2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

FLY ASH IMPOUNDMENT
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

Presented To:
Evergy Missouri West, Inc.

SCS ENGINEERS

27213169.20 | January 2021

8575 W 110th Street, Suite 100
Overland Park, Kansas 66210
913-681-0030

CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify that the 2020 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).

John R. Rockhold, R.G.

SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify that the 2020 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).

Douglas L. Doerr, P.E.

SCS Engineers

Revision Number	Revision Date	Revision Section	Summary of Revisions

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Appendices

1 INTRODUCTION

This 2020 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" (Rule) published by the United States Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015), and subsequent revisions. Specifically, this report was prepared for Evergy Missouri West, Inc. (Evergy) to fulfill the requirements of 40 CFR 257.90 (e). The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2020 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station.

1.1 § 257.90(e)(6) SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

1.1.1 § 257.90(e)(6)(i) Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the start of the current annual reporting period, (January 1, 2020), the CCR Impoundment was operating under a detection monitoring program in compliance with § 257.94.

1.1.2 § 257.90(e)(6)(ii) Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the end of the current annual reporting period, (December 31, 2020), the CCR Impoundment was operating under a detection monitoring program in compliance with § 257.94.

1.1.3 § 257.90(e)(6)(iii) Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

Monitoring Event	Monitoring Well	Constituent	ASD
Fall 2019	MW-804	Fluoride	Successful
Spring 2020	MW-804	Chloride	Successful

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

Not applicable because an assessment monitoring program was not initiated.

1.1.4 § 257.90(e)(6)(iv) Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

Not applicable because there was no assessment monitoring conducted.

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit*; and*

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

1.1.5 § 257.90(e)(6)(v) Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

Not applicable because corrective measures are not required.

1.1.6 § 257.90(e)(6)(vi) Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

Not applicable because corrective measures are not required.

2 § 257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action*

report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.1 § 257.90(E)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A site map with an aerial image showing the Fly Ash Impoundment and all background (or upgradient) and downgradient monitoring wells with identification numbers for the Fly Ash Impoundment groundwater monitoring program is provided as **Figure 1** in **Appendix A**.

2.2 § 257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No new monitoring wells were installed and no wells were decommissioned as part of the CCR groundwater monitoring program for the Fly Ash Impoundment in 2020.

2.3 § 257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under § 257.90 through § 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Only detection monitoring was required to be conducted during the reporting period (2020). Samples collected in 2020 were collected and analyzed for Appendix III detection monitoring constituents. Additionally, Appendix IV constituents were analyzed with the spring event for potential future updating of background data in conformance with EPA Unified Guidance and industry standards. Results of the sampling events are provided in **Appendix B**, **Table 1** (Appendix III with Supplemental Appendix IV Detection Monitoring Results), and **Table 2** (Detection Monitoring Field Measurements). These tables include Fall 2019 semiannual detection monitoring event verification sample data collected and analyzed in 2020; Spring 2020 semiannual detection monitoring data, verification sample data, and supplementary Appendix IV sample data; and, the initial Fall 2020 semiannual detection monitoring data. The dates of sample collection and the monitoring program requiring the sample are also provided in these tables.

2.4 § 257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

There was no transition between monitoring programs in 2020. Only detection monitoring was conducted in 2020.

2.5 § 257.90(e)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in § 257.90 through § 257.98.

A summary of potentially required information and the corresponding section of the Rule is provided in the following sections. In addition, the information, if applicable, is provided.

2.5.1 § 257.90(e) Program Status

Status of Groundwater Monitoring and Corrective Action Program.

The groundwater monitoring and corrective action program is in detection monitoring.

Summary of Key Actions Completed.

a. completion of the Fall 2019 verification sampling and analyses per the certified statistical method,

b. completion of the statistical evaluation of the Fall 2019 semiannual detection monitoring sampling and analysis event per the certified statistical method,

c. completion of the 2019 Annual Groundwater Monitoring and Corrective Action Report,

d. completion of a successful alternative source demonstration for the Fall 2019 semiannual detection monitoring sampling and analysis event,

e. completion of the Spring 2020 semiannual detection monitoring sampling and analysis event with subsequent verification sampling per the certified statistical method, and supplemental Appendix IV sample analysis,

f. completion of the statistical evaluation of the Spring 2020 semiannual detection monitoring sampling and analysis event per the certified statistical method,

g. completion of a successful alternative source demonstration for the Spring 2020 semiannual detection monitoring sampling and analysis event, and

h. initiation of the Fall 2020 semiannual detection monitoring sampling and analysis event.

Description of Any Problems Encountered.

No noteworthy problems were encountered.

Discussion of Actions to Resolve the Problems.

Not applicable because no noteworthy problems were encountered.

Projection of Key Activities for the Upcoming Year (2021).

Completion of verification sampling and data analysis, and the statistical evaluation of Fall 2020 detection monitoring sampling and analysis event. Semiannual Spring and Fall 2021 groundwater sampling and analysis. Completion of the statistical evaluation of the Spring 2021 detection monitoring sampling and analysis event, and, if required, alternative source demonstration(s).

2.5.2 § 257.94(d)(3) Demonstration for Alternative Detection Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable because no alternative monitoring frequency for detection monitoring and certification was pursued.

2.5.3 § 257.94(e)(2) Detection Monitoring Alternate Source Demonstration

Demonstration that a source other than the CCR unit caused the statistically significant increase (SSI) over background levels for a constituent or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. In addition, certification of the demonstration is to be included in the annual report.

The following demonstration reports are included as **Appendix C:**

C.1 CCR Groundwater Monitoring Alternative Source Demonstration Report November 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2020).

C.2 CCR Groundwater Monitoring Alternative Source Demonstration Report May 2020 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2020).

2.5.4 § 257.95(c)(3) Demonstration for Alternative Assessment Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the

basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable because there was no assessment monitoring conducted.

2.5.5 § 257.95(d)(3) Assessment Monitoring Concentrations and Groundwater Protection Standards

Include the concentrations of Appendix III and detected Appendix IV constituents from the assessment monitoring, the established background concentrations, and the established groundwater protection standards.

Not applicable because there was no assessment monitoring conducted.

2.5.6 § 257.95(g)(3)(ii) Assessment Monitoring Alternate Source Demonstration

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

Not applicable because there was no assessment monitoring conducted.

2.5.7 § 257.96(a) Demonstration for Additional Time for Assessment of Corrective Measures

Within 90 days of finding that any constituent listed in appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

Not applicable because there was no assessment monitoring conducted.

2.6 § 257.90(e)(6) OVERVIEW SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.

§ 257.90(e)(6) is addressed in Section 1.1 of this report.

3 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. The information contained in this report is a reflection of the conditions encountered at the Sibley Generating Station at the time of fieldwork. This report includes a review and compilation of the required information and does not reflect any variations of the subsurface, which may occur between sampling locations. Actual subsurface conditions may vary and the extent of such variations may not become evident without further investigation.

Conclusions drawn by others from the result of this work should recognize the limitation of the methods used. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive use of Evergy Missouri West, Inc. for specific application to the Sibley Generating Station Fly Ash Impoundment. No warranties, express or implied, are intended or made.

