
Alternate Source Demonstration

Pursuant to 40 CFR 257.94(e)(2), EAL may demonstrate that a source other than the CCR Unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. As discussed previously, the 2nd Half 2023 semiannual detection monitoring event was performed in November 2023. Statistical analysis of the 2nd Half 2023 semiannual detection monitoring data was performed pursuant to 40 CFR 257.93(f) and (g) and in accordance with the Statistical Methods Certification (TRC 2017b) and the Statistical Analysis Plan (FTN 2017a). Based on either increasing trends at 98% confidence levels using Sen's Slope test and/or intrawell prediction limits statistical analyses, the following 16 SSIs were identified and summarized in Table 1:

- Fluoride (MW-102S);
- Calcium, fluoride, sulfate and TDS (MW-106S);
- Boron and fluoride (MW-110S);
- Boron, calcium, fluoride, sulfate, and TDS (MW-111S);
- Fluoride (MW-105D);
- Boron, calcium, and TDS (MW-112D).

Other Appendix III constituent concentrations were within their trends at 98% confidence levels using Sen's slope test and/or intrawell prediction limits in the CCR Rule groundwater monitoring system wells.

A discussion for each of the individual SSIs identified for the Stratum I and III wells and associated evidence demonstrating that the 16 SSIs were not caused by a release from the CCR Unit is provided in the subsections below.

Table 1 SSIs – November 2023 Semiannual Detection Monitoring Event

Stratum	Well	Analyte	Value (mg/L)	Intrawell Prediction Limit (mg/L)	SI by Sen's Slope test
I	MW-102S	Fluoride	0.663	0.195	N
	MW-106S	Calcium	40.5	23.8	Y
	MW-106S	Fluoride	0.695	0.625	Y
	MW-106S	Sulfate	698	604	Y
	MW-106S	TDS	1040	827	Y
	MW-110S	Boron	1.69	1.586	Y
	MW-110S	Fluoride	0.444	0.373	Y
	MW-111S	Boron	6.67	4.495	Y
	MW-111S	Calcium	117	36.8	Y
	MW-111S	Fluoride	0.869	0.283	Y
	MW-111S	Sulfate	827	398	Y
	MW-111S	TDS	1370	541	Y
III	MW-105D	Fluoride	0.31	0.200	N
	MW-112D	Boron	0.286	0.252	N
	MW-112D	Calcium	41.1	21.3	Y
	MW-112D	TDS	295	205	Y

3.1 pH Values Across the Site

During the June 2023 sampling event, notably low pH values were recorded across the site, especially in the Stratum III monitoring wells. Ten pH values of the monitoring wells were detected below the intrawell prediction limit ranges. The pH values of the monitoring wells detected during the November 2023 sampling event returned to normal ranges aligning with historical data, which suggests that the anomalous low pH values observed during the June 2023 sampling event may be attributed to potential field detection instruments inaccuracies or sampling errors rather than indicating the presence of contamination sources.

3.2 Fluoride at MW-102S

The fluoride SSI identified at MW-102S is a result of potential laboratory inaccuracies or sampling errors, groundwater geochemistry conditions, and potential infiltration of surface water not related to CCR Unit. The following evidence supports this determination:

- Fluoride was detected in MW-102S at a concentration of 0.663 mg/L in the November 2023 sample. Compared to the historical data which is below detection limit of 0.15 mg/L, the fluoride concentration increased approximately 4 times. This concentration exceeded the intrawell prediction limit of 0.195 mg/L. No significant trend was detected by the Mann-Kendal statistical analysis. MW-102S is one of the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S) which have the fluoride concentrations below 0.15 mg/L in the past. However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water maximum contaminant level (MCL) standard of 4.0 mg/L.

- The fluoride exceedance may be attributed to potential laboratory inaccuracies or sampling errors.

- As discussed in Section 2.3, pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. Fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. Ion exchange process with the presence of high sodium and bicarbonate could result in the increasing of fluoride in groundwater.

- Surface water infiltration may have impacts to the groundwater quality, however, the impacts are not related to the CCR Unit since MW-102S located upgradient to the CCR Unit.

3.3 Calcium at MW-106S

The calcium SSI identified at MW-106S is a result of the acidic geochemistry condition in groundwater, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Calcium was detected in MW-106S at a concentration of 40.5 mg/L in the November 2023 sample. Compared to the value of 46.8 mg/L in the June 2023 sample, the calcium concentration decreased approximately 13%. The Mann-Kendal statistic of 171 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, pH and EC could affect calcium concentrations in groundwater. Low pH values of 3.8-4.0 were detected in the past few years, which indicates the groundwater in this area is acidic and it was related to pre-CCR Rule disposal source or natural geochemistry conditions. The acidic groundwater condition favors the dissolution of calcium from soil and mineral surfaces to water phase. The significant increasing trend of calcium from 16 mg/L in 2015 to 46.8 mg/L in 2023 could be a result of the acidic geochemistry condition. The increasing cation and anion concentrations will also lead to the increasing EC, which will affect other metals dissolution.

- The concentrations of calcium in MW-101S, which is a background well, have varied from 14 to 98.5 mg/L during the overall time period of CCR detection monitoring. The calcium concentration of 98.5 mg/L for MW-101S is greater than the calcium concentration of 40.5 mg/L measured at MW-106S during the 2nd Half 2023 semiannual detection monitoring event. Therefore, the calcium concentration measured at MW-106S is within the range of natural variation in background groundwater quality.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-106S, it appears that MW-106S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-106S are likely more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR

Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.4 Fluoride at MW-106S

The fluoride SSI identified at MW-106S is a result of groundwater geochemistry conditions, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Fluoride was detected in MW-106S at a concentration of 0.695 mg/L in the November 2023 sample. Compared to the value of 0.728 mg/L in the June 2023 sample, the fluoride concentration decreased by 5%. The Mann-Kendal statistic of 143 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. This concentration exceeded the intrawell prediction limit of 0.625 mg/L and the maximum fluoride concentrations of 0.1 to 0.135 mg/L measured in the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S). However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water maximum contaminant level (MCL) standard of 4.0 mg/L.

- The fluoride concentration in MW-106S stayed in a narrow range of 0.6-0.68 mg/L in the past two years. pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. As discussed in Section 2.3, fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. With the increasing trend of calcium in the groundwater, ion exchange process with high sodium and bicarbonate can result in the increasing of fluoride in groundwater.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-106S, it appears that MW-106S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.5 Sulfate at MW-106S

The sulfate SSI identified at MW-106S is a result of natural geochemistry condition in soil and groundwater, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Sulfate was detected in MW-106S at a concentration of 698 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 604 mg/L. Compared to the value of 808 mg/L in the June 2023 sample, the sulfate concentration decreased by 14%. The Mann-Kendal statistic of 158 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. The increasing trend of sulfate was consistent with TDS. The elevated sulfate concentration in the past three years could be caused by the acidic geochemistry condition discussed above or an anthropogenic source since sulfate is mobile in soils and can get into groundwater via surface water infiltration. Another potential reason is the natural occurrence of sulfide minerals in the soil, such as pyrite. The oxidation of sulfide minerals will slowly release sulfate and hydrogen ion into groundwater, which will lead to the increasing of sulfate and decreasing of pH.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-106S, MW-106S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.6 TDS at MW-106S

The TDS SSI identified at MW-106S is a result of the acidic groundwater geochemistry condition, sodium sulfate source, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- TDS was detected in MW-106S at a concentration of 1,040 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 827 mg/L. The Mann-Kendal statistic of 152 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. Compared to the TDS value of 1,200 mg/L in the June 2023 sample, 979 mg/L in the December 2022 sample, 920 mg/L in the June 2022 sample and 1090 mg/L in the November 2021 sample, the TDS was stable. As discussed in Section 2.2, the Jackson Group groundwater is sodium- and calcium-sulfate water type. Sodium could be another main contribution to the TDS exceedance with calcium and sulfate. High sodium concentration can also cause the fluoride exceedance. The acidic groundwater could be one of the potential reasons. An alternate source containing sodium sulfate should also be considered, which can be mineral dissolution, surface water flux or atmospheric deposition.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-106S, MW-106S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.7 Boron at MW-110S

The Boron SSI identified at MW-110S is a result of the acidic groundwater geochemistry condition and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Boron was detected in MW-110S at a concentration of 1.69 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 1.586 mg/L. Compared to the value of 2.24 mg/L in the June 2023 sample, the boron concentration decreased by 25%. The Mann-Kendal statistic of 165 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, the main factors that may influence boron concentration in groundwater are pH and EC. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron in groundwater will increase with the increasing of EC. The historical data review shows the relatively low salts concentrations in MW-110S area, which indicates EC is not the factor causing the boron increasing trend. Low pH values of 4.80 and 4.16 were detected in the November 2023 and June 2023 samples, respectively. The acidic groundwater condition favors the boron dissolution from soil and mineral surface. Based on the consistent boron levels in groundwater, the significant increasing trend of boron is more likely relative to the acidic geochemistry condition other than a contamination source.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-110S, it appears that MW-110S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-110S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.8 Fluoride at MW-110S

The fluoride SSI identified at MW-110S is a result of natural groundwater geochemistry conditions, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-110S. The following evidence supports this determination:

- Fluoride was detected in MW-110S at a concentration of 0.444 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 0.373 mg/L and the maximum fluoride concentrations of 0.1 to 0.135 mg/L measured in the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S). Compared to the value of 0.228 mg/L in the June 2023 sample, the fluoride concentration increased by 95%. The Mann-Kendal statistic of 80 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water MCL of 4.0 mg/L. pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. As discussed in Section 2.3.2, fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. The relative low concentration of calcium and high concentration of sodium in the groundwater could result in the increasing of fluoride in groundwater.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-110S, MW-110S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-110S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-110S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-110S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-110S, it appears likely that surface water infiltration has impacted the MW-110S monitoring results.

3.9 Boron at MW-111S

The boron SSI identified at MW-111S is a result of natural groundwater geochemistry conditions with low pH and high EC, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Boron was detected in MW-111S at a concentration of 6.67 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 4.495 mg/L. Compared to the value of 5.98 mg/L in the June 2023 sample, the boron concentration increased by 12%. The Mann-Kendal statistic of 165 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, the main factors that may influence boron concentration in groundwater are pH and EC. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron in groundwater will increase with the increasing of EC. A low pH value of 3.86 was detected in the November 2023 sample and the pH of groundwater in the area of MW-111S stayed in a steady range of 3.6 to 4.5 in the past five years. The acidic groundwater condition favors the boron dissolution from soil and mineral surface. The increasing TDS and sulfate in MW-111S demonstrates that the groundwater in this area has relatively high EC, which will cause the increasing of boron concentration in groundwater. Based on the consistent boron levels, the significant increasing trend of boron is more likely relative to the geochemistry conditions with low pH and high EC other than a contamination source.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.10 Calcium at MW-111S

The calcium SSI identified at MW-111S is a result of natural groundwater geochemistry conditions with low pH and high EC, potential impact of CCR disposed at the CADL prior to

October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Calcium was detected in MW-111S at a concentration of 117 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 36.8 mg/L. Compared to the value of 118 mg/L in the June 2023 sample, the calcium concentration was consistent. Normality analysis of the calcium data set at MW-111S was non-normal requiring trend analysis of the data set to determine a potential significance increase. The Mann-Kendal statistic of 186 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, pH and EC could affect calcium concentrations in groundwater. A low pH value of 3.86 was detected in the November 2023 sample and the pH of groundwater in the area of MW-111S stayed in a steady range of 3.6 to 4.5 in the past five years. The acidic condition favors the dissolution of calcium from soil and mineral surfaces to water phase. The relatively high EC in groundwater discussed above can also increase the calcium concentration. The significant increasing trend of calcium could be a result of the natural geochemistry conditions with low pH and high EC.

