



# North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850  
(701)-328-2750 • TTY 1-800-366-6888 • FAX (701)-328-3696 • <http://swc.nd.gov>

WATER DEVELOPMENT DIVISION  
(701) 328-2752

November 26, 2018

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

RE: October 2018 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 2018. Both outlets discharged continuously throughout the month and were shut down for the year on October 31<sup>st</sup> (**Figure 1**). October combined discharge averaged 343 cfs and a total of 21,071 acre-feet were discharged which brings the 2018 operating season total to 118,357 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.

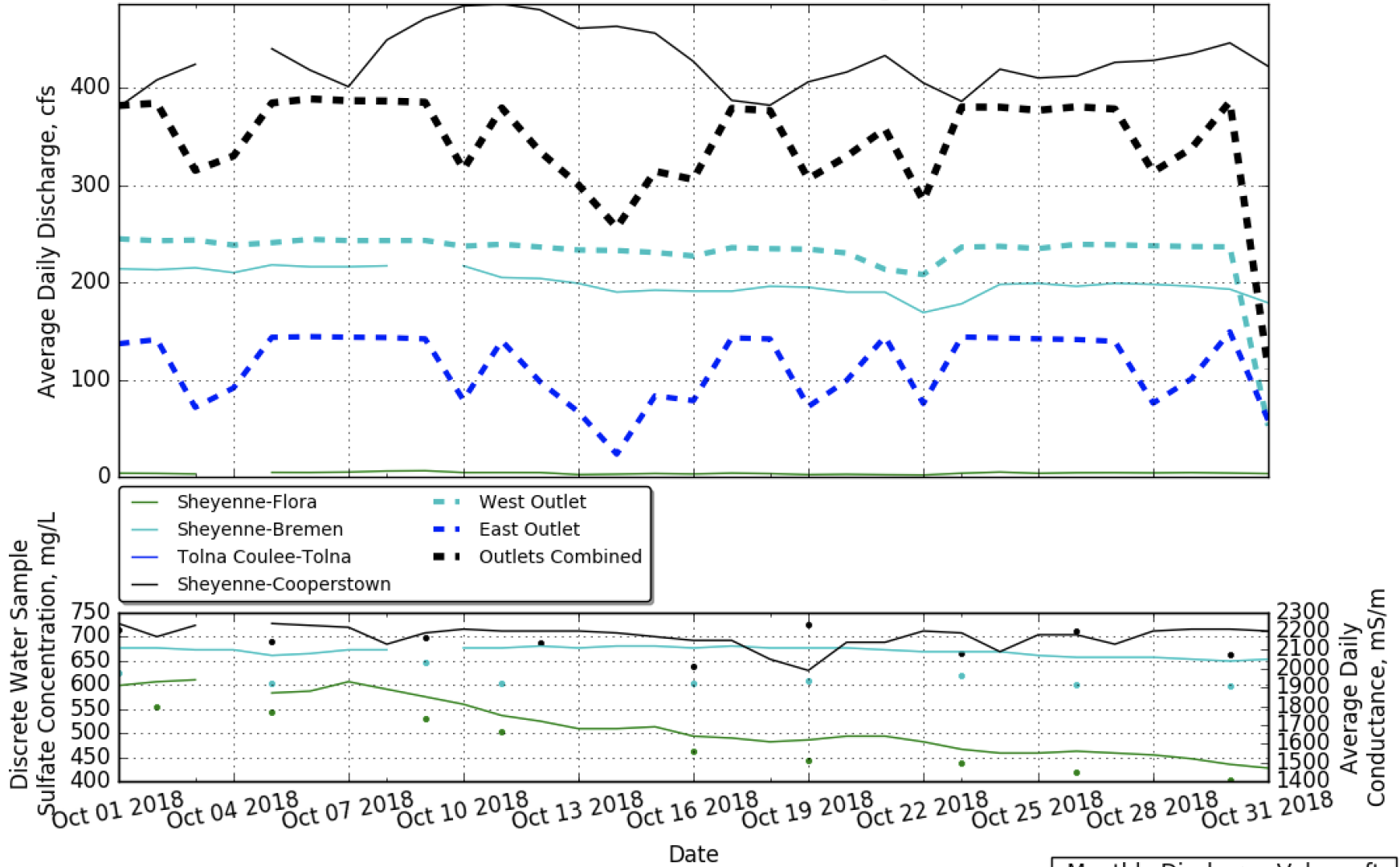
If you have any questions, please contact me at (701) 328-4948.

Sincerely,

Jonathan Kelsch P.E.  
Section Chief of Construction

JK:TD/416-10  
Enclosure

### October 2018 Devils Lake Outlet Discharge Summary



Sulfate		Conductance	
•	Flora	—	Flora
•	Bremen	—	Bremen
•	Pekin	—	Cooperstown

	Monthly Discharge Vol., ac-ft
West End Outlet	14,132
East End Outlet	6,939
Combined Total	21,071

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
10/1/18	10/31/18

LOCATION: Benson Co, ND

Devils Lake West Outlet discharged 14,132 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.56	8.87	8.67	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	597	628	614	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	609	621	614	mg/L	Average	GRAB
OUTLET DISCHARGE	53	245	230	cfs	Continuous	Recorder
SIGNATURE				11/26/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	

**COMMENT AND EXPLANATION OF ANY VIOLATIONS**

A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is 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
10/1/18	10/31/18

LOCATION: Ramsey, Benson, Nelson, ND

Devils Lake East Outlet discharged 6,939 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.63	8.97	8.78	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	2630	2980	2914	µS/cm	Continuous	Recorder
SULFATE	944	984	965	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	958	979	967	mg/L	Average	GRAB
OUTLET DISCHARGE	24	149	113	cfs	Continuous	Recorder
SIGNATURE				11/26/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is 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
10/1/18	10/31/18

LOCATION: Benson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.37	8.70	8.50	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,470	1,940	1,691	µS/cm	Continuous	Recorder
SULFATE	404	554	478	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	412	554	487	mg/L	Average	GRAB
FLOW, INSTREAM	2	7	4	cfs	Continuous	Recorder
SIGNATURE				11/26/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	

COMMENT AND EXPLANATION OF ANY VIOLATIONS

A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring location is 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
10/1/18	10/31/18

LOCATION: Eddy Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.43	9.00	8.69	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	2,040	2,120	2,093	µS/cm	Continuous	Recorder
SULFATE	597	647	612	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	599	625	612	mg/L	Average	GRAB
FLOW, INSTREAM	169	218	199	cfs	Continuous	Recorder
SIGNATURE				11/26/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is 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 BOTH OUTLETS (PEKIN)**

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/18	10/31/18

LOCATION: Nelson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.55	8.78	8.64	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	637	726	688	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	663	703	689	mg/L	Average	GRAB
FLOW, INSTREAM	NA	NA	NA	cfs	Continuous	Recorder
SIGNATURE				11/26/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is 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

**OUTLET OPERATOR NAME/ADDRESS**

NAME: ND State Water Commission  
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 Bismarck ND 58505


**MONTHLY DISCHARGE REPORT**

**LOCATION: DOWNSTREAM OF BOTH OUTLETS (COOPERSTOWN)**

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
10/1/18	10/31/18

LOCATION: Griggs Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.46	8.66	8.54	SU	Weekly	GRAB
SPECIFIC CONDUCTANCE	1,990	2,240	2,174	µS/cm	Continuous	Recorder
SULFATE	635	689	663	mg/L	Weekly	GRAB
7 DAY AVERAGE OF SULFATE	635	689	667	mg/L	Average	GRAB
FLOW, INSTREAM	380	486	429	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			11/26/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is attached.						

**Notes:**

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- 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 - Tolna Coulee near Tolna		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> )
10/1/18	4	1,910	245	21,142,000	214	2,110	137	11,835,000	-	2,910	380	2,240	382	32,977,000
10/2/18	4	1,930	243	20,978,000	213	2,110	141	12,204,000	-	2,910	408	2,170	384	33,182,000
10/3/18	3	1,940	243	21,032,000	215	2,100	72	6,194,000	-	2,800	424	2,230	315	27,226,000
10/4/18	-	-	238	20,588,000	210	2,100	92	7,911,000	-	-	-	-	330	28,499,000
10/5/18	5	1,870	241	20,802,000	218	2,070	144	12,403,000	-	2,820	440	2,240	384	33,205,000
10/6/18	5	1,880	244	21,100,000	216	2,080	144	12,465,000	-	2,880	418	2,230	388	33,565,000
10/7/18	5	1,930	243	20,989,000	216	2,100	144	12,416,000	-	2,730	401	2,220	387	33,405,000
10/8/18	6	1,890	243	20,990,000	217	2,100	143	12,383,000	-	2,880	449	2,130	386	33,373,000
10/9/18	7	1,850	243	21,000,000	-	-	142	12,266,000	-	2,730	471	2,190	385	33,266,000
10/10/18	5	1,810	237	20,489,000	217	2,110	79	6,831,000	-	-	484	2,210	316	27,320,000
10/11/18	5	1,750	239	20,664,000	205	2,110	140	12,097,000	-	2,970	486	2,200	379	32,761,000
10/12/18	5	1,720	236	20,417,000	204	2,120	98	8,460,000	-	2,950	480	2,200	334	28,877,000
10/13/18	3	1,680	233	20,152,000	199	2,110	67	5,780,000	-	2,900	461	2,200	300	25,932,000
10/14/18	3	1,680	233	20,109,000	190	2,120	24	2,040,000	-	2,890	463	2,190	256	22,149,000
10/15/18	4	1,690	231	19,934,000	192	2,120	83	7,209,000	-	2,890	456	2,170	314	27,143,000
10/16/18	3	1,640	227	19,627,000	191	2,110	79	6,784,000	-	2,960	427	2,150	306	26,411,000
10/17/18	4	1,630	236	20,359,000	191	2,120	143	12,359,000	-	2,970	387	2,150	379	32,718,000
10/18/18	4	1,610	235	20,269,000	196	2,110	142	12,259,000	-	2,970	382	2,050	376	32,528,000
10/19/18	2	1,620	234	20,223,000	195	2,110	72	6,253,000	-	2,960	406	1,990	306	26,476,000
10/20/18	3	1,640	230	19,887,000	190	2,110	99	8,580,000	-	2,930	416	2,140	329	28,467,000
10/21/18	2	1,640	213	18,440,000	190	2,100	144	12,462,000	-	-	433	2,140	358	30,902,000
10/22/18	2	1,610	208	17,975,000	169	2,090	76	6,539,000	-	-	405	2,200	284	24,514,000
10/23/18	4	1,570	236	20,407,000	178	2,090	144	12,434,000	-	2,970	386	2,190	380	32,841,000
10/24/18	5	1,550	237	20,478,000	198	2,090	143	12,351,000	-	2,970	419	2,090	380	32,829,000
10/25/18	4	1,550	235	20,280,000	199	2,070	142	12,274,000	-	2,970	410	2,180	377	32,554,000
10/26/18	4	1,560	239	20,657,000	196	2,060	141	12,207,000	-	2,970	412	2,180	380	32,864,000
10/27/18	5	1,550	239	20,616,000	199	2,060	139	12,050,000	-	2,970	426	2,130	378	32,666,000
10/28/18	4	1,540	238	20,523,000	198	2,060	76	6,563,000	-	2,830	428	2,200	313	27,086,000
10/29/18	5	1,520	237	20,458,000	196	2,050	101	8,724,000	-	-	435	2,210	338	29,182,000
10/30/18	4	1,490	237	20,434,000	193	2,040	149	12,891,000	-	2,970	446	2,210	386	33,325,000
10/31/18	4	1,470	53	4,552,000	179	2,050	59	5,058,000	-	2,950	422	2,200	111	9,610,000
<b>Minimum</b>	2	1,470	53	4,552,000	169	2,040	24	2,040,000	-	2,730	380	1,990	111	9,610,000
<b>Maximum</b>	7	1,940	245	21,142,000	218	2,120	149	12,891,000	-	2,970	486	2,240	388	33,565,000
<b>Average</b>	4	1,691	230	19,857,129	199	2,093	113	9,751,032	-	2,910	429	2,174	343	29,608,161
			<b>Total (Mgal)</b>	4,604			<b>Total (Mgal)</b>	2,261					<b>Total (Mgal)</b>	6,866
			<b>Total (Ac-ft)</b>	14,132			<b>Total (Ac-ft)</b>	6,939					<b>Total (Ac-ft)</b>	21,071

**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
10/1/18	-	-	-	-	-	-	-
10/2/18	13:40	1,920	8.51	554	554	NA	3
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	8:45	1,900	8.70	543	549	NA	2
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	8:30	1,860	8.42	531	537	NA	2
10/10/18	-	-	-	-	-	-	-
10/11/18	10:25	1,770	8.66	504	526	NA	3
10/12/18	-	-	-	-	-	-	-
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	8:20	1,660	8.44	463	484	14	2
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	10:25	1,620	8.51	442	453	NA	2
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	8:25	1,590	8.37	438	440	NA	2
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	9:30	1,560	8.44	419	429	NA	2
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	10:20	1,500	8.43	404	412	NA	2
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>		1,500	8.37	404	412	14	
<b>Maximum</b>		1,920	8.70	554	554	14	
<b>Average</b>		1,709	8.50	478	487	14	

**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
10/1/18	13:55	-	8.74	620	619	NA	3
10/2/18	-	-	-	-	-	-	-
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	8:35	-	8.87	621	621	NA	2
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	8:40	-	8.62	597	609	NA	2
10/10/18	-	-	-	-	-	-	-
10/11/18	10:15	-	8.74	621	613	NA	3
10/12/18	-	-	-	-	-	-	-
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	8:35	-	8.61	605	613	11	2
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	10:35	-	8.67	615	610	NA	2
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	8:35	-	8.56	612	614	NA	2
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	9:40	-	8.65	609	611	NA	2
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	10:30	-	8.61	628	619	NA	2
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>		NA	8.56	597	609	11	
<b>Maximum</b>		NA	8.87	628	621	11	
<b>Average</b>		NA	8.67	614	614	11	

**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
10/1/18	13:15	2,110	8.74	625	619	NA	3
10/2/18	-	-	-	-	-	-	-
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	9:15	2,080	9.00	602	614	NA	2
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	8:10	2,100	8.63	647	625	NA	2
10/10/18	-	-	-	-	-	-	-
10/11/18	10:45	2,110	8.76	602	617	NA	3
10/12/18	-	-	-	-	-	-	-
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	8:00	2,110	8.61	604	603	10	2
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	10:05	2,110	8.71	609	607	NA	2
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	8:05	2,090	8.43	618	614	NA	2
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	9:05	2,060	8.69	600	609	NA	2
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	11:00	2,050	8.61	597	599	NA	2
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>		2,050	8.43	597	599	10	
<b>Maximum</b>		2,110	9.00	647	625	10	
<b>Average</b>		2,091	8.69	612	612	10	

**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 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
10/1/18	15:40	2910	8.86	974	977	NA	3
10/2/18	-	-	-	-	-	-	-
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	10:40	2880	8.97	984	979	NA	2
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	9:55	2630	8.71	949	967	NA	2
10/10/18	-	-	-	-	-	-	-
10/11/18	-	-	-	-	-	-	-
10/12/18	7:40	2960	8.93	971	960	NA	2
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	9:55	2970	8.67	962	967	20	2
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	8:05	2960	8.77	971	967	NA	2
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	9:55	2980	8.63	958	965	NA	2
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	7:50	2970	8.77	972	965	NA	2
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	12:35	2970	8.67	944	958	NA	2
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>		2630	8.63	944	958	20	
<b>Maximum</b>		2980	8.97	984	979	20	
<b>Average</b>		2914	8.78	965	967	20	

**Notes:**

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



**Sheyenne River Downstream of Both Outlets 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
10/1/18	16:15	-	8.70	715	699	NA	3
10/2/18	-	-	-	-	-	-	-
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	10:15	-	8.78	690	703	NA	2
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	10:25	-	8.59	697	694	NA	2
10/10/18	-	-	-	-	-	-	-
10/11/18	-	-	-	-	-	-	-
10/12/18	7:15	-	8.64	688	693	NA	2
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	10:20	-	8.55	637	663	10	2
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	7:45	-	8.64	726	682	NA	2
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	10:15	-	8.55	665	696	NA	2
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	8:10	-	8.69	711	688	NA	2
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	12:00	-	8.62	663	687	NA	2
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>			8.55	637	663	10	
<b>Maximum</b>			8.78	726	703	10	
<b>Average</b>			8.64	688	689	10	

**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**



# Sheyenne River Downstream of Both Outlets near Cooperstown

## 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
10/1/18	-	-	-	-	-	-	-
10/2/18	10:15	2,190	8.66	653	669	NA	2
10/3/18	-	-	-	-	-	-	-
10/4/18	-	-	-	-	-	-	-
10/5/18	-	-	-	-	-	-	-
10/6/18	-	-	-	-	-	-	-
10/7/18	-	-	-	-	-	-	-
10/8/18	-	-	-	-	-	-	-
10/9/18	11:10	2,230	8.54	674	674	NA	1
10/10/18	-	-	-	-	-	-	-
10/11/18	-	-	-	-	-	-	-
10/12/18	-	-	-	-	-	-	-
10/13/18	-	-	-	-	-	-	-
10/14/18	-	-	-	-	-	-	-
10/15/18	-	-	-	-	-	-	-
10/16/18	11:10	2,170	8.50	635	635	34	1
10/17/18	-	-	-	-	-	-	-
10/18/18	-	-	-	-	-	-	-
10/19/18	-	-	-	-	-	-	-
10/20/18	-	-	-	-	-	-	-
10/21/18	-	-	-	-	-	-	-
10/22/18	-	-	-	-	-	-	-
10/23/18	11:10	2,170	8.46	689	689	NA	1
10/24/18	-	-	-	-	-	-	-
10/25/18	-	-	-	-	-	-	-
10/26/18	-	-	-	-	-	-	-
10/27/18	-	-	-	-	-	-	-
10/28/18	-	-	-	-	-	-	-
10/29/18	-	-	-	-	-	-	-
10/30/18	-	-	-	-	-	-	-
10/31/18	-	-	-	-	-	-	-
<b>Minimum</b>		2,170	8.46	635	635	34	
<b>Maximum</b>		2,230	8.66	689	689	34	
<b>Average</b>		2,190	8.54	663	667	34	

**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**

