

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

**CCR LANDFILL  
MONTROSE GENERATING STATION  
CLINTON, MISSOURI**

Presented To:

**Kansas City Power & Light Company**

Presented By:

**SCS ENGINEERS**  
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## CERTIFICATIONS

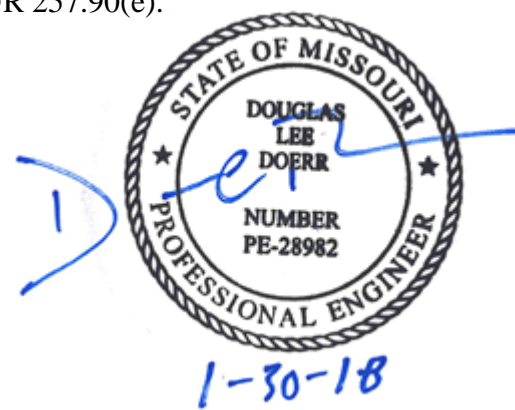
I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill at the Montrose Generating Station was prepared by me or under my direct supervision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



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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 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill at the Montrose Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



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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 CCR Landfill at the Montrose 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 CCR Landfill and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR Landfill 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 CCR Landfill 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 December 2015. 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 also conducted per the certified statistical method.

*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 Montrose 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 Montrose Generating Station CCR Landfill. No warranties, express or implied, are intended or made.

