NORTH Dakota
Be Legendary.
Water Resources

BIENNIAL REPORT

July 1, 2021
June 30 , 2023

NORTH Dakota | Water Resources

Be Legendary.

July 2024

Governor Doug Burgum
600 East Boulevard Avenue
Bismarck, ND 58505-0001

Secretary of State Michael Howe
600 East Boulevard Avenue
Bismarck, ND 58505-0001

SUBJECT: 2021-2023 Biennial Reports, N.D.C.C. § 54-06-03; N.D.C.C. § 54-06-04; and other applicable laws.

Dear Governor Burgum and Secretary of State Howe:

On behalf of the Department of Water Resources and State Water Commission, I am pleased to present our Biennial Report for the period of July 1, 2021, through June 30, 2023. This report highlights key events, accomplishments, and other pertinent activities during the last biennium for your information and consideration. As outlined in the report, DWR continues to build partnerships and strives to improve water management and development for the citizens and economy of North Dakota. Also note, on August 1, 2021, the agency formally transitioned to the Department of Water Resources, as required by House Bill 1353 (2021 Legislative Session).

Respectfully submitted,

Andrea Travnicek, Ph.D.
Director

VISION

The Department of Water Resources will sustainably manage and develop North Dakota's water resources for the health, safety, and prosperity of its people, businesses, agriculture, energy, industry, recreation, and natural resources.

MISSION

To responsibly manage North Dakota's water needs and risks for the people's benefit.

VALUES

The Department of Water Resources values fairness, objectivity, accountability, responsiveness, engagement, and credibility. We pledge to use professional and scientific methods to maintain the highest of standards in our delivery of services.

BIENNIAL REPORT CONTENTS

For more information, visit us at www.dwr.nd.gov

History & **Mandates**

The Office of the State Engineer was created in 1905 to regulate and administer matters concerning the allocation of the state's water and related land resources in compliance with Article XI, § 3 of the North Dakota Constitution, which declares all waters to be the property of the state for public use. In 1937, additional duties were added to this office when the State Engineer was designated Chief Engineer and Secretary to the Commission.

The State Water Commission was created by legislative action in 1937 as a result of the drought of the 1930s, for the specific purpose of fostering and promoting water resources development throughout the state.

During the 2021 Legislative Assembly, House Bill 1353 reorganized the Office of the State Engineer and the State Water Commission into the Department of Water Resources (DWR or Department). The reorganization became effective on August 1, 2021. The agency's first Director, Andrea Travnicek, was appointed, and the agency became a member of the Governor's Cabinet.

DWR has the authority to investigate, plan, construct, and develop water-related projects, and serves as a mechanism to financially support these efforts throughout North Dakota. The Office of the State Engineer, as part of the DWR, is responsible for several regulatory functions and responsibilities, including allocation of the state's waters, dam safety, and drainage.

Organization

The agency formerly known as the State Water Commission transitioned to the Department of Water Resources on August 1, 2021, as required by House Bill 1353. However, the decision-making board related to cost-share, known as the State Water Commission, still remains. The State Water Commission (Commission or SWC) consists of the Governor as chairman, the Commissioner of Agriculture, and eight members who are appointed by the Governor to serve staggered terms of six years each. The terms of office for appointees are arranged such that two terms, and not more than three terms, shall expire on the first day of July of each odd-numbered year. The Commission appoints a Secretary (formerly the State Engineer, now the Director of the Department of Water Resources) as its executive officer, who manages DWR team members as needed to carry out the work of the Commission.

Principal
Agency Activities

The authorizing legislation for the DWR is found in Chapter 61-03 of the North Dakota Century Code. Primary DWR functions and statutory responsibilities include:

- Allocation of the state's waters, including obtaining and recording data for the determination, development, and appropriation of the state's waters
- Hydrographic surveys and investigations of each stream system and source of water supply in the state, beginning with those most used for irrigation
- Facilitation of water rights determinations
- Water-related data collection
- Dam safety, including receipt of emergency action plans for high-hazard or medium-hazard dams
- Construction and drainage permits
- Staffing and analysis for the State Water Commission and execution of its decisions
- Rulemaking authority
- Oversight of water storage reservoirs
- Implementation of economic analysis for water conveyance projects and flood-related projects
- Implementation of life cycle cost analysis for water supply projects
- Cooperation with federal agencies in the execution of topographic surveys and maps of North Dakota
- Custodian of all plats, field notes, and similar records provided to the state by a federal government entity
- Inspection or investigation of alleged statutory violations
- Removal or modification of unsafe or unauthorized works
- Sovereign land management
- Removal, modification, or destruction of dangers in, on the bed of, or adjacent to navigable waters
- Hearings for persons aggrieved by an action or decision of DWR
- Cost-Share Program administration
- Floodplain management
- Cloud Modification Program administration
- State Water Development Plan
- Emergency response
- Water Education Program administration

Water Resources
Legislation

SENATE BILL 2345 (2021 SPECIAL SESSION)

DEVELOPMENT OF THE WATER PROJECTS STABILIZATION FUND

This bill developed the Water Projects Stabilization Fund which required that funds deposited into the Resources Trust Fund that exceeded the amount included in the 2021 legislative forecast be transferred into a newly created Water Projects Stabilization Fund. This fund accumulated $151.8 million as of June 30, 2023.

“$151.8 M
As Of June 30, 2023

SENATE BILL 2020

DEPARTMENT OF WATER RESOURCES BUDGET BILL

SB 2020 was the DWR’s budget bill. It included all requested optionals from the agency (equipment, IT unification, drilling supplies, navigability study, airborne electromagnetic (AEM) surveys, software, Bowman radar, new drill rig, and agency relocation expenses). It also directs the appropriation of carryover; appropriates $30 million from the Water Projects Stabilization Fund to BND for the payment of Western Area Water Supply (WAWS) loans (SB 2196); transfers $100 million to the Water Infrastructure Revolving Loan Fund, which was amended in SB 2015; extends the life of the Water Projects Stabilization Fund; appropriates funds to ND Parks and Recreation for sovereign lands recreation use grants; and provides legislative intent for the Red River Valley Water Supply Project, Mouse River flood control, Southwest Pipeline Project, Bismarck water treatment plant, Medora water supply project, and the Missouri River system; includes language for a study into the Missouri River intake near Washburn; allows for line-item transfers between operating expenses and capital assets; and declares it an emergency.

SB 2020 included project purpose funding for the following amounts:

- State Projects (Devils Lake Outlets, Northwest Area Water Supply, Southwest Pipeline) - $118,000,000
- Flood Control - $115,700,000
- Water Supply - $316,200,000
- Rural Water - $52,000,000
- General Water - $12,000,000
- Discretionary - $9,000,000

Water Resources **Legislation**

RED TAPE REDUCTION

DWR was an active participant in the Red Tape Reduction Working Group established in 2022. As a part of that group, DWR sought suggestions from the public and internally to identify areas for process improvement and efficiency within the agency. DWR prefiled 5 Red Tape bills, all of which passed with broad support:

- **HB 1072:** Updates references from SWC to DWR and removes outdated procurement requirements.
- **HB 1073:** Eliminates annual operating plan requirements for dams and removes emergency interim operating plan procedures from code.
- **HB 1074:** Updates language in code from an "informational hearing" for a water permit application to a "public hearing."
- **HB 1075:** Updates the cancellation of water rights process to match the process of obtaining a water permit by switching from a public hearing to a notice and comment period.
- **HB 1076:** Creates a tiered regulatory structure for dikes, eliminates the requirement for a Professional Engineer approval for the construction of an agricultural or farmstead ring dike, increases the threshold for requiring a construction permit for an agricultural dike, and requires permits for construction of municipal dikes if they protect residences or occupied structures.

DWR also testified in support of two other Red Tape bills that affect agency operations:

- **HB 1089:** Removes the requirement of the Department of Environmental Quality to receive approval from the SWC for the Drinking Water State Revolving Loan Fund Intended Use Plan.
- **HB 1098:** Updates code to match federal requirements for flood disaster relief funding in those communities with a FEMA-identified special flood hazard area but with no floodplain management ordinance. The previous code was more restrictive than federal requirements.

FEDERAL TRANSPARENCY

DWR prefiled two bills requiring transparency when the federal government is operating programs in North Dakota.

- **HB 1077:** Requires federal agencies to notify DWR of discussions regarding water storage contracts, to copy DWR on all communications, and provide DWR with a copy of the contract.
- **SB 2097:** Requires notification to various state agencies and impacted entities when there are discussions regarding a potential Wild and Scenic River designation. All communication regarding the designation must be copied to the same state agencies and impacted entities, there must be a public hearing, and the governor and the county commission must give written support prior to a designation.

2021-2023 INTERIM STRATEGIC GOVERNANCE & FINANCE STUDY

During the 2021-2023 interim, the Interim Water Topics committee performed a strategic governance and finance study to review the major water supply projects in North Dakota along with their governance and funding mechanisms. Two bills resulted as a part of that study:

- **HB 1218:** Elevates the NAWS Advisory Board to an Authority and adjusts the makeup of representatives to have equitable representation of water users and stakeholders.
- **SB 2196:** Transfers oversight of the Western Area Water Supply from the Industrial Commission to the SWC and restructures the debt. Part of the funding mechanism of this bill was included in SB 2015.