- Background concentrations of calcium have varied from 14 to 98.5 mg/L at upgradient monitoring well MW-101S. The calcium concentration of 117 mg/L at MW-111S during the 2nd Half 2023 semiannual detection monitoring event is beyond but close to the top background concentration. Therefore, the calcium exceedance is still in the range of natural variation in background groundwater quality.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.11 Fluoride at MW-111S

The fluoride SSI identified at MW-111S is a result of natural groundwater geochemistry conditions, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Fluoride was detected in MW-111S at a concentration of 0.869 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 0.283 mg/L and the maximum fluoride concentrations of 0.1 to 0.135 mg/L measured in the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S). Compared to the value of 0.85 mg/L in the June 2023 sample, the fluoride concentration was consistent. The Mann-Kendal statistic of 180 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water MCL of 4.0 mg/L. pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. As discussed in Section 2.3, fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. With the increasing trend of calcium in the groundwater, ion exchange process with high sodium and bicarbonate can result in the increasing of fluoride in groundwater. The fluoride increasing trend could also be a result of continuous dissolution of salts from the soils and minerals associated with the increased TDS.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.12 Sulfate at MW-111S

The sulfate SSI identified at MW-111S is a result of natural groundwater geochemistry condition of low pH and potential oxidation of sulfide minerals, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Sulfate was detected in MW-111S at a concentration of 827 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 398 mg/L. Compared to the value of 854 mg/L in the June 2023 sample, the sulfate concentration was consistent. The Mann-Kendal statistic of 168 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. The sulfate increasing was consistent with the TDS increasing, which indicated that more salts were dissolved into groundwater. It could be caused by the acidic geochemistry condition discussed above or an anthropogenic source since sulfate is soluble in soils and can get into groundwater via surface water infiltration. Another potential reason is the naturally occurrence of sulfide minerals in the soil, such as pyrite. The oxidation of sulfide minerals will slowly release sulfate and hydrogen ion into groundwater, which will lead to the increasing of sulfate and decreasing of pH.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.13 TDS at MW-111S

The TDS SSI identified at MW-111S is a result of the acidic groundwater geochemistry conditions with natural occurrence of sulfide minerals, sodium sulfate source, the potential impact of CCR disposed at the CADL prior to October 19, 2015 and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- TDS was detected in MW-111S at a concentration of 1,370 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 541 mg/L. Compared to the value of 1,270 mg/L in the June 2023 sample, the TDS concentration was consistent. The Mann-Kendal statistic of 188 exceeded the critical value of 78 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.2, the Jackson Group groundwater is sodium- and calcium-sulfate water type. Sodium could be another main contribution to the TDS exceedance with the increasing of calcium and sulfate. High sodium concentration can also cause the fluoride exceedance. The acidic groundwater could be one of the potential reasons. An alternate source containing sodium sulfate should also be considered, which can be mineral dissolution, surface water flux or atmospheric deposition.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.14 Fluoride at MW-105D

The fluoride SSI identified at MW-105D is a result of potential laboratory inaccuracies or sampling errors, groundwater geochemistry conditions, and potential infiltration of surface water not related to CCR Unit. The following evidence supports this determination:

- Fluoride was detected in MW-105D at a concentration of 0.31 mg/L in the November 2023 sample. Compared to the historical data which is below detection limit of 0.15 mg/L, the fluoride concentration increased approximately 2 times. This concentration exceeded the intrawell prediction limit of 0.20 mg/L. No significant trend was detected by the Mann-Kendal statistical analysis. However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water maximum contaminant level (MCL) standard of 4.0 mg/L.

- The fluoride exceedance may be attributed to potential laboratory inaccuracies or sampling errors.

- As discussed in Section 2.3, pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. Fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. Ion exchange process with the presence of high sodium and bicarbonate could result in the increasing of fluoride in groundwater.

- Surface water infiltration may have impacts to the groundwater quality; however, the surface water impacts are not related to the CCR Unit since MW-105D located upgradient to the CCR Unit.

3.15 Boron at MW-112D

The boron SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Boron was detected in MW-112D at a concentration of 0.286 mg/L in the November 2023 sample, which was consistent with 0.287 mg/L in the June 2023 sample. This concentration exceeds the intrawell prediction limit of 0.252 mg/L. Boron concentrations measured at MW-118D (background well for Stratum III) have ranged from 0.274 to 0.355 mg/L. Therefore, the boron exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of boron measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of boron at MW-112D likely represents either potential pre-CCR Rule migration from historic fill or background groundwater quality for Stratum III.

3.16 Calcium at MW-112D

The calcium SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Calcium was detected in MW-112D at a concentration of 41.1 mg/L in the November 2023 sample, which was consistent with 39.5 mg/L in the June 2023 sample. This concentration exceeds the intrawell prediction limit of 21.3 mg/L. The Mann-Kendal statistic of 224 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. The pH of 7.57 detected in November 2023 sample and the historical data review shows MW-112D area has a neutral pH condition in groundwater, therefore, the pH of 5.65 detected in June 2023 sample could be caused by potential field instrument inaccuracies or sampling errors. The relatively low TDS indicated that EC in groundwater is not a factor to the calcium exceedance. Calcium concentrations measured at MW-118D (background well for Stratum III) have ranged from 68.4 to 83.2 mg/L. Therefore, the calcium exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of calcium measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- As discussed previously, groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR Unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of calcium at MW-112D likely represents either potential pre-CCR Rule migration from historic fill or background groundwater quality for Stratum III.

3.17 TDS at MW-112D

The TDS SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- TDS was detected in MW-112D at a concentration of 295 mg/L in the November 2023 sample, which exceeded the intrawell prediction limit of 205 mg/L. Compared to the value of 308 mg/L in the June 2023 sample, the TDS concentration was consistent. The Mann-Kendal statistic of 205 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. TDS concentrations measured at MW-118D (background well for Stratum III) have ranged from 415 to 484 mg/L. A review of groundwater parameters in Stratum III indicates that sulfate is a great contributor to TDS, but the sulfate concentration at MW-112D is not detectable (less than 5 mg/L). Therefore, the TDS exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of TDS measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- As discussed previously, groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR Unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of TDS at MW-112D likely represents either potential pre-CCR Rule migration from the historic fill or background groundwater quality for Stratum III.

Section 4
Conclusions

The information provided in this report serves as the ASD prepared in accordance with 40 CFR 257.94(e)(2) of the CCR Rule. Statistical evaluation identified 16 potential SSIs in four monitoring wells in Stratums I and two monitoring wells in Stratum III. This ASD has demonstrated the following lines of reasoning that support alternative sources for the identified SSIs:

- The monitoring data in the November 2023 sampling event indicated that the low pH values detected sitewide especially in Stratum III in the June 2023 sampling event could be possibly due to field detection instrument inaccuracies or potential sampling errors rather than indicative of contamination sources.

- The SSIs identified in MW-106S, MW-110S, and MW-111S are likely releases from historic fill or portions of the CADL closed before the effective date of the CCR Rule (October 19, 2015); and

- Historical data indicated acidic groundwater geochemistry conditions in MW-106S, MW-110S and MW-111S. The SSIs identified in these wells are related to the natural groundwater geochemistry conditions, such as low pH, high electrical conductivity, potential presence of sulfide minerals in soils and relatively high oxidation-reduction potential; and

- Surface water that has come into contact with on-site CCR and has migrated into the subsurface.

- The fluoride SSIs identified in MW-102S and MW-105D could be a result of potential laboratory inaccuracies or sampling errors, or natural groundwater geochemistry conditions (relative low concentration of calcium and high concentration of sodium).

- The 3 SSIs identified in Stratum III well MW-112D are mostly within the natural variation in groundwater quality compared to MW-118D, which likely represents background natural groundwater quality of Stratum III due to its location to CCR Unit and groundwater flow velocities.

Therefore, the SSIs determined based on statistical analysis of the 2nd Half 2023 semiannual detection monitoring event performed in November 2023 are not due to a release from the CCR

Unit to Stratums I and III of the Jackson Group. Based on the information provided in this ASD report, EAL will continue to conduct semiannual detection monitoring in accordance with 40 CFR 257.94 at the Certified Monitoring Well Network for the CCR Unit.

Section 5
Certification

I hereby certify that the alternative source demonstration presented within this document for the Entergy White Bluff Plant Coal Ash Disposal Landfill CCR Unit has been prepared to meet the requirements of Title 40 CFR §257.94(e) 2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e) 2.

Name: Nakia W. Addison P.E.

Company: TRC Environmental Corporation

Expiration Date: 12/31/2025

Date: 1/31/2025

NO. 22533

1/31/2025

Section 6
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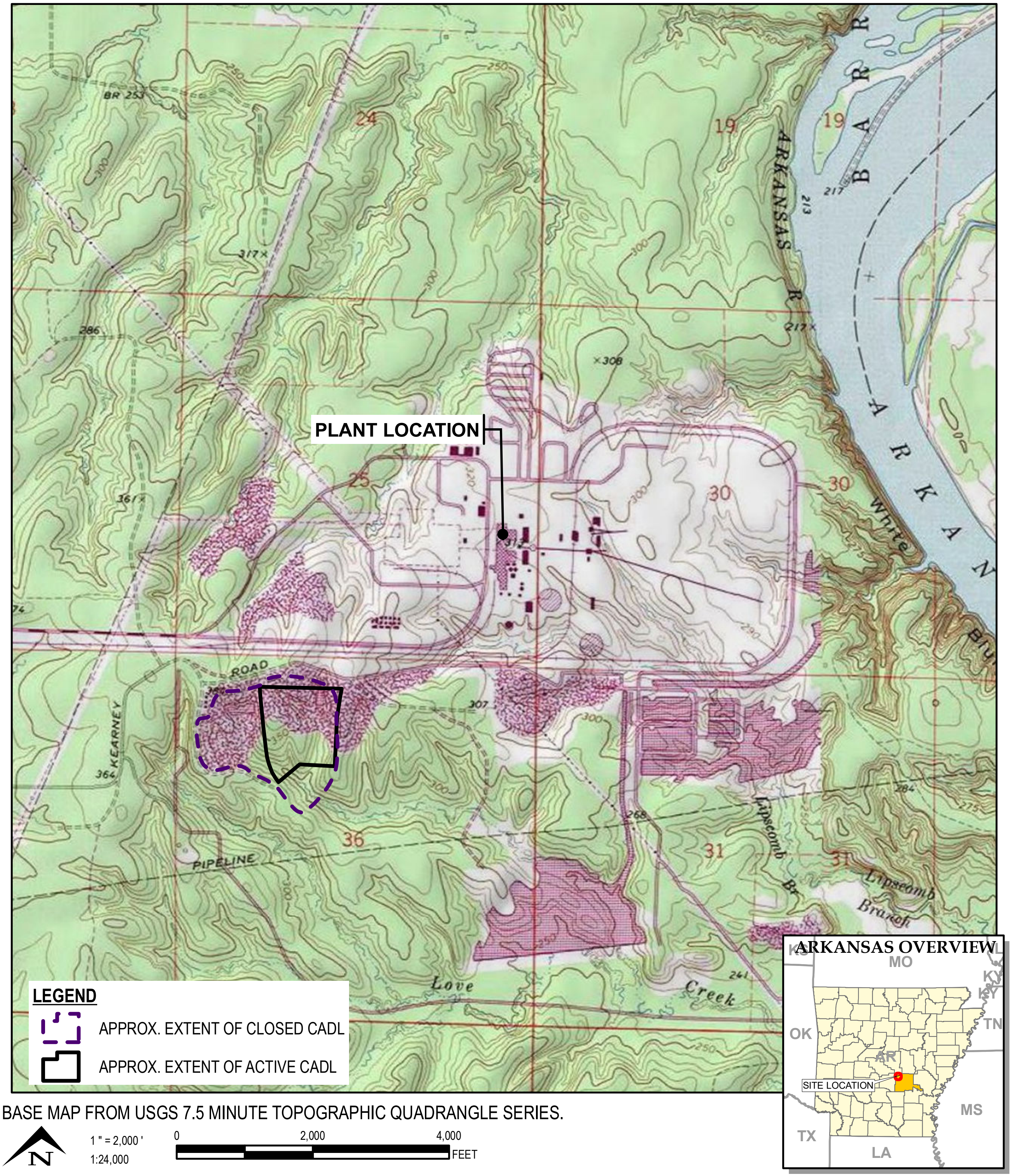

LEGEND

▭ APPROX. EXTENT OF CLOSED CADL

▭ APPROX. EXTENT OF ACTIVE CADL

BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

TRC

Two United Plaza
8550 United Plaza Blvd., Suite 502
Baton Rouge, LA
Phone: 225.270.6321

TRC - GIS

PROJECT:

ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:

ENTERGY WHITE BLUFF PLANT LOCATION MAP

DRAWN BY:	S. MAJOR
CHECKED BY:	J. HOUSE
APPROVED BY:	Z. SABATKA
DATE:	DECEMBER 2021
PROJ. NO.:	402355
FILE:	341458-001slm1.mxd