APPENDIX A

FIGURES

Figure 1: Site Map

LEGEND:

- 803 — *GROUNDWATER MONITORING SYSTEM WELL (GROUNDWATER ELEVATION)*
- *CCR FLY ASH IMPOUNDMENT UNIT BOUNDARY*

NOTES:

1. *HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 165305111.00001, DATED JANUARY 2010*
2. *GOOGLE EARTH AERIAL IMAGE. APRIL 2020.*
3. *BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.*

200 0 200 400

SCALE FEET

REV.	DATE
-	-

SHEET TITLE
SITE MAP
FLY ASH IMPOUNDMENT
CCR GROUNDWATER MONITORING SYSTEM

PROJECT TITLE
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

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FIGURE NO.
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APPENDIX B

TABLES

Table 1: Appendix III with Supplemental Appendix IV Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

Table 1
Fly Ash Impoundment
Appendix III with Supplemental Appendix IV Detection Monitoring Results
Evergy Sibley Generating Station

		Appendix III Constituents							Appendix IV Constituents														
Well Number	Sample Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Dissolved Solids (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Fluoride (mg/L)	Lead (mg/L)	Lithium (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Selenium (mg/L)	Thallium (mg/L)	Radium Combined (pCi/L)
MW-801	5/18/2020	0.234	128	92.0	0.162	6.59	64.7	591	<0.00400	<0.00200	0.112	<0.00200	<0.00100	<0.0100	<0.0100	0.162	<0.00500	<0.0150	<0.000200	<0.00500	<0.00200	<0.00200	0.27
MW-801	11/11/2020	0.243	127	65.4	0.164	7.00	54.6	505	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-802	5/18/2020	<0.200	79.2	43.9	0.176	6.62	41.6	366	<0.00400	0.00218	0.163	<0.00200	<0.00100	<0.0100	<0.0100	0.176	<0.00500	<0.0150	<0.000200	<0.00500	<0.00200	<0.00200	1.02
MW-802	11/11/2020	<0.200	29.5	7.0	0.179	6.69	19.5	190	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-803	1/13/2020	---	---	*16.7	---	**7.17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-803	5/18/2020	2.59	115	16.5	0.265	7.09	121	524	<0.00400	0.00246	0.119	<0.00200	<0.00100	<0.0100	<0.0100	0.265	<0.00500	<0.0150	<0.000200	<0.00500	<0.00200	<0.00200	2.26
MW-803	11/11/2020	2.93	118	17.4	0.254	7.43	110	512	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-804	1/13/2020	---	---	---	*0.281	**6.89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-804	2/3/2020	---	---	---	*0.337	**6.87	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-804	5/18/2020	8.63	151	20.4	0.219	7.01	<5.00	627	<0.00400	0.00322	0.477	<0.00200	<0.00100	<0.0100	<0.0100	0.219	<0.00500	0.0210	<0.000200	<0.00500	<0.00200	<0.00200	1.03
MW-804	7/14/2020	---	---	*20.9	---	**6.96	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-804	8/26/2020	---	---	*20.8	---	**7.11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-804	11/11/2020	10.30	172	20.8	0.192	7.08	<5.00	706	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-805	5/18/2020	<0.200	93.3	7.79	0.186	6.82	46.8	341	<0.00400	<0.00200	0.143	<0.00200	<0.00100	<0.0100	<0.0100	0.186	<0.00500	<0.0150	<0.000200	<0.00500	<0.00200	<0.00200	2.74
MW-805	7/14/2020	---	---	---	---	*6.93	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-805	11/11/2020	<0.200	95.3	7.58	0.191	7.31	48.3	338	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-806R	5/18/2020	5.11	148	26.4	0.206	6.95	186	659	<0.00400	0.00555	0.0714	<0.00200	<0.00100	<0.0100	<0.0100	0.206	<0.00500	0.0163	<0.000200	2.16	<0.00200	<0.00200	0.078
MW-806R	11/11/2020	5.39	156	27.1	0.200	7.21	206	673	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* Verification Sample obtained per certified statistical method and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.
**Extra Sample for Quality Control Validation or per Standard Sampling Procedure
mg/L - miligrams per liter
pCi/L - picocuries per liter
S.U. - Standard Units
--- Not Sampled

Table 2
Fly Ash Impoundment
Detection Monitoring Field Measurements
Evergy Sibley Generating Station

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (^{o}C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-801	5/18/2020	6.59	972	12.81	0.5	150	3.47	18.02	712.34
MW-801	11/11/2020	7.00	823	13.38	0.0	175	2.63	20.12	710.24
MW-802	5/18/2020	6.62	606	11.85	13.6	173	2.72	11.32	719.85
MW-802	11/11/2020	6.69	260	12.97	3.5	177	5.33	13.45	717.72
MW-803	1/13/2020	**7.17	789	14.93	0.0	-118	0.00	24.28	702.61
MW-803	5/18/2020	7.09	791	14.33	5.1	-117	1.30	23.23	703.66
MW-803	11/11/2020	7.43	753	14.93	0.7	-106	1.29	27.70	699.19
MW-804	1/13/2020	**6.89	1070	12.85	29.0	-126	0.00	29.51	698.95
MW-804	2/3/2020	**6.87	1140	15.57	9.4	-108	1.04	29.45	699.01
MW-804	5/18/2020	7.01	1030	14.83	20.9	-136	1.87	28.13	700.33
MW-804	7/14/2020	**6.96	405	19.00	18.2	-96	0.30	30.00	698.46
MW-804	8/26/2020	**7.11	934	26.79	26.1	-113	1.80	33.08	695.38
MW-804	11/11/2020	7.08	1110	16.70	0.0	-50	1.58	33.74	694.72
MW-805	5/18/2020	6.82	552	14.72	0.1	-62	1.32	24.94	703.85
MW-805	7/14/2020	*6.93	528	19.50	12.5	130	1.28	26.59	702.20
MW-805	11/11/2020	7.31	546	16.22	0.0	-28	2.22	30.10	698.69
MW-806R	5/18/2020	6.95	930	14.86	24.4	-19	0.00	22.31	706.85
MW-806R	11/11/2020	7.21	903	15.78	0.0	-17	1.87	25.45	703.71

* Verification Sample obtained per certified statistical method and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.
**Extra Sample for Quality Control Validation or per Standard Sampling Procedure
S.U. - Standard Units
µS - microsiemens
^{o}C - Degrees Celsius
ft btoc - Feet Below Top of Casing
ft NGVD - National Geodetic Vertical Datum (NAVD 88)
NTU - Nephelometric Turbidity Unit

APPENDIX C

ALTERNATIVE SOURCE DEMONSTRATIONS

C.1 Groundwater Monitoring Alternative Source Demonstration Report November 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2020)

C.2 Groundwater Monitoring Alternative Source Demonstration Report May 2020 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2020)

C.1 Groundwater Monitoring Alternative Source Demonstration Report November 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2020)

CCR GROUNDWATER MONITORING
ALTERNATIVE SOURCE DEMONSTRATION REPORT
NOVEMBER 2019 GROUNDWATER MONITORING EVENT

FLY ASH IMPOUNDMENT
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

Presented To:

Evergy Missouri West, Inc.

Presented By:

SCS ENGINEERS

8575 West 110th Street, Suite 100

Overland Park, Kansas 66210

June 2020

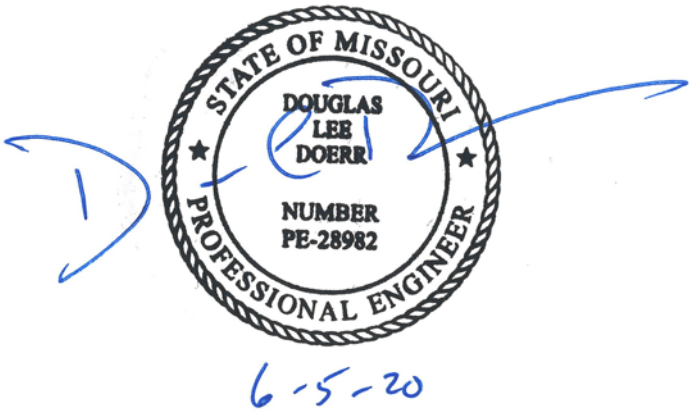
File No. 27213169.20

CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted hydrogeological practices and the local standard of care.

John R. Rockhold, R.G.
SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted engineering practices and the local standard of care.



