

**2017 ANNUAL GROUNDWATER MONITORING
AND
CORRECTIVE ACTION REPORT**

**UPPER AQC IMPOUNDMENT
LA CYGNE GENERATING STATION
LA CYGNE, KANSAS**

Presented To:

Kansas City Power & Light Company

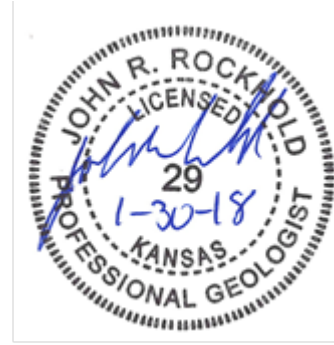
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January 30, 2018
File Number 27217233.00

CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Professional Geologist in the State of Kansas, do hereby certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the Upper AQC Impoundment at the La Cygne Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



John R. Rockhold, P.G.
SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Kansas, do hereby certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the Upper AQC Impoundment at the La Cygne 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

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1 INTRODUCTION

This 2017 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). Specifically, this report was prepared 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 2017 Annual Groundwater Monitoring and Corrective Action Report for the Upper AQC Impoundment at the La Cygne Generating Station.

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 Upper AQC Impoundment and all background (or upgradient) and downgradient monitoring wells with identification numbers for the Upper AQC 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;

The CCR groundwater monitoring system was initially certified on October 13, 2017. No new monitoring wells were installed and no wells were decommissioned as part of the CCR groundwater monitoring program for the Upper AQC Impoundment in 2017.

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 conducted during the reporting period. Sampling for the detection monitoring program began in June 2016. Samples were analyzed as indicated in **Appendix B, Table 1** (Appendix III and Appendix IV Detection Monitoring Results, and **Table 2** (Detection Monitoring Field Measurements). The dates of sample collection and the results of the analyses 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 2017. Only detection monitoring was conducted in 2017. Statistical evaluation of the data was still in process as of the end of 2017.

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)

Status of Groundwater Monitoring and Corrective Action Program.

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

Summary of Key Actions Completed.

Collection of initial background groundwater quality data was completed and the initial detection monitoring sampling and analysis event was completed in October 2017. Verification sampling was in process as of the end of 2017.

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 (2018).

Completion of statistical evaluation of detection monitoring data. Groundwater sampling and analysis and alternative source demonstration(s) (if required).

2.5.2 § 257.94(d)(3)

Demonstration providing the basis for an alternative monitoring frequency for detection monitoring and certification that it meets the requirements of this section.

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

2.5.3 § 257.94(e)(2)

Demonstration that an alternative source other than the CCR unit caused the statistically significant increase (SSI) over background or that the SSI was caused by an 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.

Not applicable because no such demonstration was conducted.

2.5.4 § 257.95(c)(3)

Demonstration providing the basis for an alternative monitoring frequency for assessment monitoring and certification that it meets the requirements of this section.

Not applicable because no such demonstration was conducted.

2.5.5 § 257.95(d)(3)

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)

Demonstration that an alternative source other than the CCR unit caused the contamination, or that the SSI (during assessment monitoring) resulted from an 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.

Not applicable because no such demonstration was conducted.

2.5.7 § 257.96(a)

Demonstration of the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. In addition, certification of the demonstration is to be included in the annual report.

Not applicable because no such demonstration was conducted.

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 La Cygne 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 KCP&L for specific application to the La Cygne Generating Station Upper AQC Impoundment. No warranties, express or implied, are intended or made.

APPENDIX A

FIGURES

Figure 1: Site Map

N:\KCP\Projects\Groundwater\DWG\La Cygne\CCR Annual Report\Fig 1 - La Cygne UAQC Imp.dwg Jan 16, 2018 - 5:14pm Layout Name: Fig 1 By: 4121rcw



LEGEND

CCR UNIT BOUNDARY (APPROXIMATE LIMITS OF UPPER AQC IMPOUNDMENT)
 CCR GROUNDWATER MONITORING SYSTEM WELLS
 MW-702

NOTES:

1. KDHE FACILITY PERMIT AREA BOUNDARY VARIES FROM THAT SHOWN.
2. GOOGLE EARTH IMAGE DATED OCTOBER 2014. BOUNDARY AND MONITOR WELL LOCATIONS ARE APPROXIMATE.
3. BOUNDARY AND MONITOR WELL LOCATIONS ARE PROVIDED BY AECOM.

