APPENDIX 2: Data Summaries For Individual Waters of Appendix 2 (4/27/21)

PARTRIDGE RIVER (04010201-552)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
04010201-552	Stream	7/26/2010	S007-504	Total	Sulfate	mg/L	411				300
04010201-552	Stream	7/26/2010	S007-505	Total	Sulfate	mg/L	335				300
04010201-552	Stream	7/26/2010	S007-506	Total	Sulfate	mg/L	378				300
04010201-552	Stream	8/24/2010	S007-443	Total	Sulfate	mg/L	48				300
04010201-552	Stream	8/24/2010	S007-502	Total	Sulfate	mg/L	126				300
04010201-552	Stream	8/24/2010	S007-513	Total	Sulfate	mg/L	161				300
04010201-552	Stream	8/26/2010	S004-595	Total	Sulfate	mg/L	21.3				300
04010201-552	Stream	8/12/2011	S007-513	Total	Sulfate	mg/L	167				300
04010201-552	Stream	8/12/2011	S007-527	Total	Sulfate	mg/L	66.7				300
04010201-552	Stream	8/19/2011	S007-443	Total	Sulfate	mg/L	11.45				300
04010201-552	Stream	8/19/2011	S007-513	Total	Sulfate	mg/L	6				300
04010201-552	Stream	8/23/2011	S007-478	Total	Sulfate	mg/L	883				300
04010201-552	Stream	8/31/2011	S007-443	Total	Sulfate	mg/L	10.39				300
04010201-552	Stream	8/7/2012	S007-513	Total	Sulfate	mg/L	54.7				300
04010201-552	Stream	8/8/2012	S007-530	Total	Sulfate	mg/L	14.7				300
04010201-552	Stream	8/9/2012	S007-535	Total	Sulfate	mg/L	14.8				300
04010201-552	Stream	8/10/2012	S007-537	Total	Sulfate	mg/L	16.7				300
04010201-552	Stream	8/16/2012	S007-502	Total	Sulfate	mg/L	10.6				300
04010201-552	Stream	8/22/2012	S007-502	Total	Sulfate	mg/L	16.8				300
04010201-552	Stream	9/12/2012	S002-599	Total	Sulfate	mg/L	36.3				300.1
04010201-552	Stream	5/28/2013	S007-443	Total	Sulfate	mg/L	14.8				300.1
04010201-552	Stream	5/30/2013	S007-513	Total	Sulfate	mg/L	43.1				300.1
04010201-552	Stream	6/4/2013	S005-752	Dissolved	Sulfate	mg/L	28.61				300.1
04010201-552	Stream	6/10/2013	S005-752	Dissolved	Sulfate	mg/L	51.176				300.1
04010201-552	Stream	6/17/2013	S005-752	Dissolved	Sulfate	mg/L	61.285				300.1
04010201-552	Stream	6/24/2013	S005-752	Dissolved	Sulfate	mg/L	14.264				300.1
04010201-552	Stream	6/26/2013	S007-443	Total	Sulfate	mg/L	7.65				300.1
04010201-552	Stream	6/28/2013	S007-513	Total	Sulfate	mg/L	24.9				300.1
04010201-552	Stream	6/30/2013	S005-752	Dissolved	Sulfate	mg/L	10.653				300.1
04010201-552	Stream	7/8/2013	S005-752	Dissolved	Sulfate	mg/L	46.037				300.1
04010201-552	Stream	7/15/2013	S005-752	Dissolved	Sulfate	mg/L	62.02				300.1
04010201-552	Stream	7/22/2013	S005-752	Dissolved	Sulfate	mg/L	55.508				300.1
04010201-552	Stream	7/24/2013	S007-443	Total	Sulfate	mg/L	14.6				300.1
04010201-552	Stream	7/24/2013	S007-513	Total	Sulfate	mg/L	54.4				300.1
04010201-552	Stream	8/5/2013	S005-752	Dissolved	Sulfate	mg/L	80.645				300.1
04010201-552	Stream	8/19/2013	S005-752	Dissolved	Sulfate	mg/L	135.93				300.1
04010201-552	Stream	8/30/2013	S007-513	Total	Sulfate	mg/L	154				300.1
04010201-552	Stream	9/3/2013	S007-443	Total	Sulfate	mg/L	34.15				300.1
04010201-552	Stream	9/4/2013	S005-752	Dissolved	Sulfate	mg/L	125.437				300.1
04010201-552	Stream	9/16/2013	S005-752	Dissolved	Sulfate	mg/L	174.966				300.1
04010201-552	Stream	9/30/2013	S005-752	Dissolved	Sulfate	mg/L	101.644				300.1
04010201-552	Stream	10/9/2013	S005-752	Dissolved	Sulfate	mg/L	94.945				300.1
04010201-552	Stream	10/14/2013	S005-752	Dissolved	Sulfate	mg/L	97.924				300.1

04010201-552	Stream	5/16/2019	S005-752	Total	Sulfate	mg/L	17.3				D516
04010201-552	Stream	6/4/2019	S005-752	Total	Sulfate	mg/L	59.8				D516
04010201-552	Stream	7/1/2019	S005-752	Total	Sulfate	mg/L	21.9				D516
04010201-552	Stream	8/6/2019	S005-752	Total	Sulfate	mg/L	90.5				300
04010201-552	Stream	9/9/2019	S005-752	Total	Sulfate	mg/L	123				D516

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 53, AVG = 92.80, STDEV = 141.60. EPA has subsequently reviewed the sulfate water quality data for the Partridge River and recognizes that EPA needs to correct that information to N = 36, AVG = 91.77, STDEV = 156.09 and MIN = 7.65.

10/1/2008 to 9/30/2019	
N	*48*
Number of Observations greater than 10 mg/L	*46 of 48*
Percent Observations above 10 mg/L	*96%*
Average	*95.64*
StDev	*147.50*
Min	*6*
Max	*883*

Revised sulfate data analysis	
7/26/2010	411
8/24/2010	161
8/26/2010	21.3
8/12/2011	167
8/19/2011	11.45
8/23/2011	883
8/31/2011	10.39
8/7/2012	54.7
8/8/2012	14.7
8/9/2012	14.8
8/10/2012	16.7
8/16/2012	10.6
8/22/2012	16.8
9/12/2012	36.3
5/28/2013	14.8
5/30/2013	43.1
6/4/2013	28.61
6/10/2013	51.176
6/17/2013	61.285
6/24/2013	14.264
6/26/2013	7.65
6/28/2013	24.9
6/30/2013	10.653
7/8/2013	46.037
7/15/2013	62.02
7/22/2013	55.508
7/24/2013	54.4
8/5/2013	80.645
8/19/2013	135.93
8/30/2013	154
9/3/2013	34.15

9/4/2013	125.437
9/16/2013	174.966
9/30/2013	101.644
10/9/2013	94.945
10/14/2013	97.924

10/1/2008 to 9/30/2018	
N	36.00
Number of Observations greater than 10 mg/L	35 of 36
Percent Observations above 10 mg/L	97%
Average	91.77
StDev	156.09
Min	7.65
Max	883.00

EMBARRASS RIVER (04010201-579)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
04010201-579	Stream	8/12/2010	S007-509	Total	Sulfate	mg/L	43.4	0	m		300
04010201-579	Stream	8/27/2010	S007-523	Total	Sulfate	mg/L	7.86	0	m		300
04010201-579	Stream	8/31/2010	S007-523	Total	Sulfate	mg/L	1	0	m		300
04010201-579	Stream	6/23/2011	S001-472	Total	Sulfate	mg/L	14.6	NA	NA		300.1
04010201-579	Stream	8/9/2011	S007-523	Total	Sulfate	mg/L	3.62	0	m		300
04010201-579	Stream	8/11/2011	152973-MONI0000000021	Total	Sulfate	mg/L	2.48	NA	NA		NA
04010201-579	Stream	8/11/2011	152973-MONI0000000022	Total	Sulfate	mg/L	5.65	NA	NA		NA
04010201-579	Stream	8/18/2011	S007-509	Total	Sulfate	mg/L	151	0	m		300
04010201-579	Stream	11/30/2011	S001-472	Total	Sulfate	mg/L	52.5	NA	NA		300.1
04010201-579	Stream	4/17/2012	S002-594	Total	Sulfate	mg/L	31.6	NA	NA		300.1
04010201-579	Stream	5/30/2012	S001-472	Total	Sulfate	mg/L	17.2	NA	NA		300.1
04010201-579	Stream	8/9/2012	S007-509	Total	Sulfate	mg/L	17	0	m		300
04010201-579	Stream	8/9/2012	S007-532	Total	Sulfate	mg/L	56.4	0	m		300
04010201-579	Stream	8/9/2012	S007-533	Total	Sulfate	mg/L	15.7	0	m		300
04010201-579	Stream	8/9/2012	S007-534	Total	Sulfate	mg/L	86	0	m		300
04010201-579	Stream	8/9/2012	S007-536	Total	Sulfate	mg/L	5.4	0	m		300
04010201-579	Stream	8/22/2012	S007-538	Total	Sulfate	mg/L	1.8	0	m		300
04010201-579	Stream	7/25/2013	S001-680	Total	Sulfate	mg/L	1	NA	NA		300.1
04010201-579	Stream	7/25/2013	S002-594	Total	Sulfate	mg/L	18.9	NA	NA		300.1
04010201-579	Stream	2/3/2014	S001-472	Total	Sulfate	mg/L	111	NA	NA		300.1
04010201-579	Stream	2/3/2014	S001-680	Total	Sulfate	mg/L	1.29	NA	NA		300.1
04010201-579	Stream	2/3/2014	S002-594	Total	Sulfate	mg/L	123	NA	NA		300.1
04010201-579	Stream	11/5/2014	152973-MONI0000000021	Total	Sulfate	mg/L	2.1	NA	NA		NA
04010201-579	Stream	11/5/2014	152973-MONI0000000022	Total	Sulfate	mg/L	54.9	NA	NA		NA
04010201-579	Stream	12/3/2014	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	12/3/2014	152973-MONI0000000022	Total	Sulfate	mg/L	77	NA	NA		NA
04010201-579	Stream	1/7/2015	152973-MONI0000000021	Total	Sulfate	mg/L	2.3	NA	NA		NA
04010201-579	Stream	1/7/2015	152973-MONI0000000022	Total	Sulfate	mg/L	89.9	NA	NA		NA
04010201-579	Stream	2/12/2015	152973-MONI0000000021	Total	Sulfate	mg/L	2.6	NA	NA		NA
04010201-579	Stream	2/12/2015	152973-MONI0000000022	Total	Sulfate	mg/L	117	NA	NA		NA
04010201-579	Stream	3/4/2015	152973-MONI0000000021	Total	Sulfate	mg/L	3.8	NA	NA		NA
04010201-579	Stream	3/4/2015	152973-MONI0000000022	Total	Sulfate	mg/L	135	NA	NA		NA
04010201-579	Stream	6/8/2015	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	6/8/2015	152973-MONI0000000022	Total	Sulfate	mg/L	15.6	NA	NA		NA
04010201-579	Stream	9/2/2015	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	9/2/2015	152973-MONI0000000022	Total	Sulfate	mg/L	7.2	NA	NA		NA
04010201-579	Stream	12/7/2015	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	12/7/2015	152973-MONI0000000022	Total	Sulfate	mg/L	28.2	NA	NA		NA
04010201-579	Stream	3/4/2016	152973-MONI0000000021	Total	Sulfate	mg/L	2.2	NA	NA		NA
04010201-579	Stream	3/4/2016	152973-MONI0000000022	Total	Sulfate	mg/L	77.2	NA	NA		NA