Douglas L. Doerr, P.E.
SCS Engineers

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Appendices

1 REGULATORY FRAMEWORK

Certain owners or operators of Coal Combustion Residuals (CCR) units are required to complete groundwater monitoring activities to evaluate whether a release from the unit has occurred. Included in the activities is the completion of a statistical analysis of the groundwater quality data as prescribed in § 257.93(h) of the CCR Final Rule. If the initial analysis indicates a statistically significant increase (SSI) over background levels, the owner or operator may perform an alternative source demonstration (ASD). In accordance with § 257.94(e)(2), the owner or operator of the CCR unit may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under § 257.94. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

2 STATISTICAL RESULTS

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on November 6, 2019. Review and validation of the results from the November 2019 Detection Monitoring Event was completed on December 16, 2019, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a statistically significant increase (SSI) over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on January 13, 2020 and February 3, 2020.

The completed statistical evaluation identified one Appendix III constituent above the prediction limit established for monitoring well MW-804.

Constituent/Monitoring Well	*UPL	Observation November 6, 2019	1st Verification January 13, 2020	2nd Verification February 3, 2020
Fluoride				
MW-804	0.2574	0.269	0.281	0.337

*UPL – Upper Prediction Limit

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation identified a SSI above the background prediction limit for fluoride in monitoring well MW-804.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration is a means to provide supporting lines of evidence that something other than a release from a regulated CCR unit caused an SSI. For the above-identified SSI for the Fly Ash Impoundment at the Sibley Generating Station, there are multiple lines of supporting evidence to indicate the above SSI was not caused by a release from the Fly Ash Impoundment. Select multiple lines of supporting evidence are described as follows.

3.1 BOX AND WHISKERS PLOTS

A commonly accepted method to demonstrate and visualize the distribution of data in a given data set is to construct box and whiskers plots. The basic box plotted graphically locates the median, 25th and 75th percentiles of the data set; the "whiskers" extend to the minimum and maximum values of the data set. The range between the ends of a box plot represents the Interquartile Range, which can be used as an estimate of spread or variability. The mean is denoted by a "+".

When comparing multiple wells or well groups, box plots for each well can be lined up on the same axis to roughly compare the variability in each well. This may be used as an exploratory screening for the test of homogeneity of variance across multiple wells.

The box and whiskers plot for fluoride in monitoring well MW-804 was compared to the concentration of fluoride in the other impoundment wells and the river. The box and whiskers plots for fluoride from many of the locations including upgradient locations overlap significantly. Additionally, the naturally occurring fluoride concentrations in the river are greater than the concentrations in the monitoring wells with only a small overlap. The higher concentration of fluoride in the river and the overlap of upgradient and downgradient wells demonstrates that a source other than the Fly Ash Impoundment caused the SSI over background levels for fluoride, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for fluoride are provided in **Appendix A**.

3.2 PIPER DIAGRAM PLOTS

Piper diagrams are a form of tri-linear diagram, and a widely accepted method to provide a visual representation of the ion concentration of groundwater. Piper diagrams portray water compositions and facilitate the interpretation and presentation of chemical analyses. They may be used to visually compare the chemical composition of water quality across wells, and aid in determining whether the waters are similar or dis-similar, and can over time indicate whether the waters are mixing.

A piper diagram has two triangular plots on the right and left side of a 4-sided center field. The three major cations are plotted in the left triangle and anions in the right. Each of the three cation/anion variables, in milliequivalents, is divided by the sum of the three values, to produce a percent of total cation/anions. These percentages determine the location of the associated symbol. The data points in the center field are located by extending the points in the lower triangles to the point of intersection. In order for a piper diagram to be produced, the selected data file must contain the following constituents: Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulfate (SO4), Carbonate (CO3), and Bicarbonate (HCO3).

A piper diagram was prepared to compare plots for MW-804 to plots for three ash pore water samples (ASD-1, ASD-2, and ASD-3) collected in the Fly Ash Impoundment with a Geoprobe® screen-point 15 groundwater sampler. Sample locations are shown on **Figure 1** in **Appendix B**. Samples were collected on November 8, 2018 for the ash pore water and well MW-804. The analytical results are provided in **Appendix C** along with the piper diagram. The piper diagram plots indicate the groundwater from the wells does not exhibit the same geochemical characteristics as the ash pore water. The groundwater and the ash pore water plot in different areas indicating there are two types of water (groundwater and ash pore water) and that the waters are not mixing. This helps demonstrate that a source other than the Fly Ash Impoundment could easily have caused the SSIs over background levels for fluoride or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.3 TIME SERIES PLOTS

Time series plots provide a graphical method to view changes in data at a particular well (monitoring point) or wells over time. Time series plots display the variability in concentration levels over time and can be used to indicate possible outliers or data errors (i.e. “spikes”). More than one well can be compared on the same plot to look for differences between wells. Non-detect data is plotted as censored data at one-half of the laboratory reporting limit. Time series plots can also be used to examine the data for trends.

The times series plot for fluoride in monitoring well MW-804 was compared to the time series plot for fluoride in the river. The fluoride concentration in well MW-804 was similar to that of the river during the last river sampling event and lower than the river concentrations for all other river sampling events. Monitoring well MW-804 is the closest well to the river and would be anticipated to be the well most influenced by the river. These time series plots demonstrate that a source other than the Fly Ash Impoundment caused the SSI over the background level for fluoride or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Time series plots for sulfate are provided in **Appendix D**.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the Fly Ash Impoundment caused the SSI over background levels, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Based on the successful ASD, the owner or operator of the Fly Ash Impoundment may continue with the detection monitoring program under § 257.94.

5 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client’s directives. It is intended for the exclusive use of Evergy Metro, Inc.

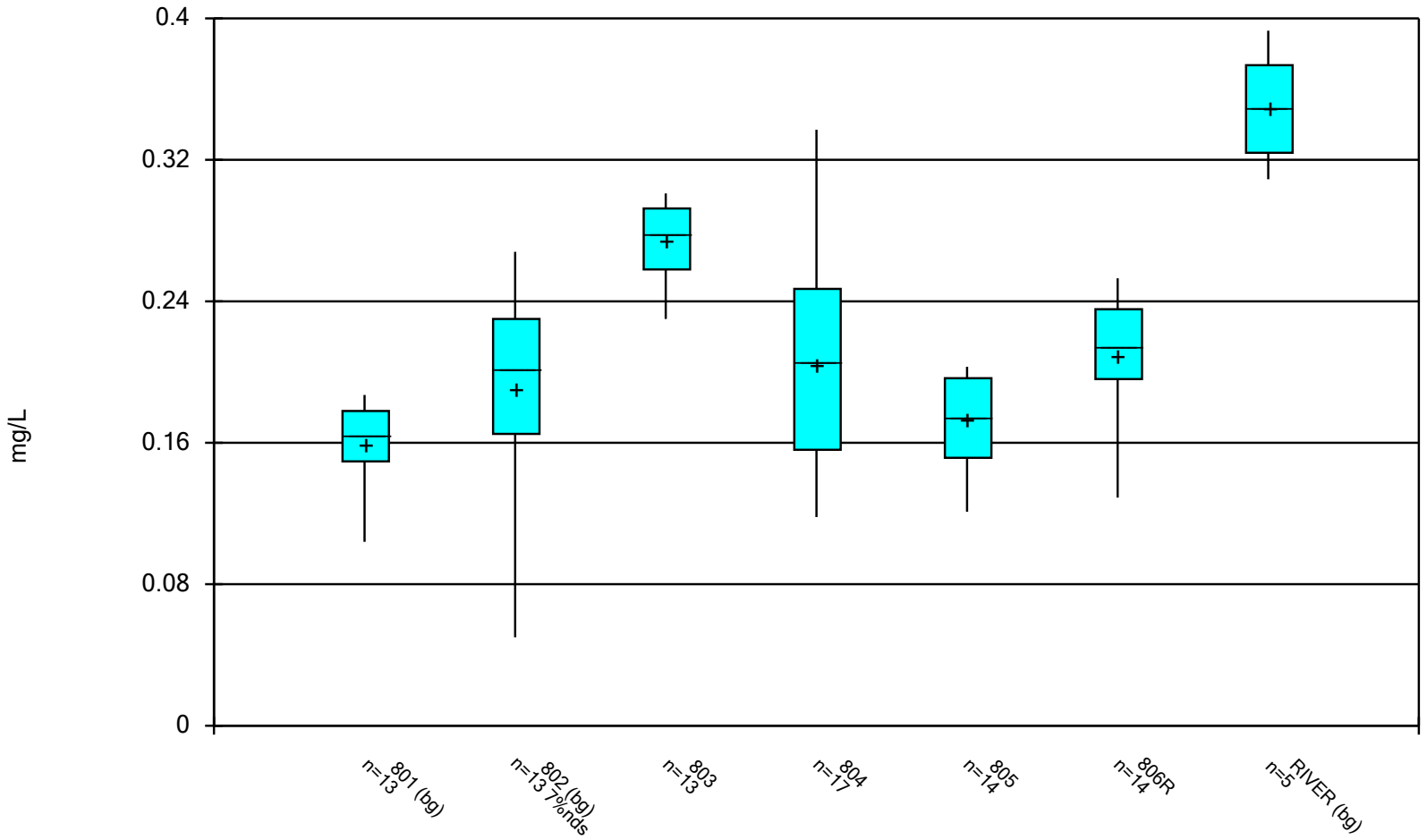
and Evergy Missouri West, Inc. for specific application to the Sibley Generating Station. No warranties, express or implied, are intended or made.