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 SCALE FEET

SCS ENGINEERS 7311 W. 130th St. Ste. 100 Overland Park, Kansas 66213 PH: (913) 681-0030 FAX: (913) 681-0012 PROJ. NO. 27217233.00 DSK: BT/ RCW	CLIENT KANSAS CITY POWER & LIGHT COMPANY LA CYGNE GENERATING STATION LA CYGNE, KANSAS	SHEET TITLE UPPER AQC IMPOUNDMENT CCR GROUNDWATER MONITORING SYSTEM PROJECT TITLE 2017 CCR GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT	REV.	DATE	CHK.	BY
			△	-	-	-
CADD FILE: FIG 1 - LA CYGNE UAQC IMP.DWG	DATE: 1/16/18	FIGURE NO. 1	DWN. BY: RCW CHK. BY: JRR D/A RW BY: JRR PROJ. MGR: JRR			

APPENDIX B

TABLES

Table 1: Appendix III and Appendix IV Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

Table 1
Upper AQC Impoundment
Appendix III and Appendix IV Detection Monitoring Results
KCP&L LaCygne Generating Station

Well Number	Sample Date	Appendix III Constituents							Appendix IV Constituents														
		Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Total 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-6	6/8/2016	1.18	112	216	0.545	7.19	181	1180	<0.002	0.00721	0.204	<0.002	<0.001	<0.002	<0.002	0.545	<0.002	0.0634	<0.0002	<0.005	<0.002	<0.002	0.385
MW-6	8/10/2016	1.23	101	214	0.495	7.18	177	1280	<0.002	0.00370	0.175	<0.002	<0.001	<0.002	<0.002	0.495	<0.002	0.0482	<0.0002	<0.005	<0.002	<0.002	0.521
MW-6	10/13/2016	1.18	114	206	0.497	7.24	165	1140	<0.002	0.00421	0.174	<0.002	<0.001	<0.002	<0.002	0.497	<0.002	0.0507	<0.0002	<0.005	<0.002	<0.002	1.89
MW-6	12/12/2016	1.18	103	189	0.401	7.27	160	1220	<0.002	0.00515	0.168	<0.002	<0.001	<0.002	<0.002	0.401	<0.002	0.0456	<0.0002	<0.005	<0.002	<0.002	1.37
MW-6	2/9/2017	1.22	98.8	208	0.492	7.25	197	1180	<0.002	<0.002	0.141	<0.002	<0.001	<0.002	<0.002	0.492	<0.002	0.0553	<0.0002	<0.005	<0.002	<0.002	0.431
MW-6	4/5/2017	1.19	97.9	227	0.447	7.30	167	1180	<0.002	<0.002	0.147	<0.002	<0.001	<0.002	<0.002	0.447	<0.002	0.0521	<0.0002	<0.005	<0.002	<0.002	0.674
MW-6	6/15/2017	1.19	90.5	181	1.75	7.20	147	1120	<0.002	0.00715	0.181	<0.002	<0.001	<0.002	<0.002	1.75	<0.002	0.0538	<0.0002	<0.005	<0.002	<0.002	1.53
MW-6	8/9/2017	1.21	102	210	0.473	7.02	170	1280	<0.002	0.00480	0.178	<0.002	<0.001	<0.002	<0.002	0.473	<0.002	0.0570	<0.0002	<0.005	<0.002	<0.002	1.98
MW-6	10/5/2017	1.11	105	208	0.464	7.11	165	1230	<0.002	0.00475	0.185	<0.002	<0.001	<0.002	<0.002	0.464	<0.002	0.0483	<0.0002	<0.005	<0.002	<0.002	1.38
MW-7	6/8/2016	1.61	26.5	106	1.36	7.77	<5	910	<0.002	0.00393	0.611	<0.002	<0.001	<0.002	<0.002	1.36	<0.002	0.0867	<0.0002	<0.005	<0.002	<0.002	1.66
MW-7	8/10/2016	1.71	21.2	103	1.27	7.83	<5	946	<0.002	0.00212	0.530	<0.002	<0.001	<0.002	<0.002	1.27	<0.002	0.0736	<0.0002	<0.005	<0.002	<0.002	1.795