OTHER WATER-RELATED BILLS

- **HB 1385:** Allows for the SWC to enter into contracts with Tribal Nations, which allows for cost-share assistance directly to the tribes for water projects.
- **SB 2036:** This bill was developed from the Interim Drainage Committee. It consolidates water resource district laws to make assessment drainage and associated water management laws more consistent.
- **SB 2365:** Requires a study regarding township participation in the National Flood Insurance Program and state mechanisms to track and display organized townships within North Dakota.

Legal Actions

FEDERAL LAND BOUNDARY LITIGATION

DWR is a named party or involved in litigation support in several cases against the federal government related to property boundaries between state and federal interests along the Missouri River beneath Lake Sakakawea. The majority of the cases are stayed, while a lead case (Continental) attempts to resolve several legal principles applicable to the remaining cases. Additionally, the DWR provides litigation support regarding ownership on the Missouri River through the Mandan, Hidatsa and Arikara Reservation.

SOVEREIGN LANDS AND MINERALS LITIGATION

There were a number of ongoing cases challenging the state's determination of the Missouri River's ordinary high watermark and ownership of land and minerals beneath the Missouri River and Lake Sakakawea. Several of these long-term cases were concluded, and most of the remaining cases should be concluded early in the next biennium.

CONSTRUCTION LITIGATION

DWR manages several construction projects for the SWC. SWC was sued by one of its contractors in a changed conditions claim, and the suit is ongoing. DWR also resolved several construction issues through mediation prior to litigation being filed. Significant resources have been expended on mediation and construction management efforts related to the Southwest Pipeline Project Supplemental Raw Water Intake.

ADMINISTRATIVE CASES

DWR was also involved in several administrative cases regarding water appropriation permits and a watercourse determination complaint appeal. The DWR was also a party to an appeal of two sovereign land permits.

OTHER FEDERAL LITIGATION SUPPORT

While not a named party, DWR staff also provided support for State litigation efforts regarding Waters of the United States (WOTUS) litigation, as well as litigation efforts from the State of Missouri challenging water withdrawal from the Missouri River. Additionally, though no litigation was filed during the biennium, staff resources were used to challenge various federal agency actions and positions.

Unmanned Aerial Systems (UAS) **Program**

In spring 2021, the DWR retired its original drone as superior technology had become available since its original purchase four years prior. In its place, the agency purchased two new drones. The new aircraft are consumer-level drones, but their flight capabilities and cameras are more advanced. The DWR also added a fourth drone pilot from the Regulatory Division's Dam Safety section. One of the drone pilots also represents the agency on the Cabinet UAS Committee.

As the DWR Drone Program grows with more pilots and equipment, the number and diversity of flights increases. Examples of drone uses include: sovereign lands investigations, ground condition monitoring, survey missions, lake gauging, Drought Disaster Livestock Water Supply Program inspections, model data verification, documenting dams to establish a database of inspections and historical conditions, and general photography/videography for education and outreach.

STATE WATER COMMISSION MEMBERS
AS OF JUNE 30, 2023

NAME	POSITION	APPOINTED	TERM ENDS
Doug Burgum	Governor - Chairman		
Doug Goehring	Department of Agriculture, Commissioner	Ex-Officio	
Connie Ova	James River Basin	July 30, 2021	June 30, 2027
Michael Anderson	Lower Red River Basin	August 10, 2017	June 30, 2025
Vacant	Devils Lake Basin		
James Odermann	Little Missouri, Upper Heart, & Upper Cannonball Basin	July 30, 2021	June 30, 2025
Gene Veeder	Upper Missouri River Basin	July 30, 2021	June 30, 2027
April Walker*	Upper Red River Basin	July 30, 2021	June 30, 2029
Jay Volk	Lower Missouri River Basin	July 31, 2019	June 30, 2025
Jason Zimmerman*	Mouse River Basin	August 10, 2017	June 30, 2029
Andrea Travnicek	*Secretary*	*July 26, 2021*	

*Both April Walker and Jason Zimmerman were reappointed June 30, 2023.

STATE WATER COMMISSION MEETINGS
JULY 1, 2021 THROUGH JUNE 30, 2023

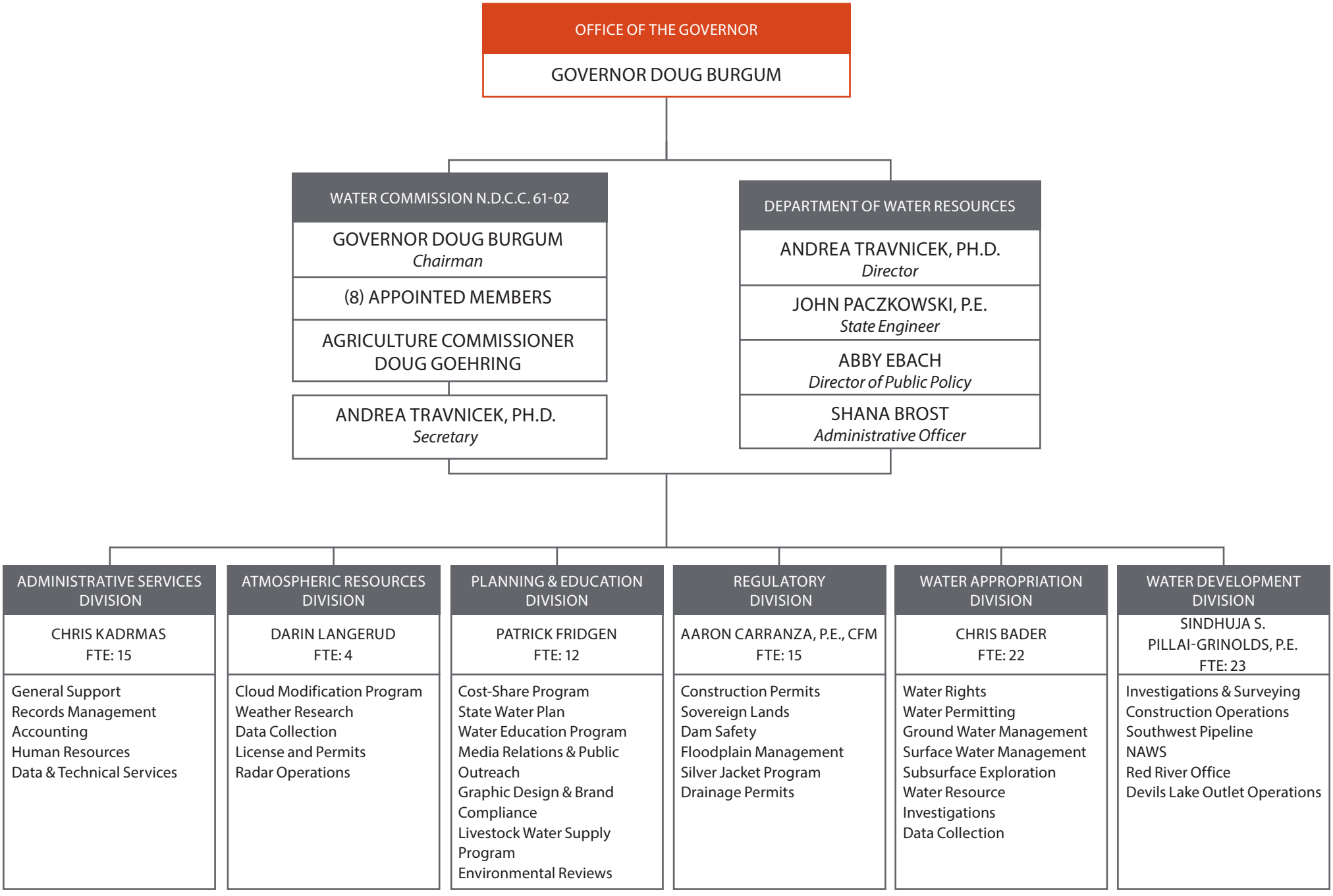
DATE	LOCATION
July 30, 2021	Virtual
August 12, 2021	Bismarck
October 14, 2021	Bismarck
November 19, 2021 (Special)	Bismarck
December 10, 2021	Bismarck
February 23, 2022	Bismarck
April 12, 2022	Virtual
June 7, 2022	Bismarck
August 11, 2022	Bismarck
October 13, 2022	Bismarck
December 9, 2022	Bismarck
February 13, 2023	Bismarck
April 13, 2023	Bismarck
June 8, 2023	Bismarck

2022 COMMISSIONER-HOSTED
BASIN MEETINGS

DATE	BASIN	COMMISSIONER
July 6, 2022	Mouse River	Jason Zimmerman
July 7, 2022	Lower Missouri	Jay Volk
July 11, 2022	Upper Red	April Walker
July 15, 2022	James River	Connie Ova
July 20, 2022	Upper Missouri	Gene Veeder
July 20, 2022	Little Missouri, Upper Heart, & Upper Cannonball	James Odermann
July 27, 2022	Lower Red	Michael Anderson
July 27, 2022	Devils Lake	Richard Johnson

NORTH DAKOTA DEPARTMENT OF WATER RESOURCES

AS OF JUNE 30, 2023



DEPARTMENT OF WATER RESOURCES TEAM

ADMINISTRATIVE SERVICES DIVISION

Director	Dr. Andrea Travnicek
State Engineer	John Paczkowski
Administrative Staff Officer	Shana Brost
Director of Administrative Services	Chris Kadrmas
Account/Budget Specialist	Sarah Felchle
Human Resource Business Partner	Missy Schmidt
Records Management Specialist	Karen Heinert
Director of Public Policy	Abby Ebach