04010201-579	Stream	6/9/2016	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	6/9/2016	152973-MONI0000000022	Total	Sulfate	mg/L	13.9	NA	NA		NA
04010201-579	Stream	9/2/2016	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	9/2/2016	152973-MONI0000000022	Total	Sulfate	mg/L	16.7	NA	NA		NA
04010201-579	Stream	12/1/2016	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	12/1/2016	152973-MONI0000000022	Total	Sulfate	mg/L	26.4	NA	NA		NA
04010201-579	Stream	3/13/2017	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	3/13/2017	152973-MONI0000000022	Total	Sulfate	mg/L	42.2	NA	NA		NA
04010201-579	Stream	6/9/2017	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	6/9/2017	152973-MONI0000000022	Total	Sulfate	mg/L	21.5	NA	NA		NA
04010201-579	Stream	9/11/2017	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	9/11/2017	152973-MONI0000000022	Total	Sulfate	mg/L	25.3	NA	NA		NA
04010201-579	Stream	12/6/2017	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	12/6/2017	152973-MONI0000000022	Total	Sulfate	mg/L	34.3	NA	NA		NA
04010201-579	Stream	3/2/2018	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	3/2/2018	152973-MONI0000000022	Total	Sulfate	mg/L	85	NA	NA		NA
04010201-579	Stream	6/5/2018	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	6/5/2018	152973-MONI0000000022	Total	Sulfate	mg/L	9.6	NA	NA		NA
04010201-579	Stream	9/5/2018	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	9/5/2018	152973-MONI0000000022	Total	Sulfate	mg/L	3.9	NA	NA		NA
04010201-579	Stream	11/8/2018	152973-MONI0000000022	Total	Sulfate	mg/L	22	NA	NA		NA
04010201-579	Stream	12/5/2018	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	12/5/2018	152973-MONI0000000022	Total	Sulfate	mg/L	42.9	NA	NA		NA
04010201-579	Stream	1/16/2019	152973-MONI0000000022	Total	Sulfate	mg/L	74	NA	NA		NA
04010201-579	Stream	2/13/2019	152973-MONI0000000022	Total	Sulfate	mg/L	76	NA	NA		NA
04010201-579	Stream	3/1/2019	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	3/11/2019	152973-MONI0000000022	Total	Sulfate	mg/L	105	NA	NA		NA
04010201-579	Stream	4/1/2019	152973-MONI0000000022	Total	Sulfate	mg/L	26	NA	NA		NA
04010201-579	Stream	5/16/2019	152973-MONI0000000022	Total	Sulfate	mg/L	14	NA	NA		NA
04010201-579	Stream	6/5/2019	152973-MONI0000000021	Total	Sulfate	mg/L	2	NA	NA		NA
04010201-579	Stream	6/6/2019	152973-MONI0000000022	Total	Sulfate	mg/L	8.8	NA	NA		NA

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 71, AVG = 29.08, STDEV = 38.20. EPA has subsequently reviewed the sulfate water quality data for the Embarrass River and recognizes that EPA needs to correct that information to N = 33, AVG = 42.71 and STDEV = 41.87.

10/1/2008 to 9/30/2019 (did not account for duplicates and incorporated data thru 2019)	
N	*71.00*
Number of Observations greater than 10 mg/L	*36 of 71*
Percent Observations above 10 mg/L	*51%*
Average	*29.08*
StDev	*38.20*
Min	*1.00*
Max	*151.00*

Revised sulfate data analysis	
8/12/2010	43.4
8/27/2010	7.86
8/31/2010	1
6/23/2011	14.6
8/9/2011	3.62
8/11/2011	5.65
8/18/2011	151
11/30/2011	52.5
4/17/2012	31.6
5/30/2012	17.2
8/9/2012	56.4
8/22/2012	1.8
7/25/2013	18.9
2/3/2014	123
11/5/2014	54.9
12/3/2014	77
1/7/2015	89.9
2/12/2015	117
3/4/2015	135
6/8/2015	15.6
9/2/2015	7.2
12/7/2015	28.2
3/4/2016	77.2
6/9/2016	13.9
9/2/2016	16.7
12/1/2016	26.4
3/13/2017	42.2
6/9/2017	21.5
9/11/2017	25.3
12/6/2017	34.3
3/2/2018	85
6/5/2018	9.6
9/5/2018	3.9

10/1/2008 to 9/30/2018	
N	33.00
Number of Observations greater than 10 mg/L	25 of 33
Percent Observations above 10 mg/L	76%

Average	42.71
StDev	41.87
Min	1.00
Max	151.00

SECOND CREEK (04010201-952)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
04010201-952	Stream	8/30/2012	S007-220	Total	Sulfate	mg/L	1100	0	m		300
04010201-952	Stream	9/12/2012	S007-220	Total	Sulfate	mg/L	1100	0.1	m		300.1
04010201-952	Stream	5/30/2013	S007-220	Total	Sulfate	mg/L	303	0.1	m		300.1
04010201-952	Stream	6/14/2013	S007-220	Total	Sulfate	mg/L	316	0.1	m		300.1
04010201-952	Stream	7/11/2013	S007-220	Total	Sulfate	mg/L	405	0.1	m		300.1
04010201-952	Stream	8/15/2013	S007-220	Total	Sulfate	mg/L	838	0.1	m		300.1
04010201-952	Stream	9/19/2013	S007-220	Total	Sulfate	mg/L	820	0.1	m		300.1
04010201-952	Stream	5/7/2019	S007-023	Total	Sulfate	mg/L	221	NA	m		300.1
04010201-952	Stream	6/25/2019	S007-023	Total	Sulfate	mg/L	219	NA	m		300.1
04010201-952	Stream	7/25/2019	S007-023	Total	Sulfate	mg/L	681	NA	m		300.1
04010201-952	Stream	8/21/2019	S007-023	Total	Sulfate	mg/L	804	NA	m		300.1
04010201-952	Stream	9/25/2019	S007-023	Total	Sulfate	mg/L	437	NA	m		300.1

NOTES: EPA considered 5 samples from 2019 in its analysis of data from Second Creek.

10/1/2008 to 9/25/2019	
N	12.00
Number of Observations greater than 10 mg/L	12 of 12
Percent Observations above 10 mg/L	100%
Average	603.67
StDev	326.88
Min	219.00
Max	1100.00

EMBARRASS RIVER (04010201-A99)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
040102010-A99	Stream	11/30/2011	S006-547	Total	Sulfate	mg/L	23.4				300.1
040102010-A99	Stream	4/13/2011	S006-547	Total	Sulfate	mg/L	26.7				300.1
040102010-A99	Stream	6/23/2011	S006-547	Total	Sulfate	mg/L	16.3				300.1

NOTE: The number of individual sulfate samples for the Embarrass River segment (04010201-A99) was below EPA's Screening Analysis recommendation of at least 5 samples. But EPA considered sulfate conditions in upstream segments, Embarrass Lake (69-0496-00), Embarrass River (04010201-579) and downstream segments, Esquagama Lake (69-0565-00), Embarrass River (04010201-B00), to characterize the overall sulfate conditions in this hydrologic system. The excessive sulfate in this river/lake system suggests that -A99 should be considered impaired.

10/1/2008 to 9/30/2018	
N	3.00
Number of Observations greater than 10 mg/L	3 of 3
Percent Observations above 10 mg/L	100%
Average	22.13
StDev	5.31
Min	16.30
Max	26.70

SWAN RIVER (07010103-753)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07010103-753	Stream	5/28/2015	S000-936	Total	Sulfate	mg/L	18.3			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	6/4/2015	S000-936	Total	Sulfate	mg/L	16.8			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	6/15/2015	S000-936	Total	Sulfate	mg/L	19.2			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	6/25/2015	S000-936	Total	Sulfate	mg/L	22.3			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	7/2/2015	S000-936	Total	Sulfate	mg/L	21.9			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	7/2/2015	S000-936	Total	Sulfate	mg/L	22.2			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	7/30/2015	S000-936	Total	Sulfate	mg/L	23.1			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	8/5/2015	S000-936	Total	Sulfate	mg/L	23.8			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	8/25/2015	S000-936	Total	Sulfate	mg/L	29.7			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	9/1/2015	S000-936	Total	Sulfate	mg/L	38.4			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	9/23/2015	S000-936	Total	Sulfate	mg/L	26.9			Sulfate in Water by Turbidimeter	D516
07010103-753	Stream	5/4/2016	S000-936	Total	Sulfate	mg/L	3			Sulfate in Water by Turbidimeter	D516

5/28/2015	18.3
6/4/2015	16.8
6/15/2015	19.2
6/25/2015	22.3
7/2/2015	22.05
7/30/2015	23.1
8/5/2015	23.8
8/25/2015	29.7
9/1/2015	38.4
9/23/2015	26.9
5/4/2016	3

10/1/2008 to 9/30/2018	
N	11.00
Number of Observations greater than 10 mg/L	10 of 11
Percent Observations above 10 mg/L	91%
Average	22.14

StDev	8.75
Min	3.00
Max	38.40

CROW RIVER, MIDDLE FORK (07010204-537)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07010204-537	Stream	6/22/2017	S009-448	Total	Sulfate	mg/L	57	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	7/17/2017	S009-448	Total	Sulfate	mg/L	57.7	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	7/20/2017	S009-448	Total	Sulfate	mg/L	57.7	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	8/17/2017	S009-448	Total	Sulfate	mg/L	40.3	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	9/19/2017	S009-448	Total	Sulfate	mg/L	60.5	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	5/7/2018	S009-448	Total	Sulfate	mg/L	45.6	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	5/15/2018	S009-448	Total	Sulfate	mg/L	46.8	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	6/11/2018	S009-448	Total	Sulfate	mg/L	20.4	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	7/16/2018	S009-448	Total	Sulfate	mg/L	44.5	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	7/18/2018	S009-448	Total	Sulfate	mg/L	44.5	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	8/6/2018	S009-448	Total	Sulfate	mg/L	35.3	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010204-537	Stream	9/6/2018	S009-448	Total	Sulfate	mg/L	33	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