MW-7	10/13/2016	1.64	24.2	99.9	1.28	8.00	<5	938	<0.002	0.00302	0.532	<0.002	<0.001	<0.002	<0.002	1.28	<0.002	0.0759	<0.0002	<0.005	<0.002	<0.002	1.82
MW-7	12/12/2016	1.60	23.2	98.0	1.13	7.96	<5	902	<0.002	0.00278	0.552	<0.002	<0.001	<0.002	<0.002	1.13	<0.002	0.0713	<0.0002	<0.005	<0.002	<0.002	1.55
MW-7	2/8/2017	1.65	26.6	100	1.20	7.79	<5	890	<0.002	<0.002	0.509	<0.002	<0.001	<0.002	<0.002	1.20	<0.002	0.0773	0.000235	<0.005	<0.002	<0.002	0.366
MW-7	4/5/2017	1.61	26.8	102	1.28	7.89	<5	916	<0.002	<0.002	0.497	<0.002	<0.001	<0.002	<0.002	1.28	<0.002	0.0755	<0.0002	<0.005	<0.002	<0.002	1.23
MW-7	6/15/2017	1.64	22.4	81.2	1.27	7.75	<5	890	<0.002	0.00223	0.527	<0.002	<0.001	<0.002	<0.002	1.27	<0.002	0.0817	<0.0002	<0.005	<0.002	<0.002	1.38
MW-7	8/9/2017	1.65	25.2	111	1.20	7.62	<5	968	<0.002	0.00301	0.565	<0.002	<0.001	<0.002	<0.002	1.20	<0.002	0.0842	<0.0002	<0.005	<0.002	<0.002	2.93
MW-7	10/5/2017	1.59	23.4	105	1.19	7.74	<5	944	<0.002	0.00280	0.563	<0.002	<0.001	<0.002	<0.002	1.19	<0.002	0.0759	<0.0002	<0.005	<0.002	<0.002	2.09
MW-11	6/6/2016	0.729	71.0	125	0.493	7.37	156	1000	<0.002	<0.002	0.0366	<0.002	<0.001	<0.002	<0.002	0.493	<0.002	0.0659	<0.0002	<0.005	<0.002	<0.002	0.472
MW-11	8/11/2016	0.739	66.9	125	0.512	7.30	187	1100	<0.002	<0.002	0.0342	<0.002	<0.001	<0.002	<0.002	0.512	<0.002	0.0594	<0.0002	<0.005	<0.002	<0.002	1.07
MW-11	10/12/2016	0.730	69.2	123	0.504	7.33	212	1140	<0.002	<0.002	0.0324	<0.002	<0.001	<0.002	<0.002	0.504	<0.002	0.0596	<0.0002	<0.005	<0.002	<0.002	0.136
MW-11	12/9/2016	0.786	67.1	107	0.425	7.58	215	1100	<0.002	<0.002	0.0332	<0.002	<0.001	<0.002	<0.002	0.425	<0.002	0.0577	<0.0002	<0.005	<0.002	<0.002	1.15
MW-11	2/9/2017	0.974	63.4	109	0.546	7.36	188	1010	<0.002	<0.002	0.0406	<0.002	<0.001	<0.002	<0.002	0.546	<0.002	0.0686	<0.0002	<0.005	<0.002	<0.002	0.711
MW-11	4/6/2017	1.04	61.1	94.5	0.527	7.41	148	938	<0.002	<0.002	0.0358	<0.002	<0.001	<0.002	<0.002	0.527	<0.002	0.0638	<0.0002	<0.005	<0.002	<0.002	1.54
MW-11	6/15/2017	1.02	58.2	89.7	0.452	7.50	145	984	<0.002	<0.002	0.0386	<0.002	<0.001	<0.002	<0.002	0.452	<0.002	0.0665	<0.0002	<0.005	<0.002	<0.002	0.317
MW-11	8/10/2017	0.965	62.6	100	0.582	7.14	191	1020	<0.002	<0.002	0.0350	<0.002	<0.001	<0.002	<0.002	0.582	<0.002	0.0627	<0.0002	<0.005	<0.002	<0.002	1.9
MW-11	10/5/2017	0.988	65.1	99.2	0.379	7.33	236	1040	<0.002	<0.002	0.0413	<0.002	<0.001	<0.002	<0.002	0.379	<0.002	0.0669	<0.0002	<0.005	<0.002	<0.002	0.356
MW-701	6/7/2016	1.07	39.6	56.5	0.717	7.63	76.9	595	<0.002	<0.002	0.149	<0.002	<0.001	<0.002	<0.002	0.717	<0.002	0.0375	<0.0002	0.00519	<0.002	<0.002	0.245