DATA & TECHNICAL SERVICES

Info Technology Admin II	Paul Moen
Data Processing Coordinator	Travis Stramer
Hydrologist III	Angela Gregory
Hydrologist III	Nicole Evans
Hydrologist III	Benjamin Gehrig
GIS Specialist III	Rodney Bassler
Engineering Technicians	Albert Lachenmeier Neil Martwick Terry McCann Ryan Novak

PLANNING & EDUCATION DIVISION

Division Director	Patrick Fridgen
Administrative Assistant	Dawn Martin
Water Resource Education Program Manager	Tina Harding
Water Resource Planners	Steve Best Cory Drevecky
Natural Resource Economist	Duane Pool
Water Resource Engineer Managers:	Jeffrey Mattern Julie Prescott
Water Resource Program Administrators	Beth Nangare Lori Noack
Public Information Officer	Lee Greuel
Graphic Artist	Sheila Fryer

REGULATORY DIVISION

Division Director	Aaron Carranza
Regulatory Program Specialist	Courtney Evoniuk
Water Resource Engineer Managers	Karen Goff Matthew Lindsay
Water Resource Engineers	Kelsey Huber Garrett Larson Jennifer Martin Joe Morrissette Damon Grabow Nicholas Bendickson
Engineer Technician	Chance Nolan
Water Resource Program Administrators	Gerald Heiser Laura Horner Tia Dolechek Tyler Spomer
Silver Jackets Program Coordinator	Michael Hall

WATER APPROPRIATION DIVISION

Division Director	Chris Bader
Administrative Assistant	Lora Johnson
Hydrologist Managers	Rex Honeyman Andrew Nygren Kimberly Fischer Abigail Franklund Joe Nett
Hydrologists	Bryce Klasen Michaela Halvorson Samuel DeVries Ryan Wolbert Laura Oborne Danielle Corona Sid Abudureyimu Stephen Fried Joshua Wert
Water Resource Program Administrators	Chris Colby Vacancy
Water Resource Engineer	Bassel Timani
Program Manager	Kathryn Arneson
Rotary Drill Operator	Dan Bahm
Equipment Operator	Evan Rogstad

WATER DEVELOPMENT DIVISION

Division Director	Sindhuja S. Pillai-Grinolds
Administrative Assistant	Patrice Power
Water Resource Engineer Managers	Timothy Freije David Nyhus Randy Gjestvang Chris Korkowski Vacancy Vacancy
Water Resource Engineers	Laura Ackerman Clay Carufel Kathryn Goos Yaping Chi
Engineering Technicians	Clint Codgill Tom Engberg Dan McDonald Austin Rogstad Bryan Hanson Brandon Weist
Water Resource Senior Managers	Dale Binstock Perry Weiner
Maintenance Supervisor	Jeff Trana
General Trades Worker	Del Nordrum
Water Resource Project Manager	Darron Nichols

ATMOSPHERIC RESOURCE BOARD

Division Director	Darin Langerud
Executive Staff Officer	Kelli Schroeder
Environmental Sciences Administrator	Mark Schneider
Environmental Scientist	Daniel Brothers

Administrative Services Division

The Administrative Services Division provides the overall direction of agency powers and duties as described in the state's water laws. Budget and fiscal control work is accomplished within the provisions of statutory law and the principles or rules derived from that law.

The Director or their appointee, and the State Engineer, serve as North Dakota's representatives on various boards and associations. The Director serves as a member of the United States International Souris River Board, the International Red River Watershed Board, the Red River Retention Authority, the Board of Directors for the Red River Basin Commission, the Upper Missouri Water Users Association, the North Dakota Water Education Foundation, the Association of Western State Engineers, and others. They also chair the Devils Lake Outlet Advisory Board and the High-Level Radioactive Waste Advisory Council. Furthermore, the Director serves as an executive council member of the Western States Water Council and as an ex-officio member of the North Dakota Water Users Association Board of Directors.

DATA & TECH SERVICES

DWR employs IT in nearly all facets of water resource management.

DATA ACQUISITION

This includes stream gauging activities, monitoring water levels, collecting and measuring pumping rates, collecting precipitation data, and a host of other activities related to water resource data.

DATA MANAGEMENT

DWR has developed and deployed additional spatial and graphical tools to navigate the complex relationships within water resource data.

DATA & TECHNICAL SERVICES

DWR employs IT in nearly all facets of water resource management. The primary responsibility of Data and Technical Services is to furnish the necessary technology infrastructure and conduct data collection activities essential to support scientific and regulatory functions. Additionally, it supports routine office and back-office automation functions that the agency relies on to fulfill its stated mission.

DATA ACQUISITION

The Department maintains a wide range of data collection activities to support various aspects of the agency's mission. This includes stream gauging activities, monitoring water levels, collecting and measuring pumping rates, collecting precipitation data, and a host of other activities related to water resource data. Historically, these efforts were largely supported by division staff through predominantly manual data collection activities.

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- DWR and Water Commission operations
- Accounting
- Information Data and Technology
- Records Management
- Support services for all agency programs

- Budget and fiscal control work
- Human Resources Management
- Agency accounting through the keeping of financial records, preparation of financial statements and reports, project or program cost accounting, preparation of budgets, and proper control of various funds appropriated by the state legislature

- Coordinating water resource programs with federal agencies and other state and local entities
- Coordinating contracts and agreements

To enhance efficiency in data collection and provide real-time data to support water resource management initiatives, the Department initiated the development of the PRESENS (Pushing REmote SENSors) project. This project aimed to offer a cost-effective solution for deploying real-time sensors to address the diverse data collection activities required by the agency. Between 2017 and 2019, the Commission completed the design, development, and initial testing of the PRESENS data loggers. Limited deployment commenced in the summer and fall of 2018, with broader deployment starting in the spring and summer of 2019. Throughout the 2021-2023 biennium, the agency operated over 500 PRESENS devices, with plans for several hundred more in the upcoming biennium.

Although the initial focus of the PRESENS project was on remote data collection for many monitoring wells and staff gauges currently maintained by the agency, the project's aim was to accommodate a wide range of sensors and data collection activities. In the 2019-2021 biennium, the PRESENS platform was modified and expanded to ultimately support the collection of precipitation, soil moisture, and soil temperature data. During the 2021-2023 biennium, the first PRESENS devices were deployed for collecting precipitation and soil temperature and moisture at various depths.

The PRESENS platform collects over 40,000 data points daily and can be easily extended to support other ongoing data collection initiatives of the agency, such as pumping rates and water use data collection activities. The collection of both pumping rate and water use information will be assessed in the coming biennium.

DATA MANAGEMENT

As demands on the state's water resources continue to grow and evolve, the agency faces additional challenges in providing more comprehensive and improved information to the residents of North Dakota. These challenges increasingly emphasize both the spatial and temporal relationships inherent in managing water resource systems. To address these challenges, the agency has developed and deployed additional spatial and graphical tools to navigate the complex relationships within water resource data. In many instances, these tools have been seamlessly integrated into data management applications to handle complexities within the data development and management processes.

In addition to the fundamental need for enhanced tools and management capabilities, the agency has encountered significant demand for additional bandwidth and capacity to support various management initiatives, increased storage requirements, and computational processes for managing and analyzing data. Growing demands for aerial imagery and Light Detection and Ranging (LiDAR) data have placed immense strain on the agency's infrastructure for data storage and associated tools for data maintenance, backup, and dissemination. The agency's storage infrastructure has expanded from just under 1 terabyte (TB) in 2002 to over 500 TB in 2015, surpassed 1 petabyte in 2019, and is projected to exceed 1.1 petabytes by the end of the 2023-2025 biennium.

All water resource data for North Dakota is accessible through the agency website (www.dwr.nd.gov). This includes site information used for monitoring groundwater resources in the state, such as sub-surface lithology, water levels, water chemistry, and associated site details. The agency website also provides data on precipitation, dams, drains, dikes, and other retention structures monitored by the Department. Additionally, alongside

the extensive range of data resources integrated into the agency's web services, the agency maintains a dedicated site for the surveying community, comprising over 2,800 Government Land Office plat maps, along with all first and second order benchmarks (survey.dwr.nd.gov).

During the 2011-2013 biennium, DWR developed map services primarily to handle the storage and dissemination of the substantial amounts of LiDAR data collected in North Dakota (lidar.dwr.nd.gov). This site has expanded to include LiDAR data from numerous projects, totaling approximately 63 TB of raw data, expected to increase to 83 TB by the end of the 2023-2025 biennium. In the 2013-2015 biennium, the Department introduced an image map service (aerial.dwr.nd.gov) aimed at cataloging all existing historic aerial photography available within the agency. This site has grown to encompass approximately 188 TB of raw image data, potentially exceeding 220 TB by the end of the 2023-2025 biennium. Additionally, during the 2019-2021 biennium, the ND Risk Assessment Mapservice (NDRAM) was introduced, utilizing both LiDAR and aerial map services for base map information, which currently holds 11 TB of data.

Data Available For Public Use

- Government Land Office Plats
- Precipitation & Hail Data
- Survey Horizontal & Vertical Control
- Water Permit Data
- Various Ground-Water Studies
- Drainage Permit Data
- Well and Site Location Data
- Stream Flow Data
- NDRAM Flood Risk Assessment
- Lithologic Data
- Construction Permit Data
- Water Chemistry Data
- Retention Structure Data
- Water Level Data
- Digital Map Data
- LiDAR
- Well Drillers' Reports
- Water Appropriation Permit Data

Atmospheric Resource Board

The Atmospheric Resource Board (ARB) is a quasi-judicial, quasi-legislative advisory, and rule-making board. ARB is co-located with the Commission and functions as one of its divisions.