FIGURE 1

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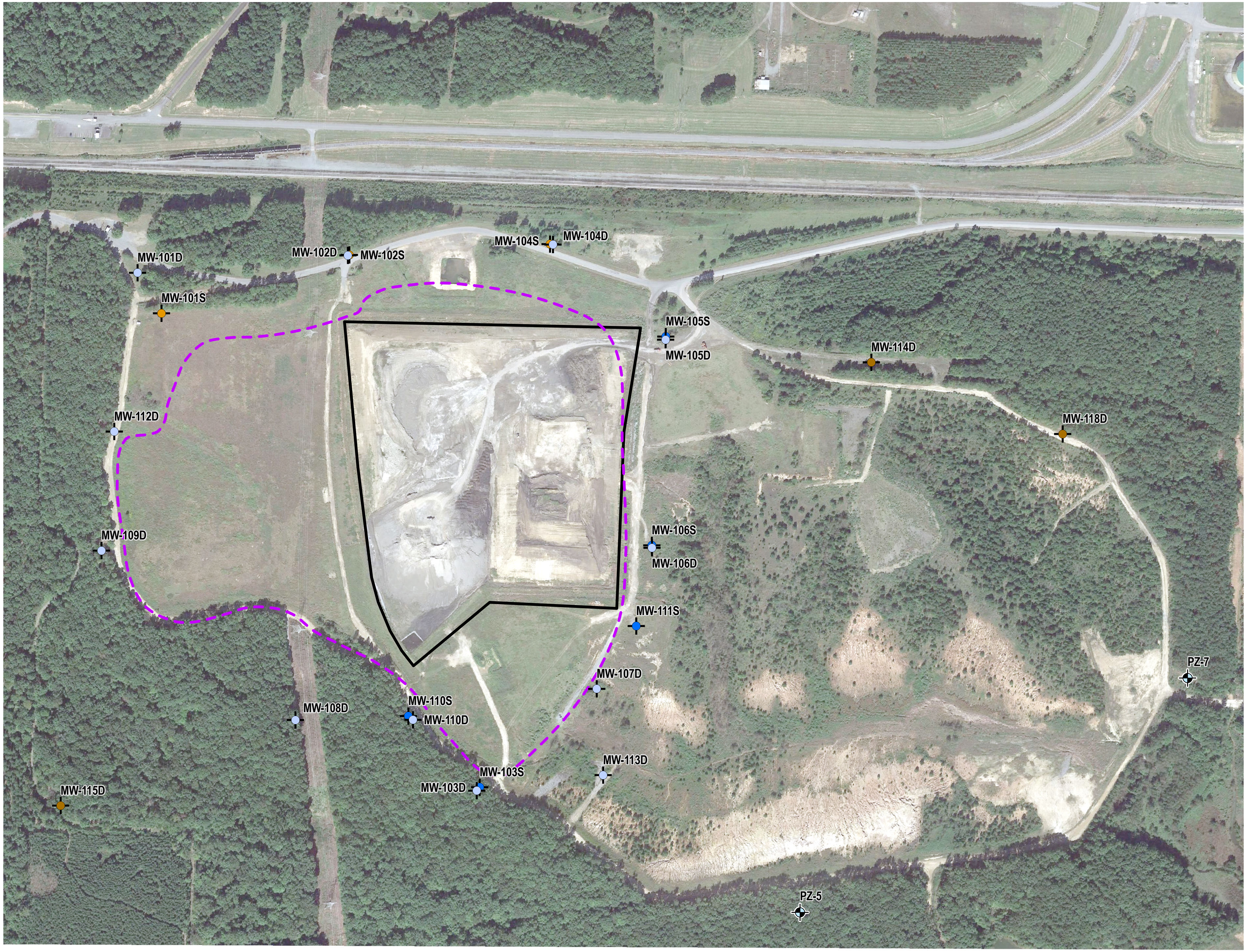

LEGEND

◆ STRATUM I BACKROUND WELL
◆ STRATUM I MONITORING WELL
◆ STRATUM III BACKROUND WELL
◆ STRATUM III MONITORING WELL
⊕ STRATUM III PIEZOMETER
▭ APPROX. EXTENT OF CLOSED CADL
▭ APPROX. EXTENT OF ACTIVE CADL

NOTES

1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 2018.
2. COAL ASH DISPOSAL LANDFILL (CADL)

N

0 400 800
Feet
1 " = 400 '
1:4,800

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:
CADL EXTENT AND CCR GROUNDWATER MONITORING LOCATIONS

DRAWN BY:	S. MAJOR	PROJ. NO.:	341458
CHECKED BY:	S. SELLWOOD	**FIGURE 2**	
APPROVED BY:	J. HOUSE		
DATE:	OCTOBER 2020		

TRC

Two United Plaza
8550 United Plaza Blvd., Suite 502
Baton Rouge, LA
Phone: 225.216.7483

FILE NO.: 341458-002.mxd

TRC - GIS

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet (Foot US)
Map Rotation: 0

Plot Date: 10/7/2020, 15:35:24 PM by SMAJOR -- LAYOUT: ANSI B(11"x17")
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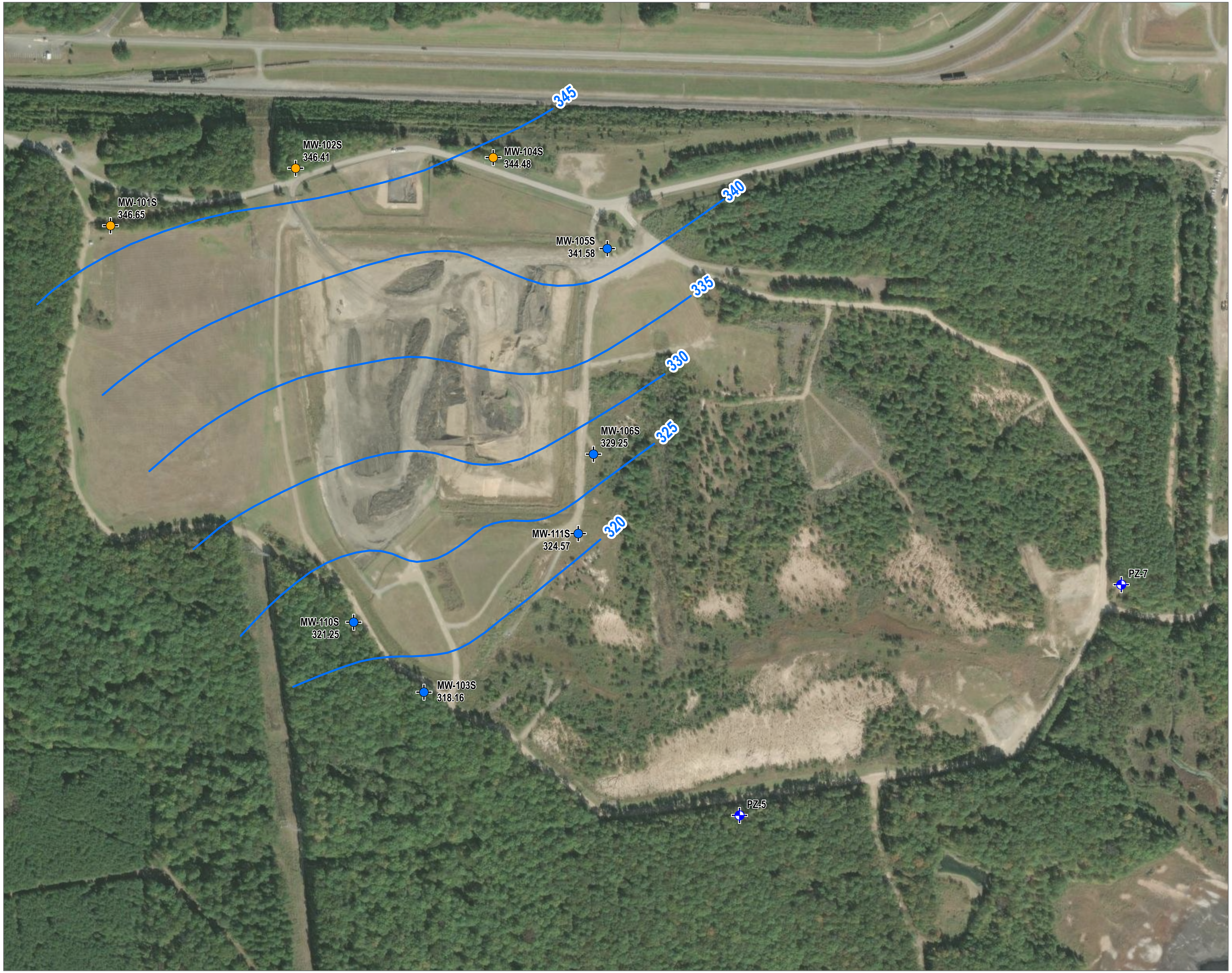


●	STRATUM I BACKROUND WELL
●	STRATUM I MW
●	STRATUM III BACKROUND WELL
○	STRATUM III MW
✦	STRATUM III PIEZOMETER
—	GROUNDWATER CONTOUR

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,800
1" = 400'
0 400 800 FEET

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

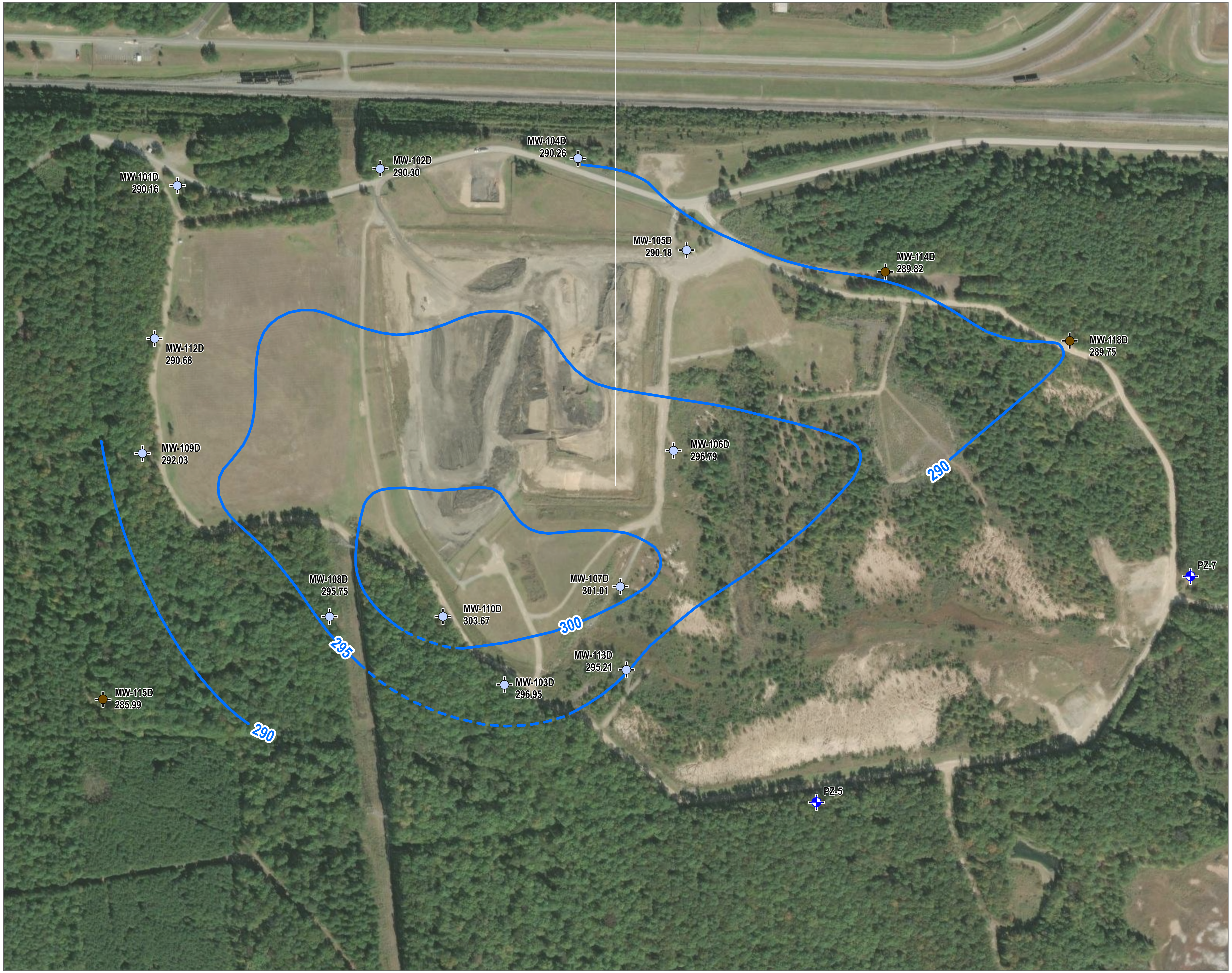
TITLE:
STRATUM 1 POTENTIOMETRIC MAP, SECOND HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.1**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.3 Stratum 1 PotMap Second Half 2024



- STRATUM I BACKROUND WELL
- STRATUM I MW
- STRATUM III BACKROUND WELL
- STRATUM III MW
- STRATUM III PIEZOMETER
- GROUNDWATER CONTOUR
- GROUNWATER CONTOUR INFERRED

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,900
1" = 408'
0 400 800
FEET

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:
STRATUM 3 POTENTIOMETRIC MAP, SECOND HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.2**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.4 Stratum 3 PotMap Second Half 2024

Alternate Source Demonstration

1st Half 2024 Sampling Event

Entergy White Bluff Plant
Coal Ash Disposal Landfill
Redfield, Jefferson County, Arkansas

January 2025

Prepared For

Entergy Arkansas, LLC
White Bluff Plant
1100 White Bluff Road
Redfield, Arkansas 72132

Submitted By

TRC Environmental Corporation
4545 Sherwood Common Blvd.
Building 3, Suite A
Baton Rouge, LA 70816

Nakia W. Addison, P.E.
Operations Manager

Jason S. House
Senior Project Manager

Executive Summary

Entergy Arkansas, LLC (EAL) performed the most recent semiannual detection monitoring sampling (1st Half 2024) in May 2024 for Cells 1 through 4 of the coal ash disposal landfill (CADL) pursuant to the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, 40 CFR Part 257 (CCR Rule). Cells 1 through 4 of the CADL constitute the coal combustion residuals (CCR) Unit per the CCR Rule. Per 40 CFR 257.94, the samples were analyzed for the Appendix III detection monitoring parameters. Upon receipt of the laboratory analytical results, statistical analysis was performed.