MW-701	8/9/2016	1.06	35.3	50.6	0.719	7.54	81.1	587	<0.002	<0.002	0.144	<0.002	<0.001	<0.002	<0.002	0.719	<0.002	0.0314	<0.0002	<0.005	<0.002	<0.002	0.215
MW-701	10/11/2016	1.04	37.2	49.1	0.751	7.67	80.3	619	<0.002	<0.002	0.159	<0.002	<0.001	<0.002	<0.002	0.751	<0.002	0.0374	<0.0002	<0.005	<0.002	<0.002	1.39
MW-701	12/6/2016	1.07	37.2	52.2	0.816	7.63	80.9	658	<0.002	<0.002	0.168	<0.002	<0.001	<0.002	<0.002	0.816	<0.002	0.0409	<0.0002	<0.005	<0.002	<0.002	0.734
MW-701	2/7/2017	1.05	37.4	49.2	0.679	7.94	89.8	631	<0.002	<0.002	0.181	<0.002	<0.001	<0.002	<0.002	0.679	<0.002	0.0397	<0.0002	<0.005	<0.002	<0.002	0.284
MW-701	4/4/2017	1.06	36.3	55.3	0.790	7.62	83.8	607	<0.002	<0.002	0.186	<0.002	<0.001	<0.002	<0.002	0.790	<0.002	0.0399	<0.0002	<0.005	<0.002	<0.002	0.371
MW-701	6/13/2017	1.01	36.1	54.1	0.692	7.07	80.6	612	<0.002	<0.002	0.172	<0.002	<0.001	<0.002	<0.002	0.692	<0.002	0.0403	<0.0002	<0.005	<0.002	<0.002	0.956
MW-701	8/8/2017	1.07	36.3	53.5	0.857	7.97	80.8	613	<0.002	<0.002	0.190	<0.002	<0.001	<0.002	<0.002	0.857	0.00209	0.0451	<0.0002	<0.005	<0.002	<0.002	2.29
MW-701	10/3/2017	1.09	36.1	51.5	0.798	7.49	80.6	595	<0.002	<0.002	0.190	<0.002	<0.001	<0.002	<0.002	0.798	<0.002	0.0429	<0.0002	<0.005	<0.002	<0.002	1.25
MW-702	6/8/2016	1.67	17.3	44.9	1.60	8.86	5.73	629	<0.002	<0.002	0.242	<0.002	<0.001	<0.002	<0.002	1.60	<0.002	0.213	<0.0002	<0.005	<0.002	<0.002	0.924
MW-702	8/9/2016	1.62	11.2	41.7	1.44	9.12	5.46	619	<0.002	<0.002	0.232	<0.002	<0.001	<0.002	<0.002	1.44	<0.002	0.251	<0.0002	<0.005	<0.002	<0.002	1.692
MW-702	10/11/2016	1.64	14.9	41.8	1.37	8.25	<5	747	<0.002	<0.002	0.199	<0.002	<0.001	<0.002	<0.002	1.37	<0.002	0.278	<0.0002	<0.005	<0.002	<0.002	1.06
MW-702	12/8/2016	1.81	19.4	46.7	1.39	8.07	<5	783	<0.002	<0.002	0.376	<0.002	<0.001	<0.002	<0.002	1.39	<0.002	0.0671	<0.0002	<0.005	<0.002	<0.002	0.522
MW-702	2/8/2017	1.87	18.1	48.4	1.46	8.09	<5	657	<0.002	<0.002	0.396	<0.002	<0.001	<0.002	<0.002	1.46	<0.002	0.0655	0.000209	<0.005	<0.002	<0.002	1.02
MW-702	4/5/2017	1.95	18.5	48.4	1.50	8.52	<5	680	<0.002	<0.002	0.373	<0.002	<0.001	<0.002	<0.002	1.50	<0.002	0.0841	<0.0002	<0.005	<0.002	<0.002	0.331
MW-702	6/15/2017	1.80	15.1	46.2	1.32	7.84	<5	648	<0.002	<0.002	0.302	<0.002	<0.001	<0.002	<0.002	1.32	<0.002	0.174	<0.0002	<0.005	<0.002	<0.002	0.605
MW-702	8/9/2017	1.87	20.3	48.1	1.41	7.87	<5	692	<0.002	<0.002	0.403	<0.002	<0.001	<0.002	<0.002	1.41	<0.002	0.0970	<0.0002	<0.005	<0.002	<0.002	1.46
MW-702	10/3/2017	1.94	19.6	48.5	1.53	7.60	<5	680	<0.002	<0.002	0.408	<0.002	<0.001	<0.002	<0.002	1.53	<0.002	0.0735	<0.0002	<0.005	<0.002	<0.002	0.939
MW-703	6/7/2016	1.86	22.0	103	1.37	7.63	<5	952	<0.002	0.00301													