The ARB comprises ten members: seven are appointed by the Governor, with ex-officio members including the Director of the Department of Water Resources, the Director of the State Aeronautics Commission, and a representative from the Department of Environmental Quality.

NDCMP

The North Dakota Cloud Modification Project (NDCMP) served five western counties during the 2021-2023 biennium.

STUDENT INTERN PROGRAMS

Since the board's creation in 1975, 407 intern pilots have logged approximately 30,000 hours of flight time in the conduct of NDCMP operations in North Dakota's skies.

RESEARCH & DEVELOPMENT

ARB continued to collaborate with the UND Department of Atmospheric Sciences to provide meso-scale numerical weather forecast modeling to the operational cloud seeding program.

NORTH DAKOTA CLOUD MODIFICATION PROJECT

The NDCMP served five western counties during the 2021-2023 biennium. Those counties were Bowman, McKenzie, Mountrail, Williams, and a portion of Slope. County participation involves a public process to establish a county weather modification authority. At the conclusion of the biennium, the project target area covered almost 4.1 million acres of western North Dakota.

The NDCMP has two goals:

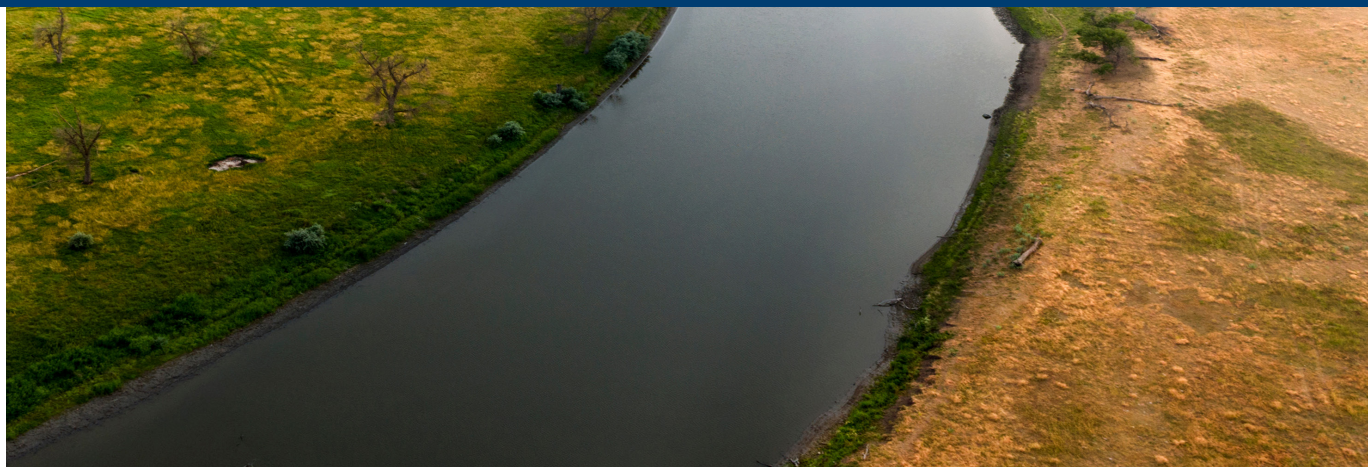
1) Suppression of damaging hail, and
2) Enhancement of rainfall.

Suitable clouds over two multi-county operational districts were treated during June, July, and August of each summer of the biennium. Five twin-engine aircraft operated by Weather Modification International of Fargo were deployed under contract to the ARB and participating counties. Operations were directed by project meteorologists from radar operations centers based at the Bowman and Stanley airports.

A recent study from the NDSU Department of Agribusiness and Applied Economics (Bangsund and Hodur, 2019) describes the significant economic benefits cloud seeding provides to agricultural production in western North Dakota. Rainfall enhancement effects were evaluated at 5 and 10 percent, which are the lower and upper bounds of typical

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- Carrying out the administrative procedures required for the licensing of weather modification contractors and the permitting of cloud seeding operations and research activities
- Developing and maintaining a system for the collection of data and records of all operational weather modification activities
- Conducting research into atmospheric precipitation processes to assess and improve the effectiveness of cloud seeding technology
- Promulgating rules and regulations governing cloud seeding activities to ensure environmental and public safety
- Monitoring and evaluating cloud seeding activities and reporting back to sponsoring entities
- Monitoring, collecting, and disseminating accurate precipitation and climate data



results, while hail suppression was evaluated at a 45 percent reduction in crop loss. Results of the study show the NDCMP is strongly economical, even with its most conservative estimates. The value of added growing season rainfall at 5 percent enhancement is estimated at $21.2 million annually, or $9.19 per planted acre. When evaluating rain enhancement at 10 percent, the number jumps to $41.9 million, or $18.15 per planted acre. The addition of hail suppression adds another $6.9 million annually, or $3.00 per planted acre.

Rainfall enhancement at 10 percent and crop-hail reduction of 45 percent yield estimated economic returns of more than $53 for every $1 spent on the program. Viewed more conservatively, using rainfall enhancement of 5 percent, results are still impressive, yielding nearly $31 of benefit for every dollar spent. Enhanced agricultural production from cloud seeding is also reflected elsewhere in the economy. Tax revenue from increased crop yields is estimated to range between $576,000 to $999,000 annually.

Employing different datasets and methodology, a 2021 study by Michigan State University scientists evaluated the NDCMP and found very similar results. Using 30 (1989-2018) years of insurance data from the United States Department of Agriculture (USDA) Risk Management Agency (RMA) and crop yield data from the National Agricultural Statistics Service (NASS), the study sought to determine if there was any difference in wheat and barley yields and insurance loss ratios for NDCMP counties versus surrounding counties not involved in the program.

Their analysis found annual wheat yields in the NDCMP counties were higher by 3.87 bushels per harvested acre, and statistically significant at the 95% confidence level. Moreover, crop insurance loss ratios for wheat were lower for the NDCMP counties. The authors concluded, "Our evaluation indicates that the cloud seeding program had significant positive effects on crop yields and improved loss ratios. The examination offers new evidence about the effectiveness of hail suppression through cloud seeding." A further analysis of economic benefits yielded a benefit-to-cost ratio of more than 36 to 1.

WEATHER RADAR OPERATIONS

The ARB continued to operate two WSR-74C weather radars during the biennium. Radars were located in facilities at the Bowman and Stanley airports and operated at approximately one-quarter of the cost of previously leased systems. Images from both radars are available and updated every five minutes on the agency's website during the operational season.

The radars provide low atmospheric coverage of storms and precipitation over western North Dakota, where National Weather Service (NWS) radars can't see. This provides a more accurate representation of precipitation for those living in the coverage areas.

The Bowman radar is sited at the coverage limits of the NWS radars located at Bismarck, Billings, Glasgow, and Rapid City, and thus provides lower atmosphere coverage of southwestern North Dakota, southeastern Montana, and northwestern South Dakota.

In 2011, ARB partnered with eight counties in the area, who pledged $24,000 to operate the Bowman radar year-round. They are: Billings, Bowman, Dunn, Golden Valley, Slope, Stark (North Dakota), Fallon (Montana), and Harding (South Dakota) counties. The Bowman radar continued to operate year-round throughout the biennium in partnership with these regional counties, at the same $24,000 annual cost. Real-time radar images and raw data were provided on the agency's website.

In addition to the Bowman and Stanley radars, Williams County purchased a C-band weather radar and installed it at the new Williston Basin International Airport in 2020. The agency hosts the Williams County Radar data on its website. During the 2023 Legislative Session, funding was included in the DWR budget to purchase a new Bowman radar.

STUDENT INTERN PROGRAMS

Eighteen intern copilots from the University of North Dakota's (UND) John D. Odegard School of Aerospace Sciences participated in the NDCMP during the last biennium. Training at UND includes a 4-credit course on applied weather modification. Students must also meet flight certification requirements prior to participation. Since the board's creation in 1975, 407 intern pilots have logged approximately 30,000 hours of flight time in the conduct of NDCMP operations in North Dakota's skies. In addition to recording the time, location, duration, and meteorological conditions during all seeding and reconnaissance missions, the pilots are fully qualified to fly the aircraft, providing an additional margin of safety. Because of the experience they gain, many intern copilots have returned to the NDCMP as Pilots-in-Command (PICs) in subsequent project seasons. Interns are paid an hourly wage and are considered temporary employees of the ARB during the summer months.

The weather modification pilot training program is the only one of its kind in the United States, and it provides a significant number of qualified cloud seeding pilots for projects elsewhere in the country and around the world.

ARB also retained undergraduate students majoring in atmospheric science as intern meteorologists during the 2021-2023 biennium. A total of six interns assisted NDCMP radar meteorologists at radar-equipped operations centers in Bowman and Stanley, raising the total to 73 since the program's inception. Like the intern pilots, intern meteorologists continue to demonstrate their enthusiasm and dedication to the NDCMP and provide a pool of better-qualified persons to serve future projects as radar meteorologists.