The signatures of the certifying registered geologist and professional engineer on this document represent that to the best of their knowledge, information, and belief in the exercise of their professional judgement in accordance with the standard of practice, it is their professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by them are made on the basis of their experience, qualifications, and professional judgement and are not to be construed as warranties or guaranties. In addition, opinions relating to regulatory, environmental, geologic, geochemical and geotechnical conditions interpretations or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

Appendix A

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Fluoride Analysis Run 3/16/2020 11:19 AM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

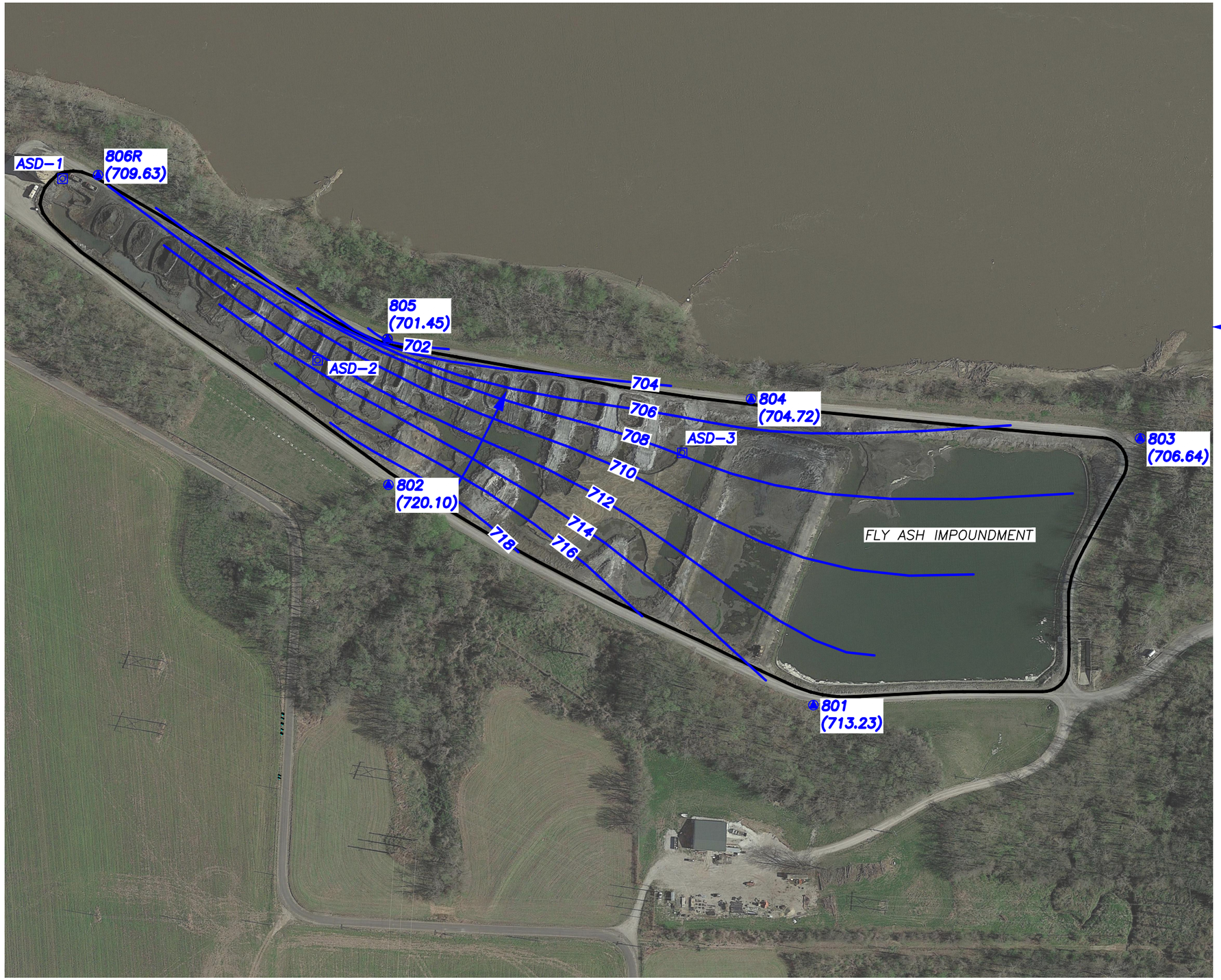
Box & Whiskers Plot

Sibley Client: SCS Engineers Data: Sibley Printed 3/16/2020, 11:19 AM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Fluoride (mg/L)	801 (bg)	13	0.1588	0.02496	0.006922	0.165	0.104	0.187	0
Fluoride (mg/L)	802 (bg)	13	0.1902	0.05929	0.01644	0.202	0.05	0.268	7.692
Fluoride (mg/L)	803	13	0.2749	0.02187	0.006066	0.278	0.23	0.301	0
Fluoride (mg/L)	804	17	0.2048	0.06076	0.01474	0.206	0.118	0.337	0
Fluoride (mg/L)	805	14	0.1731	0.02584	0.006907	0.175	0.121	0.203	0
Fluoride (mg/L)	806R	14	0.2092	0.03512	0.009386	0.214	0.129	0.253	0
Fluoride (mg/L)	RIVER (bg)	5	0.349	0.03026	0.01353	0.35	0.309	0.393	0

Appendix B

Figure 1



LEGEND:

- 760 — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- 601 (734.55) GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- ASD–2 GEOPROBE® PORE WATER SAMPLE LOCATION
- FLY ASH IMPOUNDMENT UNIT BOUNDARY
- GROUNDWATER FLOW DIRECTION

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. GOOGLE EARTH AERIAL IMAGE. APRIL 2018.
3. BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.