Table 1
Upper AQC Impoundment
Appendix III and Appendix IV Detection Monitoring Results
KCP&L LaCygne Generating Station

Well Number	Sample Date	Appendix III Constituents							Appendix IV Constituents														
		Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Total 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-704	6/7/2016	2.03	35.1	82.5	0.852	7.74	203	1250	0.012	<0.002	0.113	<0.002	<0.001	<0.002	<0.002	0.852	<0.002	0.0938	<0.0002	0.0191	<0.002	<0.002	0.986
MW-704	8/9/2016	2.13	28.9	83.4	0.874	7.65	194	1220	0.0115	<0.002	0.104	<0.002	<0.001	<0.002	<0.002	0.874	<0.002	0.0867	<0.0002	0.0143	<0.002	<0.002	0.824
MW-704	10/11/2016	2.08	32.9	80.8	0.865	7.71	180	1240	0.0112	<0.002	0.0776	<0.002	<0.001	<0.002	<0.002	0.865	<0.002	0.0953	<0.0002	0.0128	<0.002	<0.002	1.45
MW-704	12/6/2016	2.09	32.0	82.9	0.939	7.66	185	1210	0.00867	<0.002	0.0844	<0.002	<0.001	<0.002	<0.002	0.939	<0.002	0.0974	<0.0002	0.0124	<0.002	<0.002	0.957
MW-704	2/7/2017	2.09	29.0	82.0	0.825	7.83	196	1210	0.00769	0.00205	0.0847	<0.002	<0.001	<0.002	<0.002	0.825	<0.002	0.101	0.000246	0.0112	<0.002	<0.002	0.994
MW-704	4/4/2017	2.09	29.8	84.7	0.882	7.75	176	1150	0.00719	<0.002	0.0747	<0.002	<0.001	<0.002	<0.002	0.882	<0.002	0.101	<0.0002	0.0102	<0.002	<0.002	0.505
MW-704	6/13/2017	2.04	26.6	81.8	0.740	7.07	151	1310	0.00488	<0.002	0.0774	<0.002	<0.001	<0.002	<0.002	0.740	<0.002	0.106	<0.0002	0.00858	<0.002	<0.002	1.27
MW-704	8/8/2017	2.09	30.6	82.1	0.783	7.71	189	1190	0.00423	<0.002	0.0799	<0.002	<0.001	<0.002	<0.002	0.783	<0.002	0.109	<0.0002	0.00876	<0.002	<0.002	1.17
MW-704	10/3/2017	2.12	30.3	85.0	0.917	7.58	168	1250	0.00521	<0.002	0.0842	<0.002	<0.001	<0.002	<0.002	0.917	<0.002	0.107	<0.0002	0.008	<0.002	<0.002	2.18
MW-705	6/7/2016	2.19	41.0	142	0.944	7.30	39.6	960	<0.002	<0.002	0.0918	<0.002	<0.001	<0.002	<0.002	0.944	<0.002	0.133	<0.0002	<0.005	<0.002	<0.002	0.601
MW-705	8/9/2016	2.22	33.5	136	0.985	7.35	40.7	992	<0.002	<0.002	0.0892	<0.002	<0.001	<0.002	<0.002	0.985	<0.002	0.113	<0.0002	<0.005	<0.002	<0.002	0.258
MW-705	10/11/2016	2.21	39.6	138	0.998	7.21	39.2	1130	<0.002	<0.002	0.0881	<0.002	<0.001	<0.002	<0.002	0.998	<0.002	0.119	<0.0002	<0.005	<0.002	<0.002	1.39
MW-705	12/7/2016	2.30	39.5	134	1.07	6.50	41.7	958	<0.002	<0.002	0.0930	<0.002	<0.001	<0.002	<0.002	1.07	<0.002	0.125	<0.0002	<0.005	<0.002	<0.002	0.608
MW-705	2/9/2017	2.25	38.8	135	1.04	7.33	45.5	968	<0.002	<0.002	0.0890	<0.002	<0.001	<0.002	<0.002	1.04	<0.002	0.130	<0.0002	<0.005	<0.002	<0.002	0.555
MW-705	4/6/2017	2.23	37.5	131	0.905	7.14	41.9	932	<0.002	<0.002	0.0873	<0.002	<0.001	<0.002	<0.002	0.905	<0.002	0.121	<0.0002	<0.005	<0.002	<0.002	0.264
MW-705	6/13/2017	2.09	35.4	136	0.924	7.18	42.2	1020	<0.002	<0.002	0.0837	<0.002	<0.001	<0.002	<0.002	0.924	<0.002	0.129	<0.0002	<0.005	<0.002	<0.002	0.278
MW-705	8/9/2017	2.21	38.7	139	0.920	7.29	43.5	1040	<0.002	<0.002	0.0938	<0.002	<0.001	<0.002	<0.002	0.920	<0.002	0.134	<0.0002	<0.005	<0.002	<0.002	0.831
MW-705	10/3/2017	2.13	36.1	138	1.04	7.21	41.3	1020	<0.002	<0.002	0.0873	<0.002	<0.001	<0.002	<0.002	1.04	<0.002	0.115	<0.0002	<0.005	<0.002	<0.002	0.568
MW-706	6/8/2016	2.14	35.8	270	1.22	7.54	<5	1270	<0.002	<0.002	0.273	<0.002	<0.001	<0.002	<0.002	1.22	<0.002	0.146	<0.0002	<0.005	<0.002	<0.002	1.26
MW-706	8/9/2016	2.19	29.0	269	1.12	7.55	<5	1250	<0.002	<0.002	0.280	<0.002	<0.001	<0.002	<0.002	1.12	<0.002	0.126	<0.0002	<0.005	<0.002	<0.002	0.704
MW-706	10/11/2016	2.17	33.1	274	1.21	8.14	<5	1560	<0.002	<0.002	0.274	<0.002	<0.001	<0.002	<0.002	1.21	<0.002	0.136	<0.0002	<0.005	<0.002	<0.002	1.38
MW-706	12/6/2016	2.25	32.9	272	1.25	7.60	<5	1300	<0.002	<0.002	0.281	<0.002	<0.001	<0.002	<0.002	1.25	<0.002	0.141	<0.0002	<0.005	<0.002	<0.002	4.74