STATEWIDE PRECIPITATION OBSERVATIONS

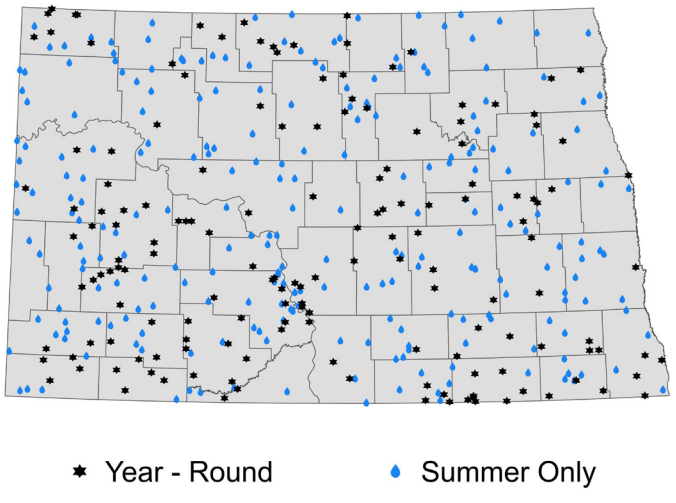
The ARB Cooperative Observer Network (ARBCON) continued reporting precipitation in North Dakota during the biennium. ARBCON observers numbered about 450 volunteers statewide, building on a database dating back to 1977. ARBCON has logged more than five million daily observations since the network began.

In response to the increased need for snow and snow water equivalent data in the state to assist in flood forecasting and water management, ARBCON began measuring and reporting snowfall in October 2010. Initial observer participation more than doubled the number of local snow reporting stations previously in the state. Currently, year-round ARBCON observers number approximately 200.

Internet-capable reporters enter their daily reports directly through the agency's website, after logging in with a unique username and password, making the data available sooner than those submitted on monthly reporting cards. About one-third of ARBCON observers are utilizing online reporting, a number which should continue to grow in future years.

Rain, hail, and snow data, as well as color maps depicting monthly and growing season precipitation, departure from normal, and 30-year averages can be publicly accessed and downloaded directly through the agency's website. The data have proven to be very helpful in the assessment of excess rain, snow, and attendant flooding, as well as in the monitoring and delineation of drought in North Dakota.

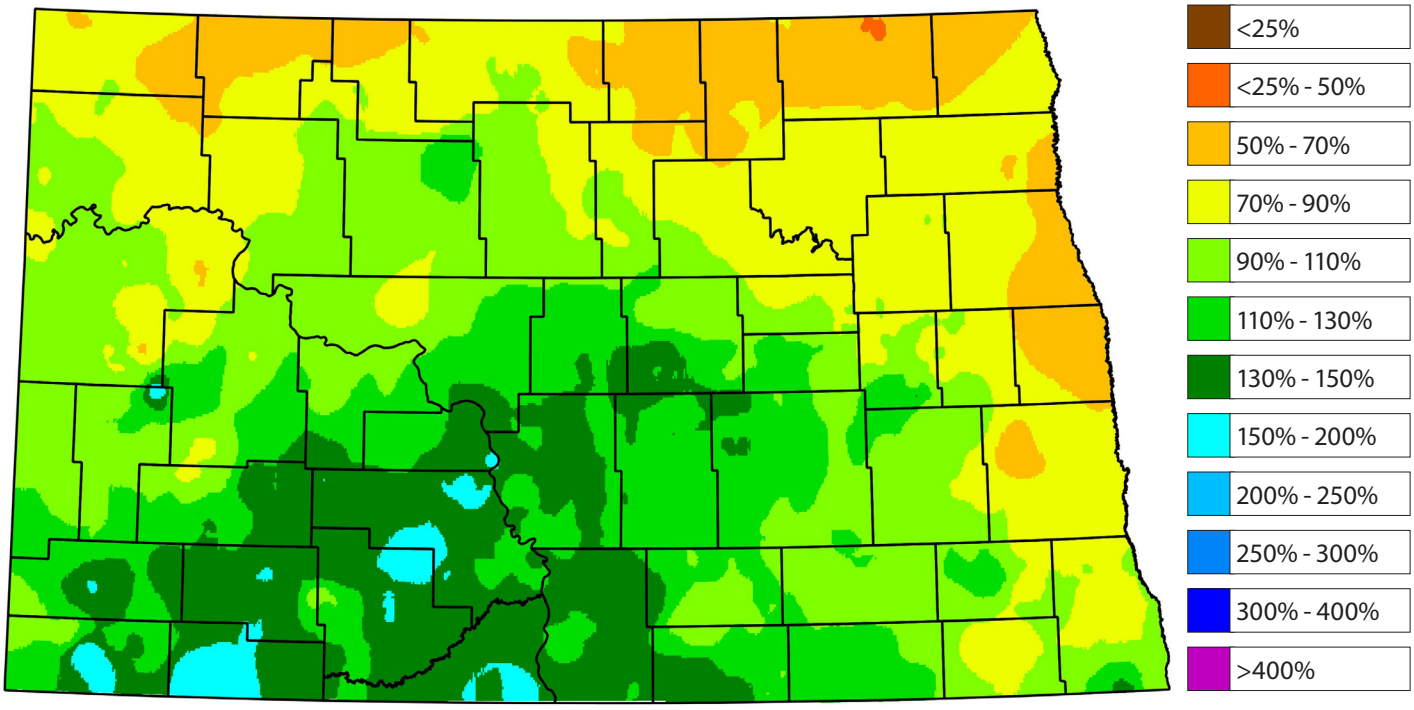
2023 ARBCON OBSERVERS



RESEARCH & DEVELOPMENT

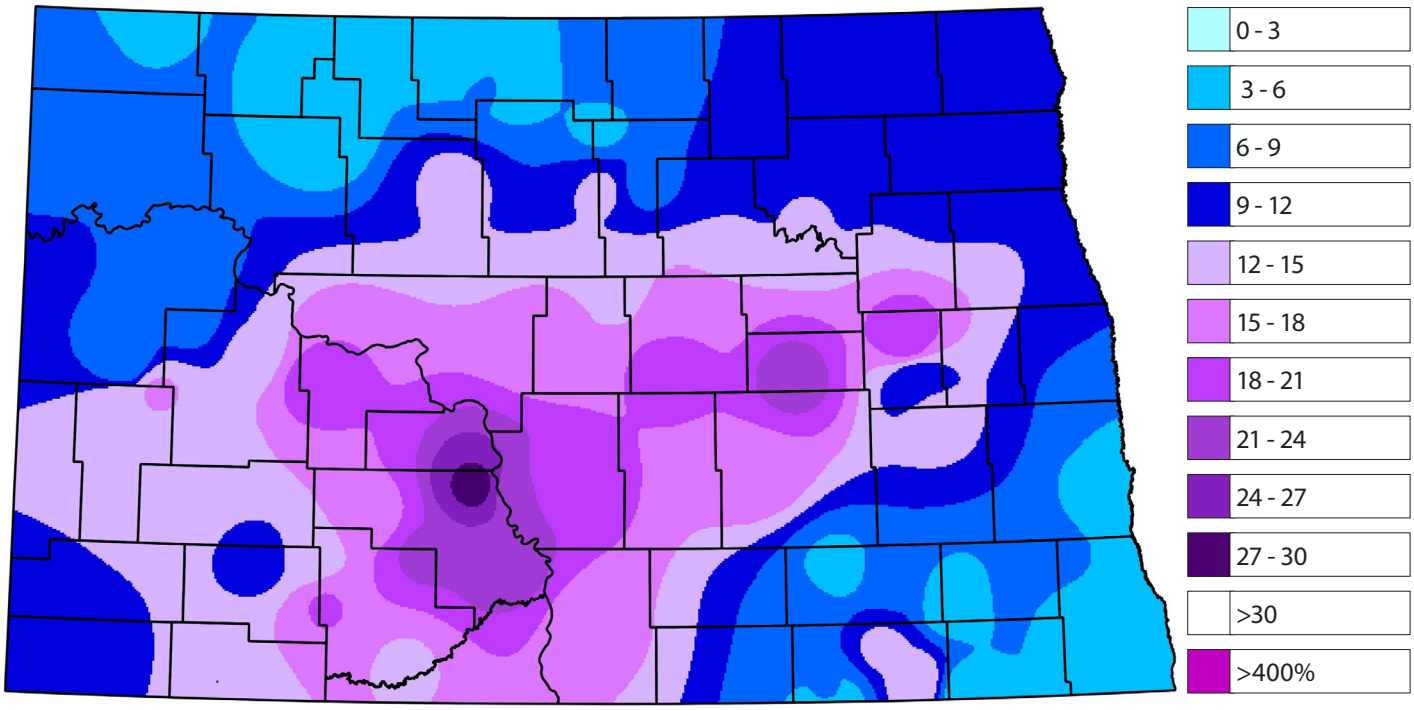
ARB continued to collaborate with the UND Department of Atmospheric Sciences to provide meso-scale numerical weather forecast modeling to the operational cloud seeding program. UND continues to develop the Weather Research and Forecasting (WRF) model to improve convective weather precipitation forecasts supporting cloud seeding operations. The model is run twice daily at the university, and data are provided to NDCMP forecasters through a website interface.

APRIL-SEPTEMBER 2023 PERCENT OF NORMAL RAINFALL



Source: NDARB Cooperative Observer Network

NOVEMBER 2022 SNOWFALL (IN INCHES)



Source: NDARB Cooperative Observer Network

Planning & Education Division

The primary responsibilities of the Planning and Education Division are to manage the agency's Cost-Share Assistance Program and to maintain the state's water project inventory and water development plan. Division staff also participate in numerous regional, state, local, and inter-office planning activities; manage the agency's water education programs; coordinate environmental reviews; manage the Drought Disaster Livestock Water Supply Assistance Program; and oversee public outreach, media relations efforts, graphic design, and brand compliance.