In accordance with the statistical analyses, the following 16 statistically significant increases (SSI) above background concentrations were identified in three monitoring wells in Stratum I and two monitoring wells in Stratum III, based on either increasing trends at 98% confidence levels using Sen's Slope test and/or intrawell prediction limits statistical analyses:

- Calcium, fluoride, sulfate and TDS (MW-106S);
- Boron, calcium and TDS (MW-110S);
- Boron, calcium, fluoride, sulfate, and TDS (MW-111S);
- Boron, calcium, and TDS (MW-112D);
- TDS (MW-114D).

The information provided in this report serves as EAL's alternate source demonstration (ASD) prepared in accordance with 40 CFR 257.94(e)(2) and successfully demonstrates that the SSIs are not due to a release from the CCR Unit to groundwater, but are due to the following:

- Natural groundwater geochemistry conditions such as pH, electrical conductivity (EC), oxidation-reduction potential (ORP) and the naturally occurrence of sulfide minerals;
- Natural variation in groundwater quality;
- Releases from historic fill or portions of the CADL closed before the effective date of the CCR Rule (October 19, 2015); and/or

- Surface water that has come into contact with on-site CCR and has migrated into the subsurface.

Therefore, based on the information provided in this ASD report, EAL will continue to conduct semiannual detection monitoring for Appendix III constituents in accordance with 40 CFR 257.94 at the certified groundwater monitoring well system (Certified Monitoring Well Network) for the CCR Unit and will continue to implement improvements to stormwater management practices at the CADL.

Table of Contents

List of Tables

List of Figures

Section 1
Introduction

1.1 Background

Entergy Arkansas, LLC (EAL) operates the Entergy White Bluff Plant (Plant), a coal-fired power plant, to generate electricity. The Plant is located at 1100 White Bluff Road in Redfield, Jefferson County, Arkansas as shown on Figure 1. Coal combustion residuals (CCR) are produced as part of the electrical generation operations. The Plant has been generating and disposing of CCR in a portion of the on-site coal ash disposal landfill (CADL) since it began operations in 1981. The CADL is a Class 3N non-commercial industrial landfill and operates under Arkansas Division of Environmental Quality (ADEQ) Solid Waste Permit No. 0199-S3N-R3.

The ADEQ-permitted CADL consists of approximately 153-acres at the Plant and encompasses the following three areas:

- Approximately 50-acre portion of the CADL historically used for CCR disposal from 1981 until prior to the effective date of the CCR Rule (October 19, 2015). CCR was placed into ravines. This area was closed in accordance with the Plant's original solid waste permit (TRC, 2018a);

- Cells 1 through 4, which are the current cells used for CCR disposal and were constructed on top of, and adjacent to, the above-noted closed CCR disposal areas prior to the effective date of the CCR Rule. Cells 1 through 4 encompass approximately 30 acres and were constructed as follows:

    - Cells 1, 2, and 3 were constructed with an 18-inch thick compacted clay bottom liner;

    - Cell 4 was constructed with a two-foot thick compacted clay bottom liner and a leachate collection system; and

- Approximately 100-acre portion of the CADL that is currently undeveloped and may be used for CCR and/or non-CCR disposal.

In addition to the current 153-acre permitted landfill, there is an approximately 25 acre area to the immediate west of Cells 1 through 4 where during the initial period of operation of the Plant, ash was placed pursuant to the permits issued at that time. This historic fill area is covered with soil and vegetated.

Cells 1 through 4 accept CCR for disposal in accordance with the federal *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule* (CCR Rule), effective October 19, 2015, and subsequent Final Rules promulgated by the United States Environmental Protection Agency (USEPA). Cells 1 through 4 comprise the CCR management unit (CCR Unit) per the CCR Rule and are the focus of this ASD. The approximate limits of Cells 1 through 4, the closed disposal areas, and the undeveloped, future disposal areas within the ADEQ-permitted footprint of the CADL are shown in Figure 2.

Historical CCR management by EAL has consisted of the following activities:

- Beneficial use in local construction projects;
- Beneficial use as roadbed material at the CADL; and
- Placement into the CADL.

1.1.1 Groundwater Monitoring and Statistical Analysis

In accordance with 40 CFR 257.90 through 257.94, EAL installed a groundwater monitoring system for Cells 1 through 4, collected samples from the Certified Monitoring Well Network for laboratory analysis for CCR constituents and performed statistical analysis of the collected samples. EAL installed a Certified Monitoring Well Network for the CCR Unit in accordance with 40 CFR 257.90 and 257.91. The Certified Monitoring Well Network consists of 23 wells installed into two stratigraphic units as follows:

- Eight wells are installed into an upper silty and clayey sand unit (Stratum I), which are designated as "S" monitoring wells; and
- Fifteen wells are installed into a lower silty and clayey sand and clay unit (Stratum III), which are designated as "D" monitoring wells.

Pursuant to 40 CFR 257.91(f), EAL obtained certification by a qualified Arkansas-registered professional engineer (P.E.) stating that the Certified Monitoring Well Network has been designed and constructed to meet the requirements of 40 CFR 257.91 (see Groundwater Monitoring System Certification, TRC, February 26, 2018) of the CCR Rule (TRC 2018b).

As discussed above, Stratum I and Stratum III are currently being monitored pursuant to the CCR Rule. A groundwater sampling and analysis program including selection of statistical procedures to evaluate groundwater data was prepared per the CCR Rule (see Groundwater Sampling and Analysis Plan (FTN, 2017b)). Eight quarterly background CCR detection monitoring events were performed from October 2015 through June 2017 in accordance with 40 CFR 257.93(d) and 257.94(b). The eight quarterly detection monitoring background samples were analyzed for Appendix III to Part 257 – Constituents for Detection Monitoring and for Appendix IV to Part 257 – Constituents for Assessment Monitoring.

Following completion of quarterly background detection monitoring in June 2017, EAL implemented semiannual detection monitoring per 40 CFR 257.94(b) for the CCR Unit. The first semiannual detection monitoring event was performed in August 2017 (2nd Half 2017). Subsequent detection monitoring events, with associated verification sampling when appropriate, have been performed on a semiannual basis since August 2017. EAL performed the most recent semiannual detection monitoring event (1st Half 2024) in November 2024. Per the CCR Rule, the semiannual detection monitoring event samples were analyzed for Appendix III constituents.

After completion of each semiannual detection monitoring event, the Appendix III laboratory analytical data were statistically evaluated to identify potential SSIs for Appendix III constituents above background levels. In accordance with 40 CFR 257.93(f)(6), EAL obtained certification by a qualified Arkansas-registered P.E. stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR Unit (see Statistical Methods Certification, TRC, October 16, 2017).

Pursuant to 40 CFR 257.93(h), statistical analysis and re-analysis of the laboratory analytical data were performed to identify potential SSIs for the 1st Half 2024 semiannual detection monitoring event. A total of 16 SSIs were identified for five Appendix III constituents: boron, calcium, fluoride, sulfate, and TDS. SSIs were identified in three Stratum I and two Stratum III monitoring wells.

1.2 Purpose

Pursuant to 40 CFR 257.94(e)(2), EAL may demonstrate that a source other than the CCR Unit caused the SSIs identified or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The purpose of this report is to provide written documentation of the successful ASD for the SSIs identified for the 1st Half 2024 semiannual detection monitoring event, pursuant to 40 CFR 257.94(e)(2) of the CCR Rule.

Section 2
Hydrogeology and Geochemistry

2.1 Site Hydrogeology

Historical subsurface investigations have identified the following four stratigraphic horizons of the Jackson Group (Kresse, et. al., 2014) and their associated hydrogeology for the CCR Unit and the CADL:

- **Stratum I. Interbedded Clay, Silt, and Sand.** Stratum I ranges from approximately 10 to 54-feet thick and consists of interbedded silty sand (SM), clayey sand (SC), silts (ML and MH), and clay (CL and CH). Occasional deposits of carbonaceous material are present throughout Stratum I. Based on the results of in-situ slug tests, hydraulic conductivity values range from 4.0 x 10^{-5} to 4.0 x 10^{-4} cm/sec;

- **Stratum II. Clay.** Stratum II ranges from approximately 14 to 49-feet thick and consists of a very stiff clay (CH) with occasional silt and/or very fine-grained sand laminations. Occasional deposits of carbonaceous mater are present throughout Stratum II. Based on the results of in-situ slug tests, hydraulic conductivity values range from 4.7 x 10^{-6} to 1.4 x 10^{-8} cm/sec;

- **Stratum III. Clayey and Silty Sand.** Stratum III ranges from approximately 5 to 19-feet thick and consists primarily of clayey sand (SC) and/or silty sand (SM). A poorly graded, fine-grained sand (SM) was identified in one piezometer. The upper limits of Stratum III were encountered at elevations of 263 to 289-feet NGVD (depths ranging from 19 to 97-feet bgs). Based on results of in-situ slug tests, hydraulic conductivity was determined to be spatially variable and ranged from 4.2 x 10^{-7} to 2.5 x 10^{-4} cm/sec; and

  Lower Confining Unit below Stratum III. is a very dark grey, fat clay that is highly laminated with light grey silt and very fine-grained sand. In-situ permeability testing of this unit determined a vertical hydraulic conductivity of 3.7 x 10^{-8} cm/s. This Lower Confining Unit was encountered during aquifer characterization efforts around the recycle ponds conducted in 2018.

It was concluded that Stratum I was not laterally continuous across the approximately 153-acre landfill. The estimated calculated seepage velocities in Stratums I and III were as follows:

- Stratum I: 2 to 20 feet/year; and
- Stratum III: <1 to 10 feet/year.

While Stratum I and Stratum III have been monitored per the CCR Rule since October 2015, it is unclear whether Stratum I and Stratum III are aquifers that are capable of providing sustainable well yields consistent with USEPA aquifer use criteria (*e.g.*, 0.1 gallons per minute). This uncertainty is based on the following evidence:

- Stratum I is present to the west of the CADL and only present within the western portion of the ADEQ-permitted boundaries of the CADL, approximately corresponding to the boundaries of the closed portions of the CADL. The CCR Unit and Stratum I are not continuous to the east across the entire footprint of the CADL;
- In-situ hydraulic conductivities are low to very low for both Stratum I and Stratum III, indicating that sustainable well yields may not be obtainable from Stratum I and Stratum III at volumes that meet the minimum USEPA well use criteria (*e.g.*, 0.1 gallons per minute); and
- During the quarterly and semiannual detection monitoring events performed from October 2015 through May 2024, which have been performed using the low-flow purge and sample methodology, the sampling teams have consistently documented that turbidity values are often greater than 10 Nephelometric Turbidity Units (NTU). Furthermore, wells have been pumped dry during sampling for both Stratum I and Stratum III, indicating that neither sustainable well yields nor useable drinking water are associated with Stratum I and Stratum III.

To evaluate this uncertainty, EAL began performing hydrogeologic investigations during 2019 and 2020, continuing through 2024 to evaluate both the stratigraphy and hydrogeology beneath the CCR Unit and to identify the aquifer(s) making up the uppermost aquifer system at the CCR Unit and CADL and the appropriateness of the current Certified Monitoring Well Network.

2.2 General Groundwater Quality

Regionally, groundwater quality in the Jackson Group consists of a sodium- and calcium-sulfate water type, with generally poor water quality (FTN 2014, Kresse et. al 2014). Reported water quality concentrations for select secondary drinking water contaminants compared to USEPA secondary maximum contaminant levels (MCLs) are provided in the table below.

Jackson Group Groundwater Water Quality

Constituent	Concentration Range		USEPA Secondary MCL
	Low	High	
Iron (mg/L)	0.05	19	0.3
pH (s.u.)	2.9	8.0	6.5 - 8.5
Sulfate (mg/L)	0.6	3,080	250
TDS (mg/L)	11	5,330	500

As noted in the table above, the natural range of groundwater quality within the Jackson Group, which includes both Stratum I and Stratum III, exceeds the secondary drinking water MCLs established by the USEPA for drinking water or, in the case of pH, is less than its secondary MCL. Finally, the results of historical groundwater monitoring at the Plant conducted from 1991 through 1996 showed that normal indicator parameters were masked by naturally elevated concentrations of the monitored constituents (FTN 2014, TRC 2018a).