MW-706	2/7/2017	2.18	29.2	309	1.12	7.84	<5	1270	<0.002	<0.002	0.290	<0.002	<0.001	<0.002	<0.002	1.12	<0.002	0.140	0.00025	<0.005	<0.002	<0.002	1.16
MW-706	4/4/2017	2.13	30.8	282	1.20	7.67	<5	1230	<0.002	<0.002	0.276	<0.002	<0.001	<0.002	<0.002	1.20	<0.002	0.138	<0.0002	<0.005	<0.002	<0.002	0.628
MW-706	6/13/2017	2.05	28.0	274	1.09	7.53	<5	1300	<0.002	<0.002	0.245	<0.002	<0.001	<0.002	<0.002	1.09	<0.002	0.146	<0.0002	<0.005	<0.002	<0.002	0.812
MW-706	8/9/2017	2.18	31.5	282	1.14	7.37	<5	1320	<0.002	<0.002	0.280	<0.002	<0.001	<0.002	<0.002	1.14	<0.002	0.152	<0.0002	<0.005	<0.002	<0.002	1.54
MW-706	10/4/2017	2.23	31.1	276	1.11	7.05	<5	1240	<0.002	<0.002	0.296	<0.002	<0.001	<0.002	<0.002	1.11	<0.002	0.146	<0.0002	<0.005	<0.002	<0.002	0.51
MW-706	1/9/2018	---	---	---	---	*7.14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-707B	6/23/2016	1.38	371	200	0.386	7.03	5010	770	<0.002	<0.002	0.0253	<0.002	<0.001	0.00225	0.00548	0.386	0.00333	0.445	<0.0002	<0.005	0.00337	<0.002	3.59
MW-707B	8/9/2016	1.94	412	235	0.347	6.81	4320	8420	<0.002	<0.002	0.0315	<0.002	<0.001	<0.002	0.00347	0.347	<0.002	0.623	<0.0002	<0.005	0.00422	<0.002	0.613
MW-707B	10/11/2016	1.88	408	211	0.382	6.95	4860	6160	0.00235	<0.002	0.0347	<0.002	<0.001	0.00684	0.0234	0.382	<0.002	0.715	<0.0002	<0.005	0.00326	<0.002	1.41
MW-707B	12/6/2016	1.98	410	220	0.353	6.92	4920	5370	<0.002	<0.002	0.0215	<0.002	<0.001	0.00254	0.00543	0.353	<0.002	0.737	<0.0002	<0.005	0.00233	<0.002	1.25
MW-707B	2/7/2017	1.97	398	207	0.293	6.95	5280	6070	<0.002	<0.002	0.0198	<0.002	<0.001	0.00252	0.00288	0.293	0.00267	0.780	0.000244	<0.005	<0.002	<0.002	0.44
MW-707B	4/4/2017	1.93	382	242	0.323	7.20	4940	7890	<0.002	<0.002	0.0133	<0.002	<0.001	<0.002	0.00506	0.323	<0.002	0.821	<0.0002	<0.005	<0.002	<0.002	0.701
MW-707B	6/13/2017	1.95	374	209	0.613	7.06	4600	6910	<0.002	<0.002	0.0143	<0.002	<0.001	<0.002	0.00542	0.613	<0.002	0.976	<0.0002	<0.005	0.00218	<0.002	1
MW-707B	8/8/2017	2.02	378	193	0.402	7.04	4790	7640	<0.002	<0.002	0.0134	<0.002	<0.001	<0.002	0.00492	0.402	<0.002	0.993	<0.0002	<0.005	0.00223	<0.002	0.31
MW-707B	10/3/2017	2.02	382	214	0.391	6.88	4800	7690	<0.002	<0.002	0.0244	<0.002	<0.001	<0.002	0.00467	0.391	<0.002	0.974	<0.0002	<0.005	<0.002	<0.002	0.97
MW-708	6/7/2016	1.37	35.2	46.2	0.569	7.43	8.99	651	<0.002	<0.002	0.212	<0.002	<0.001	<0.002	<0.002	0.569	<0.002	0.0780	<0.0002	<0.005	<0.002	<0.002	1.83
MW-708	8/10/2016	1.44	30.2	47.0	0.619	7.48	8.98	881	<0.002	<0.002	0.240	<0.002	<0.001	<0.002	<0.002	0.619	<0.002	0.0673	<0.0002	<0.005	<0.002	<0.002	1.544
MW-708	10/12/2016	1.47	32.2	46.5	0.632	7.46	8.24	684	<0.002	<0.002	0.244	<0.002	<0.001	<0.002	<0.002	0.632	<0.002	0.0731	<0.0002	<0.005	<0.002	<0.002	1.52
MW-708	12/9/2016	1.44	30.7	44.4	0.548	7.32	8.72	639	<0.002	<0.002	0.257	<0.002	<0.001	<0.002	<0.002	0.548	<0.002	0.0687	<0.0002	<0.005	<0.002	<0.002	1.29
MW-708	2/9/2017	1.51	32.0	48.0	0.695	7.32	9.59	679	<0.002	<0.002	0.255	<0.002	<0.001	<0.002	<0.002	0.695	<0.002	0.0843	<0.0002	<0.005	<0.002	<0.002	0.502
MW-708	4/6/2017	1.48	31.4	47.7	0.612	7.12	8.36	623	<0.002	<0.002	0.244	<0.002	<0.001	<0.002	<0.002	0.612	<0.002	0.0762	<0.0002	<0.005	<0.002	<0.002	1.62
MW-708	6/14/2017	1.36	30.2	46.0	0.624	7.33	9.38	653	<0.002	<0.002	0.222	<0.002	<0.001	<0.002	<0.002	0.624	<0.002	0.0792	<0.0002	<0.005	<0.002	<0.002	0.176
MW-708	8/8/2017	1.44	31.7	47.1	0.705	6.88	9.36	649	<0.002	<0.002	0.229	<0.002	<0.001	<0.002	<0.002	0.705	<0.002	0.0822	<0.0002	<0.005	<0.002	<0.002	0.866
MW-708	10/4/2017	1.49	32.7	48.0	0.642	7.27	9.09	645	<0.002	<0.002	0.277	<0.002	<0.001	<0.002	<0.002	0.642	<0						