STATE WATER DEVELOPMENT PLAN

The purpose of the 2023 State Water Development Plan is to outline the planning process; and provide a progress report on the state's priority water management and development efforts.

PUBLIC RELATIONS

The agency maintains a public website that contains up-to-date information about departments, programs, policies, data, maps, goals, and its mission and vision.

ND WATER EDUCATION

The Water Education Program is delivered through interactive learning, awareness, exploration, and action-based stewardship of North Dakota water resources.

COST-SHARE PROGRAM

Policy development and program application decisions related to the agency's cost-share program are the responsibility of the State Water Commission. The Commission has adopted a policy to support local sponsors in the development of sustainable water-related projects in North Dakota. The policy reflects cost-share priorities and provides the basic requirements for all projects considered for prioritization during the agency's budgeting process. Projects and studies that receive cost-share funding from the agency's appropriated funds are consistent with the public interest.

The State Water Commission has been fortunate to have access to significant funding for project support in recent years. That funding has come at a time of serious water resource challenges across the state, with major flood control, water supply, and other projects facing funding needs. During the 2021-2023 biennium, the Planning Division processed approximately 2,700 cost-share requests and payments. There were approximately 251 new projects approved totaling over $388 million.

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- Supporting local sponsors in the development of sustainable water-related projects in North Dakota through the Cost-Share Assistance Program
- Maintaining a water project inventory and Water Development Plan to promote efficiency in meeting North Dakota's future water development and funding needs
- Conducting and reviewing economic and life cycle cost analyses to ensure responsible and efficient use of taxpayer dollars
- Leading or participating in special studies that result in water resource and related land management plans at various levels of government
- Monitoring water resource issues and advising decision makers on possible impacts to North Dakota's water management objectives
- Representing the Department on regional, national, and international natural resource planning bodies, such as the Assiniboine River Basin Initiative, International Water Institute, Red River Basin Commission, and Missouri River Advisory Council
- Preparing presentations, developing and maintaining the agency's online and social media presence, and fostering public awareness of the agency and its activities through media outreach and relations efforts
- Providing graphic design support for public-facing and internal documents
- Reviewing publications for "North Dakota Be Legendary" brand compliance
- Assisting joint water resource management boards in the development of watershed management plans
- Providing opportunities for adults and students to increase their understanding of North Dakota's water resources and how these resources are managed
- Coordinating and managing interagency environmental reviews
- Managing the Drought Disaster Livestock Water Supply Assistance Program, when activated
- Supporting the agency's Unmanned Aerial Systems (UAS) Program

MUNICIPAL, RURAL, & INDUSTRIAL WATER SUPPLY

In federal fiscal years 2022 and 2023, the Municipal, Rural, and Industrial (MR&I) Water Supply Program received $75 million in federal grant funds for the development of water supply facilities in the state. This brought the total received from the federal government to $485.8 million since the program was authorized by the Garrison Reformulation Act of 1986 and the Dakota Water Resources Act of 2000.

The 2022 and 2023 federal MR&I funds were allocated to the Northwest Area Water Supply (NAWS) Project for the development of the biota water treatment plant, intake, and water transmission pipelines. MR&I funds were also allocated for Eastern North Dakota Alternative Water Supply Project development.

STATE WATER DEVELOPMENT PLAN

By virtue of North Dakota Century Code, Section 61-02-14, Powers and Duties of the Commission; Section 61-02-26, Duties of State Agencies Concerned with Intrastate Use or Disposition of Waters; and Section 61-02-01.3, Comprehensive Water Development Plan, the SWC is required to develop and maintain a comprehensive, short- and long-range water plan for the sound management and development of North Dakota's water resources.

The most recent North Dakota State Water Development Plan was completed in January 2023. The purpose of the 2023 State Water Development Plan is to outline the planning process; provide a progress report on the state's priority water management and development efforts; provide information regarding North Dakota's current and future water development project funding needs and priorities; provide information regarding North Dakota's revenue sources for water development; serve as a formal request for funding from the Resources Trust Fund; and identify goals and objectives to meet water development challenges.

In addition, the 2023 Water Development Plan considers longer-term planning horizons. While previous plans typically focused on a funding picture two to four years in the future, the 2023 Plan estimates the potential financial needs of water-related infrastructure in ten years, twenty years, and beyond.

AGENCY STRATEGIC PLANNING

The Planning and Education Division manages implementation of the agency's current 5 Year Strategic Plan, which was completed during the 2021-2023 biennium. The DWR Strategic Plan is intended to provide direction and clearly articulate where the agency will prioritize efforts through June 30, 2027.

The Strategic Plan included the following overarching objectives:

1. Effectively communicate with the public and stakeholders with a primary focus on collaboration and building partnerships.
2. Develop world-class, sustainable, and resilient water development and management practices.
3. Support the beneficial use of Missouri River system water and other available water supply sources.
4. Implement innovative ideas, technology, and grow analytic capabilities to improve efficiencies in water management and development.
5. Improve the department's internal resilience and promote a positive culture.

PUBLIC RELATIONS

External communication efforts are disseminated via multiple methods to the general public, media, elected leaders, Commission members, organizations, and stakeholders.

The agency maintains a public website that contains up-to-date information about departments, programs, policies, data, maps, goals, and its mission and vision. Social media outlets such as Facebook, YouTube, LinkedIn, and other platforms are also used to distribute current events and agency news.

The Planning and Education Division's Communications Manager serves as a resource to the entire agency, providing communication assistance in areas such as news releases, social media initiatives, talking points and speeches, coordinating media interviews, public outreach campaigns, agency communication plans, presentations, producing educational agency-based tutorial videos, generating internal and external newsletters, creating water-focused magazine articles, and participating in community events.

INTERNAL COMMUNICATION

The agency utilizes a variety of tools for internal communication. One of those tools is through the use of an intranet site. This site provides the latest agency news, information, upcoming events, and meetings. The agency also promotes staff interests with effective internal communications, including a weekly update that is distributed to staff featuring weekly meetings and other information that might be of interest to team members that week. Team engagement efforts called Coffee Chats and Town Hall meetings also were developed as effective internal communication strategies to encourage collaboration and team building. They consist of informative, educational, and sometimes entertaining presentations by staff members about their roles or important agency initiatives. External presenters are also sometimes scheduled to talk about issues of interest.

DROUGHT DISASTER LIVESTOCK WATER SUPPLY PROJECT ASSISTANCE PROGRAM

At the April 8, 2021, Water Commission meeting, the Drought Disaster Livestock Water Supply Program (Program) was reactivated in response to severe drought conditions across North Dakota, and in support of an emergency declaration issued that day by Governor Burgum. Along with the reactivation, the Commission approved the reallocation of remaining 2017 Program funds totaling $557,277.

As conditions continued to worsen, an additional $1.5 million was authorized for the Program at a special Water Commission meeting on April 20, 2021. A Secretary approval in the amount of $75,000 was granted on May 25, 2021. On June 8, 2021, the Water Commission approved another $2 million. And, at a special meeting on July 30, 2021, the Water Commission approved another $2 million - bringing the program appropriation total to $6.1 million.

At the August 11, 2022, Commission meeting, the decision was made to deactivate the 2021 Program as there were no areas of North Dakota that were classified as having emergency drought conditions. The Program was officially deactivated on September 1, 2022. Since that date, team members worked with producers to reimburse cost-share for their completed projects.

As of July 26, 2023, the 2021 Program was considered complete. Over the course of the 2021 Program, DWR approved $6.1 million for 1,577 projects, involving 1,115 producers. Of these projects that were initially approved, 1,216 projects were completed by 826 producers with a total of $4.79 million provided in cost-share reimbursement.

Throughout the Program, agency team members conducted inspections of 116 completed projects. DWR team members believe this is an important component of the Program not only for project verification purposes but also because it allows them to meet with project applicants and provides a face to the Program.

INTERAGENCY PROJECT REVIEWS

Planning and Education Division staff continue to conduct and coordinate interagency environmental reviews involving projects associated with Community Development Block Grants and Loans; Hazard Mitigation Grant Program; Rural Development Loan Program; highway improvements; airport improvements; dike/levee projects; water storage impoundments; municipal and rural water supply development and treatment projects; municipal waste treatment projects; oil and gas well projects; oil and gas pipeline projects; electrical transmission line development/maintenance/modification projects; and various federal and state water, land, and wildlife management plans, studies, Environmental Assessments (EAs), and Environmental Impact Statements (EIS).

Throughout the 2021-2023 biennium, DWR continued to use the electronic internal routing system that was developed internally during the previous biennium. This system continues to allow staff an adequate amount of time to complete reviews and decreases the agency's response time to the applicant. In the 2021-2023 biennium, the agency received 433 requests for project reviews. Staff have a maximum of 30 days to provide comments, but on average, a signed comment letter is provided to the project sponsor in less than three weeks.

Environmental review comments address compliance requirements involving agency regulatory responsibilities in issuing permits pertaining to water appropriation, floodplain management, sovereign lands, and the construction of dikes, levees, dams, drains, and water holding ponds. Staff members also provide information concerning the location of water wells, stream gauges, well monitoring sites, and elevation benchmarks.