2.3 Groundwater Geochemistry

Understanding the geochemistry of groundwater is essential to examining the groundwater monitoring data, explaining the relationships between the characteristics, and analyzing natural as well as anthropogenic impacts on groundwater systems. Source apart, geochemical processes play an important role in controlling the chemical composition of groundwater, including carbonate equilibrium, oxidation-reduction reactions and adsorption-desorption processes. Based the site geological conditions, several groundwater parameters are discussed as follows, including boron, fluoride, sulfate, calcium, TDS and pH.

2.3.1 Boron in Groundwater

Boron is normally considered as a minor constituent in groundwater as it is generally present in low concentrations (Palmucci & Rusi, 2014). Source apart, the primary origin of boron in groundwater is the process of sorption and desorption to the mineral surfaces including rocks and soils (Ravenscroft & McArthur, 2004). The regulatory guideline values of boron in drinking water are given at 0.5 mg/L by the World Health Organization (WHO) and 0.9 mg/L by USEPA in human consumption for long-term exposure (WHO, 2008; USEPA, 2008). Boron is often cited as contamination tracer and usually occurs as a non-ionized form as H_3BO_3 in soils at $pH<8.5$, but above this pH, it exists as an anion, $B(OH)_4^-$ (Upadhyaya et al., 2014).

The factors that may influence the boron concentration in groundwater include weathering, human activity, evaporative concentration, ion-exchange, electrical conductivity (EC), and pH. Ravenscroft & McArthur (2004) studied the mechanism of regional boron enrichment in groundwater and the results indicated that the main process that caused high boron enrichment in groundwater was the flushing by fresh groundwater rather than geological setting, climate or age. The desorption of Boron from mineral surfaces could be affected by pH, ionic strength, salinity and HCO_3/CO_3. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron adsorption favors high pH and boron desorption favors low pH on rocks, soils and organic matters (Hollis et al., 1988; Keren & Communar, 2009; Tabelin et al., 2014).

A few more research studies confirmed that the presence of boron in groundwater depends on the EC (salinity), such that it increases with increasing EC. Halim et al. (2010) reported that the increasing of Cl^- concentration contributes to increase in EC value since a strong linear correlation ($R^2 = 0.88$) between EC and Cl^- was observed. Palmucci & Rusi (2014) observed a clear correlation between the high concentrations of boron and the chloride-sodium facies, which are characterized by high saline content, negative redox potential, and low value of the SO_4^{2-}/Cl^- ratio. Rodriguez-Espinosa et al. (2020) found that the Boron concentration in groundwater was related to the SO_4^{2-} and age affect.

Regarding the Boron concentration level on the sites, the main source of Boron is more natural than anthropogenic. Therefore, the detected increasing of Boron concentration is likely due to the geochemistry condition changes, such as pH, ion exchanges, EC and salinity.

2.3.2 Fluoride in Groundwater

The common natural source of fluoride in groundwater is the dissolution of natural fluoride-bearing mineral, such as fluorspar, fluorapatite, amphiboles, hornblende, tremolite and biotite (Luo et al., 2018). The natural concentration of fluoride in groundwater depends on the geological, chemical and physical characteristics of the aquifer, the porosity and acidity of the soil and rocks, the surrounding temperature, the action of other chemical elements, depth of the aquifer and intensity of weathering (Brindha & Elango, 2011). Due to the concentration range of this site, geochemical process is the main factor controlling fluoride in groundwater.

Ion exchange, evaporation, adsorption-desorption, ion competition, mixing, and salinization are geochemical processes that can take place and cause the occurrence of fluoride in groundwater (Luo et al., 2018). Main factors that might cause the increase of fluoride concentration in groundwater include alkaline pH, high concentration of sodium and bicarbonate, and low concentration of calcium.

Alkaline pH can increase the fluoride dissolution from mineral surfaces into groundwater. Saxena & Ahmed (2001) observed that alkaline conditions with pH ranging between 7.6 and 8.6 are favorable for dissolution of fluorite mineral from the host rocks.

Sodium bicarbonate type waters are typical of high fluoride waters. Many research studies have demonstrated positive correlations between fluoride and both bicarbonate and sodium as well as an inverse relation between fluoride and calcium. (Mondal et al., 2014; Guo et al., 2012; Chen et al., 2020). The chemical reactions for the dissolution of fluoride in the presence of high bicarbonate and sodium, and low calcium content is described as follows (Kimambo et al., 2019):

$$\mathrm{Na}^{+} + \ +\mathrm{HCO}_3^{-} - \rightarrow \mathrm{NaHCO}_3$$

$$\mathrm{CaF}_2 + \ +2\mathrm{NaHCO}_3 \ \rightarrow \mathrm{CaCO}_3 + 2\mathrm{Na}^{+} + 2\mathrm{F}^{-} + \ \mathrm{H}_2\mathrm{O} + \mathrm{CO}_2$$

Luo et al. (2018) reported that cation exchange can increase the fluoride concentration when increasing the Na/Ca molar ratio via ion complexation, and salt effect can further increase the fluoride dissolution from mineral surfaces.

In addition, evaporation is another potential reason for increases in the fluoride concentration in shallow groundwater. Evaporation could directly remove water from shallow aquifers and elevate the fluoride concentration. Evaporation could increase ion concentrations, leading to the precipitation of some major minerals, reducing the calcium concentration, and favoring the dissolution of fluoride. Anthropogenic sources may also increase the fluoride in groundwater, such as pesticide and fertilizer use, and industrial waste discharge.

2.3.3 Sulfate in Groundwater

Sulfate is ubiquitous in groundwater, with both natural and anthropogenic sources. There are many potential sources of sulfate including mineral dissolution, atmospheric deposition, and other anthropogenic sources (mining, fertilizer, synthetic detergents, industrial wastewater etc.) (Miao et al., 2012). As water moves through soil and rock formations that contain sulfate minerals, some of the sulfate dissolves into the groundwater. Minerals that contain sulfate include magnesium sulfate (Epsom salt), sodium sulfate (Glauber's salt), and calcium sulfate (gypsum). Gypsum is an important contributor to the high levels of sulfate in many aquifers around the world. Higher levels of sulfate in groundwater are common in the western part of the United States (MDH, 2008).

Sulfate is mobile in soil and inputs to soil will impact groundwater eventually. Many research studies indicated that atmospheric deposition, dissolution of gypsum, oxidation of sulfide mineral and anthropogenic inputs will contribute to sulfate. Based on the geological condition of the site, atmospheric deposition and anthropogenic activities could be the main factors (Einsiedl & Mayer, 2005; Pu et al., 2012).

2.3.4 Calcium in Groundwater

Calcium is one of the most important ionic constituents in groundwater (Razowska-jaworek, 2014). Water-rock interaction occurs when water meets rocks or minerals, such as limestone, marble, calcite, dolomite, gypsum, fluorite and apatite. Natural dissolution of carbonate rocks and minerals is the primary source of calcium in groundwater (Jiang et al., 2009). Calcium is an important determinant of water hardness (Ca^{2+}), while magnesium is the other hardness determinant. The most common shallow groundwater type is Ca-HCO_3 dominated and Ca(Mg)-HCO_3 dominated.

A literature review indicates the major factors that may influence the calcium concentration in groundwater include rock weathering, pH, electrical conductivity and anthropogenic activities (mining, concrete material dissolution, fertilizer etc.) (Hájek et al., 2021; Schot & Wassen, 1993; Shi et al., 2018). Based on the geological condition of the site, pH, electrical conductivity and anthropogenic activities could be the potential reasons for the calcium concentrations.

2.3.5 TDS in Groundwater

Total dissolved solids represent the combined total of inorganic and organic substances contained in the groundwater, and it can be a general indicator of water quality. These solids are primarily minerals, salts, and organic matters, which may originate from sources such as the weathering of minerals, urban runoff, sewage, effluent discharges, agriculture, decaying organisms, and other human activities (de-icing roads, water softer use). Common salts that contribute to TDS are sodium, chloride, calcium, magnesium, potassium, sulfates, and bicarbonates (Olumuyiwa I. Ojo, 2012).

TDS levels in groundwater is usually higher than surface water due to the longer contact time with the underlying rocks and sediments. Since many minerals are water soluble, high concentrations can accumulate over time through the constantly reoccurring process of precipitation and evaporation.

TDS is related to other water quality parameters like hardness, which may occur if the high TDS content is due to the presence of carbonates. A few research studies simulated the relationship between TDS and other groundwater parameters such as EC and salinity, using different models. Due to the complicated geological conditions, the observation was not consistent at different study sites (Atekwana et al., 2004; Banadkooki et al., 2020; Poursaeid et al., 2020).

2.3.6 pH in Groundwater

Groundwater pH is an important aspect to consider in the monitoring and management of CCR landfill sites, as changes in pH can affect the quality of groundwater and the potential for release of contaminants. The potential reasons for pH changes in groundwater are as following:

- Changes in water flow patterns. Changes in the flow patterns of groundwater can cause the mixing of different water sources with varying pH levels, resulting in an overall increase in the pH of the groundwater at the site.

- Drainage from adjacent areas. Groundwater from adjacent areas with higher pH levels may be flowing into the landfill site and raising the overall pH of the groundwater at the site.

- Changes in geochemistry condition. Geochemistry can play a role in affecting the pH of groundwater at a landfill site, such as mineral dissolution, pH buffering capacity, redox reactions, and groundwater-rock interactions (Edmunds & Smedley, 1996; Wilkin & DiGiulio, 2010).

    - Mineral dissolution. Minerals present in the surrounding soil can dissolve and release basic or acidic compounds into the groundwater, affecting the pH, e.g., the dissolution of calcium carbonate can increase the pH of the groundwater by releasing carbonate ions, the dissolution and oxidation of pyrite can decrease the pH of groundwater by releasing hydrogen ions.

    - pH buffering capacity. The presence of minerals with a high buffering capacity in the surrounding soil can help to regulate the pH of the groundwater, preventing drastic changes in response to other factors. For example, the presence of minerals like calcite and dolomite can buffer the groundwater pH, helping to maintain a relatively stable pH even in the presence of acidic compounds.

    - Redox reactions. The oxidation-reduction reactions that occur in the surrounding soil can impact the pH of the groundwater. The oxidation of iron-sulfide minerals can result in the release of sulfuric acid, which can lower the pH of groundwater. The oxidation of reduced sulfur species to sulfate, which can increase the pH of groundwater (Jacks, 2017).

    - Groundwater-rock interactions. The interaction between groundwater and the rocks and minerals in the surrounding soil can affect the pH of the groundwater. For example, groundwater can dissolve or release basic or acidic compounds from the minerals in the rock, affecting the pH.

Section 3
Alternate Source Demonstration

Pursuant to 40 CFR 257.94(e)(2), EAL may demonstrate that a source other than the CCR Unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. As discussed previously, the 1st Half 2024 semiannual detection monitoring event was performed in May 2024. Statistical analysis of the 1st Half 2024 semiannual detection monitoring data was performed pursuant to 40 CFR 257.93(f) and (g) and in accordance with the Statistical Methods Certification (TRC 2017b) and the Statistical Analysis Plan (FTN 2017a). Based on either increasing trends at 98% confidence levels using Sen's Slope test and/or intrawell prediction limits statistical analyses, the following 16 SSIs were identified and summarized in Table 1:

- Calcium, fluoride, sulfate and TDS (MW-106S);
- Boron, calcium and TDS (MW-110S);
- Boron, calcium, fluoride, sulfate, and TDS (MW-111S);
- Boron, calcium, and TDS (MW-112D);
- TDS (MW-114D).

Other Appendix III constituent concentrations were within their trends at 98% confidence levels using Sen's slope test and/or intrawell prediction limits in the CCR Rule groundwater monitoring system wells.

A discussion for each of the individual SSIs identified for the Stratum I and III wells and associated evidence demonstrating that the 16 SSIs were not caused by a release from the CCR Unit is provided in the subsections below.

Table 1 SSIs – May 2024 Semiannual Detection Monitoring Event

Stratum	Well	Analyte	Value (mg/L)	Intrawell Prediction Limit (mg/L)	SI by Sen's Slope test
I	MW-106S	Calcium	38	23.81	Y
	MW-106S	Fluoride	0.901	0.625	Y
	MW-106S	Sulfate	752	603.5	Y
	MW-106S	TDS	1120	827.1	Y
	MW-110S	Boron	2.41	1.586	Y
	MW-110S	Calcium	8.88	6.762	N
	MW-110S	TDS	475	465.2	Y
	MW-111S	Boron	6.45	4.495	Y
	MW-111S	Calcium	108	36.78	Y
	MW-111S	Fluoride	0.957	0.283	Y
	MW-111S	Sulfate	756	397.5	Y
	MW-111S	TDS	1270	540.7	Y
III	MW-112D	Boron	0.288	0.252	Y
	MW-112D	Calcium	42.4	21.28	Y
	MW-112D	TDS	327	204.9	Y
	MW-114D	TDS	332	322	Y

3.1 Calcium at MW-106S

The calcium SSI identified at MW-106S is a result of the acidic geochemistry condition in groundwater, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Calcium was detected in MW-106S at a concentration of 38 mg/L in the May 2024 sample. Compared to the value of 40.5 mg/L in the November 2023 sample, the calcium concentration decreased approximately 6%. The Mann-Kendal statistic of 186 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3.6, pH and EC could affect calcium concentrations in groundwater. Low pH values of 3.8-4.0 were detected in the past few years, which indicates the groundwater in this area is acidic and it was related to pre-CCR Rule disposal source or natural geochemistry conditions. The acidic groundwater condition favors the dissolution of calcium from soil and mineral surfaces to water phase. The significant increasing trend of calcium from 16 mg/L in 2015 to 38 mg/L in 2024 could be a result of the acidic geochemistry condition. The increasing cation and anion concentrations will also lead to the increasing EC, which will affect other metals dissolution.

