OUTLINE

- Introduction & Membership Term Review
  - Andrea Travnicek, Director

- Devils Lake Basin Review
  - Jon Kelsch, DWR Director of Water Development

- National Weather Service Situational Update
  - Amanda Lee, NWS Grand Forks Service Hydrologist

- 2021 Operational Summary
  - Jon Kelsch, DWR Director of Water Development

- 2021 Water Quality Review
  - NDDEQ

- Outlook For 2022 Outlet Operations

- Status By Committee Members

- Final Comments
Members With Upcoming Term Expirations Are Encouraged To Apply For Reappointment Through The Board Application Portal
DEVILS LAKE BASIN WATER BALANCE

**Average Annual Estimates (2010-2020)**

- Precipitation = 20.4 Inches
  Inflow = 249,300 Acre-Feet
  (17.4 Inches On Average)

- Evaporation = 30.3 Inches
  Outlet Discharge = 108,260 Ac-Ft
  (8.0 Inches On Average)
DEVI S LAKE PERIOD OF RECORD ELEVATION

June 2011
Peak Elevation Of
1,454.3 Feet

Lake Elevations Above
1446 Feet Include
Devils Lake & Stump Lake Combined

Data Courtesy Of USGS Gage 05056500

Lake Elevations Above
1446 Feet Include
Devils Lake & Stump Lake Combined

Data Courtesy Of USGS Gage 05056500
DEVILS LAKE ESTIMATED INFLOW

- Inflow is highly variable and influenced by previous years.
- Average inflow from 2010-2020 has been approximately 249,300 Ac-Ft.
- 2021 estimated inflow was 229,000 Acre-Feet.
2021 Average Lake Precipitation Estimated To Be 17.67 Inches

Drier Conditions In Four Of The Five Past Years Have Contributed To Lower Lake Elevations

20.4 in average (2010-2020)
Devils Lake Peaked At 1454.3 Feet In 2011

The Lake Has Shown A Steady Decline Over the Last 10 Years, approx. 7 Feet
Historically Dry Conditions Throughout 2021 Caused A Significant Drop In Lake Levels

Devils Lake Fell to 1447 Feet In Early October of 2021

In 2022, Lake Rise & Inflow Have Been Increased By April Snowfall
Amanda Lee
NWS Grand Forks
DEVILS LAKE OUTLET DISCHARGE 2010 – 2021

- 2020 Total Discharge Was 82,086 Acre-Feet
- Outlets Discharged For 124 Days In 2020
- The Outlets Have Combined To Discharge Over 1.3M Ac-Ft
- Estimated Lake Elevation is 5.5 feet Higher Without Outlets
2021 Operation Window: June 1 - October 28
East Outlet was shut down due to water quality and lake level.
West Outlet discharge was 98% of the total.
2021 WATER QUALITY REVIEW
DEVLILS LAKE OUTLET MONITORING SITES

Values Noted Maximum & Average (man)
Flora & Red River At Harwood Are Not Influenced By Outlet Discharge
SULFATE MONITORING

![Sulfate as (SO4) Concentrations (May 2021 Thru April 2022)](image-url)

### Sulfate as (SO4) Concentrations (May 2021 Thru April 2022)

**Station ID** | **Station Description** | **Max** | **Min** | **Mean** | **Median** | **# of Samples** | **Last Collection Date** | **Last Result**
--- | --- | --- | --- | --- | --- | --- | --- | ---
31616 | Sheyenne River Near Flora | 613 | 362 | 501.19 | 504.5 | 42 | 25-Oct-21 | 432
31848 | Devil's Lake State Outlet | 744 | 648 | 702.00 | 703 | 37 | 25-Oct-21 | 716
31817 | Sheyenne River Near Bremen | 748 | 412 | 677.48 | 697 | 42 | 25-Oct-21 | 646
5389 | Sheyenne River Near Warwick | 704 | 203 | 575.05 | 618 | 21 | 25-Oct-21 | 532
128224 | East End Outlet at County Road 4 | 1070 | 1060 | 1065.00 | 1065 | 2 | 29-Jul-21 | 1060
24750 | Sheyenne River Near Cooperstown | 641 | 230 | 470.85 | 508.5 | 26 | 15-Mar-22 | 254
126171 | Lake Ashtabula East Of Hannaford | 636 | 243 | 476.83 | 510.5 | 12 | 20-Oct-21 | 512
126172 | Lake Ashtabula At Sibley Crossing Bridge | 564 | 244 | 401.25 | 407.5 | 12 | 20-Oct-21 | 536
126173 | Lake Ashtabula Downstream Location At Ashtabula | 545 | 278 | 393.75 | 389 | 12 | 20-Oct-21 | 545
24563 | Sheyenne River Below Baldhill Dam | 547 | 422 | 481.04 | 472 | 27 | 15-Mar-22 | 528
16280 | Sheyenne River Near Horace | 597 | 218 | 436.56 | 434 | 27 | 15-Mar-22 | 506
31834 | Red River Near Harwood | 865 | 101 | 290.06 | 215 | 16 | 15-Mar-22 | 649
966 | Red River Near Halstad Mn | 833 | 184 | 349.50 | 283 | 16 | 15-Mar-22 | 597
29102 | Red River At Pembina | 549 | 85.6 | 234.23 | 208 | 16 | 04-Apr-22 | 85.6
TOTAL DISSOLVED SOLIDS MONITORING

Values Noted Are Minimum, Maximum & Average (mean)

Flora & Red River At Harwood Are Not Influenced By Outlet Discharge
SULFATE AT PEMBINA

Sulfate as (SO4) Concentrations For The Red River At Pembina (May 2021 - April 2022)

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<tr>
<th>Date</th>
<th>Station Description</th>
<th>Result Value</th>
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TOTAL DISSOLVED SOLIDS AT PEMBINA

### Total Dissolved Solids (TDS) For The Red River At Pembina (May 2021 - April 2022)

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SULFATE MONITORING NEAR HARWOOD AND HALSTAD

**Graph:**

The graph shows sulfate (SO4) concentrations for the Red River near Harwood and Halstad, spanning from May 2021 to April 2022.

**Table:**

<table>
<thead>
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<th>Station Description</th>
<th>Harwood</th>
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<td>597</td>
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TOTAL DISSOLVED SOLIDS NEAR HARWOOD AND HALSTAD

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<td>02-Jun-21</td>
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USGS 05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD

--- Provisional Data Subject to Revision ---

- Median daily statistic (79 years)
- Discharge
- Value is affected by ice at the measurement site.
OUTLOOK FOR 2022 OUTLET OPERATIONS
THANK YOU

Keep Connected

🌐 dwr.nd.gov
_emails dwr@nd.gov
🌐 www.facebook.com/NDWaterResources