10/1/2008 to 9/30/2018	
N	12.00
Number of Observations greater than 10 mg/L	12 of 12
Percent Observations above 10 mg/L	100%
Average	45.28
Stdev	11.97
Min	20.40
Max	60.50

LONG PRAIRIE RIVER (07010108-501)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07010108-501	Stream	12/10/2008	S000-282	Total	Sulfate	mg/L	33.8			Inorganic Anions by Ion Chromatography	300(A)
07010108-501	Stream	1/27/2009	S000-282	Total	Sulfate	mg/L	23.4			Inorganic Anions by Ion Chromatography	300(A)
07010108-501	Stream	2/23/2009	S000-282	Total	Sulfate	mg/L	35.3			Inorganic Anions by Ion Chromatography	300(A)
07010108-501	Stream	3/24/2009	S000-282	Total	Sulfate	mg/L	5.33			Inorganic Anions by Ion Chromatography	300(A)
07010108-501	Stream	4/2/2009	S000-282	Total	Sulfate	mg/L	6.37			Inorganic Anions by Ion Chromatography	300(A)
07010108-501	Stream	5/5/2009	S000-282	Total	Sulfate	mg/L	10.5			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	7/15/2009	S000-282	Total	Sulfate	mg/L	11.3			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	8/4/2009	S000-282	Total	Sulfate	mg/L	13.6			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	9/2/2009	S000-282	Total	Sulfate	mg/L	14.1			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	10/21/2009	S000-282	Total	Sulfate	mg/L	12.8			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	11/2/2009	S000-282	Total	Sulfate	mg/L	15.7			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	11/3/2009	S000-282	Total	Sulfate	mg/L	15.8			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	12/2/2009	S000-282	Total	Sulfate	mg/L	16.6			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	1/11/2010	S000-282	Total	Sulfate	mg/L	17.5			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	2/10/2010	S000-282	Total	Sulfate	mg/L	14.6			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	2/22/2010	S000-282	Total	Sulfate	mg/L	14.4			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	3/15/2010	S000-282	Total	Sulfate	mg/L	5.83			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	3/25/2010	S000-282	Total	Sulfate	mg/L	8.93			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	4/13/2010	S000-282	Total	Sulfate	mg/L	12.6			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	5/4/2010	S000-282	Total	Sulfate	mg/L	10.4			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	6/2/2010	S000-282	Total	Sulfate	mg/L	11.1			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	7/8/2010	S000-282	Total	Sulfate	mg/L	10.8			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	8/30/2010	S000-282	Total	Sulfate	mg/L	7.94			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07010108-501	Stream	9/13/2010	S000-282	Total	Sulfate	mg/L	6.95			Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

10/1/2008 to 9/30/2018	
N	24.00
Number of Observations greater than 10 mg/L	18 of 24
Percent Observations above 10 mg/L	75%
Average	13.99
StDev	7.59
Min	5.33
Max	35.30

STANCHFIELD CREEK (07010207-518)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07010207-518	Stream	10/2/2008	S004-980	Total	Sulfate	mg/L	11.7			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	5/7/2009	S004-980	Total	Sulfate	mg/L	11.6			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	5/21/2009	S004-980	Total	Sulfate	mg/L	11.5			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	6/4/2009	S004-980	Total	Sulfate	mg/L	11.8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	6/18/2009	S004-980	Total	Sulfate	mg/L	9.4			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/2/2009	S004-980	Total	Sulfate	mg/L	7.1			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/15/2009	S004-980	Total	Sulfate	mg/L	7			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/16/2009	S004-980	Total	Sulfate	mg/L	7.3			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/21/2009	S004-980	Total	Sulfate	mg/L	6.8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/30/2009	S004-980	Total	Sulfate	mg/L	7.7			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	8/13/2009	S004-980	Total	Sulfate	mg/L	7.6			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	8/20/2009	S004-980	Total	Sulfate	mg/L	18.9			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	8/27/2009	S004-980	Total	Sulfate	mg/L	16.6			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	9/10/2009	S004-980	Total	Sulfate	mg/L	9.7			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	9/24/2009	S004-980	Total	Sulfate	mg/L	7.15			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	10/8/2009	S004-980	Total	Sulfate	mg/L	19.8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	5/15/2013	S004-980	Total	Sulfate	mg/L	15.3			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	5/29/2013	S004-980	Total	Sulfate	mg/L	11.8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	6/13/2013	S004-980	Total	Sulfate	mg/L	23.8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	6/27/2013	S004-980	Total	Sulfate	mg/L	14.2			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/10/2013	S004-980	Total	Sulfate	mg/L	8			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	7/25/2013	S004-980	Total	Sulfate	mg/L	18.9			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	8/8/2013	S004-980	Total	Sulfate	mg/L	12			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	8/22/2013	S004-980	Total	Sulfate	mg/L	5.9			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	9/4/2013	S004-980	Total	Sulfate	mg/L	6.7			Sulfate in Water by Turbidimeter	D516
07010207-518	Stream	9/18/2013	S004-980	Total	Sulfate	mg/L	40			Sulfate in Water by Turbidimeter	D516

10/1/2008 to 9/30/2018	
N	26.00
Number of Observations greater than 10 mg/L	14 of 26

Percent Observations above 10 mg/L	54%
Average	12.63
Stdev	7.37
Min	5.90
Max	40.00

TROTT BROOK (07010207-680)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07010207-680	Stream	4/16/2012	S003-176	Total	Sulfate	mg/L	20.8			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	5/2/2012	S003-176	Total	Sulfate	mg/L	19.1			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	5/24/2012	S003-176	Total	Sulfate	mg/L	11			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	6/28/2012	S003-176	Total	Sulfate	mg/L	12.6			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	7/23/2012	S003-176	Total	Sulfate	mg/L	10.2			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	8/1/2012	S003-176	Total	Sulfate	mg/L	10.6			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	4/30/2013	S003-176	Total	Sulfate	mg/L	28			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	5/21/2013	S003-176	Total	Sulfate	mg/L	22			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	6/5/2013	S003-176	Total	Sulfate	mg/L	20.9			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	6/25/2013	S003-176	Total	Sulfate	mg/L	15.1			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	7/2/2013	S003-176	Total	Sulfate	mg/L	12.8			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	7/23/2013	S003-176	Total	Sulfate	mg/L	10			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	8/6/2013	S003-176	Total	Sulfate	mg/L	17.9			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	8/27/2013	S003-176	Total	Sulfate	mg/L	15.3			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	9/4/2013	S003-176	Total	Sulfate	mg/L	17.5			Sulfate in Water by Turbidimeter	D516
07010207-680	Stream	9/25/2013	S003-176	Total	Sulfate	mg/L	17.3			Sulfate in Water by Turbidimeter	D516

10/1/2008 to 9/30/2018	
N	16.00
Number of Observations greater than 10 mg/L	15 of 16
Percent Observations above 10 mg/L	94%
Average	16.32
StDev	5.10
Min	10.00
Max	28.00

MISSISSIPPI RIVER (07040003-627)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

STREAM_CODE	Sample Date	Result	Units	Detection	DL Units	Sample Location	County	Lat.	Long.
07040003-627	01 Oct 2008	34.3	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	14 Oct 2008	32	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	16 Oct 2008	31.1	mg/L	1.0	mg/L	MISSISSIPPI R LOCK & DAM #6 AT TREMPEALEAU, WIS	Winona	-91.4379	43.9995
07040003-627	17 Nov 2008	25	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	18 Dec 2008	30.6	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	22 Jan 2009	38	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	03 Feb 2009	31.8	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	16 Mar 2009	28.4	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	14 Apr 2009	32.4	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	29 Apr 2009	35.3	mg/L	1.0	mg/L	MISSISSIPPI R LOCK & DAM #6 AT TREMPEALEAU, WIS	Winona	-91.4379	43.9995
07040003-627	01 Jun 2009	40.1	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	17 Nov 2009	58.3	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	17 Dec 2009	65.6	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	19 Jan 2010	62.3	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	17 Feb 2010	50.6	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	25 Apr 2011	59.8	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	07 Aug 2011	40.1	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	24 Oct 2011	34	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	09 Apr 2014	23.7	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	08 Jul 2014	45.7	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	06 Oct 2014	21.9	mg/L	1.0	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	11 May 2016	36.2	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	08 Jun 2016	19.6	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	12 Jul 2016	36	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	25 Aug 2016	17.9	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	28 Sep 2016	24.8	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	18 Oct 2016	40	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	24 Apr 2017	31.4	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	25 Jul 2017	45.6	mg/L	0.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222
07040003-627	18 Oct 2017	32.6	mg/L	2.5	mg/L	MISSISSIPPI R. BY WINONA	Winona	-91.668861	44.088222

10/1/2008 to 9/30/2018 (data provided by Grand Portage (April 2021))	
N	30
Number of Observations greater than 10 mg/L	30 of 30
Percent Observations above 10 mg/L	100%
Average	36.84

Stdev	12.39
Min	17.90
Max	65.60

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07040003-627	Stream	10/1/2008	S000-096	Total	Sulfate	mg/L	34.3	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	10/14/2008	S000-096	Total	Sulfate	mg/L	32	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	10/16/2008	S000-095	Total	Sulfate	mg/L	31.1	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	10/16/2008	S000-095	Total	Sulfate	mg/L	31.1	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	11/17/2008	S000-096	Total	Sulfate	mg/L	25	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	12/18/2008	S000-096	Total	Sulfate	mg/L	30.6	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	1/22/2009	S000-096	Total	Sulfate	mg/L	38	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	2/3/2009	S000-096	Total	Sulfate	mg/L	31.8	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	3/16/2009	S000-096	Total	Sulfate	mg/L	28.4	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
07040003-627	Stream	4/14/2009	S000-096	Total	Sulfate	mg/L	32.5	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/14/2009	S000-096	Total	Sulfate	mg/L	32.4	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/29/2009	S000-095	Total	Sulfate	mg/L	35.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/29/2009	S000-095	Total	Sulfate	mg/L	35.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	6/1/2009	S000-096	Total	Sulfate	mg/L	40.1	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	11/17/2009	S000-096	Total	Sulfate	mg/L	58.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	12/17/2009	S000-096	Total	Sulfate	mg/L	65.6	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	1/19/2010	S000-096	Total	Sulfate	mg/L	62.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	2/17/2010	S000-096	Total	Sulfate	mg/L	50.6	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/25/2011	S000-096	Total	Sulfate	mg/L	59.8	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	8/7/2011	S000-096	Total	Sulfate	mg/L	40.1	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	10/24/2011	S000-096	Total	Sulfate	mg/L	34	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