200 0 200 400
SCALE FEET

REV.	DATE
-	-

SHEET TITLE
POTENTIOMETRIC SURFACE MAP (NOVEMBER 2019)
CCR FLY ASH IMPOUNDMENT

PROJECT TITLE
ALTERNATIVE SOURCE DEMONSTRATION

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

SCS ENGINEERS
8575 W. 110th St, Ste. 100
Overland Park, Kansas 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO.	DWN. BY:	Q/A RVW BY:
27213187.18	DAW	DLD
DSN. BY:	**CHK. BY:**	**PROJ. MGR.**
DAW	JRR	JRF

CADD FILE:
19 – NOV_GW ASD FIG 1.DWG

DATE:
3/17/20

FIGURE NO.
1

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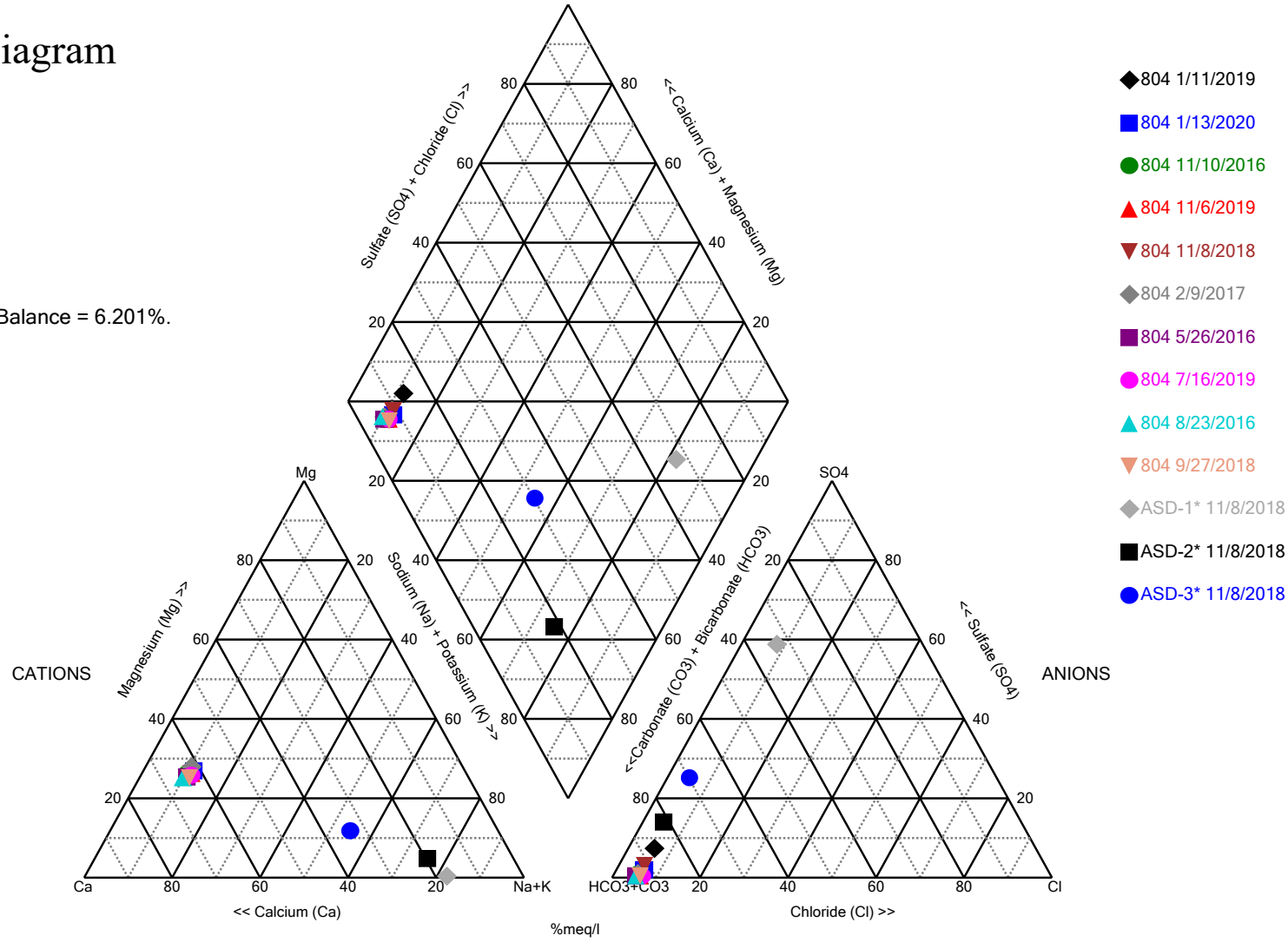
Appendix C

Piper Diagram Plots and Laboratory Results

Piper Diagram

Cation-Anion Balance = 6.201%.



Analysis Run 3/16/2020 2:44 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

Analysis Run 3/16/2020 2:46 PM View: Ash Pond III

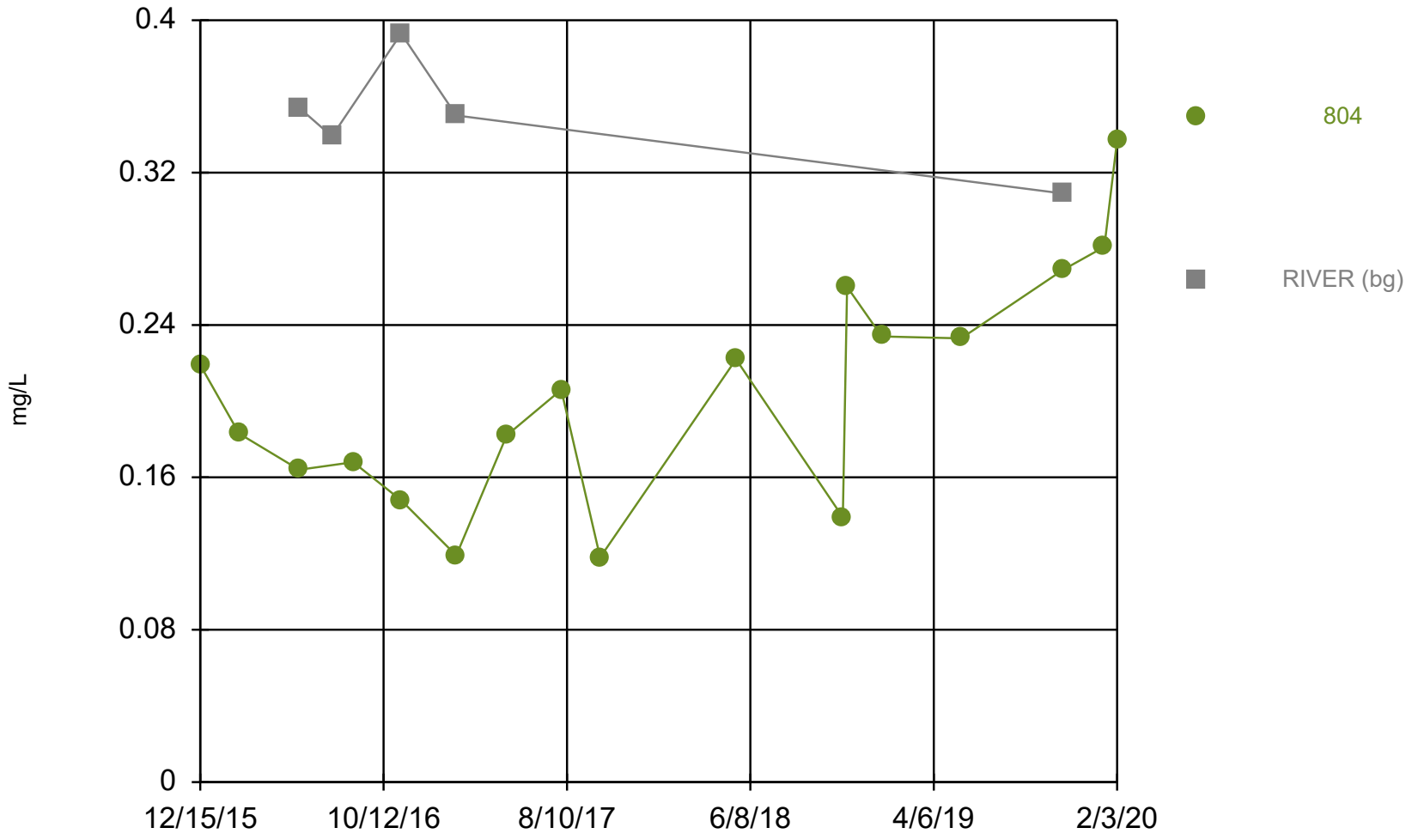
Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
804 5/26/2016	27.8	5.99	167	39.8	15.5	2.5	596	10
804 8/23/2016	24.9	4.62	157	37	14.4	2.5	551	10
804 11/10/2016	26.2	4.71	155	39	14.2	2.5	525	10
804 2/9/2017	23.4	4.62	132	36.1	15.2	2.5	504	10
804 9/27/2018	29.3	5.67	158	37.8	18.9	2.5	591	10
804 11/8/2018	30.1	5.76	158	39.8	18.3	14.1	561	10
804 1/11/2019	26.8	5.58	145	35.7	17.6	31.8	479	10
804 7/16/2019	28.6	6.68	158	39.3	18.6	2.5	545	10
804 11/6/2019	28.3	5.71	151	38.6	19.2	2.5	580	10
804 1/13/2020	28	6.02	145	37.9	20	9.37	571	10
ASD-1* 11/8/2018	178	38.6	37.1	0.5	29.3	303	10	104
ASD-2* 11/8/2018	497	82.4	124	17	43.8	211	10	795
ASD-3* 11/8/2018	365	42.2	208	43.8	41.5	336	10	592