- The concentrations of calcium in MW-101S, which is a background well, have varied from 14 to 98.5 mg/L during the overall time period of CCR detection monitoring. The calcium concentration of 98.5 mg/L for MW-101S is greater than the calcium concentration of 38 mg/L measured at MW-106S during the 1st Half 2024 semiannual detection monitoring event. Therefore, the calcium concentration measured at MW-106S is within the range of natural variation in background groundwater quality.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-106S, it appears that MW-106S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-106S are likely more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR

Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.2 Fluoride at MW-106S

The fluoride SSI identified at MW-106S is a result of groundwater geochemistry conditions, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Fluoride was detected in MW-106S at a concentration of 0.901 mg/L in the May 2024 sample. Compared to the value of 0.695 mg/L in the November 2023 sample, the fluoride concentration increased by 29%. The Mann-Kendal statistic of 164 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. This concentration exceeded the intrawell prediction limit of 0.625 mg/L and the maximum fluoride concentrations of 0.1 to 0.135 mg/L measured in the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S). However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water maximum contaminant level (MCL) standard of 4.0 mg/L.

- The fluoride concentration in MW-106S stayed in a narrow range of 0.6-0.7 mg/L in the past two years. pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. As discussed in Section 2.3, fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. With the increasing trend of calcium in the groundwater, ion exchange process with high sodium and bicarbonate can result in the increasing of fluoride in groundwater.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-106S, it appears that MW-106S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.3 Sulfate at MW-106S

The sulfate SSI identified at MW-106S is a result of natural geochemistry condition in soil and groundwater, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- Sulfate was detected in MW-106S at a concentration of 752 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 604 mg/L. Compared to the value of 698 mg/L in the November 2023 sample, the sulfate concentration increased by 8%. The Mann-Kendal statistic of 177 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. The increasing trend of sulfate was consistent with TDS. The elevated sulfate concentration in the past three years could be caused by the acidic geochemistry condition discussed above or an anthropogenic source since sulfate is mobile in soils and can get into groundwater via surface water infiltration. Another potential reason is the natural occurrence of sulfide minerals in the soil, such as pyrite. The oxidation of sulfide minerals will slowly release sulfate and hydrogen ion into groundwater, which will lead to the increasing of sulfate and decreasing of pH.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-106S, MW-106S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR unit; therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.4 TDS at MW-106S

The TDS SSI identified at MW-106S is a result of the acidic groundwater geochemistry condition, sodium sulfate source, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-106S. The following evidence supports this determination:

- TDS was detected in MW-106S at a concentration of 1,120 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 827 mg/L. The Mann-Kendal statistic of 171 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. Compared to the TDS value of 1,040 mg/L in the November 2023, 1,200 mg/L in the June 2023 sample, 979 mg/L in the December 2022 sample, 920 mg/L in the June 2022 sample and 1090 mg/L in the November 2021 sample, the TDS was stable. As discussed in Section 2.2, the Jackson Group groundwater is sodium- and calcium-sulfate water type. Sodium could be another main contribution to the TDS exceedance with calcium and sulfate. High sodium concentration can also cause the fluoride exceedance. The acidic groundwater could be one of the potential reasons. An alternate source containing sodium sulfate should also be considered, which can be mineral dissolution, surface water flux or atmospheric deposition.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-106S, MW-106S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-106S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-106S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-106S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-106S, it appears likely that surface water infiltration has impacted the MW-106S monitoring results.

3.5 Boron at MW-110S

The Boron SSI identified at MW-110S is a result of the acidic groundwater geochemistry condition and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Boron was detected in MW-110S at a concentration of 2.41 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 1.586 mg/L. Compared to the value of 1.69 mg/L in the November 2023 sample, the boron concentration increased by 43%. The Mann-Kendal statistic of 186 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, the main factors that may influence boron concentration in groundwater are pH and EC. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron in groundwater will increase with the increasing of EC. The historical data review shows the relatively low salts concentrations in MW-110S area, which indicates EC is not the factor causing the boron increasing trend. Low pH values of 4.55 and 4.80 were detected in the May 2024 and November 2023, respectively. The acidic groundwater condition favors the boron dissolution from soil and mineral surface. Based on the consistent boron levels in groundwater, the significant increasing trend of boron is more likely relative to the acidic geochemistry condition other than a contamination source.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-110S, it appears that MW-110S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-110S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.6 Calcium at MW-110S

The calcium SSI identified at MW-110S is a result of the acidic geochemistry condition in groundwater, potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Calcium was detected in MW-110S at a concentration of 8.88 mg/L in the May 2024 sample, compared to the value of 6.03 mg/L in the November 2023 sample. No significant trend was detected by the Mann-Kendal statistical analysis. As discussed in Section 2.3.4 and, pH and EC could affect calcium concentrations in groundwater. Low pH values of 3.8-4.0 were detected in the past few years, which indicates the groundwater in this area is acidic and it was related to pre-CCR Rule disposal source or natural geochemistry conditions. The acidic groundwater condition favors the dissolution of calcium from soil and mineral surfaces to water phase.

- The concentrations of calcium in MW-101S, which is a background well, have varied from 14 to 98.5 mg/L during the overall time period of CCR detection monitoring. The calcium concentration of 8.88 mg/L measured at MW-110S during the 1st Half 2024 semiannual detection monitoring event is lower than the background well. Therefore, the calcium concentration measured at MW-110S is within the range of natural variation in background groundwater quality.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL underlying the CCR Unit, and the CCR Unit relative to MW-110S, it appears that MW-110S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the CCR Unit; therefore, concentrations measured in MW-110S are likely more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.7 TDS at MW-110S

The TDS SSI identified at MW-110S is a result of the acidic groundwater geochemistry condition, and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- TDS was detected in MW-110S at a concentration of 475 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 465.2 mg/L. The Mann-Kendal statistic of 101 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. Compared to the TDS value of 355 mg/L in the November 2023, the TDS concentration increased by 34%. As discussed in Section 2.2, the Jackson Group groundwater is sodium- and calcium-sulfate water type. Sodium could be another main contribution to the TDS exceedance with calcium and sulfate. High sodium concentration can also cause the fluoride exceedance. The acidic groundwater could be one of the potential reasons. An alternate source containing sodium sulfate should also be considered, which can be mineral dissolution, surface water flux or atmospheric deposition.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-110S, MW-110S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-110S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

3.8 Boron at MW-111S

The boron SSI identified at MW-111S is a result of natural groundwater geochemistry conditions with low pH and high EC, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Boron was detected in MW-111S at a concentration of 6.45 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 4.495 mg/L. Compared to the value of 6.67 mg/L in the November 2023 sample, the boron concentration decreased by 3%. The Mann-Kendal statistic of 184 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3.1, the main factors that may influence boron concentration in groundwater are pH and EC. Decreasing of pH will increase the dissolution of boron from the mineral surfaces. Boron in groundwater will increase with the increasing of EC. A low pH value of 4.10 was detected in the May 2024 sample and the pH of groundwater in the area of MW-111S stayed in a steady range of 3.6 to 4.5 in the past five years. The acidic groundwater condition favors the boron dissolution from soil and mineral surface. The increasing TDS and sulfate in MW-111S demonstrates that the groundwater in this area has relatively high EC, which will cause the increasing of boron concentration in groundwater. Based on the consistent boron levels, the significant increasing trend of boron is more likely relative to the geochemistry conditions with low pH and high EC other than a contamination source.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.9 Calcium at MW-111S

The calcium SSI identified at MW-111S is a result of natural groundwater geochemistry conditions with low pH and high EC, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Calcium was detected in MW-111S at a concentration of 108 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 36.8 mg/L. Compared to the value of 117 mg/L in the November 2023 sample, the calcium concentration decreased by 8%. Normality analysis of the calcium data set at MW-111S was non-normal requiring trend analysis of the data set to determine a potential significance increase. The Mann-Kendal statistic of 197 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.3, pH and EC could affect calcium concentrations in groundwater. A low pH value of 4.1 was detected in the May 2024 sample and the pH of groundwater in the area of MW-111S stayed in a steady range of 3.6 to 4.5 in the past five years. The acidic condition favors the dissolution of calcium from soil and mineral surfaces to water phase. The relatively high EC in groundwater discussed above can also increase the calcium concentration. The significant increasing trend of calcium could be a result of the natural geochemistry conditions with low pH and high EC.

- Background concentrations of calcium have varied from 14 to 98.5 mg/L at upgradient monitoring well MW-101S. The calcium concentration of 108 mg/L at MW-111S during the 1st Half 2024 semiannual detection monitoring event is beyond but close to the top background concentration. Therefore, the calcium exceedance is still in the range of natural variation in background groundwater quality.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the underlying pre-CCR Rule closed portions of the CADL rather than the

CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.10 Fluoride at MW-111S

The fluoride SSI identified at MW-111S is a result of natural groundwater geochemistry conditions, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Fluoride was detected in MW-111S at a concentration of 0.957 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 0.283 mg/L and the maximum fluoride concentrations of 0.1 to 0.135 mg/L measured in the three Stratum I background monitoring wells (MW-101S, MW-102S, and MW-104S). Compared to the value of 0.869 mg/L in the November 2023 sample, the fluoride concentration was consistent. The Mann-Kendal statistic of 199 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. However, it should be noted that the measured fluoride concentrations are less than the federal primary drinking water MCL of 4.0 mg/L. pH of the groundwater is not an impact of the exceedance since fluoride dissolution favors alkaline pH. As discussed in Section 2.3.2, fluoride has positive correlation with both bicarbonate and sodium, and an inverse relation with calcium. With the increasing trend of calcium in the groundwater, ion exchange process with high sodium and bicarbonate can result in the increasing of fluoride in groundwater. The fluoride increasing trend could also be a result of continuous dissolution of salts from the soils and minerals associated with the increased TDS.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.11 Sulfate at MW-111S

The sulfate SSI identified at MW-111S is a result of natural groundwater geochemistry condition of low pH and potential oxidation of sulfide minerals, potential impact of CCR disposed at the CADL prior to October 19, 2015, and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- Sulfate was detected in MW-111S at a concentration of 756 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 398 mg/L. Compared to the value of 827 mg/L in the November 2023 sample, the sulfate concentration decreased by 8%. The Mann-Kendal statistic of 179 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. The sulfate increasing was consistent with the TDS increasing, which indicated that more salts were dissolved into groundwater. It could be caused by the acidic geochemistry condition discussed above or an anthropogenic source since sulfate is soluble in soils and can get into groundwater via surface water infiltration. Another potential reason is the naturally occurrence of sulfide minerals in the soil, such as pyrite. The oxidation of sulfide minerals will slowly release sulfate and hydrogen ion into groundwater, which will lead to the increasing of sulfate and decreasing of pH.

- Based on review of potentiometric surface mapping and locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit;

therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.12 TDS at MW-111S

The TDS SSI identified at MW-111S is a result of the acidic groundwater geochemistry conditions with natural occurrence of sulfide minerals, sodium sulfate source, the potential impact of CCR disposed at the CADL prior to October 19, 2015 and potential infiltration of surface water impacted by on-site CCR into the subsurface in the area of MW-111S. The following evidence supports this determination:

- TDS was detected in MW-111S at a concentration of 1,270 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 541 mg/L. Compared to the value of 1,370 mg/L in the November 2023 sample, the TDS concentration was consistent. The Mann-Kendal statistic of 205 exceeded the critical value of 84 indicating a significant increasing trend at the 98% confidence level. As discussed in Section 2.2.5, the Jackson Group groundwater is sodium- and calcium-sulfate water type. Sodium could be another main contribution to the TDS exceedance with the increasing of calcium and sulfate. High sodium concentration can also cause the fluoride exceedance. The acidic groundwater could be one of the potential reasons. An alternate source containing sodium sulfate should also be considered, which can be mineral dissolution, surface water flux or atmospheric deposition.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-111S, MW-111S likely monitors groundwater associated with the pre-CCR Rule closed portions of the CADL rather than the CCR Unit. Therefore, concentrations measured in MW-111S may be more reflective of pre-CCR Rule disposal rather than of the Unit.