07040003-627	Stream	8/17/2012	S007-660	Total	Sulfate	mg/L	1.14	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	8/17/2012	S007-660	Total	Sulfate	mg/L	17.2	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	6/21/2013	S007-660	Total	Sulfate	mg/L	8.44	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	6/21/2013	S007-660	Total	Sulfate	mg/L	28.3	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	7/30/2013	S007-661	Total	Sulfate	mg/L	11.8	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	7/30/2013	S007-661	Total	Sulfate	mg/L	47.7	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	9/10/2013	S007-660	Total	Sulfate	mg/L	0.96	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	9/10/2013	S007-660	Total	Sulfate	mg/L	34.8	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	9/10/2013	S007-660	Total	Sulfate	mg/L	2.54	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	9/10/2013	S007-660	Total	Sulfate	mg/L	34.4	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/9/2014	S000-096	Total	Sulfate	mg/L	23.7	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	7/8/2014	S000-096	Total	Sulfate	mg/L	45.7	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	10/6/2014	S000-096	Total	Sulfate	mg/L	21.9	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	5/11/2016	S000-096	Total	Sulfate	mg/L	36.2	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	6/8/2016	S000-096	Total	Sulfate	mg/L	19.6	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	7/12/2016	S000-096	Total	Sulfate	mg/L	36	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	8/25/2016	S000-096	Total	Sulfate	mg/L	17.9	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	9/28/2016	S000-096	Total	Sulfate	mg/L	24.8	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	10/18/2016	S000-096	Total	Sulfate	mg/L	40	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

07040003-627	Stream	11/29/2016	S000-096	Total	Sulfate	mg/L	46.8	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	12/6/2016	S000-096	Total	Sulfate	mg/L	46.6	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	12/20/2016	S000-096	Total	Sulfate	mg/L	53.3	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	12/27/2016	S000-096	Total	Sulfate	mg/L	53.4	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	1/23/2017	S000-096	Total	Sulfate	mg/L	59.1	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	1/26/2017	S000-096	Total	Sulfate	mg/L	59.4	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	2/23/2017	S000-096	Total	Sulfate	mg/L	30.3	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	3/21/2017	S000-096	Total	Sulfate	mg/L	37.8	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	3/28/2017	S000-096	Total	Sulfate	mg/L	37.7	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/20/2017	S000-096	Total	Sulfate	mg/L	32.8	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/24/2017	S000-096	Total	Sulfate	mg/L	31.4	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	4/25/2017	S000-096	Total	Sulfate	mg/L	33.1	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	7/25/2017	S000-096	Total	Sulfate	mg/L	45.6	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07040003-627	Stream	10/18/2017	S000-096	Total	Sulfate	mg/L	32.6	0	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 30, AVG = 36.84 , STDEV =12.39 . EPA has subsequently reviewed the sulfate water quality data for the Mississippi River (07040003-627) segments and recognizes that EPA needs to correct that information to N = 45, AVG = 37.13, STDEV = 13.29 and Min = 9.17.

Revised sulfate data analysis	
10/1/2008	34.3
10/14/2008	32
10/16/2008	31.1
11/17/2008	25
12/18/2008	30.6
1/22/2009	38
2/3/2009	31.8
3/16/2009	28.4
4/14/2009	32.45
4/29/2009	35.3
6/1/2009	40.1
11/17/2009	58.3
12/17/2009	65.6

1/19/2010	62.3
2/17/2010	50.6
4/25/2011	59.8
8/7/2011	40.1
10/24/2011	34
8/17/2012	9.17
6/21/2013	18.37
7/30/2013	29.75
9/10/2013	18.175
4/9/2014	23.7
7/8/2014	45.7
10/6/2014	21.9
5/11/2016	36.2
6/8/2016	19.6
7/12/2016	36
8/25/2016	17.9
9/28/2016	24.8
10/18/2016	40
11/29/2016	46.8
12/6/2016	46.6
12/20/2016	53.3
12/27/2016	53.4
1/23/2017	59.1
1/26/2017	59.4
2/23/2017	30.3
3/21/2017	37.8
3/28/2017	37.7
4/20/2017	32.8
4/24/2017	31.4
4/25/2017	33.1
7/25/2017	45.6
10/18/2017	32.6

10/1/2008 to 9/30/2018 (revised Appendix 2 values)	
N	45
Number of Observations greater than 10 mg/L	44 of 45
Percent Observations above 10 mg/L	98%
Average	37.13
Stdev	13.29
Min	9.17
Max	65.60

MISSISSIPPI RIVER (07060001-509)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
07060001-509	Stream	8/14/2012	S007-222	Total	Sulfate	mg/L	0.5	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	8/14/2012	S007-222	Total	Sulfate	mg/L	18	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	8/15/2012	S007-556	Total	Sulfate	mg/L	18.1	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	8/15/2012	S007-556	Total	Sulfate	mg/L	2.26	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	6/20/2013	S007-222	Total	Sulfate	mg/L	0.92	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	6/20/2013	S007-222	Total	Sulfate	mg/L	29.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	7/29/2013	S007-222	Total	Sulfate	mg/L	17.5	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	7/29/2013	S007-222	Total	Sulfate	mg/L	44.2	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	9/9/2013	S007-222	Total	Sulfate	mg/L	2.4	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
07060001-509	Stream	9/9/2013	S007-222	Total	Sulfate	mg/L	33.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

8/14/2012	9.25
8/15/2012	10.18
6/20/2013	15.11
7/29/2013	30.85
9/9/2013	17.85

10/1/2008 to 9/30/2018	
N	5.00
Number of Observations greater than 10 mg/L	4 of 5
Percent Observations above 10 mg/L	80%
Average	16.65
StDev	8.69
Min	9.25
Max	30.85

CLEARWATER RIVER (09020305-647)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
09020305-647	Stream	5/24/2012	S002-121	Total	Sulfate	mg/L	21.5	(null)	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	8/28/2012	S002-121	Total	Sulfate	mg/L	23.8	(null)	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	8/28/2012	S002-121	Total	Sulfate	mg/L	24.8	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	6/24/2013	S002-121	Total	Sulfate	mg/L	2.29	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	6/24/2013	S002-121	Total	Sulfate	mg/L	28	(null)	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	7/17/2013	S002-121	Total	Sulfate	mg/L	6.31	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	7/17/2013	S002-121	Total	Sulfate	mg/L	23.7	(null)	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	9/9/2013	S002-121	Total	Sulfate	mg/L	27.1	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	9/9/2013	S002-121	Total	Sulfate	mg/L	34.4	(null)	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
09020305-647	Stream	5/15/2014	S002-916	Total	Sulfate	mg/L	99.3	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	5/27/2014	S002-916	Total	Sulfate	mg/L	57.7	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	6/17/2014	S002-916	Total	Sulfate	mg/L	87.4	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	6/23/2014	S002-916	Total	Sulfate	mg/L	56.1	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	7/7/2014	S002-916	Total	Sulfate	mg/L	39.8	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	7/22/2014	S002-916	Total	Sulfate	mg/L	33	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	8/5/2014	S002-916	Total	Sulfate	mg/L	27.9	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	8/20/2014	S002-916	Total	Sulfate	mg/L	82	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	9/15/2014	S002-916	Total	Sulfate	mg/L	75.3	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	9/15/2014	S002-916	Total	Sulfate	mg/L	75	(null)	(null)	Sulfate in Water by Turbidimeter	D516
09020305-647	Stream	9/29/2014	S002-916	Total	Sulfate	mg/L	37.4	(null)	(null)	Sulfate in Water by Turbidimeter	D516

5/24/2012	21.5
8/28/2012	24.3
6/24/2013	15.145
7/17/2013	15.005
9/9/2013	30.75
5/15/2014	99.3
5/27/2014	57.7
6/17/2014	87.4
6/23/2014	56.1
7/7/2014	39.8
7/22/2014	33
8/5/2014	27.9
8/20/2014	82
9/15/2014	75.15
9/29/2014	37.4

10/1/2008 to 9/30/2018	
N	15.00
Number of Observations greater than 10 mg/L	15 of 15
Percent Observations above 10 mg/L	100%
Average	46.83
Stdev	27.72
Min	15.01
Max	99.30

SAND RIVER (09030002-501)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	sample_date	origin_stn_id	stn_origin_code	wu_station_id	sample_fraction	param_name	units_code	origin_org_id	result	sample_depth	sample_depth_units	detect_flag	detect_description	analytic_method	use_subclass_grp	huc_8	detection_limit	wu_sys_id
09030002-501	Stream	5/25/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	252	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/24/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	247	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/22/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	210	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/26/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	234	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/21/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	236	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/25/2010	S007-472	Equis	65919	Total	Sulfate	mg/L	1	79	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/25/2010	S007-473	Equis	65931	Total	Sulfate	mg/L	1	226	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	5/24/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	85	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/29/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	63	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/27/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	89	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/23/2011	S007-472	Equis	65919	Total	Sulfate	mg/L	1	30	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/29/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	78	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/30/2011	S003-249	Equis	41212	Total	Sulfate	mg/L	1	7.69	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/28/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	61.4	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/26/2011	S007-472	Equis	65919	Total	Sulfate	mg/L	1	81	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/26/2011	S007-473	Equis	65931	Total	Sulfate	mg/L	1	127	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	5/23/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	92.4	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/25/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	101	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/23/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	48	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/27/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	38	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/11/2012	S003-249	Equis	41212	Total	Sulfate	mg/L	1	15.9	0.1	m	TRUE	NA	300.1	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/26/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	61	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/22/2012	S007-472	Equis	65919	Total	Sulfate	mg/L	1	32	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	10/22/2012	S007-473	Equis	65931	Total	Sulfate	mg/L	1	55	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/6/2014	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	28.1	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/3/2014	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	16.5	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	12/3/2014	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	214	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	1/7/2015	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	286	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	5/6/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	103	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	5/28/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	51.8	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/11/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	52.6	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/25/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	42.5	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/9/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	73.4	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/29/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	92.1	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/12/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	107	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	9/30/2015	S001-681	Equis	51532	Total	Sulfate	mg/L	1	78	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	8/22/2016	S001-681	Equis	51532	Total	Sulfate	mg/L	1	20	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	12/7/2018	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	141	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	12/31/2018	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	0.05	NA	NA	FALSE	NA	NA	2Bg, 3C	9030002	0.05	59341836
09030002-501	Stream	1/4/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	167	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	2/11/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	239	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	3/8/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	245	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	4/8/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	72.1	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	5/1/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	83.8	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	6/7/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	66.4	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836
09030002-501	Stream	7/1/2019	152971-MONI0000000016	TEMPO_WW	93900	Total	Sulfate	mg/L	SURW	58.9	NA	NA	TRUE	NA	NA	2Bg, 3C	9030002	NA	59341836

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 46, AVG = 104.08 and STDEV = 79.52. EPA has subsequently reviewed the sulfate water quality data for the Sand River and recognizes that EPA needs to correct that information to N = 34, AVG = 103.60, STDEV = 81.48 and Min = 7.69.

10/1/2008 to 9/30/2019 (Appendix 2 values)	
N	46.00
Number of Observations greater than 10 mg/L	44 of 46
Percent Observations above 10 mg/L	96%
Average	104.08
StDev	79.52
Min	0.05
Max	286.00

Revised Data Analysis	
5/25/2010	252
6/24/2010	247
7/22/2010	210
8/26/2010	234
9/21/2010	236
10/25/2010	226
5/24/2011	85
6/29/2011	63
7/27/2011	89
8/23/2011	30
8/29/2011	78
8/30/2011	7.69
9/28/2011	61.4
10/26/2011	127
5/23/2012	92.4
6/25/2012	101
7/23/2012	48
8/27/2012	38
9/11/2012	15.9
9/26/2012	61
10/22/2012	55
8/6/2014	28.1
9/3/2014	16.5
12/3/2014	214
1/7/2015	286
5/6/2015	103
5/28/2015	51.8
6/11/2015	52.6
6/25/2015	42.5
7/9/2015	73.4
7/29/2015	92.1
8/12/2015	107
9/30/2015	78
8/22/2016	20

10/1/2008 to 9/30/2018 (revised Appendix 2 values)	
N	34

Number of Observations greater than 10 mg/L	33 of 34
Percent Observations above 10 mg/L	97%
Average	103.60
StDev	81.48
Min	7.69
Max	286.00

PIKE RIVER (09030002-503)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	sample_date	origin_stn_id	stn_origin_code	wu_station_id	sample_fraction	param_name	units_code	origin_org_id	result	sample_depth	sample_depth_units	detect_flag	detect_description	analytic_method	use_subclass_grp	huc_8	detection_limit	wu_sys_id
09030002-503	Stream	10/25/2010	S001-497	Equis	51096	Total	Sulfate	mg/L	1	27	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	10/25/2010	S007-474	Equis	65932	Total	Sulfate	mg/L	1	40	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	8/30/2011	S006-927	Equis	64133	Total	Sulfate	mg/L	1	8.31	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	10/26/2011	S001-497	Equis	51096	Total	Sulfate	mg/L	1	19	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	10/26/2011	S007-474	Equis	65932	Total	Sulfate	mg/L	1	43	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	9/11/2012	S006-927	Equis	64133	Total	Sulfate	mg/L	1	14.2	0.1	m	TRUE	NA	300.1	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	10/22/2012	S001-497	Equis	51096	Total	Sulfate	mg/L	1	15	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	10/22/2012	S007-474	Equis	65932	Total	Sulfate	mg/L	1	13	NA	NA	TRUE	NA	300	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	5/6/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	39.2	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	5/28/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	25.3	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	6/11/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	6.55	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	6/25/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	29.6	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	7/9/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	26.4	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	7/29/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	22.1	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	8/12/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	28.3	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	9/16/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	11.5	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	9/30/2015	S006-927	Equis	64133	Total	Sulfate	mg/L	1	28.1	NA	NA	TRUE	NA	D516	2Bg, 3C	9030002	NA	59341838
09030002-503	Stream	8/22/2016	S006-927	Equis	64133	Total	Sulfate	mg/L	1	3	NA	NA	FALSE	Present Below Quantification Limit	D516	2Bg, 3C	9030002	3	59341838

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 18, AVG = 22.20 and STDEV = 11.75. EPA has subsequently reviewed the sulfate water quality data for the Pike River and recognizes that EPA needs to correct that information to N = 15, AVG = 22.70 and STDEV = 12.61

10/1/2008 to 9/30/2018	
N	18
Number of Observations greater than 10 mg/L	15 of 18
Percent Observations above 10 mg/L	83%
Average	22.20
StDev	11.75
Min	3.00
Max	43.00

Revised Data Analysis	
10/25/2010	40
8/30/2011	8.31
10/26/2011	43
9/11/2012	14.2
10/22/2012	15
5/6/2015	39.2
5/28/2015	25.3
6/11/2015	6.55
6/25/2015	29.6
7/9/2015	26.4
7/29/2015	22.1
8/12/2015	28.3
9/16/2015	11.5

9/30/2015	28.1
8/22/2016	3

10/1/2008 to 9/30/2018 (revised Appendix 2 values)	
N	15
Number of Observations greater than 10 mg/L	12 of 15
Percent Observations above 10 mg/L	80%
Average	22.70
StDev	12.61
Min	3.00
Max	43.00

HAY LAKE (31-0037-00)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
31-0037-00	Lake	6/23/2009	31-0037-00-201	Total	Sulfate	mg/L	49	0	m		300.0
31-0037-00	Lake	7/1/2009	31-0037-00-201	Total	Sulfate	mg/L	60	0	m		300.0
31-0037-00	Lake	7/6/2009	31-0037-00-201	Total	Sulfate	mg/L	78	0	m		300.0
31-0037-00	Lake	7/14/2009	31-0037-00-201	Total	Sulfate	mg/L	55	0	m		300.0
31-0037-00	Lake	8/5/2009	31-0037-00-201	Total	Sulfate	mg/L	49	0	m		300.0
31-0037-00	Lake	8/25/2009	31-0037-00-201	Total	Sulfate	mg/L	47	0	m		300.0
31-0037-00	Lake	9/21/2011	31-0037-00-201	Total	Sulfate	mg/L	10.24	0	m		300.0
31-0037-00	Lake	9/6/2012	31-0037-00-202	Total	Sulfate	mg/L	31.7	0.1	m		300.1
31-0037-00	Lake	9/4/2013	31-0037-00-202	Total	Sulfate	mg/L	22.1	0.1	m		300.1

10/1/2008 to 9/30/2018	
N	9.00
Number of Observations greater than 10 mg/L	9 of 9
Percent Observations above 10 mg/L	100%
Average	44.67
StDev	20.49
Min	10.24
Max	78.00

SWAN LAKE (SW BAY) (31-0067-03)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

stationId	Station Name	Sample Date	Parameter	Sample Fraction Type	Unit	Result	Sample Upper Depth	Sample Depth Unit	Test Method Name	Test Method Id
31-0067-03-205	SWAN (WEST BAY)	6/24/2009	Sulfate as SO4	Total	mg/L	12	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	6/24/2009	Sulfate as SO4	Total	mg/L	11.1	0	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/1/2009	Sulfate as SO4	Total	mg/L	32	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/1/2009	Sulfate as SO4	Total	mg/L	48	0	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/6/2009	Sulfate as SO4	Total	mg/L	45	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/6/2009	Sulfate as SO4	Total	mg/L	40	0	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/15/2009	Sulfate as SO4	Total	mg/L	8	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	7/15/2009	Sulfate as SO4	Total	mg/L	8	0	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	8/5/2009	Sulfate as SO4	Total	mg/L	8	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	8/5/2009	Sulfate as SO4	Total	mg/L	8.1	0	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	8/25/2009	Sulfate as SO4	Total	mg/L	6.9	0.7	m	Determination of Inorganic Anions by Ion Chromatography	300
31-0067-03-205	SWAN (WEST BAY)	8/25/2009	Sulfate as SO4	Total	mg/L	6.9	0	m	Determination of Inorganic Anions by Ion Chromatography	300

NOTES: When EPA published Appendix 2 in April 2021, EPA reported the number of samples in exceedance of the 10 mg/L to be 4 samples (67%). EPA has subsequently reviewed the sulfate water quality data for Sandy Lake (SW Bay) and recognizes that EPA needs to correct that information to 3 samples in exceedance of 10 mg/L (50%).

6/24/2009	11.55
7/1/2009	40
7/6/2009	42.5
7/15/2009	8
8/5/2009	8.05
8/25/2009	6.9

10/1/2008 to 9/30/2018 (revised Appendix 2 values)	
N	6.00
Number of Observations greater than 10 mg/L	3 of 6

Percent Observations above 10 mg/L	50%
Average	19.50
StDev	16.94
Min	6.90
Max	42.50

OX HIDE LAKE (31-0106-00)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
31-0106-00	Lake	8/5/2009	31-0106-00-202	Total	Sulfate	mg/L	29	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
31-0106-00	Lake	5/21/2012	31-0106-00-203	Total	Sulfate	mg/L	28.3	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	9/7/2012	31-0106-00-203	Total	Sulfate	mg/L	0.5	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	9/7/2012	31-0106-00-203	Total	Sulfate	mg/L	26.4	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	9/7/2012	31-0106-00-203	Total	Sulfate	mg/L	26.4	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	9/7/2012	31-0106-00-203	Total	Sulfate	mg/L	0.5	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	8/14/2013	31-0106-00-203	Total	Sulfate	mg/L	1.94	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
31-0106-00	Lake	8/14/2013	31-0106-00-203	Total	Sulfate	mg/L	25.9	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTE: The number of individual sulfate samples for Ox Hide Lake (31-0106-00) was below EPA's screening analysis recommendation of at least 5 samples. But EPA considered the overall water quality data set (e.g., mean is 2 times the numeric 10 mg/L sulfate criterion, all 4 samples are above 10 mg/L) and found Ox Hide Lake to be impaired.

8/5/2009	29
5/21/2012	28.3
9/7/2012	13.45
8/14/2013	13.92

10/1/2008 to 9/30/2018	
N	4.00
Number of Observations greater than 10 mg/L	4 of 4
Percent Observations above 10 mg/L	100%
Average	21.17
Stdev	8.65
Min	13.92
Max	29.00

LAKE MONONGALIA (34-0158-01)

KEY

Sulfate measurement below 10 mg/L
Sulfate measurement above 10 mg/L
Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
34-0158-01	Lake	5/21/2008	34-0158-01-101	Total	Sulfate	mg/L	45.4	0	m		300(A)
34-0158-01	Lake	6/18/2008	34-0158-01-101	Total	Sulfate	mg/L	35.1	0	m		300(A)
34-0158-01	Lake	7/21/2008	34-0158-01-101	Total	Sulfate	mg/L	22.5	0	m		300(A)
34-0158-01	Lake	8/18/2008	34-0158-01-101	Total	Sulfate	mg/L	27	0	m		300(A)
34-0158-01	Lake	9/24/2008	34-0158-01-101	Total	Sulfate	mg/L	37.4	0	m		300(A)
34-0158-01	Lake	9/20/2011	34-0158-01-201	Total	Sulfate	mg/L	16.51	0	m		300.0
34-0158-01	Lake	6/23/2013	34-0158-01-203	Total	Sulfate	mg/L	34.7	0.1	m		300.1
34-0158-01	Lake	7/31/2013	34-0158-01-203	Total	Sulfate	mg/L	33.6	0.1	m		300.1
34-0158-01	Lake	9/13/2013	34-0158-01-203	Total	Sulfate	mg/L	34.6	0.1	m		300.1
34-0158-01	Lake	6/25/2015	34-0158-01-203	Total	Sulfate	mg/L	22.6	0.1	m		300.1

5/21/2008 to 9/30/2018 - Including 2008 data (5/21/08 to 9/24/08, 5 additional samples)	
N	10.00
Number of Observations greater than 10 mg/L	10 of 10
Percent Observations above 10 mg/L	100%
Average	30.94
StDev	8.61
Min	16.51
Max	45.40

LAKE MONONGALIA (34-0158-02)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
34-0158-02	Lake	5/21/2008	34-0158-02-101	Total	Sulfate	mg/L	33.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
34-0158-02	Lake	6/18/2008	34-0158-02-101	Total	Sulfate	mg/L	31	2	m	Inorganic Anions by Ion Chromatography	300(A)
34-0158-02	Lake	7/23/2008	34-0158-02-101	Total	Sulfate	mg/L	25.7	2	m	Inorganic Anions by Ion Chromatography	300(A)
34-0158-02	Lake	8/6/2008	34-0158-02-101	Total	Sulfate	mg/L	27.3	2	m	Inorganic Anions by Ion Chromatography	300(A)
34-0158-02	Lake	9/23/2008	34-0158-02-101	Total	Sulfate	mg/L	23.9	(null)	(null)	Inorganic Anions by Ion Chromatography	300(A)
34-0158-02	Lake	7/26/2012	34-0158-02-204	Total	Sulfate	mg/L	21.7	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
34-0158-02	Lake	7/26/2012	34-0158-02-204	Total	Sulfate	mg/L	0.56	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTE: EPA considered data prior to 10/1/2008 for Lake Monongalia (34-0158-02), 5 samples from 5/21/2008 to 9/23/2008.

5/21/2008	33.6
6/18/2008	31
7/23/2008	25.7
8/6/2008	27.3
9/23/2008	23.9
7/26/2012	11.13

5/21/2008 to 9/30/2018	
N	6.00
Number of Observations greater than 10 mg/L	6 of 6
Percent Observations above 10 mg/L	100%
Average	25.44
StDev	7.85
Min	11.13
Max	33.60

EAST VERMILLION LAKE (69-0378-01)

KEY

- Sulfate measurement below 10 mg/L
- Sulfate measurement above 10 mg/L
- Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0378-01	Lake	5/15/2008	69-0378-01-132	Total	Sulfate	mg/L	13.9	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	5/16/2008	69-0378-01-130	Total	Sulfate	mg/L	15.4	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	5/16/2008	69-0378-01-134	Total	Sulfate	mg/L	9.77	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	5/16/2008	69-0378-01-113	Total	Sulfate	mg/L	10.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	6/2/2008	69-0378-01-132	Total	Sulfate	mg/L	6.28	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	6/2/2008	69-0378-01-130	Total	Sulfate	mg/L	14.4	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	6/23/2008	69-0378-01-132	Total	Sulfate	mg/L	14.7	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	6/23/2008	69-0378-01-130	Total	Sulfate	mg/L	14.1	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/7/2008	69-0378-01-132	Total	Sulfate	mg/L	13.7	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/7/2008	69-0378-01-130	Total	Sulfate	mg/L	14.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/21/2008	69-0378-01-132	Total	Sulfate	mg/L	13.7	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/22/2008	69-0378-01-130	Total	Sulfate	mg/L	14.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/22/2008	69-0378-01-130	Total	Sulfate	mg/L	14.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/22/2008	69-0378-01-134	Total	Sulfate	mg/L	14.4	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	7/22/2008	69-0378-01-113	Total	Sulfate	mg/L	9.43	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/4/2008	69-0378-01-132	Total	Sulfate	mg/L	13.5	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/5/2008	69-0378-01-130	Total	Sulfate	mg/L	14.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/18/2008	69-0378-01-132	Total	Sulfate	mg/L	13.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/18/2008	69-0378-01-132	Total	Sulfate	mg/L	13.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/18/2008	69-0378-01-130	Total	Sulfate	mg/L	14.9	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	9/3/2008	69-0378-01-132	Total	Sulfate	mg/L	13.4	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	9/3/2008	69-0378-01-130	Total	Sulfate	mg/L	14.8	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	9/29/2008	69-0378-01-132	Total	Sulfate	mg/L	12.5	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-01	Lake	8/2/2010	69-0378-01-132	Total	Sulfate	mg/L	14.3	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/2/2010	69-0378-01-208	Total	Sulfate	mg/L	9.6	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/2/2010	69-0378-01-221	Total	Sulfate	mg/L	12.1	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	6/1/2011	69-0378-01-220	Total	Sulfate	mg/L	13.5	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0378-01	Lake	8/29/2011	69-0378-01-132	Total	Sulfate	mg/L	13.4	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/29/2011	69-0378-01-208	Total	Sulfate	mg/L	10.9	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/29/2011	69-0378-01-221	Total	Sulfate	mg/L	11.7	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/13/2012	69-0378-01-132	Total	Sulfate	mg/L	12.9	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/13/2012	69-0378-01-208	Total	Sulfate	mg/L	9.9	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	8/13/2012	69-0378-01-221	Total	Sulfate	mg/L	11.4	(null)	(null)	Sulfate by Turbidimetric Determination	375.4
69-0378-01	Lake	5/5/2015	69-0378-01-130	Total	Sulfate	mg/L	10.1	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0378-01	Lake	6/2/2015	69-0378-01-130	Total	Sulfate	mg/L	10.6	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0378-01	Lake	7/7/2015	69-0378-01-130	Total	Sulfate	mg/L	10.5	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0378-01	Lake	8/5/2015	69-0378-01-130	Total	Sulfate	mg/L	10.6	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0378-01	Lake	9/23/2015	69-0378-01-218	Total	Sulfate	mg/L	9.97	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTE: When EPA published Appendix 2 in April 2021, EPA reported the AVG = 12.38 and STDEV = 1.57. EPA has subsequently reviewed the sulfate water quality data for East Vermillion Lake and recognizes that EPA should have recognized the AVG = 13.21 and STDEV = 1.78.

5/15/2008	13.90
5/16/2008	15.40
6/2/2008	14.40
6/23/2008	14.70
7/7/2008	14.60
7/21/2008	13.70
7/22/2008	14.60
8/4/2008	13.50
8/5/2008	14.60
8/18/2008	14.90
9/3/2008	14.80
9/29/2008	12.50
8/2/2010	14.30
6/1/2011	13.50
8/29/2011	13.40
8/13/2012	12.90
5/5/2015	10.10
6/2/2015	10.60
7/7/2015	10.50
8/5/2015	10.60
9/23/2015	9.97

10/1/2008 to 9/30/2018	
N	21.00
Number of Observations greater than 10 mg/L	20 of 21
Percent Observations above 10 mg/L	95%
Mean	13.21
StDev	1.78
Min	9.97
Max	15.40

VERMILLION (69-0378-03)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0378-03	Lake	5/9/2000	69-0378-03-116	Total	Sulfate	mg/L	26	2	m	Sulfate by Turbidimetric Determination	375.4
69-0378-03	Lake	6/13/2000	69-0378-03-116	Total	Sulfate	mg/L	23	2	m	Sulfate by Turbidimetric Determination	375.4
69-0378-03	Lake	7/18/2000	69-0378-03-116	Total	Sulfate	mg/L	10	2	m	Sulfate by Turbidimetric Determination	375.4
69-0378-03	Lake	8/8/2000	69-0378-03-116	Total	Sulfate	mg/L	7.9	2	m	Sulfate by Turbidimetric Determination	375.4
69-0378-03	Lake	9/12/2000	69-0378-03-116	Total	Sulfate	mg/L	9.1	2	m	Sulfate by Turbidimetric Determination	375.4
69-0378-03	Lake	5/16/2008	69-0378-03-116	Total	Sulfate	mg/L	12.1	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	6/2/2008	69-0378-03-116	Total	Sulfate	mg/L	1	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	6/23/2008	69-0378-03-116	Total	Sulfate	mg/L	8.69	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	6/23/2008	69-0378-03-116	Total	Sulfate	mg/L	8.68	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	7/7/2008	69-0378-03-116	Total	Sulfate	mg/L	9.43	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	7/22/2008	69-0378-03-116	Total	Sulfate	mg/L	9.64	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	8/5/2008	69-0378-03-116	Total	Sulfate	mg/L	10.4	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	8/18/2008	69-0378-03-116	Total	Sulfate	mg/L	11.1	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	9/3/2008	69-0378-03-116	Total	Sulfate	mg/L	12	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	9/30/2008	69-0378-03-116	Total	Sulfate	mg/L	11.6	2	m	Inorganic Anions by Ion Chromatography	300(A)
69-0378-03	Lake	6/6/2019	69-0378-03-116	Total	Sulfate	mg/L	10.8	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0378-03	Lake	6/19/2019	69-0378-03-116	Total	Sulfate	mg/L	10.8	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0378-03	Lake	7/1/2019	69-0378-03-116	Total	Sulfate	mg/L	10.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0378-03	Lake	7/18/2019	69-0378-03-116	Total	Sulfate	mg/L	11.6	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300

NOTE: For Vermillion Lake (69-0378-03) EPA considered sulfate data collected in 2008 prior to October 1, 2008 (5/16/2008 to 9/30/2008, 9 sulfate samples). Within those 9 samples, there is one sulfate measurement collected on 6/2/2008 (1 mg/L) which potentially is an erroneous measurement. The other 12 sulfate measurements are in the range of 8.69 mg/L to 12.1 mg/L. If one were to remove the sulfate measurement from 6/2/2008 (1 mg/L) from the overall sulfate data which EPA analyzed, the average sulfate concentration for 12 samples increases to 10.71 mg/L. Based on this potential erroneous measurement and the overall sulfate concentration data set, EPA found Vermillion Lake (69-0378-03) to be impaired.

5/16/2008	12.1
6/2/2008	1
6/23/2008	8.685
7/7/2008	9.43
7/22/2008	9.64
8/5/2008	10.4
8/18/2008	11.1
9/3/2008	12
9/30/2008	11.6
6/6/2019	10.8
6/19/2019	10.8
7/1/2019	10.4
7/18/2019	11.6

5/16/2008 to 9/30/2019	
N	13
Number of Observations greater than 10 mg/L	9 of 13
Percent Observations above 10 mg/L	69%
Mean	9.97
StDev	2.88
Min	1.00
Max	12.10

WYNNE LAKE (69-0434-02)

KEY

Sulfate measurement below 10 mg/L
Sulfate measurement above 10 mg/L
Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0434-02	Lake	8/19/2010	69-0434-02-203	Total	Sulfate	mg/L	16.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0434-02	Lake	8/8/2012	69-0434-02-204	Total	Sulfate	mg/L	2.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0434-02	Lake	6/24/2019	69-0434-02-202	Total	Sulfate	mg/L	11.7	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0434-02	Lake	6/27/2019	69-0434-02-202	Total	Sulfate	mg/L	11.7	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0434-02	Lake	6/27/2019	69-0434-02-202	Total	Sulfate	mg/L	127	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0434-02	Lake	7/15/2019	69-0434-02-202	Total	Sulfate	mg/L	11.8	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0434-02	Lake	8/27/2019	69-0434-02-202	Total	Sulfate	mg/L	12.8	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0434-02	Lake	9/23/2019	69-0434-02-202	Total	Sulfate	mg/L	12	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTE: When EPA published Appendix 2 in April 2021, EPA reported the N = 7, AVG = 19.06 and STDEV = 22.51. EPA has subsequently reviewed the sulfate water quality data for Wynne Lake and recognizes that EPA should correct the AVG and STDEV to AVG = 19.45 and STDEV = 22.42.

10/1/2008 to 9/30/2019	
N	7.00
Number of Observations greater than 10 mg/L	6 of 7
Percent Observations above 10 mg/L	86%
Average	19.06
Stdev	24.51
Min	2.20
Max	69.35

Revised data analysis	
8/19/2010	16.3
8/8/2012	2.2
6/24/2019	11.7
6/27/2019	69.35
7/15/2019	11.8
8/27/2019	12.8
9/23/2019	12

10/1/2008 to 9/30/2018	
N	7.00
Number of Observations greater than 10 mg/L	6 of 7

Percent Observations above 10 mg/L	86%
Average	19.45
Stdev	22.42
Min	2.20
Max	69.35

EMBARRASS LAKE (69-0496-00)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

LOC_DESC	WID	SAMPLE_DATE	RESULT	PARAMETER
Embarrass Lake	69-0496-00	8/13/2009	21.4	Sulfate
Embarrass Lake	69-0496-00	8/13/2009	21.2	Sulfate
Embarrass Lake	69-0496-00	8/20/2009	21.3	Sulfate
Embarrass Lake	69-0496-00	8/20/2009	21.2	Sulfate
Embarrass Lake	69-0496-00	8/20/2009	21.2	Sulfate
Embarrass Lake	69-0496-00	8/20/2009	21.4	Sulfate
Embarrass Lake	69-0496-00	8/20/2009	21.2	Sulfate
Embarrass Lake	69-0496-00	5/26/2010	37.3	Sulfate
Embarrass Lake	69-0496-00	8/17/2010	22.8	Sulfate
Embarrass Lake	69-0496-00	8/20/2010	23.2	Sulfate
Embarrass Lake	69-0496-00	8/20/2010	23.2	Sulfate
Embarrass Lake	69-0496-00	5/10/2011	17.3	Sulfate
Embarrass Lake	69-0496-00	6/15/2011	16.6	Sulfate
Embarrass Lake	69-0496-00	6/15/2011	16.6	Sulfate
Embarrass Lake	69-0496-00	8/7/2012	11.9	Sulfate
Embarrass Lake	69-0496-00	8/8/2012	15.4	Sulfate
Embarrass Lake	69-0496-00	8/8/2012	16.7	Sulfate

8/13/2009	21.3
8/20/2009	21.26
5/26/2010	37.3
8/17/2010	22.8
8/20/2010	23.2
5/10/2011	17.3
6/15/2011	16.6
8/7/2012	11.9
8/8/2012	16.05

10/1/2008 to 9/30/2018	
N	9.00
Number of Observations greater than 10 mg/L	9 of 9
Percent Observations above 10 mg/L	100%
Mean	20.86
StDev	7.19
Min	11.90
Max	37.30

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0496-00	Lake	8/13/2009	69-0496-00-205	Total	Sulfate	mg/L	21.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/13/2009	69-0496-00-212	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2009	69-0496-00-209	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2009	69-0496-00-210	Total	Sulfate	mg/L	21.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2009	69-0496-00-211	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300

69-0496-00	Lake	8/20/2009	69-0496-00-208	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2009	69-0496-00-208	Total	Sulfate	mg/L	21.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	5/26/2010	69-0496-00-101	Total	Sulfate	mg/L	37.3	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	8/17/2010	69-0496-00-204	Total	Sulfate	mg/L	22.8	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2010	69-0496-00-207	Total	Sulfate	mg/L	23.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/20/2010	69-0496-00-206	Total	Sulfate	mg/L	23.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	5/10/2011	69-0496-00-101	Total	Sulfate	mg/L	17.3	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	6/15/2011	69-0496-00-201	Total	Sulfate	mg/L	16.6	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	6/15/2011	69-0496-00-201	Total	Sulfate	mg/L	16.6	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	8/7/2012	69-0496-00-204	Total	Sulfate	mg/L	11.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/8/2012	69-0496-00-204	Total	Sulfate	mg/L	16.7	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	8/8/2012	69-0496-00-204	Total	Sulfate	mg/L	15.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0496-00	Lake	9/14/2012	69-0496-00-203	Total	Sulfate	mg/L	5.31	0.1	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	9/14/2012	69-0496-00-203	Total	Sulfate	mg/L	18.8	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	7/26/2013	69-0496-00-101	Total	Sulfate	mg/L	43.1	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0496-00	Lake	7/26/2013	69-0496-00-101	Total	Sulfate	mg/L	18.2	(null)	(null)	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

NOTE: When EPA published Appendix 2 in April 2021, EPA reported the N = 9, AVG = 20.76 and STDEV = 7.34. EPA has subsequently reviewed the sulfate water quality data for Embarrass Lake and recognizes that EPA should have recognized the N = 11, AVG = 20.97 and STDEV = 7.67.

8/13/2009	21.4
8/20/2009	21.4
5/26/2010	37.3
8/17/2010	22.8
8/20/2010	23.2
5/10/2011	17.3
6/15/2011	16.6
8/7/2012	11.9
8/8/2012	16.05
9/14/2012	12.05
7/26/2013	30.65

10/1/2008 to 9/30/2018 (revised)	
N	11.00
Number of Observations greater than 10 mg/L	11 of 11
Percent Observations above 10 mg/L	100%
Mean	20.97
StDev	7.67
Min	11.90
Max	37.30

ESQUAGAMA LAKE (69-0565-00)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0565-00	Lake	8/20/2009	69-0565-00-204	Total	Sulfate	mg/L	17.1	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0565-00	Lake	8/20/2010	69-0565-00-203	Total	Sulfate	mg/L	27.1	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0565-00	Lake	8/20/2010	69-0565-00-202	Total	Sulfate	mg/L	26.6	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0565-00	Lake	6/25/2019	69-0565-00-101	Total	Sulfate	mg/L	13.2	2	m	Determination of Inorganic Anions by Ion Chromatography	300.1
69-0565-00	Lake	7/16/2019	69-0565-00-101	Total	Sulfate	mg/L	12.5	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0565-00	Lake	8/27/2019	69-0565-00-101	Total	Sulfate	mg/L	12.5	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1
69-0565-00	Lake	9/24/2019	69-0565-00-101	Total	Sulfate	mg/L	14.5	2	m	Determination of Inorganic Anions in Drinking Water by Ion Chromatography	300.1

10/1/2008 to 9/30/2018	
N	6.00
Number of Observations greater than 10 mg/L	6 of 6
Percent Observations above 10 mg/L	100%
Mean	16.11
StDev	5.54
Min	12.50
Max	26.85

8/20/2009	17.1
8/20/2010	27.1
6/25/2019	13.2
7/16/2019	12.5
8/27/2019	12.5
9/24/2019	14.5

10/1/2008 to 9/30/2018 (revised)	
N	6.00
Number of Observations greater than 10 mg/L	6 of 6
Percent Observations above 10 mg/L	100%
Mean	16.15
StDev	5.64

Min	12.50
Max	27.10

CEDAR ISLAND (N) LAKE (69-0568-01)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0568-01	Lake	8/13/2009	69-0568-01-201	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/13/2009	69-0568-01-202	Total	Sulfate	mg/L	21.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/13/2009	69-0568-01-203	Total	Sulfate	mg/L	20.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/13/2009	69-0568-01-204	Total	Sulfate	mg/L	21.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/19/2010	69-0568-01-202	Total	Sulfate	mg/L	23.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/23/2011	69-0568-01-202	Total	Sulfate	mg/L	18.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/7/2012	69-0568-01-203	Total	Sulfate	mg/L	2.2	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/7/2012	69-0568-01-203	Total	Sulfate	mg/L	69.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-01	Lake	8/23/2012	69-0568-01-206	Total	Sulfate	mg/L	16.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300

NOTE: When EPA published Appendix 2 in April 2021, EPA reported the AVG = 23.16 and STDEV = 7.67. EPA has subsequently reviewed the sulfate water quality data for Cedar Island (N) Lake and recognizes that EPA should have recognized the AVG as 23.19 and STDEV as 7.66.

8/13/2009	21.3
8/19/2010	23.4
8/23/2011	18.9
8/7/2012	36.05
8/23/2012	16.3

10/1/2008 to 9/30/2018 (revised)	
N	5.00
Number of Observations greater than 10 mg/L	5 of 5
Percent Observations above 10 mg/L	100%
Mean	23.19
StDev	7.66
Min	16.30
Max	36.05

CEDAR ISLAND (N) LAKE (69-0568-02)

KEY

- **Sulfate measurement below 10 mg/L**
- **Sulfate measurement above 10 mg/L**
- **Highlighted due to multiple samples collected on this date**

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0568-02	Lake	8/13/2009	69-0568-02-203	Total	Sulfate	mg/L	20.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/18/2009	69-0568-02-204	Total	Sulfate	mg/L	19.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/25/2009	69-0568-02-204	Total	Sulfate	mg/L	19.8	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/25/2009	69-0568-02-204	Total	Sulfate	mg/L	19.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/25/2009	69-0568-02-204	Total	Sulfate	mg/L	19.8	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/25/2009	69-0568-02-207	Total	Sulfate	mg/L	19.7	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/25/2009	69-0568-02-203	Total	Sulfate	mg/L	20.1	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/18/2010	69-0568-02-204	Total	Sulfate	mg/L	23.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/18/2010	69-0568-02-203	Total	Sulfate	mg/L	23.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/9/2011	69-0568-02-204	Total	Sulfate	mg/L	2.24	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/11/2011	69-0568-02-204	Total	Sulfate	mg/L	17.3	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/11/2011	69-0568-02-203	Total	Sulfate	mg/L	31.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/11/2011	69-0568-02-203	Total	Sulfate	mg/L	15.9	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300
69-0568-02	Lake	8/23/2012	69-0568-02-210	Total	Sulfate	mg/L	15.4	(null)	(null)	Determination of Inorganic Anions by Ion Chromatography	300

NOTE: When EPA published Appendix 2 in April 2021, EPA reported the AVG = 17.47 and STDEV = 7.16. EPA has subsequently reviewed the sulfate water quality data for Cedar Island S Lake and recognizes that EPA should have recognized the to be AVG = 18.92, STDEV = 8.89 and Max = 31.4.

8/13/2009	20.3
8/18/2009	19.3
8/25/2009	19.9
8/18/2010	23.9
8/9/2011	2.24
8/11/2011	31.4
8/23/2012	15.4

10/1/2008 to 9/30/2018 (revised)	
N	7.00

Number of Observations greater than 10 mg/L	6 of 7
Percent Observations above 10 mg/L	86%
Mean	18.92
StDev	8.89
Min	2.24
Max	31.40

LITTLE SANDY LAKE (69-0729-00)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0729-00	Lake	5/25/2010	69-0729-00-201	Total	Sulfate	mg/L	345				
69-0729-00	Lake	6/24/2010	69-0729-00-201	Total	Sulfate	mg/L	325				
69-0729-00	Lake	7/22/2010	69-0729-00-201	Total	Sulfate	mg/L	280				
69-0729-00	Lake	8/26/2010	69-0729-00-201	Total	Sulfate	mg/L	475				
69-0729-00	Lake	9/21/2010	69-0729-00-201	Total	Sulfate	mg/L	360				
69-0729-00	Lake	10/25/2010	69-0729-00-201	Total	Sulfate	mg/L	330				
69-0729-00	Lake	5/24/2011	69-0729-00-201	Total	Sulfate	mg/L	140				
69-0729-00	Lake	6/29/2011	69-0729-00-201	Total	Sulfate	mg/L	130				
69-0729-00	Lake	7/27/2011	69-0729-00-201	Total	Sulfate	mg/L	140				
69-0729-00	Lake	8/29/2011	69-0729-00-201	Total	Sulfate	mg/L	150				
69-0729-00	Lake	9/28/2011	69-0729-00-201	Total	Sulfate	mg/L	179				
69-0729-00	Lake	10/26/2011	69-0729-00-201	Total	Sulfate	mg/L	247				
69-0729-00	Lake	5/23/2012	69-0729-00-201	Total	Sulfate	mg/L	210				
69-0729-00	Lake	6/25/2012	69-0729-00-201	Total	Sulfate	mg/L	121				
69-0729-00	Lake	7/23/2012	69-0729-00-201	Total	Sulfate	mg/L	87				
69-0729-00	Lake	8/27/2012	69-0729-00-201	Total	Sulfate	mg/L	104				
69-0729-00	Lake	9/26/2012	69-0729-00-201	Total	Sulfate	mg/L	131				
69-0729-00	Lake	10/22/2012	69-0729-00-201	Total	Sulfate	mg/L	210				

10/1/2008 to 9/30/2018	
N	18.00
Number of Observations greater than 10 mg/L	18 of 18
Percent Observations above 10 mg/L	100%
Average	220.22
StDev	109.61
Max	475.00
Min	87.00

SANDY LAKE (69-0730-00)

KEY

	Sulfate measurement below 10 mg/L
	Sulfate measurement above 10 mg/L
	Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
69-0730-00	Lake	5/25/2010	69-0730-00-201	Total	Sulfate	mg/L	305	0	m		300
69-0730-00	Lake	6/24/2010	69-0730-00-201	Total	Sulfate	mg/L	276	0	m		300
69-0730-00	Lake	7/22/2010	69-0730-00-201	Total	Sulfate	mg/L	250	0	m		300
69-0730-00	Lake	8/26/2010	69-0730-00-201	Total	Sulfate	mg/L	310	0	m		300
69-0730-00	Lake	9/21/2010	69-0730-00-201	Total	Sulfate	mg/L	276	0	m		300
69-0730-00	Lake	10/25/2010	69-0730-00-201	Total	Sulfate	mg/L	260	0	m		300
69-0730-00	Lake	5/24/2011	69-0730-00-201	Total	Sulfate	mg/L	110	0	m		300
69-0730-00	Lake	6/29/2011	69-0730-00-201	Total	Sulfate	mg/L	103	0	m		300
69-0730-00	Lake	7/27/2011	69-0730-00-201	Total	Sulfate	mg/L	107	0	m		300
69-0730-00	Lake	8/29/2011	69-0730-00-201	Total	Sulfate	mg/L	109	0	m		300
69-0730-00	Lake	9/28/2011	69-0730-00-201	Total	Sulfate	mg/L	110	0	m		300
69-0730-00	Lake	10/26/2011	69-0730-00-201	Total	Sulfate	mg/L	166	0	m		300
69-0730-00	Lake	5/22/2012	69-0730-00-202	Total	Sulfate	mg/L	169	0.1	m		300.1
69-0730-00	Lake	5/23/2012	69-0730-00-201	Total	Sulfate	mg/L	160	0	m		300
69-0730-00	Lake	6/25/2012	69-0730-00-201	Total	Sulfate	mg/L	84	0	m		300
69-0730-00	Lake	7/23/2012	69-0730-00-201	Total	Sulfate	mg/L	72.6	0	m		300
69-0730-00	Lake	8/27/2012	69-0730-00-201	Total	Sulfate	mg/L	78.3	0	m		300
69-0730-00	Lake	9/21/2012	69-0730-00-203	Total	Sulfate	mg/L	3.05	0.1	m		300.1
69-0730-00	Lake	9/26/2012	69-0730-00-201	Total	Sulfate	mg/L	87	0	m		300
69-0730-00	Lake	10/22/2012	69-0730-00-201	Total	Sulfate	mg/L	99	0	m		300
69-0730-00	Lake	6/11/2013	69-0730-00-203	Total	Sulfate	mg/L	11	0.1	m		300.1
69-0730-00	Lake	6/11/2013	69-0730-00-204	Total	Sulfate	mg/L	135	0.1	m		300.1
69-0730-00	Lake	7/9/2013	69-0730-00-203	Total	Sulfate	mg/L	122	0.1	m		300.1
69-0730-00	Lake	7/9/2013	69-0730-00-204	Total	Sulfate	mg/L	118	0.1	m		300.1
69-0730-00	Lake	8/13/2013	69-0730-00-204	Total	Sulfate	mg/L	123	0.1	m		300.1
69-0730-00	Lake	8/13/2013	69-0730-00-205	Total	Sulfate	mg/L	122	0.1	m		300.1
69-0730-00	Lake	9/17/2013	69-0730-00-203	Total	Sulfate	mg/L	67.9	0.1	m		300.1
69-0730-00	Lake	9/17/2013	69-0730-00-204	Total	Sulfate	mg/L	130	0.1	m		300.1
69-0730-00	Lake	9/19/2013	69-0730-00-204	Total	Sulfate	mg/L	126	0.1	m		300.1

NOTES: When EPA published Appendix 2 in April 2021, EPA reported N = 29, AVG = 141.30 and StDev = 81.29. EPA has subsequently reviewed the sulfate water quality data for Sandy Lake and recognizes that EPA needs to correct that information to N = 25, AVG = 150.84 and STDEV = 81.52

10/1/2008 to 9/30/2018 (Appendix 2 values)	
N	29.00
Number of Observations greater than 10 mg/L	28 of 29

Percent Observations above 10 mg/L	97%
Average	141.03
StDev	81.29
Min	3.05
Max	310.00

5/25/2010	305
6/24/2010	276
7/22/2010	250
8/26/2010	310
9/21/2010	276
10/25/2010	260
5/24/2011	110
6/29/2011	103
7/27/2011	107
8/29/2011	109
9/28/2011	110
10/26/2011	166
5/22/2012	169
5/23/2012	160
6/25/2012	84
7/23/2012	72.6
8/27/2012	78.3
9/21/2012	3.05
9/26/2012	87
10/22/2012	99
6/11/2013	135
7/9/2013	122
8/13/2013	123
9/17/2013	130
9/19/2013	126

10/1/2008 to 9/30/2018 (revised Appendix 2 values)	
N	25
Number of Observations greater than 10 mg/L	24 of 25
Percent Observations above 10 mg/L	96%
Average	150.84
StDev	81.52
Min	3.05
Max	310

RICE LAKE (71-0142-00)

KEY

- Sulfate measurement below 10 mg/L
- Sulfate measurement above 10 mg/L
- Highlighted due to multiple samples collected on this date

wid	type	Sample Date	Station ID	Station Origin Code	Sample Fraction	Parameter	Units	Result	Sample Depth	Sample Depth Units	Detect Description	Analytic Method
71-0142-00	Lake	4/4/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	2.3				
71-0142-00	Lake	4/11/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	21.8				
71-0142-00	Lake	4/16/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.9				
71-0142-00	Lake	4/20/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.5				
71-0142-00	Lake	4/23/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.9				
71-0142-00	Lake	4/24/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.4				
71-0142-00	Lake	5/9/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	4.2				
71-0142-00	Lake	5/17/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	7.6				
71-0142-00	Lake	5/21/2012	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	13.5				
71-0142-00	Lake	5/7/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.7				
71-0142-00	Lake	5/9/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18				
71-0142-00	Lake	5/28/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.9				
71-0142-00	Lake	5/30/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	16.3				
71-0142-00	Lake	6/18/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	3				
71-0142-00	Lake	6/20/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	3				
71-0142-00	Lake	10/8/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	22.6				
71-0142-00	Lake	10/10/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	21.5				
71-0142-00	Lake	11/5/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	26.4				
71-0142-00	Lake	11/7/2014	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	25.3				
71-0142-00	Lake	5/6/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.41				
71-0142-00	Lake	5/8/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	16.8				
71-0142-00	Lake	6/10/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	6/12/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	9/23/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.86				
71-0142-00	Lake	9/25/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.12				
71-0142-00	Lake	11/4/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	27.4				
71-0142-00	Lake	11/6/2015	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.29				
71-0142-00	Lake	4/6/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	24.6				
71-0142-00	Lake	4/8/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	26.64				
71-0142-00	Lake	5/4/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.34				
71-0142-00	Lake	5/6/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.997				
71-0142-00	Lake	6/8/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	16.147				
71-0142-00	Lake	6/10/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	9/14/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.931				
71-0142-00	Lake	9/16/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	10/6/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	13.33				
71-0142-00	Lake	10/7/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	19.6				
71-0142-00	Lake	11/2/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.71				

71-0142-00	Lake	11/4/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	13.63				
71-0142-00	Lake	11/28/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.2				
71-0142-00	Lake	11/30/2016	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	4/12/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	16.08				
71-0142-00	Lake	4/14/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	23.92				
71-0142-00	Lake	5/24/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	5/26/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	18.09				
71-0142-00	Lake	6/26/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	6/28/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	9/13/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	19.38				
71-0142-00	Lake	9/15/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	17.66				
71-0142-00	Lake	10/11/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	10/13/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.39				
71-0142-00	Lake	11/14/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	19.56				
71-0142-00	Lake	11/16/2017	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	15.1				
71-0142-00	Lake	5/15/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	19.93				
71-0142-00	Lake	5/18/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	19.58				
71-0142-00	Lake	6/20/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	6/22/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	12				
71-0142-00	Lake	9/12/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	15.14				
71-0142-00	Lake	9/14/2018	3897-MONI0000000002	TEMPO_WW	Total	Sulfate	mg/L	14.42				

10/1/2008 to 9/30/2018	
N	59
Number of Observations greater than 10 mg/L	54 of 59
Percent Observations above 10 mg/L	92%
Mean	15.98
StDev	5.50
Min	2.30
Max	27.40