Appendix D

Time Series Plots

Time Series



Constituent: Fluoride Analysis Run 3/16/2020 3:44 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

C.2 Groundwater Monitoring Alternative Source Demonstration Report May 2020 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2020)

CCR GROUNDWATER MONITORING
ALTERNATIVE SOURCE DEMONSTRATION REPORT
MAY 2020 GROUNDWATER MONITORING EVENT

FLY ASH IMPOUNDMENT
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

Presented To:

Evergy Missouri West, Inc.

Presented By:

SCS ENGINEERS

8575 West 110th Street, Suite 100

Overland Park, Kansas 66210

December 2020

File No. 27213169.20

CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted hydrogeological practices and the local standard of care.

John R. Rockhold, R.G.
SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted engineering practices and the local standard of care.

Douglas L. Doerr, P.E.
SCS Engineers

Table of Contents

Section **Page**

Appendices

1 REGULATORY FRAMEWORK

Certain owners or operators of Coal Combustion Residuals (CCR) units are required to complete groundwater monitoring activities to evaluate whether a release from the unit has occurred. Included in the activities is the completion of a statistical analysis of the groundwater quality data as prescribed in § 257.93(h) of the CCR Final Rule. If the initial analysis indicates a statistically significant increase (SSI) over background levels, the owner or operator may perform an alternative source demonstration (ASD). In accordance with § 257.94(e)(2), the owner or operator of the CCR unit may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under § 257.94. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

2 STATISTICAL RESULTS

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on May 18, 2020. Review and validation of the results from the May 2020 Detection Monitoring Event was completed on June 26, 2020, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a statistically significant increase (SSI) over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on July 14, 2020 and August 26, 2020.

The completed statistical evaluation identified one Appendix III constituent above the prediction limit established for monitoring well MW-804.

Constituent/Monitoring Well	*UPL	Observation May 18, 2020	1st Verification July 14, 2020	2nd Verification August 26, 2020
Chloride				
MW-804	19.5	20.4	20.9	20.8

*UPL – Upper Prediction Limit

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation identified a SSI above the background prediction limit for chloride in monitoring well MW-804.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration is a means to provide supporting lines of evidence that something other than a release from a regulated CCR unit caused an SSI. For the above-identified SSI for the Fly Ash Impoundment at the Sibley Generating Station, there are multiple lines of supporting evidence to indicate the above SSI was not caused by a release from the Fly Ash Impoundment. Select multiple lines of supporting evidence are described as follows.

3.1 BOX AND WHISKERS PLOTS

A commonly accepted method to demonstrate and visualize the distribution of data in a given data set is to construct box and whiskers plots. The basic box plotted graphically locates the median, 25th and 75th percentiles of the data set; the "whiskers" extend to the minimum and maximum values of the data set. The range between the ends of a box plot represents the Interquartile Range, which can be used as an estimate of spread or variability. The mean is denoted by a "+".

When comparing multiple wells or well groups, box plots for each well can be lined up on the same axis to roughly compare the variability in each well. This may be used as an exploratory screening for the test of homogeneity of variance across multiple wells.

The box and whiskers plot for chloride in monitoring well MW-804 was compared to the concentration of chloride in the other impoundment wells. The box and whiskers plots for chloride from upgradient wells is significantly greater than the concentration in MW-804. The higher concentration of chloride in the upgradient wells demonstrates that a source other than the Fly Ash Impoundment caused the SSI over background levels for chloride, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for chloride are provided in **Appendix A**.

3.2 PIPER DIAGRAM PLOTS

Piper diagrams are a form of tri-linear diagram, and a widely accepted method to provide a visual representation of the ion concentration of groundwater. Piper diagrams portray water compositions and facilitate the interpretation and presentation of chemical analyses. They may be used to visually compare the chemical composition of water quality across wells, and aid in determining whether the waters are similar or dis-similar, and can over time indicate whether the waters are mixing.

A piper diagram has two triangular plots on the right and left side of a 4-sided center field. The three major cations are plotted in the left triangle and anions in the right. Each of the three cation/anion variables, in milliequivalents, is divided by the sum of the three values, to produce a percent of total cation/anions. These percentages determine the location of the associated symbol. The data points in the center field are located by extending the points in the lower triangles to the point of intersection. In order for a piper diagram to be produced, the selected data file must contain the following constituents: Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulfate (SO4), Carbonate (CO3), and Bicarbonate (HCO3).

A piper diagram was prepared to compare plots for MW-804 to plots for three ash pore water samples (ASD-1, ASD-2, and ASD-3) collected in the Fly Ash Impoundment with a Geoprobe® screen-point 15

groundwater sampler. Sample locations are shown on **Figure 1** in **Appendix B**. Samples were collected on November 8, 2018 for the ash pore water and well MW-804. The analytical results are provided in **Appendix C** along with the piper diagram. The piper diagram plots indicate the groundwater from the wells does not exhibit the same geochemical characteristics as the ash pore water. The groundwater and the ash pore water plot in different areas indicating there are two types of water (groundwater and ash pore water) and that the waters are not mixing. This helps demonstrate that a source other than the Fly Ash Impoundment could easily have caused the SSIs over background levels for chloride or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.3 TIME SERIES PLOTS

Time series plots provide a graphical method to view changes in data at a particular well (monitoring point) or wells over time. Time series plots display the variability in concentration levels over time and can be used to indicate possible outliers or data errors (i.e. "spikes"). More than one well can be compared on the same plot to look for differences between wells. Non-detect data is plotted as censored data at one-half of the laboratory reporting limit. Time series plots can also be used to examine the data for trends.

The times series plot for chloride in monitoring well MW-804 was compared to the time series plot for upgradient and downgradient wells. The chloride concentration in well MW-804 was similar to that of the other downgradient wells and lower than the upgradient wells. These time series plots demonstrate that a source other than the Fly Ash Impoundment caused the SSI over the background level for chloride or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Time series plots for sulfate are provided in **Appendix D**.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the Fly Ash Impoundment caused the SSI over background levels, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Based on the successful ASD, the owner or operator of the Fly Ash Impoundment may continue with the detection monitoring program under § 257.94.

5 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive use of Evergy Metro, Inc. and Evergy Missouri West, Inc. for specific application to the Sibley Generating Station. No warranties, express or implied, are intended or made.