- Surface water that has come into contact with on-site CCR at the CCR Unit has migrated from the perimeter drainage swale for the CCR Unit due to periodic build-up of sediment within the perimeter surface water swale. When this build-up occurs, surface water flows out of the swale and over the adjoining access road and then to the area of MW-111S. This drainage swale carries surface water runoff from closed portions of the CADL as well as from the CCR Unit. This surface water ultimately migrates from the MW-111S area via surface water swales within the ADEQ-permitted CADL footprint, with ultimate discharge into the site surge pond as per EAL's NPDES permit. Based on the close proximity of this surface water to MW-111S, it appears likely that surface water infiltration has impacted the MW-111S monitoring results.

3.13 Boron at MW-112D

The boron SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Boron was detected in MW-112D at a concentration of 0.288 mg/L in the May 2024 sample, which was consistent with 0.286 mg/L in the November 2023 sample. This concentration exceeds the intrawell prediction limit of 0.252 mg/L. Boron concentrations measured at MW-118D (background well for Stratum III) have ranged from 0.274 to 0.355 mg/L. Therefore, the boron exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of boron measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- Groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of boron at MW-112D likely represents either potential pre-CCR Rule migration from historic fill or background groundwater quality for Stratum III.

3.14 Calcium at MW-112D

The calcium SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- Calcium was detected in MW-112D at a concentration of 42.4 mg/L in the November 2023 sample, which was consistent with 41.1 mg/L in the November 2023 sample. This concentration exceeds the intrawell prediction limit of 21.3 mg/L. The Mann-Kendal statistic of 246 exceeded the critical value of 89 indicating a significant increasing trend at the 98% confidence level. The relatively low TDS indicated that EC in groundwater is not a factor to the calcium exceedance. Calcium concentrations measured at MW-118D (background well for Stratum III) have ranged from 68.4 to 83.2 mg/L. Therefore, the calcium exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of calcium measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- As discussed previously, groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR Unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of calcium at MW-112D likely represents either potential pre-CCR Rule migration from historic fill or background groundwater quality for Stratum III.

3.15 TDS at MW-112D

The TDS SSI identified at MW-112D is a result of natural variation in groundwater quality and potential impact of CCR disposed at the CADL prior to October 19, 2015. The following evidence supports this determination:

- TDS was detected in MW-112D at a concentration of 327 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 205 mg/L. Compared to the value of 295 mg/L in the November 2023 sample, the TDS concentration was consistent. The Mann-Kendal statistic of 227 exceeded the critical value of 89 indicating a significant increasing trend at the 98% confidence level. TDS concentrations measured at MW-118D (background well for Stratum III) have ranged from 415 to 484 mg/L. A review of groundwater parameters in Stratum III indicates that sulfate is a great contributor to TDS, but the sulfate concentration at MW-112D is not detectable (less than 5 mg/L). Therefore, the TDS exceedance at MW-112D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of historic fill, locations of closed portions of the CADL, and the CCR Unit relative to MW-112D, MW-112D is located immediately adjacent (approximately 25 feet) to historic fill, but approximately 950 feet from the CCR Unit. Therefore, the concentrations of TDS measured in MW-112D may be more reflective of pre-CCR Rule disposal rather than of the CCR Unit.

- As discussed previously, groundwater flow velocities are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-112D is located approximately 950 feet from the CCR unit, any release from the CCR Unit would be detected in Stratum III at MW-112D within approximately 95 years, which is significantly longer than the CCR Unit has been in operation. Therefore, the concentration of TDS at MW-112D likely represents either potential pre-CCR Rule migration from the historic fill or background groundwater quality for Stratum III.

3.16 TDS at MW-114D

The TDS SSI identified at MW-114D is a result of natural variation in groundwater quality. The following evidence supports this determination:

- TDS was detected in MW-114D at a concentration of 332 mg/L in the May 2024 sample, which exceeded the intrawell prediction limit of 322 mg/L. Compared to the value of 315 mg/L in the November 2023 sample and 326 mg/L in the June 2023 sample, the TDS concentration was consistent. TDS concentrations measured at MW-118D (background well for Stratum III) have ranged from 415 to 642 mg/L. Therefore, the TDS exceedance at MW-114D is within the range of variation in background groundwater quality and is not a potential environmental concern.

- Based on review of potentiometric surface mapping, locations of closed portions of the CADL, and the CCR Unit relative to MW-114D, MW-114D is located 950 feet from the CCR

Unit. Therefore, the concentrations of TDS measured in MW-114D may be more reflective of background natural water quality rather than of the CCR Unit.

- As discussed previously, groundwater flow velocities in Stratum III are estimated to be approximately <1 ft/year to 10 ft/year (TRC 2018a). Since, MW-114D is located approximately 950 feet from the CCR Unit, any release from the pre-CCR Rule closed portions of the CADL or the CCR Unit would be detected in Stratum III at MW-114D within approximately 95 years, which is significantly longer than either the CADL or the CCR Unit has been in operation. Therefore, the concentration of calcium at MW-114D likely represents background natural groundwater quality for Stratum III.

Section 4
Conclusions

The information provided in this report serves as the ASD prepared in accordance with 40 CFR 257.94(e)(2) of the CCR Rule. Statistical evaluation identified 16 potential SSIs in three monitoring wells in Stratums I and two monitoring wells in Stratum III. This ASD has demonstrated the following lines of reasoning that support alternative sources for the identified SSIs:

- The SSIs identified in MW-106S, MW-110S, and MW-111S are likely releases from historic fill or portions of the CADL closed before the effective date of the CCR Rule (October 19, 2015); and

- Historical data indicated acidic groundwater geochemistry conditions in MW-106S, MW-110S and MW-111S. The 12 SSIs identified in these wells are related to the natural groundwater geochemistry conditions, such as low pH, high electrical conductivity, potential presence of sulfide minerals in soils and relatively high oxidation-reduction potential; and

- Surface water that has come into contact with on-site CCR and has migrated into the subsurface.

- The 2 fluoride SSIs identified in MW-106S and MW-111S could be a result of natural groundwater geochemistry conditions (relative low concentration of calcium and high concentration of sodium).

- The 4 SSIs identified in Stratum III wells MW-112D and MW-114D are mostly within the natural variation in groundwater quality compared to MW-118D, which likely represents background natural groundwater quality of Stratum III due to its location to CCR Unit and groundwater flow velocities.

Therefore, the SSIs determined based on statistical analysis of the 1st Half 2024 semiannual detection monitoring event performed in May 2024 are not due to a release from the CCR Unit to Stratums I and III of the Jackson Group. Based on the information provided in this ASD report, EAL will continue to conduct semiannual detection monitoring in accordance with 40 CFR 257.94 at the Certified Monitoring Well Network for the CCR Unit.

Section 5
Certification

I hereby certify that the alternative source demonstration presented within this document for the Entergy White Bluff Plant Coal Ash Disposal Landfill CCR Unit has been prepared to meet the requirements of Title 40 CFR §257.94(e) 2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e) 2.

Name: Nakia W. Addison, P.E. **Expiration Date:** 12/31/2025

Company: TRC Environmental Corporation **Date:** 1/31/2025

NO. 22533
NAKIA W. ADDISON

1/31/2025

(SEAL)

Section 6
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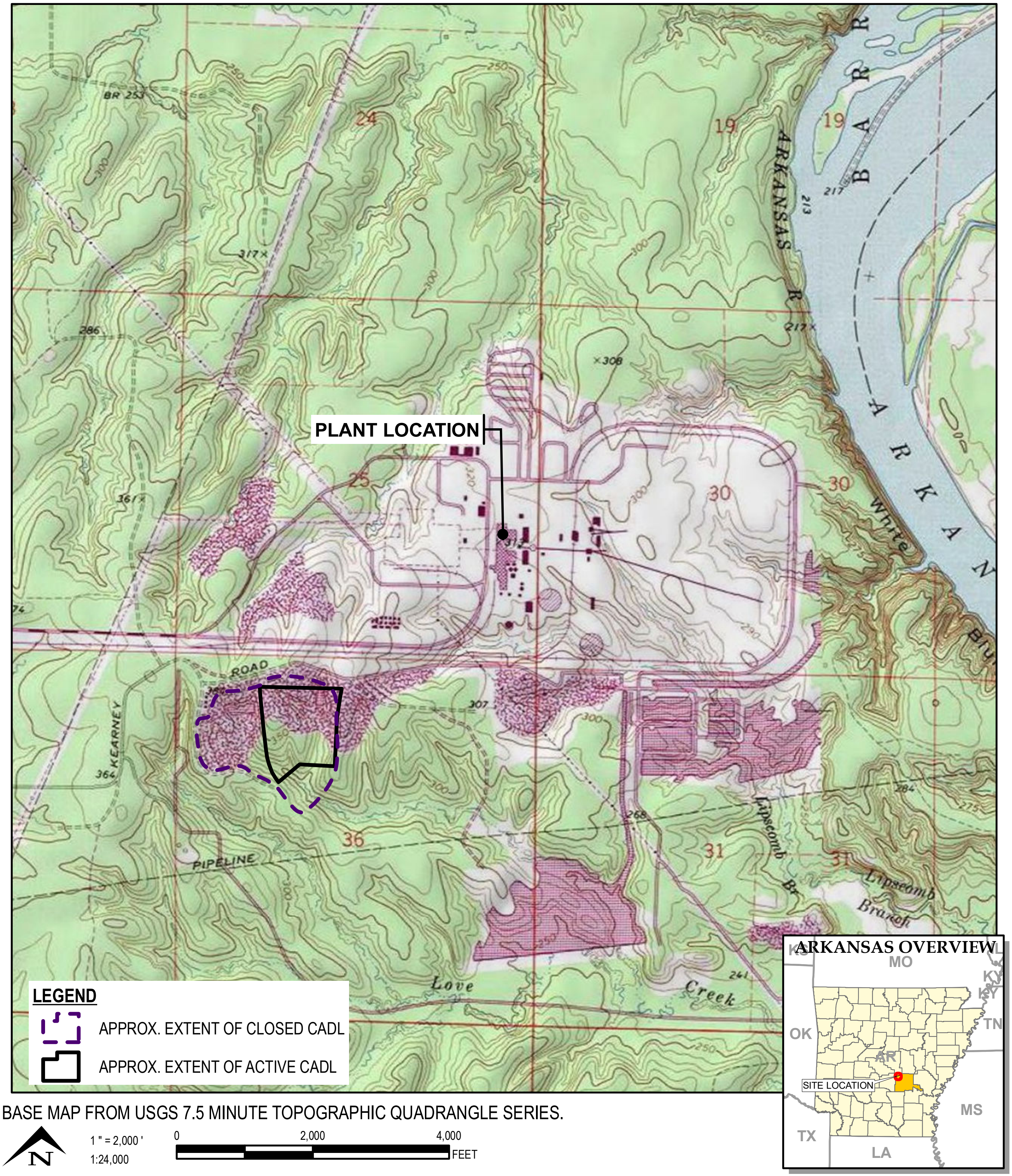

BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

TRC

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TRC - GIS

PROJECT:

ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:

ENTERGY WHITE BLUFF PLANT LOCATION MAP

DRAWN BY:	S. MAJOR
CHECKED BY:	J. HOUSE
APPROVED BY:	Z. SABATKA
DATE:	DECEMBER 2021
PROJ. NO.:	402355
FILE:	341458-001slm1.mxd