ECONOMIC & LIFE CYCLE COST ANALYSES

House Bill 1020, passed by the North Dakota Legislature in 2017, created NDCC 61-03-21.4, requiring the agency to "develop an economic analysis process for water conveyance projects and flood-related projects expected to cost more than one million dollars, and a life cycle analysis process for municipal water supply projects. When the State Water Commission is considering whether to fund a water conveyance project, flood-related project, or water supply project, DWR shall review the economic analysis or life cycle analysis, and inform the State Water Commission of the findings from the analysis and review."

To comply with NDCC 61-03-21.4, DWR contracted with HDR Inc. to assist the agency in drafting Economic Analysis (EA) and Life Cycle Cost Analysis (LCCA) processes. Additionally, the agency and HDR completed fillable electronic platforms that project sponsors and the agency are able to access to assist with more efficient and consistent assessments of projects.

Policy was revised to require all water supply projects requesting cost-share assistance to complete the provided Life Cycle Cost Analysis worksheet and for all water conveyance and flood protection projects greater than $200,000 to complete an Economic Analysis worksheet. These worksheets must be submitted to the agency for review prior to consideration for funding by the Water Commission.

To assist with EA and LCCA completion and reviews, the agency hired a Natural Resource Economist in 2019. This economist provides guidance to communities preparing EAs and LCCAs, investigates alternatives, reviews the results of the submissions, and prepares a summary for consideration by the Commission. During the 2021-2023 biennium, 22 EAs and 144 LCCAs were completed.

NORTH DAKOTA WATER EDUCATION

In 1984, the (then) State Water Commission took the initiative to provide water education throughout the state, with the primary goal of educating the public about the importance of water in North Dakota. When the program first started, it was called Water Education for Teachers (WET).

Today, WET is known as Project WET (Water Education Today), a supplemental and interdisciplinary water education program accepted around the world. North Dakota's Project WET became the template for the program's growth, and it now involves all 50 states and 60 countries, supporting the mission of advancing water education to understand local and global challenges and inspiring local solutions.

Since 1997, North Dakota Project WET has enhanced its scope and vision with the innovative "Explore Your Watershed" Program. Now called North Dakota Water Education, it promotes the importance of water in all aspects of our lives, including conservation, water quality, non-point source pollution, stewardship, protection, access, health, and best management practices. North Dakota Water Education develops and fosters partnerships and collaboration with schools, local, state, and federal agencies, and water entities throughout the state to provide educational opportunities and information.

Project WET publications, trainings, festivals, and community events are based on four core beliefs: 1) water connects us all, 2) water is for all, 3) water must be managed for sustainability, and 4) water is dependent on personal responsibility and actions. Water Education is delivered to educators, youth, communities, and the general public through multi-credit watershed institutes, teacher workshops, facilitator trainings, water festivals, and special community events.

The Water Education Program is delivered through interactive learning, awareness, exploration, and action-based stewardship of North Dakota water resources, with a focus on how water interacts with both the human and natural environments within our own watersheds. Programs are based on the well-developed, and time-tested Project WET curriculum, through the development and dissemination of indoor, outdoor, and classroom-ready experiences, teaching aids, printed materials, and online resources that are hands-on, user-friendly, non-biased, age-appropriate, adaptable, and relevant.

The water education program has experienced growth over the years, and the adoption of virtual and online opportunities play a key role in advancing water education. Online resources assist teachers, community members, and students by providing the tools required to gain a better understanding of how we think about water as a limited resource.

OTHER GOVERNMENTAL & NON-GOVERNMENTAL ORGANIZATION INVOLVEMENT

The Planning and Education Division also participated, to varying degrees, in several other governmental and non-governmental organizations, providing input from DWR's perspective. During the biennium, staff were involved with the Devils Lake Basin Joint Water Resource Board; Upper Sheyenne River Joint Water Resource Board; the International Water Institute; Devils Lake Outlet Advisory Committee; North Dakota Missouri River Advisory Council; Red River Retention Authority; Red River Basin Commission; and Assiniboine River Basin Initiative.

THE CURRENT

The Current, which was created in early 2016, is a quarterly newsletter that provides the latest agency-specific information concerning water development, regulatory and appropriation efforts, water education, policy changes, Water Commission meeting approvals, and much more. In April 2020, The Current evolved into a digital publication, and the average distribution of the newsletter is approximately 1,100 per quarter.

NORTH DAKOTA WATER MAGAZINE

Since 1993, various water interests in North Dakota have pooled resources through the North Dakota Water Education Foundation to publish a magazine titled North Dakota Water. This magazine provides a broad spectrum of high-quality information about the state's water resources to the widest possible audience. Over the course of the 2021-2023 biennium, monthly distribution of the magazine varies but can reach up to 30,000 copies. Readers include the general public, local, state, and federal agencies, and elected officials.

The Planning and Education Division develops and writes the agency's contribution, a two-page section called The Oxbow. A third page is contributed by the Atmospheric Resource Board.

Regulatory Division

The Regulatory Division is responsible for regulating the following areas under North Dakota Century Code as a function of the agency.

PERMITS

Construction permits are required, within certain thresholds, to construct or modify a dam, dike, or other device for water conservation, flood control regulation, watershed improvement, or storage of water.

SOVEREIGN LANDS MANAGEMENT

North Dakota's sovereign lands encompass areas, including beds and islands, situated within the ordinary high water mark of the state's navigable lakes and streams.

DAM SAFETY PROGRAM

The purpose of North Dakota's dam safety program is to minimize the risk to life and property associated with the potential failure of dams in the state.

PERMITS

The agency has several statutory requirements regarding the permitting of water management projects. Construction permits are required, within certain thresholds, to construct or modify a dam, dike, or other device for water conservation, flood control regulation, watershed improvement, or storage of water. Drainage permits are required to drain a pond, slough, lake, or sheetwater, or any series thereof having a watershed area comprising eighty acres or more, as well as for emergency drainage. Sovereign lands permits are required for certain work or activities below the ordinary high-water mark of the state's navigable lakes and streams. Other special areas of the agency's regulatory duties or functions include the review of water-related complaints, the review of appeals of water resource district decisions, the review of stream crossing and watercourse determination requests, the processing of subsurface water management permits, and environmental review assistance coordinated with the Planning and Education Division.

Division members also represent the agency at a variety of technical meetings held by such groups as the U.S. Army Corps of Engineers, Natural Resource Conservation Service (NRCS) State Technical Committee, NRCS Interagency Watershed Committee, Association of Soil Conservation Districts, North Dakota Soil Conservation Committee, and the Natural Resources Trust.

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- Administering and providing guidance on permit applications for surface drains; construction of dams, dikes, and other devices; and sovereign land projects
- Offering technical assistance to water resource district boards
- Administering FEMA's North Dakota Dam Safety Program and RiskMAP programs
- Providing floodplain management assistance to communities participating in the National Flood Insurance Program through FEMA's Community Assistance Program - State Support Services Element
- Managing North Dakota's non-mineral interests in sovereign lands through ordinary high watermark delineations, and navigable waters identification
- Reviewing projects located within navigable waters
- Coordinating the state's participation in the U.S. Army Corps' Silver Jackets Program
- Reviewing determination requests, complaints, and complaint appeals

ENGINEERING & PERMITTING

Drainage and flood control continue to be top priorities for North Dakota. Recent state investments in new drainage and flood control projects, as well as improvements to existing projects, highlight the agency's role and expertise in regulating and overseeing engineering and water management considerations for these projects.

The purpose of the Engineering and Permitting (E&P) Section is to provide oversight and regulation of drainage and flood control projects, including agricultural drainage, dikes, levees, floodwalls, and channel diversions, with the goal of providing sound technical review of jurisdictional projects for the Department's consideration. The E&P Section reviews permit applications for drainage and flood control projects to ensure that the proposed projects follow state-of-the-art engineering practices, as well as adhere to the state's water management rules and regulations. The E&P Section works closely with North Dakota's water resource districts and their representatives, as both the construction permitting and drainage permitting processes involve water resource district permitting authority.

The E&P Section routinely collaborates with other state and federal agencies, political subdivisions, and the general public regarding permitting processes. Additionally, the E&P Section conducts reviews of complaints, complaint appeals, and assessment appeals, as well as reviews requests for stream crossing determinations and watercourse determinations. These duties necessitate that the E&P Section be well-versed in various areas of civil engineering practice, as well as in statutes, rules, policy, and case history, to ensure that water control and management projects are completed in accordance with engineering and legal requirements at the time of construction.

The E&P Section was active in several efforts during the 2021-2023 biennium, including the Governor's Red Tape Reduction Initiative, the Interim Water Drainage Committee, and updates to the Administrative Code.

2021-2023 BIENNIUM RECEIVED & PROCESSED PERMITS

	RECEIVED/ INITIALLY PROCESSED	PROCESSED/ COMPLETED[1]	AGENCY DECISION[2]
Construction Permit Applications	55	40	40
Surface Drain Permit Applications	40	34	36
Emergency Drain Permit Applications	1	1	1
Subsurface Water Management Permits[3]	314	314	–
Sovereign Lands Permit Applications	106	60	60
Special Problems or Other Determination Requests[4]	48	27	27

[1] Processed/Completed applications or requests include requests received before the 2021-2023 biennium.

[2] Agency Decision means those applications or requests that resulted in an agency permit decision or agency determination. (Excluding withdrawn applications or unresponsive applicants.)

[3] Subsurface Water Management Permits do not involve agency decision-making but are a common daily processing activity that requires document management and database processing.