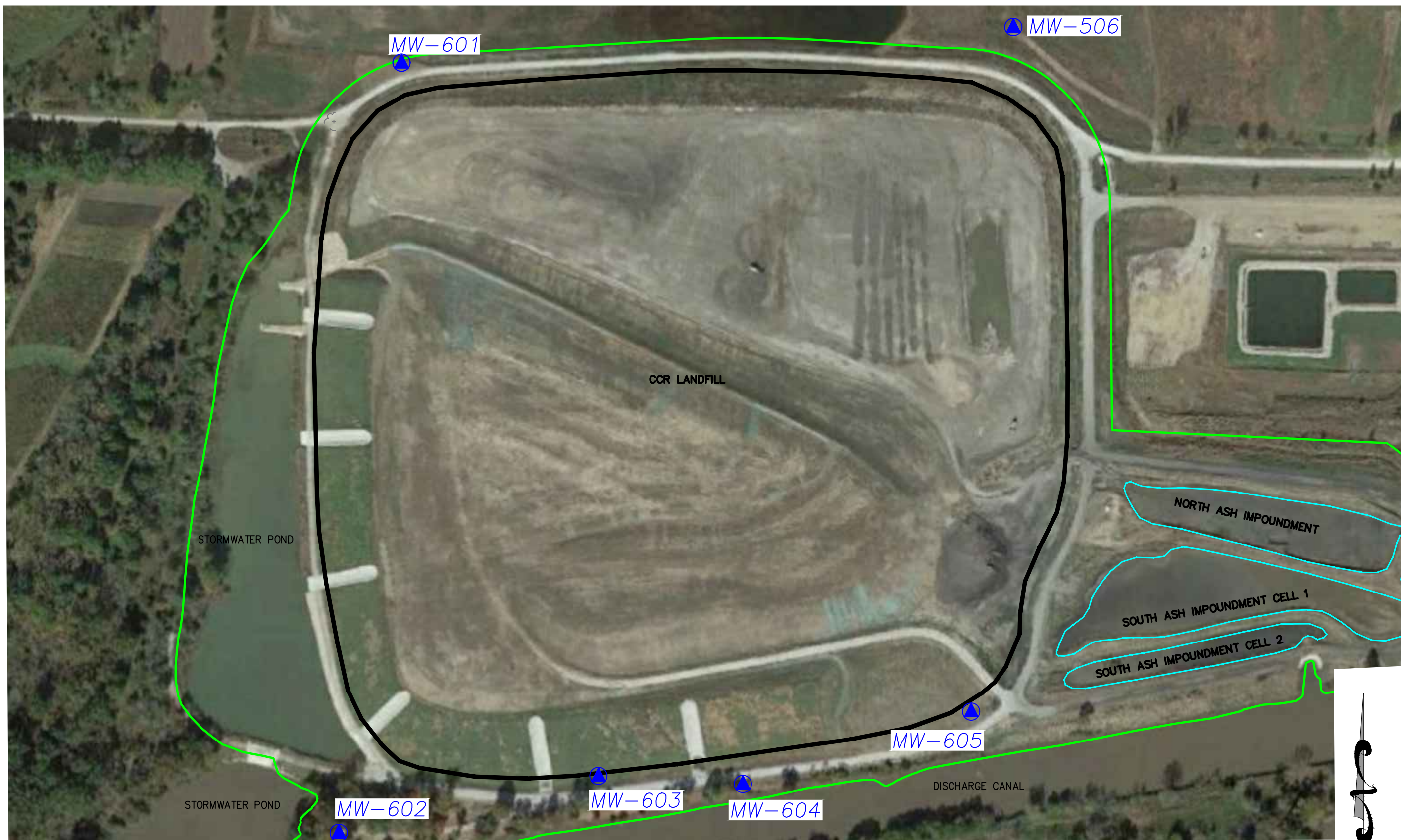


## **APPENDIX A**

### **FIGURES**

Figure 1: Site Map

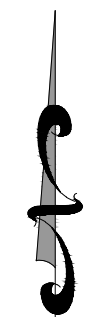
N:\KCP\PROJECTS\GROUNDWATER\DWG\MONTROSE\2017\ANNUAL CCR REPORTING\FIGURE 1\_MONT LF.DWG



- LEGEND:**
- PERMITTED SOLID WASTE FACILITY BOUNDARY (APPROXIMATE)
  - CCR LANDFILL UNIT BOUNDARY (APPROXIMATE)
  - ▲ MW-602 CCR GROUNDWATER MONITORING SYSTEM WELLS
  - ASH IMPOUNDMENT UNIT BOUNDARY (APPROXIMATE)

- NOTES:**
1. HORIZONTAL DATUM: MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE (NAD 83)
  2. VERTICAL DATUM: NAVD 88

3. GOOGLE EARTH IMAGE DATED 10/20/2014. BOUNDARY AND MONITOR WELL LOCATIONS ARE APPROXIMATE.
4. BOUNDARY AND MONITOR WELL LOCATIONS PROVIDED BY AECOM



<b>CK BY</b>							
<b>REV.</b>	<b>DATE</b>						
<b>SHEET TITLE</b>		<b>SITE MAP CCR LANDFILL CCR GROUNDWATER MONITORING SYSTEM</b>					
<b>PROJECT TITLE</b>		<b>2017 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT</b>					
<b>CLIENT</b>		<b>KANSAS CITY POWER &amp; LIGHT COMPANY MONTRÖSE GENERATING STATION MONTRÖSE, MISSOURI</b>					
<b>SCS ENGINEERS</b>		<b>ENVIRONMENTAL CONSULTANTS AND CONTRACTORS</b>					
7311 W. 130th St. Ste. 100 Overland Park, Kansas 66213 PH. (913) 881-0030 FAX. (913) 881-0012		DWN. BY: RCW		O/A R/W BY: JRR		PROJ. NO.: 27213168-17	
27213168-17		CHK. BY: JRR		PROJ. MGR: JRR			
<b>CADD FILE:</b>		<b>FIGURE 1_MONT LF.DWG</b>					
<b>DATE:</b>		<b>1/12/2018</b>					
<b>FIGURE NO.</b>		<b>1</b>					

## **APPENDIX B**

### **TABLES**

Table 1: Appendix III and Appendix IV Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements



**Table 2**  
**CCR Landfill**  
**Detection Monitoring Field Measurements**  
**KCP&L Montrose 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-506	12/16/2015	5.11	4140	13.12	14.5	4.01	757.89
MW-506	2/16/2016	5.56	4040	10.88	25.9	4.20	757.70
MW-506	5/23/2016	5.47	3460	19.00	0.0	3.83	758.07
MW-506	8/22/2016	5.57	3580	18.90	0.0	6.30	755.60
MW-506	11/8/2016	6.04	3290	18.39	28.7	6.69	755.21
MW-506	2/7/2017	9.26	3650	13.90	13.7	4.91	756.99
MW-506	5/1/2017	5.51	3350	12.24	0.8	2.94	758.96
MW-506	7/31/2017	5.51	3050	17.97	2.0	5.52	756.38
MW-506	10/2/2017	5.59	2810	18.69	10.9	6.74	755.16
MW-506	11/15/2017	**5.58	2900	17.81	4.8	6.61	754.96
MW-601	12/16/2015	5.12	4830	13.65	74.0	10.22	754.89
MW-601	2/16/2016	5.73	4960	11.49	39.2	9.56	755.55
MW-601	5/23/2016	5.58	4260	22.74	0.0	9.64	755.47
MW-601	8/22/2016	5.44	4550	19.30	0.0	11.27	753.84
MW-601	11/8/2016	5.26	4990	17.48	1.6	11.51	753.60
MW-601	2/7/2017	5.41	4630	14.30	21.9	11.16	753.95
MW-601	5/2/2017	5.45	4750	15.98	46.1	9.00	756.11
MW-601	7/31/2017	5.44	4670	18.05	11.3	10.85	754.26
MW-601	10/2/2017	5.61	4520	17.13	11.0	11.91	753.20
MW-601	11/15/2017	**5.49	4190	16.56	4.4	11.91	753.20
MW-602	12/16/2015	5.93	2530	12.47	4.1	5.63	750.23
MW-602	2/16/2016	5.78	2540	12.33	9.8	5.85	750.01
MW-602	5/23/2016	7.05	2040	18.64	7.8	5.34	750.52
MW-602	8/22/2016	5.74	2180	17.65	2.2	5.17	750.69
MW-602	11/7/2016	5.99	2360	17.55	3.0	3.83	752.03
MW-602	2/7/2017	6.62	2470	14.44	3.7	3.86	752.00
MW-602	5/2/2017	5.81	2270	14.92	1.9	3.62	752.24
MW-602	7/31/2017	5.87	2200	17.64	0.2	3.96	751.90
MW-602	10/2/2017	5.86	2230	19.18	5.1	4.42	751.44
MW-602	11/15/2017	5.87	2050	16.55	1.5	4.20	751.66
MW-602	12/29/2017	**5.74	1920	14.28	9.3	4.29	751.57
MW-603	12/16/2015	4.58	3750	13.04	10.1	13.97	749.67
MW-603	2/16/2016	4.29	3770	12.92	25.0	14.10	749.54
MW-603	5/23/2016	4.98	3160	19.18	0.0	13.50	750.14
MW-603	8/22/2016	4.65	3620	16.97	0.0	13.26	750.38
MW-603	11/7/2016	4.48	3650	18.55	0.0	11.84	751.80
MW-603	2/7/2017	4.44	3410	14.08	0.3	11.78	751.86
MW-603	5/2/2017	4.60	3510	14.76	0.0	11.42	752.22
MW-603	7/31/2017	5.13	3140	19.26	1.4	11.83	751.81
MW-603	10/2/2017	4.48	3350	19.01	3.0	12.05	751.59
MW-603	11/15/2017	4.44	3140	16.77	3.2	11.91	751.73
MW-603	12/29/2017	**4.43	3000	15.19	7.1	12.01	751.63
MW-604	12/16/2015	5.79	3430	12.20	5.6	14.14	749.25
MW-604	2/16/2016	5.51	3460	12.99	13.2	14.05	749.34
MW-604	5/23/2016	6.30	2820	20.18	1.0	13.45	749.94
MW-604	8/22/2016	5.67	2870	16.71	4.4	13.13	750.26
MW-604	11/7/2016	6.04	3110	19.02	0.0	11.61	751.78
MW-604	2/7/2017	6.10	2810	14.98	4.1	11.59	751.80
MW-604	5/2/2017	5.72	3000	15.25	1.0	11.55	751.84
MW-604	7/31/2017	5.82	2590	18.01	0.0	11.55	751.84
MW-604	10/2/2017	5.72	2720	20.86	0.9	11.84	751.55
MW-604	11/15/2017	**5.73	2540	17.08	0.5	11.75	751.64
MW-605	12/17/2015	5.57	3560	11.26	21.6	14.10	750.01
MW-605	2/16/2016	5.34	3510	12.95	12.2	14.10	750.01
MW-605	5/23/2016	6.11	2800	20.18	0.0	13.42	750.69
MW-605	8/22/2016	5.42	3110	17.32	0.0	13.25	750.86
MW-605	11/7/2016	5.49	3340	19.43	0.0	11.93	752.18
MW-605	2/7/2017	5.58	3190	13.77	0.3	11.98	752.13
MW-605	5/2/2017	5.58	3260	15.38	0.0	11.96	752.15
MW-605	7/31/2017	5.55	3080	18.04	0.0	11.84	752.27
MW-605	10/2/2017	5.58	3110	21.39	0.8	12.10	752.01
MW-605	11/15/2017	**5.55	2930	17.29	0.0	12.05	752.06

\* Verification Sample  
\*\* Extra Sample Collected per Standard Sampling Procedure  
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  
--- Not Sampled