Table 2
Upper AQC Impoundment
Detection Monitoring Field Measurements
KCP&L LaCygne Generating Station

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (°C)	Turbidity (NTU)	***Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-6	6/8/2016	7.19	1789	17.43	4.10	8.55	852.13
MW-6	8/10/2016	7.18	2066	20.62	1.24	8.76	851.92
MW-6	10/13/2016	7.24	2021	15.94	0.66	4.96	855.72
MW-6	12/12/2016	7.27	2030	12.00	1.93	8.42	852.26
MW-6	2/9/2017	7.25	1869	10.78	3.25	9.76	850.92
MW-6	4/5/2017	7.30	2022	13.30	3.08	7.52	853.16
MW-6	6/15/2017	7.20	2071	18.64	1.39	8.82	851.86
MW-6	8/9/2017	7.02	1999	17.44	5.04	8.64	852.04
MW-6	10/5/2017	7.11	2072	18.45	0.72	9.31	851.37
MW-7	6/8/2016	7.77	1367	18.23	6.00	6.25	849.41
MW-7	8/10/2016	7.83	1543	20.56	0.72	7.80	847.86
MW-7	10/13/2016	8.00	1501	16.27	2.13	5.42	850.24
MW-7	12/12/2016	7.96	1506	12.25	1.12	7.46	848.20
MW-7	2/8/2017	7.79	1422	11.34	2.52	7.48	848.18
MW-7	4/5/2017	7.89	1517	11.47	1.68	8.84	846.82
MW-7	6/15/2017	7.75	1509	17.83	2.53	7.40	848.26
MW-7	8/9/2017	7.62	1496	16.60	0.87	8.07	847.59
MW-7	10/5/2017	7.74	1551	18.02	1.36	7.82	847.84
MW-11	6/6/2016	7.37	1521	21.66	1.90	2.53	874.45
MW-11	8/11/2016	7.30	1739	25.17	0.77	2.58	874.40
MW-11	10/12/2016	7.33	1662	16.62	1.24	1.49	875.49
MW-11	12/9/2016	7.58	1657	11.55	1.10	2.49	874.49
MW-11	2/9/2017	7.36	1473	10.65	1.36	2.61	874.37
MW-11	4/6/2017	7.41	1584	13.52	1.02	2.39	874.59
MW-11	6/15/2017	7.50	1639	19.99	1.35	2.58	874.40
MW-11	8/10/2017	7.14	1585	19.95	1.35	3.08	873.90
MW-11	10/5/2017	7.33	1652	19.95	1.14	2.79	874.19
MW-701	6/7/2016	7.63	1023	25.37	12.40	7.88	877.35
MW-701	8/9/2016	7.54	998	21.96	3.07	9.14	876.09
MW-701	10/11/2016	7.67	996	24.03	4.79	7.34	877.89
MW-701	12/6/2016	7.63	1174	11.06	4.71	8.53	876.70
MW-701	2/7/2017	7.94	1222	13.62	5.82	7.05	878.18
MW-701	4/4/2017	7.62	969	12.54	5.03	7.32	877.91
MW-701	6/13/2017	7.07	1044	20.97	2.87	7.19	878.04
MW-701	8/8/2017	7.97	1226	22.65	6.51	8.27	876.96
MW-701	10/3/2017	7.49	998	13.27	2.44	8.78	876.45
MW-702	6/8/2016	8.86	1115	24.77	6.50	20.52	862.65
MW-702	8/9/2016	9.12	1044	20.86	2.80	21.41	861.76
MW-702	10/11/2016	8.25	1080	22.86	1.89	21.36	861.81
MW-702	12/8/2016	8.07	1061	7.12	1.92	20.81	862.36
MW-702	2/8/2017	8.09	967	6.86	3.97	19.37	863.80
MW-702	4/5/2017	8.52	1079	11.29	1.48	18.97	864.20
MW-702	6/15/2017	7.84	1109	16.59	1.15	19.40	863.77
MW-702	8/9/2017	7.87	1123	18.47	0.72	21.25	861.92
MW-702	10/3/2017	7.60	1161	20.73	1.69	21.76	861.41
MW-703	6/7/2016	7.63	1461	20.49	4.10	7.41	876.43
MW-703	8/9/2016	7.65	1505	20.03	1.72	7.74	876.10
MW-703	10/11/2016	7.59	1484	21.83	0.33	6.52	877.32
MW-703	12/6/2016	8.00	1494	8.54	1.17	6.11	877.73
MW-703	2/7/2017	7.76	1430	12.86	11.00	6.00	877.84
MW-703	4/4/2017	7.64	1537	11.50	5.22	6.47	877.37
MW-703	6/14/2017	7.62	1585	19.92	3.48	6.93	876.91
MW-703	8/10/2017	7.47	1532	19.92	2.55	6.92	876.92
MW-703	10/5/2017	7.58	1555	21.68	1.70	6.32	877.52
MW-704	6/7/2016	7.74	2003	23.51	5.70	19.31	863.86
MW-704	8/9/2016	7.65	1961	22.71	2.61	16.96	866.21
MW-704	10/11/2016	7.71	1916	20.69	4.45	16.01	867.16
MW-704	12/6/2016	7.66	1880	10.02	3.67	16.76	866.41
MW-704	2/7/2017	7.83	1868	11.11	4.87	15.14	868.03
MW-704	4/4/2017	7.75	1966	12.35	3.93	15.64	867.53
MW-704	6/13/2017	7.07	1936	20.82	2.88	15.50	867.67
MW-704	8/8/2017	7.71	1977	27.38	3.98	16.50	866.67
MW-704	10/3/2017	7.58	2068	18.93	2.21	16.74	866.43