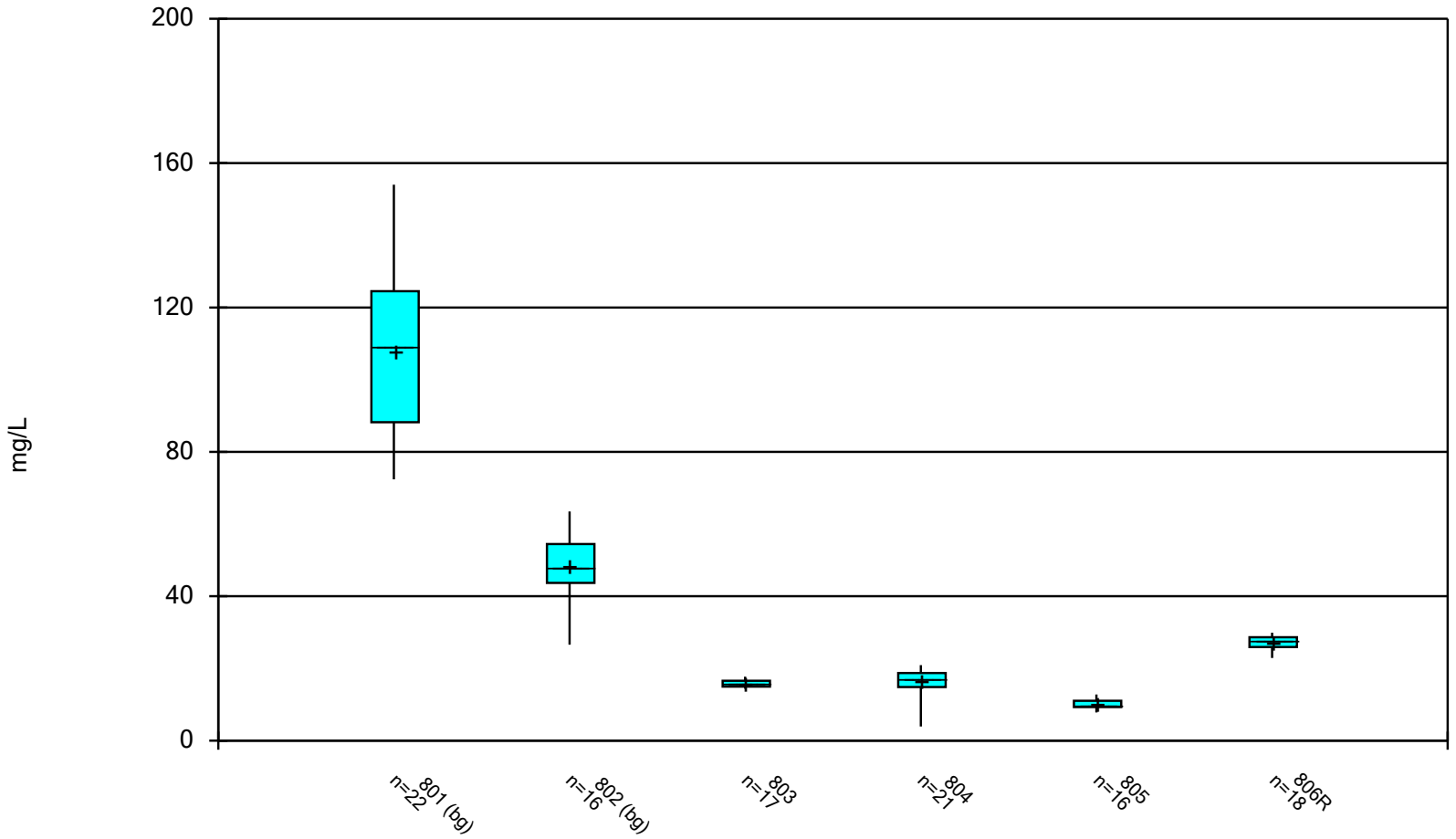
The signatures of the certifying registered geologist and professional engineer on this document represent that to the best of their knowledge, information, and belief in the exercise of their professional judgement

in accordance with the standard of practice, it is their professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by them are made on the basis of their experience, qualifications, and professional judgement and are not to be construed as warranties or guaranties. In addition, opinions relating to regulatory, environmental, geologic, geochemical and geotechnical conditions interpretations or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

Appendix A

Box and Whiskers Plots

Box & Whiskers Plot



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Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Sibley Client: SCS Engineers Data: Sibley Printed 10/6/2020, 1:14 PM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Chloride (mg/L)	801 (bg)	22	107.7	23.35	4.978	109	72.4	154	0
Chloride (mg/L)	802 (bg)	16	48.21	9.839	2.46	48	26.6	63.5	0
Chloride (mg/L)	803	17	15.93	0.9873	0.2394	15.9	14.4	17.7	0
Chloride (mg/L)	804	21	16.56	3.602	0.7859	17.5	3.9	20.9	0
Chloride (mg/L)	805	16	10.14	1.293	0.3233	9.87	7.79	12.8	0
Chloride (mg/L)	806R	18	27.19	2.05	0.4832	27.9	22.9	29.9	0

Appendix B

Figure 1

LEGEND:

- 760 — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- 601 (734.55) — GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- ASD-1 — GEOPROBE® PORE WATER SAMPLE LOCATION
- FLY ASH IMPOUNDMENT UNIT BOUNDARY
- GROUNDWATER FLOW DIRECTION

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 165305111.00001, DATED JANUARY 2010
2. GOOGLE EARTH AERIAL IMAGE. APRIL 2020.
3. BOUNDARY AND MONITORING WELL LOCATIONS SHOWN ARE APPROXIMATE.

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SCALE FEET

REV.	DATE
-	-

SHEET TITLE
POTENTIOMETRIC SURFACE MAP (MAY 2020)
CCR FLY ASH IMPOUNDEMENT

PROJECT TITLE
ALTERNATIVE SOURCE DEMONSTRATION (MAY 2020)

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

SCS ENGINEERS
8575 W. 110th St. Ste. 100
Overland Park, Kansas 66210
PH: (913) 681-0030 FAX: (913) 681-0012