FIGURE 1

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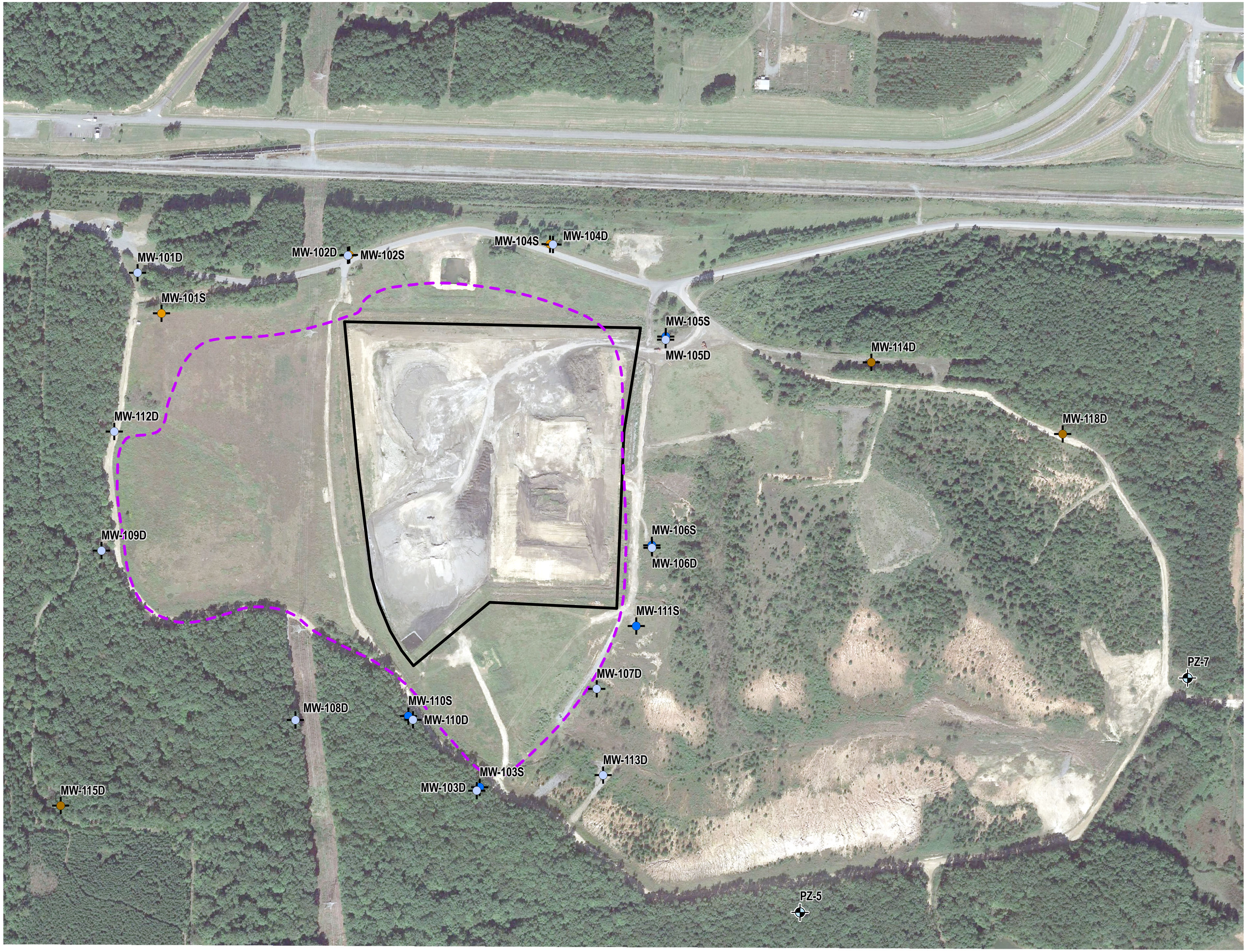

LEGEND

- STRATUM I BACKROUND WELL
- STRATUM I MONITORING WELL
- STRATUM III BACKROUND WELL
- STRATUM III MONITORING WELL
- STRATUM III PIEZOMETER
- APPROX. EXTENT OF CLOSED CADL
- APPROX. EXTENT OF ACTIVE CADL

NOTES

1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 2018.
2. COAL ASH DISPOSAL LANDFILL (CADL)

N

0 400 800 Feet

1 " = 400 '
1:4,800

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE:
CADL EXTENT AND CCR GROUNDWATER MONITORING LOCATIONS

DRAWN BY:	S. MAJOR	PROJ. NO.:	341458
CHECKED BY:	S. SELLWOOD	**FIGURE 2**	
APPROVED BY:	J. HOUSE		
DATE:	OCTOBER 2020		

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FILE NO.: 341458-002.mxd

TRC - GIS

Plot Date: 10/7/2020, 15:35:24 PM by SMAJOR -- LAYOUT: ANSI B(11"x17") **Coordinate System:** NAD 1983 StatePlane Arkansas South FIPS 0302 Feet (Foot US)
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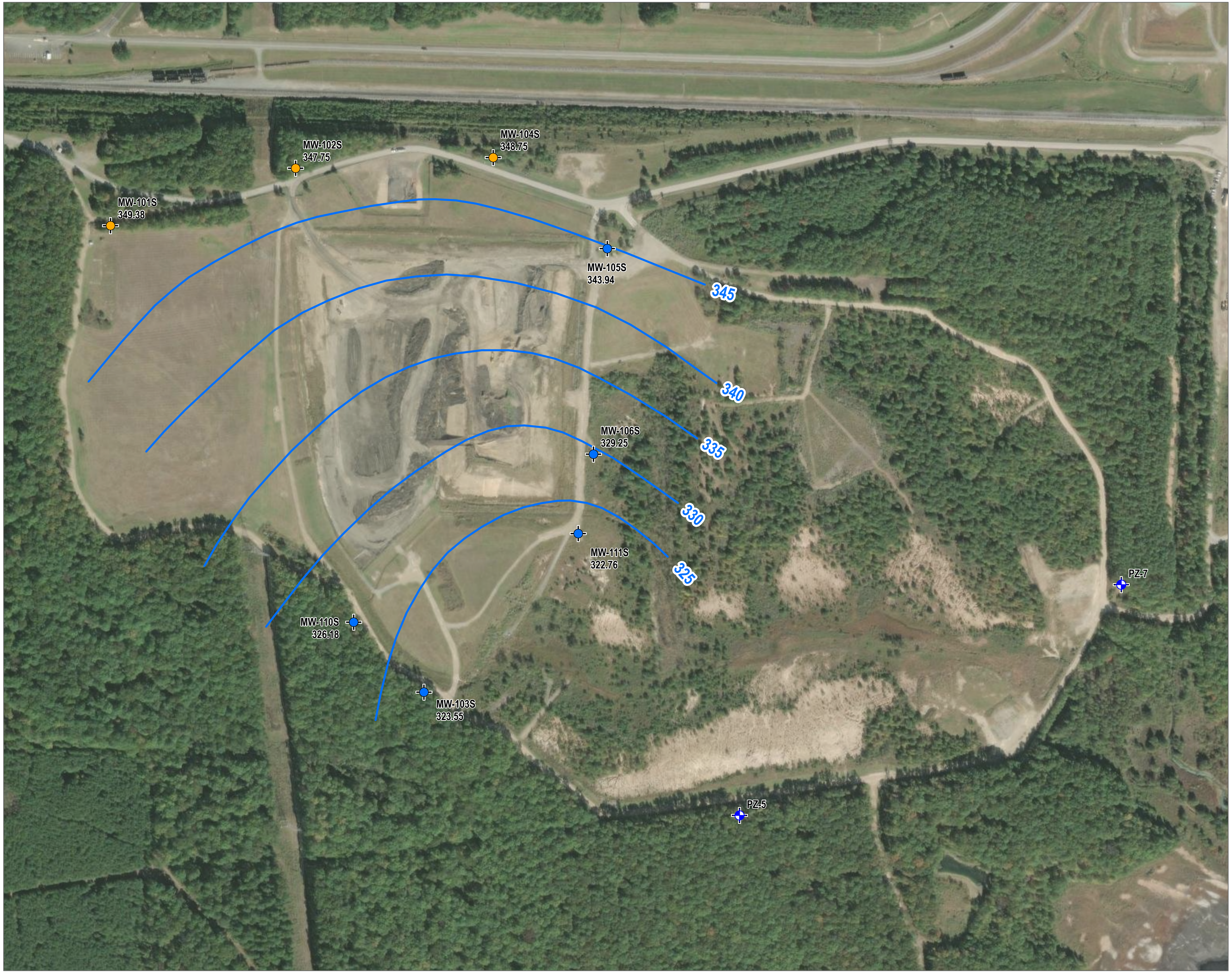


- ◆ STRATUM I BACKROUND WELL
- ◆ STRATUM I MW
- ◆ STRATUM III BACKROUND WELL
- ◆ STRATUM III MW
- ◆ STRATUM III PIEZOMETER
- — GROUNDWATER CONTOUR

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,800
1" = 400'
0 400 800 FEET

PROJECT:
ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

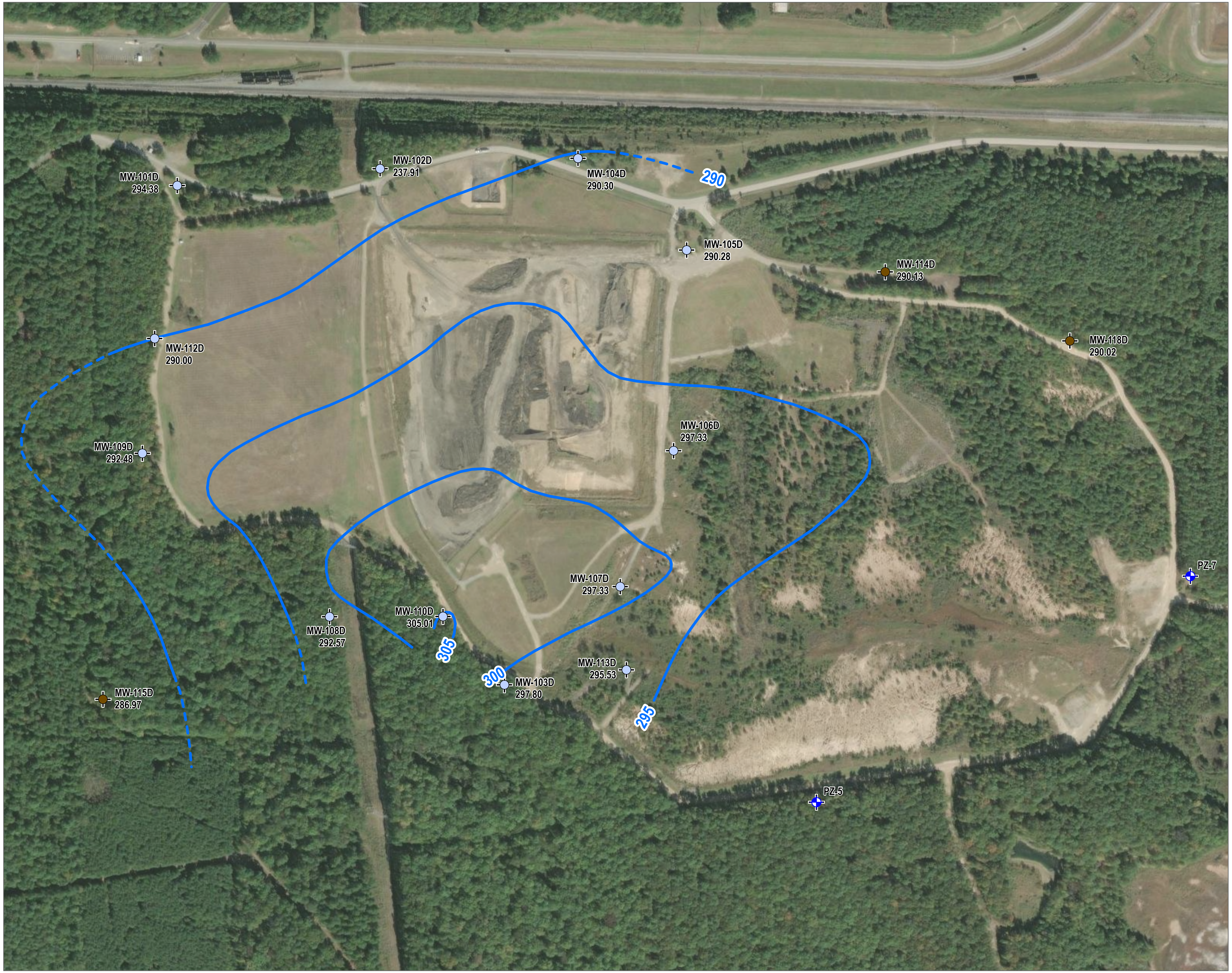
TITLE:
STRATUM 1 POTENTIOMETRIC MAP,
FIRST HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.1**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
4545 SHERWOOD COMMON BLVD.
BUILDING 3 - SUITE A
BATON ROUGE, LA 70816
PHONE: 225.216.7483

FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.1 Stratum 1 PotMap First Half 2024



◆ STRATUM I BACKROUND WELL
◆ STRATUM I MW
◆ STRATUM III BACKROUND WELL
◆ STRATUM III MW
◆ STRATUM III PIEZOMETER
— GROUNDWATER CONTOUR
- - GROUNDWATER CONTOUR INFERRED

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
DATA SOURCES: TRC

N

1:4,900
1" = 408'
0 400 800 FEET

PROJECT: ENTERGY WHITE BLUFF PLANT
1100 WHITE BLUFF ROAD
REDFIELD, ARKANSAS

TITLE: STRATUM 3 POTENTIOMETRIC MAP,
FIRST HALF 2024

DRAWN BY:	B. TRACY	PROJ. NO.:	635879
CHECKED BY:	D. STITCHER	**FIGURE 2.2**	
APPROVED BY:	E. GAINES		
DATE:	FEBRUARY 2025		

TRC
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FILE: Groundwater_Contour_Maps.aprx

Coordinate System: NAD 1983 StatePlane Arkansas South FIPS 0302 Feet; Map Rotation: 0
-- Saved By: BTRACY on 2/26/2025, 11:40:43 AM; File Path: T:\1-PROJECTS\ENTERGY\635879_Groundwater_Contour_Maps\2-APRX\Groundwater_Contour_Maps.aprx; Layout Name: Figure 2.2 Stratum 3 PotMap First Half 2024