* Verification Sample

** Extra Sample Collected per Standard Sampling Procedure

***Depth to water measured in all monitoring wells within 24 hour period prior to the sampling event

S.U. - Standard Units

µS - microsiemens

°C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit

Table 2
Upper AQC Impoundment
Detection Monitoring Field Measurements
KCP&L LaCygne Generating Station

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (°C)	Turbidity (NTU)	***Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-705	6/7/2016	7.30	1499	20.06	3.20	8.73	847.22
MW-705	8/9/2016	7.35	1654	21.71	1.52	8.67	847.28
MW-705	10/11/2016	7.21	1619	18.08	0.29	8.04	847.91
MW-705	12/7/2016	6.50	1635	13.78	1.02	8.23	847.72
MW-705	2/9/2017	7.33	1571	8.40	3.93	9.18	846.77
MW-705	4/6/2017	7.14	1696	14.77	0.98	9.38	846.57
MW-705	6/13/2017	7.18	1702	18.40	0.67	9.31	846.64
MW-705	8/9/2017	7.29	1685	21.40	7.18	9.84	846.11
MW-705	10/3/2017	7.21	1597	16.95	1.97	10.65	845.30
MW-706	6/8/2016	7.54	2249	23.47	14.10	9.98	844.30
MW-706	8/9/2016	7.55	2175	18.35	7.66	10.86	843.42
MW-706	10/11/2016	8.14	2176	21.46	3.42	10.47	843.81
MW-706	12/6/2016	7.60	2098	10.17	5.43	9.80	844.48
MW-706	2/7/2017	7.84	1942	13.61	6.77	8.46	845.82
MW-706	4/4/2017	7.67	2593	12.29	4.52	8.34	845.94
MW-706	6/13/2017	7.53	2288	21.80	2.99	8.26	846.02
MW-706	8/9/2017	7.37	2208	17.88	7.31	10.20	844.08
MW-706	10/4/2017	7.05	2112	13.01	0.85	10.61	843.67
MW-706	1/9/2018	*7.14	1641	14.37	0.88	8.71	845.57
MW-707B	6/23/2016	7.03	6076	15.56	60.70	18.48	840.32
MW-707B	8/9/2016	6.81	7436	23.03	14.30	23.05	835.75
MW-707B	10/11/2016	6.95	7296	21.74	13.20	15.86	842.94
MW-707B	12/6/2016	6.92	7512	10.18	11.13	17.98	840.82
MW-707B	2/7/2017	6.95	7376	15.69	8.30	16.51	842.29
MW-707B	4/4/2017	7.20	7917	13.54	2.03	17.68	841.12
MW-707B	6/13/2017	7.06	6897	20.85	1.88	17.41	841.39
MW-707B	8/8/2017	7.04	7781	26.90	2.98	19.03	839.77
MW-707B	10/3/2017	6.88	8170	19.09	1.96	18.25	840.55
MW-708	6/7/2016	7.43	957	17.64	4.00	7.81	845.22
MW-708	8/10/2016	7.48	1118	22.51	1.28	8.29	844.74
MW-708	10/12/2016	7.46	1081	16.24	1.00	7.06	845.97
MW-708	12/9/2016	7.32	1072	10.46	1.34	6.98	846.05
MW-708	2/9/2017	7.32	1029	11.63	0.98	7.18	845.85
MW-708	4/6/2017	7.12	1113	14.41	1.47	7.27	845.76
MW-708	6/14/2017	7.33	1165	20.52	0.71	7.35	845.68
MW-708	8/8/2017	6.88	1085	21.59	0.79	8.08	844.95
MW-708	10/4/2017	7.27	1169	10.19	0.88	7.77	845.26
TW-1	6/9/2016	7.83	1689	23.38	2.90	17.89	844.21
TW-1	8/9/2016	7.54	1693	17.03	2.08	18.46	843.64
TW-1	10/11/2016	7.69	1710	23.58	2.16	17.69	844.41
TW-1	12/6/2016	7.53	1640	12.34	2.68	16.33	845.77
TW-1	2/7/2017	7.89	1510	14.50	2.52	15.49	846.61
TW-1	4/4/2017	7.78	1782	12.89	1.84	15.97	846.13
TW-1	6/13/2017	7.67	1880	22.42	1.88	16.75	845.35
TW-1	8/8/2017	7.65	1742	21.11	2.28	17.37	844.73
TW-1	10/3/2017	7.48	1220	18.63	1.22	17.03	845.07

* Verification Sample

** Extra Sample Collected per Standard Sampling Procedure

***Depth to water measured in all monitoring wells within 24 hour period prior to the sampling event

S.U. - Standard Units

µS - microsiemens

°C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit