



# North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850  
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WATER DEVELOPMENT DIVISION  
(701) 328-2752

November 15, 2016

North Dakota Department of Health  
Division of Water Quality  
918 East Divide Avenue  
Bismarck, ND 58501-1947

RE: October 2016 Devils Lake Outlets Monthly Discharge and Water Quality Report

Division of Water Quality:

Enclosed is the monthly discharge report for the Devils Lake Outlets for the month of October 2016. Both outlets discharged at slightly increased rates over the past month. Foam overflowing the West Outlet standpipes continued to limit the discharge capacity of the West Outlet. The East Outlet was operated steadily with a goal of preventing exceedances of downstream water quality constraints. One sample gathered at Pekin on October 14<sup>th</sup> did have a sulfate concentration of 756 mg/L which exceeded the 750 mg/L constraint. The West and East Outlets discharged at average rates of 152 and 166 cfs respectively (**Figure 1**). A total of 19,532 acre-feet were discharged in September which brings the 2016 season total to 123,191 acre-feet.

The attached tables contain average daily outlet discharges and water quality results from samples collected from the outlets and the corresponding upstream and downstream locations. Also included are average daily stream flow data and conductivity data obtained from the USGS gaging stations located upstream and downstream of the outlets.

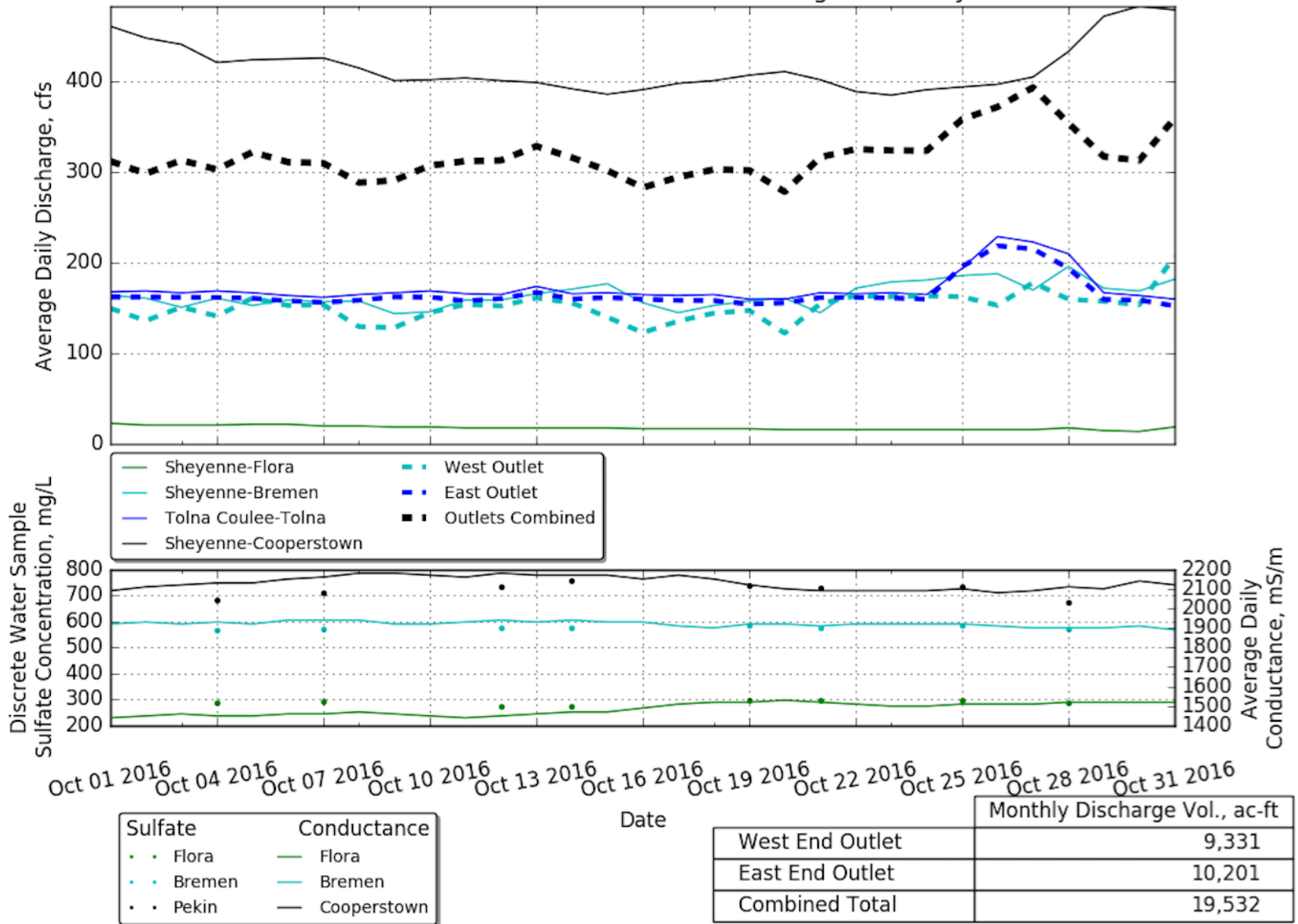
If you have any questions, please contact me at (701) 328-4948.

Sincerely,

Jonathan Kelsch P.E.  
Section Chief of Construction

JK:TD/416-10  
Enclosure

### October 2016 Devils Lake Outlet Discharge Summary



**Figure 1:** Devils Lake Outlet Discharge Summary

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission  
 ADDRESS: 900 E Boulevard Avenue,  
 Bismarck ND 58505

MONTHLY DISCHARGE REPORT


LOCATION: WEST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/16	10/31/16

LOCATION: Benson Co, ND

Devils Lake West Outlet discharged 9,331 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.63	8.92	8.78	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	594	645	614	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	597	634	615	mg/L	2 x Week	GRAB
OUTLET DISCHARGE	122	207	152	cfs	Continuous	Recorder
SIGNATURE				11/15/16	701-328-4948	
NAME AND TITLE				JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION		
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
Summary of individual sample results and flow data for outlet, upstream & downstream monitoring locations attached.						

Notes:

- ac-ft - Acre feet
- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission  
 ADDRESS: 900 E Boulevard Avenue,  
 Bismarck ND 58505

MONTHLY DISCHARGE REPORT


LOCATION: EAST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/16	10/31/16

LOCATION: Ramsey, Benson, Nelson, ND

Devils Lake East Outlet discharged 10,201 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.55	8.59	8.58	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	967	1040	1013	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	994	1030	1018	mg/L	2 x Week	GRAB
OUTLET DISCHARGE	153	219	166	cfs	Continuous	Recorder
SIGNATURE				11/15/16	701-328-4948	
NAME AND TITLE				JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION		
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
Summary of individual sample results and flow data for outlet, upstream & downstream monitoring locations attached.						

Notes:

- ac-ft - Acre feet
- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission  
 ADDRESS: 900 E Boulevard Avenue,  
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: UPSTREAM OF THE WEST END OUTLET (FLORA)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/16	10/31/16

LOCATION: Benson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.43	8.55	8.51	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,440	1,530	1,485	µS/cm	Continuous	Recorder
SULFATE	273	298	289	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	274	297	289	mg/L	2 x Week	GRAB
FLOW, INSTREAM	21	27	23	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			11/15/16	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
Summary of individual sample results and flow data for outlet, upstream & downstream monitoring locations attached.						

Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- USGS streamflow and specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission  
 ADDRESS: 900 E Boulevard Avenue,  
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF THE WEST END OUTLET (BREMEN)  
 UPSTREAM OF THE EAST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/16	10/31/16

LOCATION: Eddy Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.67	8.83	8.74	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,890	1,940	1,920	µS/cm	Continuous	Recorder
SULFATE	565	584	576	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	564	582	575	mg/L	2 x Week	GRAB
FLOW, INSTREAM	144	196	164	cfs	Continuous	Recorder
SIGNATURE				11/15/16	701-328-4948	
NAME AND TITLE				JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION		
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
Summary of individual sample results and flow data for outlet, upstream & downstream monitoring locations attached.						

Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- USGS streamflow and specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission  
 ADDRESS: 900 E Boulevard Avenue,  
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF THE EAST END OUTLET (PEKIN)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/16	10/31/16

LOCATION: Nelson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.47	8.57	8.54	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	672	756	720	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	678	747	720	mg/L	2 x Week	GRAB
FLOW, INSTREAM	NA	NA	NA	cfs	Continuous	Recorder
SIGNATURE				11/15/16	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
Summary of individual sample results and flow data for outlet, upstream & downstream monitoring locations attached.						

Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

**Daily Outlet Discharge and Upstream and Downstream Flows  
Devils Lake Outlets**

Date	Above West End Outlet - Sheyenne River near Flora		West End Outlet		Below West End Outlet/Above East End Outlet -Sheyenne River near Bremen		East End Outlet		Below East End Outlet - Toina Coulee near Toina		Below East End Outlet - Sheyenne River near Cooperstown		Sum of Outlets	
	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft <sup>3</sup> )	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft <sup>3</sup> )	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft <sup>3</sup> )
10/1/16	26	1,440	150	12,947,000	164	1,920	162	14,026,000	168	2,990	461	2,090	312	26,973,000
10/2/16	24	1,450	136	11,771,000	161	1,930	162	14,020,000	169	3,010	448	2,110	299	25,791,000
10/3/16	24	1,460	151	13,058,000	151	1,920	162	14,001,000	167	3,000	441	2,120	313	27,059,000
10/4/16	23	1,450	141	12,208,000	161	1,930	162	13,974,000	169	2,960	421	2,130	303	26,182,000
10/5/16	24	1,450	161	13,923,000	153	1,920	161	13,910,000	167	2,990	424	2,130	322	27,833,000
10/6/16	24	1,460	153	13,224,000	159	1,940	158	13,662,000	164	2,960	425	2,150	311	26,886,000
10/7/16	23	1,460	154	13,282,000	157	1,940	156	13,504,000	162	2,920	426	2,160	310	26,886,000
10/8/16	22	1,470	130	11,207,000	158	1,940	159	13,723,000	165	2,950	415	2,180	289	24,930,000
10/9/16	22	1,460	129	11,107,000	144	1,920	162	14,035,000	167	2,960	401	2,180	291	25,142,000
10/10/16	22	1,450	145	12,538,000	146	1,920	162	14,007,000	169	2,960	402	2,170	307	26,545,000
10/11/16	22	1,440	154	13,313,000	159	1,930	158	13,667,000	166	2,940	404	2,160	312	26,980,000
10/12/16	21	1,450	152	13,173,000	159	1,940	161	13,868,000	165	2,920	401	2,180	313	27,041,000
10/13/16	22	1,460	161	13,932,000	166	1,930	167	14,465,000	174	2,920	399	2,170	329	28,397,000
10/14/16	22	1,470	156	13,483,000	171	1,940	160	13,838,000	166	2,880	392	2,170	316	27,321,000
10/15/16	22	1,470	140	12,113,000	177	1,930	162	13,968,000	167	2,920	386	2,170	302	26,081,000
10/16/16	22	1,490	123	10,625,000	156	1,930	160	13,828,000	165	2,980	391	2,150	283	24,453,000
10/17/16	22	1,510	136	11,737,000	145	1,910	159	13,711,000	164	2,950	398	2,170	295	25,448,000
10/18/16	22	1,520	145	12,488,000	153	1,900	158	13,686,000	165	2,940	401	2,150	303	26,174,000
10/19/16	22	1,520	148	12,745,000	158	1,920	155	13,357,000	160	2,960	407	2,120	302	26,102,000
10/20/16	21	1,530	122	10,578,000	161	1,920	156	13,471,000	160	2,910	411	2,100	278	24,049,000
10/21/16	22	1,520	155	13,386,000	145	1,910	162	13,966,000	167	2,960	402	2,090	317	27,352,000
10/22/16	22	1,510	164	14,139,000	172	1,920	162	13,973,000	166	2,920	389	2,090	325	28,112,000
10/23/16	23	1,500	163	14,052,000	179	1,920	161	13,937,000	167	2,910	385	2,090	324	27,989,000
10/24/16	23	1,500	164	14,146,000	181	1,920	160	13,817,000	165	2,970	391	2,090	324	27,963,000
10/25/16	23	1,510	163	14,044,000	186	1,920	196	16,921,000	194	2,960	394	2,100	358	30,965,000
10/26/16	23	1,510	153	13,238,000	188	1,910	219	18,905,000	229	2,780	397	2,080	372	32,143,000
10/27/16	23	1,510	178	15,396,000	170	1,900	215	18,599,000	223	2,750	405	2,090	393	33,995,000
10/28/16	25	1,520	160	13,817,000	196	1,900	194	16,778,000	210	2,890	433	2,110	354	30,595,000
10/29/16	23	1,520	158	13,614,000	172	1,900	160	13,800,000	167	2,790	472	2,100	317	27,414,000
10/30/16	22	1,520	154	13,302,000	169	1,910	159	13,731,000	164	2,860	483	2,140	313	27,033,000
10/31/16	27	1,520	207	17,874,000	182	1,890	153	13,186,000	160	2,940	479	2,120	359	31,060,000
<b>Minimum</b>	21	1,440	122	10,578,000	144	1,890	153	13,186,000	160	2,750	385	2,080	278	24,049,000
<b>Maximum</b>	27	1,530	207	17,874,000	196	1,940	219	18,905,000	229	3,010	483	2,180	393	33,995,000
<b>Average</b>	23	1,485	152	13,111,613	164	1,920	166	14,333,355	172	2,927	416	2,131	318	27,444,968
			<b>Total (Mgal)</b>	3,040			<b>Total (Mgal)</b>	3,324					<b>Total (Mgal)</b>	6,364
			<b>Total (Ac-ft)</b>	9,331			<b>Total (Ac-ft)</b>	10,201					<b>Total (Ac-ft)</b>	19,532

**Notes:**

- cfs - cubic feet per second
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- ft<sup>3</sup> - cubic feet
- Mgal - Millions of Gallons
- Ac ft - Acre Feet
- USGS streamflow and specific conductance data are preliminary and courtesy of the USGS
- NC - Not calculated



**Sheyenne River Upstream of West End Outlet Near Flora**  
**Monthly Water Quality Summary**  
**Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance USGS Gage ( $\mu$ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of Samples included in 7- day Average
10/1/16	-	-	-	-	-	-	-
10/2/16	-	-	-	-	-	-	-
10/3/16	-	-	-	-	-	-	-
10/4/16	8:30	1,450	8.54	289	294	34	2
10/5/16	-	-	-	-	-	-	-
10/6/16	-	-	-	-	-	-	-
10/7/16	9:55	1,460	8.52	291	290	NA	2
10/8/16	-	-	-	-	-	-	-
10/9/16	-	-	-	-	-	-	-
10/10/16	-	-	-	-	-	-	-
10/11/16	-	-	-	-	-	-	-
10/12/16	8:25	1,450	8.55	273	282	NA	2
10/13/16	-	-	-	-	-	-	-
10/14/16	10:00	1,480	8.43	275	274	NA	2
10/15/16	-	-	-	-	-	-	-
10/16/16	-	-	-	-	-	-	-
10/17/16	-	-	-	-	-	-	-
10/18/16	-	-	-	-	-	-	-
10/19/16	8:45	1,520	8.53	297	286	16	2
10/20/16	-	-	-	-	-	-	-
10/21/16	9:45	1,520	8.48	296	297	NA	2
10/22/16	-	-	-	-	-	-	-
10/23/16	-	-	-	-	-	-	-
10/24/16	-	-	-	-	-	-	-
10/25/16	8:40	1,510	8.53	298	297	NA	3
10/26/16	-	-	-	-	-	-	-
10/27/16	-	-	-	-	-	-	-
10/28/16	10:15	1,520	8.50	289	294	NA	2
10/29/16	-	-	-	-	-	-	-
10/30/16	-	-	-	-	-	-	-
10/31/16	-	-	-	-	-	-	-
<b>Minimum</b>		1,450	8.43	273	274	16	
<b>Maximum</b>		1,520	8.55	298	297	34	
<b>Average</b>		1,489	8.51	289	289	25	

**Notes:**

$\mu$ S/cm - Microsiemens per Centimeter at 25 degrees Celsius

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

USGS specific conductance data courtesy of the USGS

USGS data are provisional and subject to revision

Italic font denotes preliminary result

**West End Outlet  
Monthly Water Quality Summary  
Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance from Telemetry System (µS/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of Samples included in 7- day Average
10/1/16	-	-	-	-	-	-	-
10/2/16	-	-	-	-	-	-	-
10/3/16	-	-	-	-	-	-	-
10/4/16	8:40	-	8.69	594	597	6	2
10/5/16	-	-	-	-	-	-	-
10/6/16	-	-	-	-	-	-	-
10/7/16	10:10	-	8.73	611	603	NA	2
10/8/16	-	-	-	-	-	-	-
10/9/16	-	-	-	-	-	-	-
10/10/16	-	-	-	-	-	-	-
10/11/16	-	-	-	-	-	-	-
10/12/16	8:36	-	8.72	604	608	NA	2
10/13/16	-	-	-	-	-	-	-
10/14/16	10:15	-	8.63	622	613	NA	2
10/15/16	-	-	-	-	-	-	-
10/16/16	-	-	-	-	-	-	-
10/17/16	-	-	-	-	-	-	-
10/18/16	-	-	-	-	-	-	-
10/19/16	9:00	-	8.80	645	634	13	2
10/20/16	-	-	-	-	-	-	-
10/21/16	9:55	-	8.89	620	633	NA	2
10/22/16	-	-	-	-	-	-	-
10/23/16	-	-	-	-	-	-	-
10/24/16	-	-	-	-	-	-	-
10/25/16	8:55	-	8.85	613	626	NA	3
10/26/16	-	-	-	-	-	-	-
10/27/16	-	-	-	-	-	-	-
10/28/16	10:30	-	8.92	601	607	NA	2
10/29/16	-	-	-	-	-	-	-
10/30/16	-	-	-	-	-	-	-
10/31/16	-	-	-	-	-	-	-
<b>Minimum</b>		NA	8.63	594	597	6	
<b>Maximum</b>		NA	8.92	645	634	13	
<b>Average</b>		NA	8.78	614	615	10	

**Notes:**

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

Italic font denotes preliminary result

**Sheyenne River Downstream of West End Outlet/Upstream of East End Outlet (Bremen)**  
**Monthly Water Quality Summary**  
**Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance USGS Gage ( $\mu$ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
10/1/16	-	-	-	-	-	-	-
10/2/16	-	-	-	-	-	-	-
10/3/16	-	-	-	-	-	-	-
10/4/16	8:00	1,920	8.70	565	564	54	2
10/5/16	-	-	-	-	-	-	-
10/6/16	-	-	-	-	-	-	-
10/7/16	9:20	1,920	8.67	572	569	NA	2
10/8/16	-	-	-	-	-	-	-
10/9/16	-	-	-	-	-	-	-
10/10/16	-	-	-	-	-	-	-
10/11/16	-	-	-	-	-	-	-
10/12/16	8:00	1,920	8.70	577	575	NA	2
10/13/16	-	-	-	-	-	-	-
10/14/16	9:30	1,950	8.70	577	577	NA	2
10/15/16	-	-	-	-	-	-	-
10/16/16	-	-	-	-	-	-	-
10/17/16	-	-	-	-	-	-	-
10/18/16	-	-	-	-	-	-	-
10/19/16	8:15	1,900	8.76	584	581	26	2
10/20/16	-	-	-	-	-	-	-
10/21/16	9:25	1,910	8.83	578	581	NA	2
10/22/16	-	-	-	-	-	-	-
10/23/16	-	-	-	-	-	-	-
10/24/16	-	-	-	-	-	-	-
10/25/16	8:15	1,920	8.79	584	582	NA	3
10/26/16	-	-	-	-	-	-	-
10/27/16	-	-	-	-	-	-	-
10/28/16	9:40	1,900	8.80	569	577	NA	2
10/29/16	-	-	-	-	-	-	-
10/30/16	-	-	-	-	-	-	-
10/31/16	-	-	-	-	-	-	-
<b>Minimum</b>		1,900	8.67	565	564	26	
<b>Maximum</b>		1,950	8.83	584	582	54	
<b>Average</b>		1,918	8.74	576	575	40	

**Notes:**

$\mu$ S/cm - Microsiemens per Centimeter at 25 degrees Celsius  
mg/L - Milligrams per liter or parts per million  
NA - Not Analyzed  
USGS specific conductance data courtesy of the USGS  
USGS data are provisional and subject to revision  
Italic font denotes preliminary result

**East End Outlet  
Monthly Water Quality Summary  
Devils Lake Discharge Report**

Date	Time	Specific Conductance from Telemetry System (µS/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day average
10/1/16	-	-	-	-	-	-	-
10/2/16	-	-	-	-	-	-	-
10/3/16	-	-	-	-	-	-	-
10/4/16	9:50	-	8.58	1010	1020	26	2
10/5/16	-	-	-	-	-	-	-
10/6/16	-	-	-	-	-	-	-
10/7/16	8:15	-	8.59	999	1005	NA	2
10/8/16	-	-	-	-	-	-	-
10/9/16	-	-	-	-	-	-	-
10/10/16	-	-	-	-	-	-	-
10/11/16	-	-	-	-	-	-	-
10/12/16	9:50	-	8.58	1040	1020	NA	2
10/13/16	-	-	-	-	-	-	-
10/14/16	8:00	-	8.55	1020	1030	NA	2
10/15/16	-	-	-	-	-	-	-
10/16/16	-	-	-	-	-	-	-
10/17/16	-	-	-	-	-	-	-
10/18/16	-	-	-	-	-	-	-
10/19/16	10:25	-	8.57	1040	1030	54	2
10/20/16	-	-	-	-	-	-	-
10/21/16	8:05	-	8.59	1010	1025	NA	2
10/22/16	-	-	-	-	-	-	-
10/23/16	-	-	-	-	-	-	-
10/24/16	-	-	-	-	-	-	-
10/25/16	10:05	-	8.56	1020	1023	NA	3
10/26/16	-	-	-	-	-	-	-
10/27/16	-	-	-	-	-	-	-
10/28/16	8:10	-	8.58	967	994	NA	2
10/29/16	-	-	-	-	-	-	-
10/30/16	-	-	-	-	-	-	-
10/31/16	-	-	-	-	-	-	-
<b>Minimum</b>		NA	8.55	967	994	26	
<b>Maximum</b>		NA	8.59	1040	1030	54	
<b>Average</b>		NA	8.58	1013	1018	40	

**Notes:**

mg/L - Milligrams per liter or parts per million  
 NA - Not Analyzed due to operation constraints  
 Italic font denotes preliminary result

**Sheyenne River Downstream of East End Outlet near Pekin  
Monthly Water Quality Summary  
Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance Laboratory Analysis (µS/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
10/1/16	-	-	-	-	-	-	-
10/2/16	-	-	-	-	-	-	-
10/3/16	-	-	-	-	-	-	-
10/4/16	10:30	0	8.52	683	678	36	2
10/5/16	-	-	-	-	-	-	-
10/6/16	-	-	-	-	-	-	-
10/7/16	7:40	0	8.55	711	697	NA	2
10/8/16	-	-	-	-	-	-	-
10/9/16	-	-	-	-	-	-	-
10/10/16	-	-	-	-	-	-	-
10/11/16	-	-	-	-	-	-	-
10/12/16	10:20	0	8.54	734	723	NA	2
10/13/16	-	-	-	-	-	-	-
10/14/16	7:30	0	8.47	<b>756</b>	745	NA	2
10/15/16	-	-	-	-	-	-	-
10/16/16	-	-	-	-	-	-	-
10/17/16	-	-	-	-	-	-	-
10/18/16	-	-	-	-	-	-	-
10/19/16	11:00	0	8.56	737	747	26	2
10/20/16	-	-	-	-	-	-	-
10/21/16	7:40	-	8.56	730	734	NA	2
10/22/16	-	-	-	-	-	-	-
10/23/16	-	-	-	-	-	-	-
10/24/16	-	-	-	-	-	-	-
10/25/16	10:30	0	8.55	733	733	NA	3
10/26/16	-	-	-	-	-	-	-
10/27/16	-	-	-	-	-	-	-
10/28/16	7:35	0	8.57	672	703	NA	2
10/29/16	-	-	-	-	-	-	-
10/30/16	-	-	-	-	-	-	-
10/31/16	-	-	-	-	-	-	-
<b>Minimum</b>			8.47	672	678	26	
<b>Maximum</b>			8.57	756	747	36	
<b>Average</b>			8.54	720	720	31	

**Notes:**

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

Italic font denotes preliminary result

**Bold font denotes sample sulfate concentration exceeds 750 mg/L**