PROJ. NO. 27213167.20
DSN. BY: TGW
DWL. BY: ALR
CHK. BY: JRF
Q/A RVW BY: JRF
PROJ. MGR. JRF

CADD FILE:
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DATE:
12/22/20

FIGURE NO.
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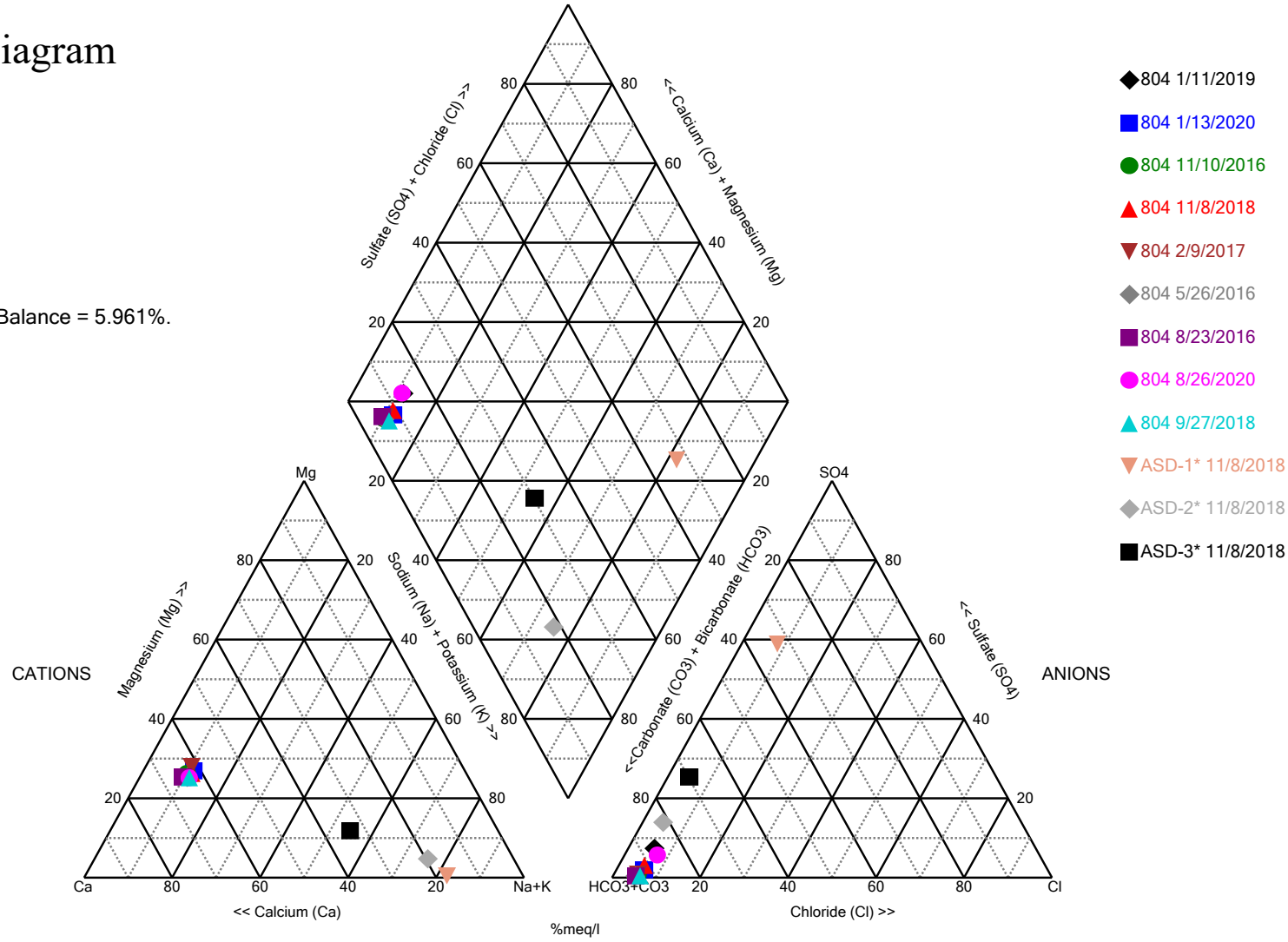
Appendix C

Piper Diagram Plots and Laboratory Results

Piper Diagram

Cation-Anion Balance = 5.961%.



Analysis Run 10/6/2020 1:32 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

Analysis Run 10/6/2020 1:33 PM View: Ash Pond III

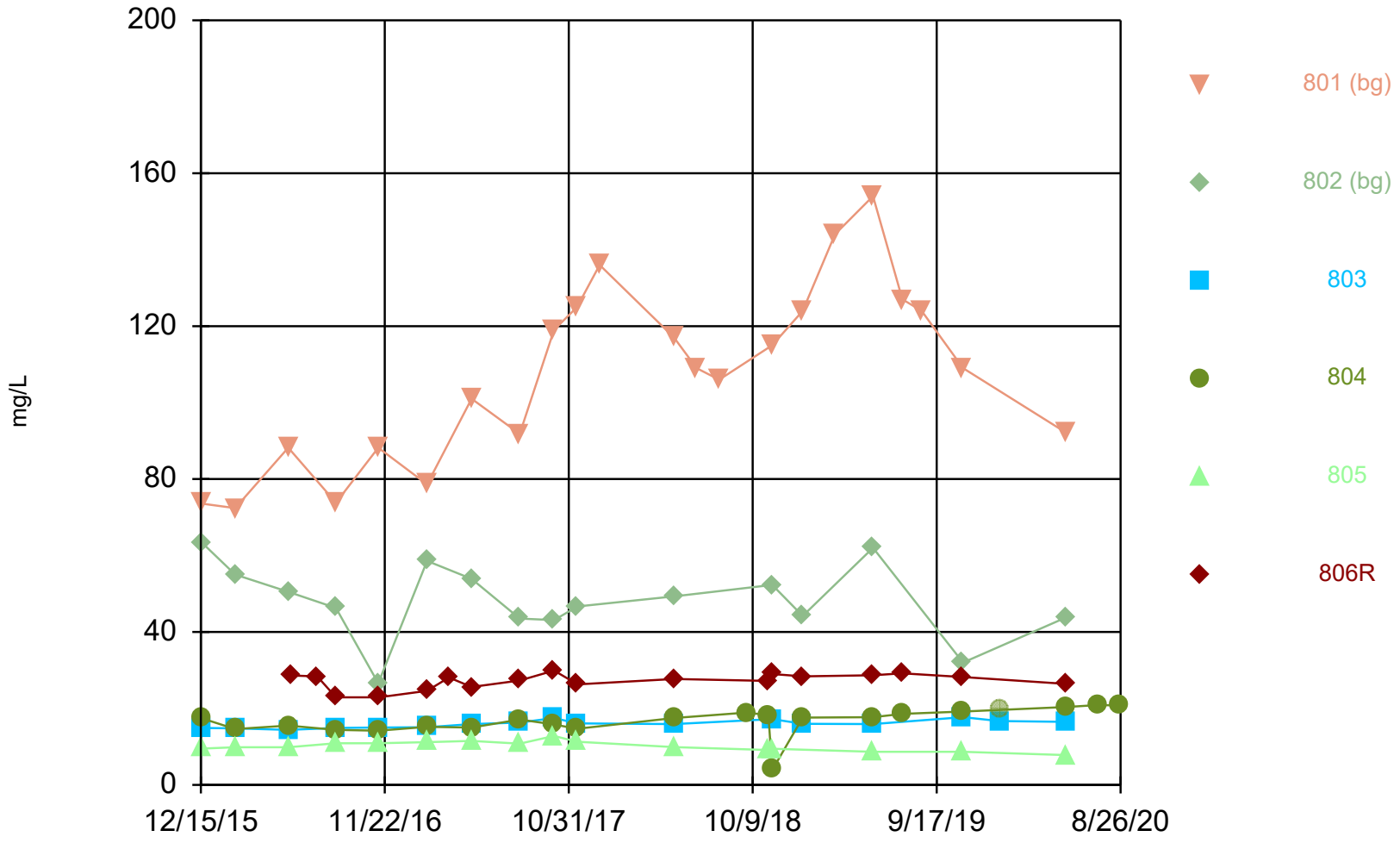
Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
804 5/26/2016	27.8	5.99	167	39.8	15.5	2.5	596	10
804 8/23/2016	24.9	4.62	157	37	14.4	2.5	551	10
804 11/10/2016	26.2	4.71	155	39	14.2	2.5	525	10
804 2/9/2017	23.4	4.62	132	36.1	15.2	2.5	504	10
804 9/27/2018	29.3	5.67	158	37.8	18.9	2.5	591	10
804 11/8/2018	30.1	5.76	158	39.8	18.3	14.1	561	10
804 1/11/2019	26.8	5.58	145	35.7	17.6	31.8	479	10
804 1/13/2020	28	6.02	145	37.9	20	9.37	571	10
804 8/26/2020	26.9	5.41	148	35.1	20.8	27.1	491	10
ASD-1* 11/8/2018	178	38.6	37.1	0.5	29.3	303	10	104
ASD-2* 11/8/2018	497	82.4	124	17	43.8	211	10	795
ASD-3* 11/8/2018	365	42.2	208	43.8	41.5	336	10	592

Appendix D

Time Series Plots

Time Series



Constituent: Chloride Analysis Run 10/6/2020 1:14 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley