

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

September 23, 2009

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

RE: North Dakota Pollutant Discharge Elimination System
Permit Number: ND-0026247

Enclosed are the monthly discharge reports for the Devils Lake Outlet for the month of August 2009 and the summaries of the sample results and flow data. Discharge occurred on all the days in the reporting period.

Attached to the summaries are the tables showing average daily outlet discharge, water quality results of the samples collected from the upstream location, downstream location and the outlet, the average daily stream flow data and the conductivity data obtained from the USGS gaging station at the upstream and the downstream location.

If you have any questions regarding these reports, please contact me at 701-328-4958.

Sincerely,

Bruce Engelhardt P.E.
Head, Investigations Section
BE:SPG:416-10
Enclosure

OUTLET OPERATOR NAME/ADDRESS

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

MONTHLY DISCHARGE REPORT

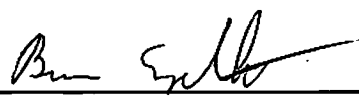
LOCATION: AT OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
8/1/09	8/31/09

LOCATION: Benson Co, ND

Devils Lake Outlet discharged 5898 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.38	8.88	8.5	SU	4 x Week	GRAB
SPECIFIC CONDUCTANCE	1159.11	1869.84	1666.76	umho/cm	Continuous	Recorder
SULFATE	563	584	576.4	mg/L	4 x Week	GRAB
7 DAY AVERAGE OF SULFATE	571.6	580.6	576.64	mg/L	4 x Week	GRAB
OUTLET DISCHARGE	21.38	106.48	95.92	cfs	Continuous	Recorder
SIGNATURE				9/23/09	701-328-4958	
NAME AND TITLE	BRUCE ENGELHARDT, HEAD, INVESTIGATIONS 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.

**Water Quality Results of the samples collected at the outlet
Devils Lake Outlet**

Date	Time	Sampler	Average Daily EC from Outlet Telemetry (µS/cm)	Lab pH	Lab Sulfate (mg/L)	7 Day Rolling Average of Sulfate for the operating period (mg/L)	Total Suspended Solids (mg/L)	No. of days included in the 7 day Rolling average
8/1/09	-	-	1737.46	-	-	-	-	-
8/2/09	-	-	1736.18	-	-	-	-	-
8/3/09	9:00	NDSWC	1825.83	8.46	575	572	16	7
8/4/09	9:15	NDSWC	1869.84	8.39	582	571.6	-	7
8/5/09	10:00	NDSWC	1868.24	8.38	582	575.4	-	7
8/6/09	10:00	NDSWC	1843.88	8.45	582	578.8	-	7
8/7/09	9:40	NDSWC	1814.65	8.43	579	580	-	7
8/8/09	-	-	1802.12	-	-	-	-	-
8/9/09	-	-	1772.14	-	-	-	-	-
8/10/09	8:35	NDSWC	1686.32	8.39	578	580.6	-	7
8/11/09	9:00	NDSWC	1638.34	8.44	580	580.2	-	7
8/12/09	-	-	1526.78	-	-	-	-	-
8/13/09	8:15	NDSWC	1773.99	8.45	580	579.25	28	7
8/13/09	10:00	NDSWC	1773.99	8.55	578	579	-	7
8/14/09	11:00	NDSWC	1794.92	8.51	563	19:12	-	7
8/15/09	-	-	1834.53	-	-	-	-	-
8/16/09	-	-	1824.36	-	-	-	-	-
8/17/09	10:50	NDSWC	1803.15	8.53	574	573.75	-	7
8/18/09	9:30	NDSWC	1724.19	8.48	577	574.4	56	7
8/19/09	15:10	NDSWC	1801.86	8.62	582	574.8	-	7
8/20/09	8:30	NDSWC	1799.95	8.46	574	574	-	7
8/21/09	10:20	NDSWC	1808.20	8.51	573	576	-	7
8/22/09	-	-	1801.35	-	-	-	-	-
8/23/09	-	-	1801.99	-	-	-	-	-
8/24/09	12:40	NDSWC	1809.04	8.55	577	576.6	-	7
8/25/09	8:30	NDSWC	1656.95	8.51	577	576.6	75	7
8/26/09	9:45	NDSWC	1453.74	8.5	575	575.2	-	7
8/27/09	8:40	NDSWC	1190.75	8.51	576	575.6	-	7
8/28/09	12:45	NDSWC	1159.11	8.52	580	577	-	7
8/29/09	-	-	1277.31	-	-	-	-	-
8/30/09	-	-	1268.48	-	-	-	-	-
8/31/09	9:00	NDSWC	1438.01	8.53	581	577.8	-	7

Daily Outlet Discharge

Date	Average Daily Outlet Discharge (cfs)	Total Daily Volume (cu-ft)	
8/1/09	93.47	8075511.82	
8/2/09	94.30	8147213.19	
8/3/09	92.97	8032300.06	
8/4/09	94.44	8159996.06	
8/5/09	95.11	8217470.72	
8/6/09	95.18	8223862.6	
8/7/09	79.31	6852633.37	
8/8/09	70.37	6080007.83	
8/9/09	96.15	8307388.88	
8/10/09	95.83	8279431.32	
8/11/09	97.52	8425616.1	
8/12/09	101.45	8765591.35	
8/13/09	105.95	9154324.41	
8/14/09	102.03	8815120.38	
8/15/09	106.48	9199759.23	
8/16/09	105.74	9135885.73	
8/17/09	100.54	8687028.05	
8/18/09	94.42	8157607.9	
8/19/09	21.38	1846899.5	
8/20/09	102.66	8869422.91	
8/21/09	101.69	8786057.51	
8/22/09	102.43	8849685.03	
8/23/09	101.53	8772056.9	
8/24/09	100.96	8722764.09	
8/25/09	103.43	8935972.42	
8/26/09	104.32	9012830.66	
8/27/09	103.05	8903406.44	
8/28/09	101.59	8776985.07	
8/29/09	103.52	8944070.99	
8/30/09	104.48	9027119.17	
8/31/09	101.30	8752287.1	
Total		256,916,307	cu-ft
Total		1922	Mgal
Total		5898	Ac-ft
Average Flow	95.92	cfs	
Minimum	21.38		
Maximum	106.48		
Average	95.92		

OUTLET OPERATOR NAME/ADDRESS

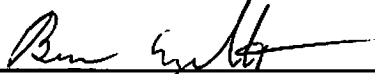
NAME: ND State Water Commission
ADDRESS: 900 E Boulevard Avenue
 Bismarck ND 58505

MONTHLY DISCHARGE REPORT

LOCATION: UPSTREAM OF THE OUTLET (FLORA)

FACILITY: Devils Lake Outlet Project
LOCATION: Benson Co, ND

MONITORING PERIOD	
START DATE	END DATE
8/1/09	8/31/09

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.23	8.41	8.33	SU	4 x Week	GRAB
SPECIFIC CONDUCTANCE	1470	1580	1517.2	umho/cm	Continuous	Recorder
SULFATE	232	250	240.76	mg/L	4 x Week	GRAB
7 DAY AVERAGE OF SULFATE	233.6	247.2	240.15	mg/L	4 x Week	GRAB
FLOW, INSTREAM	22	40	32.84	cfs	Continuous	Recorder
SIGNATURE				9/23/09	701-328-4958	
NAME AND TITLE	BRUCE ENGELHARDT, HEAD, INVESTIGATIONS 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.						
Instream samples and measurements for this summary pertain only to time periods when outlet is actually operated.						

**Water Quality Results of the samples collected from the upstream location near Flora
Sheyenne River Above Devils Lake Outlet Near Flora**

Date	Time	Sampler	USGS EC (μ S/cm)	Lab pH	Lab Sulfate (mg/L)	7 Day Rolling Average of Sulfate for the operating period (mg/L)	Total Suspended Solids (mg/L)	No. of days included in the 7 day Rolling average
8/1/09	-	-	-	-	-	-	-	-
8/2/09	-	-	-	-	-	-	-	-
8/3/09	9:15	NDSWC	1490	8.36	238	235.4	33	7
8/4/09	9:00	NDSWC	1500	8.24	236	234.4	-	7
8/5/09	10:15	NDSWC	1530	8.24	234	234.8	-	7
8/6/09	10:15	NDSWC	1530	8.23	235	235	-	7
8/7/09	9:50	NDSWC	1540	8.35	233	235.2	-	7
8/8/09	-	-	-	-	-	-	-	-
8/9/09	-	-	-	-	-	-	-	-
8/10/09	8:21	NDSWC	1530	8.31	242	236	-	7
8/11/09	9:30	NDSWC	1530	8.29	239	236.6	-	7
8/12/09	-	-	-	-	-	-	-	-
8/13/09	8:45	NDSWC	1550	8.37	242	239	70	7
8/13/09	9:50	NDSWC	1550	8.27	240	239.2	-	7
8/14/09	10:45	NDSWC	1520	8.31	236	239.8	-	7
8/15/09	-	-	-	-	-	-	-	-
8/16/09	-	-	-	-	-	-	-	-
8/17/09	11:00	NDSWC	1490	8.34	249	241.75	-	7
8/18/09	9:50	NDSWC	1510	8.37	244	242.2	49	7
8/19/09	15:25	NDSWC	1470	8.32	248	243.4	-	7
8/20/09	8:15	NDSWC	1470	8.32	241	243.6	-	7
8/21/09	10:10	NDSWC	1470	8.36	242	244.8	-	7
8/22/09	-	-	-	-	-	-	-	-
8/23/09	-	-	-	-	-	-	-	-
8/24/09	13:00	NDSWC	1530	8.4	247	244.4	-	7
8/25/09	8:40	NDSWC	1520	8.41	246	244.8	42	7
8/26/09	9:30	NDSWC	1540	8.32	247	244.6	-	7
8/27/09	8:30	NDSWC	1570	8.38	250	246.4	-	7
8/28/09	12:30	NDSWC	1570	8.33	246	247.2	-	7
8/29/09	-	-	-	-	-	-	-	-
8/30/09	-	-	-	-	-	-	-	-
8/31/09	9:15	NDSWC	1580	8.39	245	246.8	-	7

Average daily streamflow and conductivity data at the upstream location near Flora

USGS Gaging Station Data		
Sheyenne River Above Devils Lake Outlet Near Flora		
Date	Streamflow (cfs)	EC (μS/cm)
8/1/09	32	1500
8/2/09	33	1500
8/3/09	33	1500
8/4/09	34	1510
8/5/09	34	1530
8/6/09	33	1530
8/7/09	35	1530
8/8/09	36	1520
8/9/09	37	1530
8/10/09	36	1530
8/11/09	34	1540
8/12/09	33	1540
8/13/09	31	1560
8/14/09	34	1540
8/15/09	38	1530
8/16/09	40	1530
8/17/09	39	1500
8/18/09	38	1510
8/19/09	37	1480
8/20/09	37	1470
8/21/09	36	1480
8/22/09	35	1500
8/23/09	33	1520
8/24/09	31	1530
8/25/09	29	1530
8/26/09	28	1550
8/27/09	27	1570
8/28/09	26	1570
8/29/09	24	1580
8/30/09	23	1580
8/31/09	22	1590
Minimum	22	1470
Maximum	40	1590
Average	32.84	1528.39

OUTLET OPERATOR NAME/ADDRESS

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


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF THE OUTLET (BREMEN)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
8/1/09	8/31/09

LOCATION: Benson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.32	8.48	8.39	SU	4 x Week	GRAB
SPECIFIC CONDUCTANCE	1660	1900	1844.4	umho/cm	Continuous	Recorder
SULFATE	396	522	486.84	mg/L	4 x Week	GRAB
7 DAY AVERAGE OF SULFATE	460.6	508.6	482.876	mg/L	4 x Week	GRAB
FLOW, INSTREAM	77	134	122.64	cfs	Continuous	Recorder
SIGNATURE				9/23/09	701-328-4958	
NAME AND TITLE	BRUCE ENGELHARDT, HEAD, INVESTIGATIONS 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.						
Instream samples and measurements for this summary pertain only to time periods when outlet is actually operated.						

**Water Quality Results of the samples collected from the downstream location near Bremen
 Sheyenne River Below Devils Lake Outlet Near Bremen**

Date	Time	Sampler	USGS EC (µS/cm)	Lab pH	Lab Sulfate (mg/L)	7 Day Rolling Average of Sulfate for the operating period (mg/L)	Total Suspended Solids (mg/L)	No. of days included in the 7 day Rolling average
8/1/09	-	-	-	-	-	-	-	-
8/2/09	-	-	-	-	-	-	-	-
8/3/09	9:45	NDSWC	1840	8.41	489	467.4	42	7
8/4/09	8:30	NDSWC	1860	8.33	494	467.2	-	7
8/5/09	10:45	NDSWC	1870	8.32	495	472.2	-	7
8/6/09	10:45	NDSWC	1860	8.34	496	492.2	-	7
8/7/09	10:15	NDSWC	1870	8.39	495	493.8	-	7
8/8/09	-	-	-	-	-	-	-	-
8/9/09	-	-	-	-	-	-	-	-
8/10/09	8:00	NDSWC	1840	8.34	477	491.4	-	7
8/11/09	10:00	NDSWC	1860	8.36	489	490.4	-	7
8/12/09	-	-	-	-	-	-	-	-
8/13/09	9:10	NDSWC	1870	8.45	489	487.5	64	7
8/13/09	9:30	NDSWC	1870	8.4	491	488.2	-	7
8/14/09	10:15	NDSWC	1870	8.39	499	489	-	7
8/15/09	-	-	-	-	-	-	-	-
8/16/09	-	-	-	-	-	-	-	-
8/17/09	11:30	NDSWC	1850	8.42	485	491	-	7
8/18/09	10:20	NDSWC	1840	8.41	484	489.6	58	7
8/19/09	15:45	NDSWC	1850	8.4	485	488.8	-	7
8/20/09	7:50	NDSWC	1860	8.34	484	487.4	-	7
8/21/09	9:50	NDSWC	1760	8.33	432	474	-	7
8/22/09	-	-	-	-	-	-	-	-
8/23/09	-	-	-	-	-	-	-	-
8/24/09	13:30	NDSWC	1850	8.47	496	476.2	-	7
8/25/09	9:10	NDSWC	1860	8.46	500	479.4	47	7
8/26/09	9:00	NDSWC	1880	8.41	502	482.8	-	7
8/27/09	8:00	NDSWC	1880	8.41	507	487.4	-	7
8/28/09	12:00	NDSWC	1890	8.42	512	503.4	-	7
8/29/09	-	-	-	-	-	-	-	-
8/30/09	-	-	-	-	-	-	-	-
8/31/09	9:45	NDSWC	1900	8.48	522	508.6	-	7

Average daily streamflow and conductivity data at the downstream location near Bremen

USGS Gaging Station Data		
Sheyenne River Below Devils Lake		
Date	Streamflow (cfs)	EC (μS/cm)
8/1/09	126	1850
8/2/09	125	1850
8/3/09	126	1870
8/4/09	124	1870
8/5/09	125	1870
8/6/09	124	1870
8/7/09	127	1860
8/8/09	113	1830
8/9/09	109	1790
8/10/09	124	1840
8/11/09	124	1860
8/12/09	124	1870
8/13/09	125	1870
8/14/09	127	1880
8/15/09	131	1840
8/16/09	134	1850
8/17/09	134	1850
8/18/09	133	1850
8/19/09	114	1850
8/20/09	77	1840
8/21/09	120	1770
8/22/09	129	1830
8/23/09	129	1840
8/24/09	128	1850
8/25/09	125	1860
8/26/09	124	1880
8/27/09	123	1880
8/28/09	122	1890
8/29/09	119	1900
8/30/09	119	1900
8/31/09	118	1900
Minimum	77	1770
Maximum	134	1900
Average	122.65	1856.77