[4] Special Problems or Other Determination Requests includes drainage complaints, drainage complaint appeals, dam or dike complaints, dam or dike complaint appeals, assessment appeals, watercourse determinations, and stream crossing determinations.

GOVERNOR'S RED TAPE REDUCTION - HB1076

The E&P Section proposed HB1076 as part of the Governor's Red Tape Reduction Initiative. HB1076 suggested changes to the permitting of lower-risk dikes, such as agricultural dikes and farmstead ring dikes. The permitting threshold for agricultural dikes was changed from a 50-acre-foot volume test to an 80-acre protected area test. Additionally, agricultural dikes and farmstead ring dikes were exempted from professional engineering requirements for plans and specifications needed for a construction permit application.

WATER DRAINAGE COMMITTEE

The E&P Section was directly involved in the Interim Legislative Water Drainage Committee by providing presentations and technical expertise to the committee. The committee's work directly influenced several areas of the E&P Section's work, including water resource district and Department overlapping jurisdiction, assessment appeals to the Department, and water-related definitions such as waterways.

ADMINISTRATIVE CODE UPDATES

As part of the passage of HB1076, the E&P Section is working toward Administrative Code updates to update definitions for dike permitting. These definitions include farmstead ring dike and agricultural dike definitions. The E&P Section took part in a Department/water resource district working group to address the direction of new rules and to discuss areas for future code changes.

SOVEREIGN LANDS MANAGEMENT

North Dakota's sovereign lands encompass areas, including beds and islands, situated within the ordinary high water mark of the state's navigable lakes and streams. The Department is tasked with determining which of these lakes and streams were navigable in fact at the time of statehood, based on the standards of the Equal Footing Doctrine, and therefore qualify as sovereign lands of the state. This includes delineating the ordinary high water mark (OHWM) of these navigable water bodies and overseeing the state's non-hydrocarbon-related mineral interests in North Dakota's sovereign lands. Any projects occurring, either partially or wholly, upon state sovereign lands require authorization in the form of a Sovereign Land Permit.

The objective is to manage, operate, and supervise North Dakota's sovereign land for multiple uses, consistent with the Public Trust Doctrine, and in the best interest of present and future generations. Meeting these goals can be challenging due to the increasing popularity of water-based recreation and the attraction of waterfront property for housing, business, and recreation development.

In 2007, the Office of the State Engineer completed the North Dakota Sovereign Land Management Plan, which outlines the authority to manage sovereign lands and includes recommendations and corresponding action strategies to improve management of this valuable resource. Additionally, the State Engineer developed the OHWM Delineation Guidelines in 2007 to provide a consistent and repeatable method for accurately delineating the OHWM in both riverine and lake environments. OHWM delineations conducted on state sovereign lands must adhere to the State's Delineation Guidelines.

During the 2017 and 2019 North Dakota Legislative Assemblies, legislation was passed amending the ownership of riverbed segments and defining requirements for ordinary high water mark determinations.

Currently, 17 water bodies have been identified as navigable in fact by the Department under the standards of the Equal Footing Doctrine, with three of them adjudicated as such. In the 2019 Legislative Assembly, a formal procedure for determining the navigability of lakes and streams under the standards of the Equal Footing Doctrine that had not been adjudicated as such was codified as N.D.C.C. § 61-33-05.1. In the 2023 Legislative Assembly, the Department secured funding to conduct a study of a portion of currently claimed navigable waters to formally research their respective navigability. The Department is committed to fully reviewing all currently claimed navigable waters as directed by the ND Legislature.

As the Department does not currently employ any law enforcement staff, an agreement has been developed with the North Dakota Game and Fish Department to enforce state code on state sovereign lands.

The agency collaborates with city, county, federal, and other state land managers to enhance public access to and use of state sovereign lands for non-motorized recreational purposes.

DAM SAFETY PROGRAM

The purpose of North Dakota's dam safety program is to minimize the risk to life and property associated with the potential failure of dams in the state. Primary functions of the dam safety program include reviewing construction permit applications for dams, conducting dam inspections, and maintaining an inventory of dams in North Dakota.

There are approximately 3,300 known dams in North Dakota's dam inventory. Of these, 49 dams are currently classified as high hazard, and 61 are currently classified as medium hazard. This means there is the potential for loss of life or significant property damage downstream if one of those dams were to fail. Updating, maintaining, and improving the state's inventory of dams is a continuous, ongoing effort of the dam safety program.

During the biennium, 23 construction permit applications were reviewed by the dam safety program and approved by the Department. In addition, two emergency construction permits were reviewed and approved, two emergency permit extensions were reviewed and approved, and 16 construction permit applications were reviewed and processed as not requiring a construction permit. Additionally, two dam-related complaint appeals were processed.

Another primary function of the dam safety program is to conduct dam inspections and provide recommendations for maintenance and repair to dam owners. The dam safety program inspects state, local, and privately-owned high and medium hazard dams on a rotational basis. During the 2021-2023 biennium, full periodic dam safety inspections were completed on 35 high and medium hazard dams, or approximately 30% of North Dakota's high and medium hazard dams. An additional 81 dam site visits were also made during the biennium. These include site visits to investigate concerns at dams raised by dam owners or the public, check the condition of dams during spring flooding, read dam instrumentation, and improve the state's inventory of low-head dams.

The dam safety program was active in the development of several new policy documents during the 2021-2023 biennium:

- Interim Guidance for Using the Probable Maximum Precipitation Study was released in February 2022. This policy guides the selection and usage of probable maximum precipitation (PMP) values in the design of dams, following the completion of the North Dakota Statewide PMP study in June 2021.

- Hazard Classification and Legacy Dams (REG-04.2023) was released in June 2023. This policy identifies the process the agency will use to determine the hazard classification of a dam, as well as implements a new legacy dam designation for existing dams where a hazard classification adjustment may be necessary due to classification criteria changes alone.

- A draft of the new North Dakota Dam Safety Standards (finalized January 2024) policy (REG_05.2023) was released for public comment in June 2023. This policy updates the North Dakota Dam Design Handbook (North Dakota State Engineer, June 1985). The new standards outline the administrative and technical requirements necessary to obtain a construction permit while also aligning the Department's dam safety practices with the current national state of the dam safety practice. This project was funded by National Dam Safety Program (NDSP) grants through the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA).

NORTH DAKOTA SILVER JACKETS PROGRAM

The North Dakota Silver Jackets is an Army Corps of Engineers-sponsored program aimed at establishing a joint Federal/State Flood Risk Management Team in every state, with a mission to enhance and promote flood risk reduction efforts throughout the state. The North Dakota Silver Jackets Team is led by the agency, with membership including the St. Paul Army Corps of Engineers, Omaha Army Corps of Engineers, United States Geological Survey (USGS), United States Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), National Weather Service (NWS), Federal Emergency Management Agency (FEMA) Region VIII, North Dakota Department of Emergency Services (NDDES), and North Dakota Geological Survey (NDGS). The program promotes flood risk reduction and awareness through the identification, development, and implementation of selected projects and measures with the goal of reducing the threat and impact of flooding in North Dakota.

The North Dakota Silver Jackets Team was active in several flood risk reduction projects and studies during the 2021-2023 biennium:

- Continued Light Detection and Ranging (LiDAR) collection support through FEMA grant opportunities, including the collection of Quality Level I and II data.
- Received a SWC grant to partner with the St. Paul Corps to collect Red River Bathymetry in the 2023-2025 biennium.
- Entered a partnership with USGS and the SWC for a multi-year effort to update USGS stream gauges, stream stats, and regression equations.
- Pursued multiple opportunities with USGS, Omaha Corps, and St. Paul Corps with funding from the SWC to create and update statewide datasets to help advance flood risk resilience decision-making statewide.

FLOODPLAIN MANAGEMENT

Two staff members work with FEMA-funded floodplain programs within the Regulatory Division, both associated with the National Flood Insurance Program (NFIP). These programs include Risk Mapping, Assessment, and Planning (Risk MAP), and the Community Assistance Program – State Support Services Element (CAP-SSSE).

The Risk MAP program was initiated for the purpose of identifying, assessing, communicating, and mitigating flood hazard risks, with the goals of delivering high-quality data that will increase public awareness and lead to actions that will reduce the risk to life and property. The Risk MAP program is 100 percent FEMA funded.

The Risk MAP Program Manager works with communities to assess jurisdictional needs. Once grant applications have been approved and issued to the agency, the Program Manager oversees the selection of engineering consultants chosen annually to do the work tasks of Flood Insurance Rate Map (FIRM) creation and subsequent contract management. The agency is currently managing ten floodplain mapping contracts. During the 2021, 2022, and 2023 FEMA grant cycles, an additional $8,429,045 was allocated through FEMA Risk MAP Grants to be used toward the collection of Quality Level 2 and Level 1 LiDAR acquisition, Statewide 15 cm Aerial Imagery, and survey work in North Dakota.

The CAP-SSSE is a federal program that provides 75% funding to provide technical assistance to communities in the NFIP and to evaluate community performance in implementing NFIP floodplain management activities. The State NFIP Coordinator assists the 336 participating communities in North Dakota. Through local participation, roughly $1.7 billion in flood insurance coverage is provided, with over 5,500 active policies.

Each community designates a representative as its Floodplain Administrator to oversee floodplain development within flood-prone or identified high-risk floodplains. Regulations that meet the minimum federal and state standards are outlined within their local floodplain development ordinance. North Dakota Century Code ch. 61-16.2 explains the higher state floodplain standards that participating communities are expected to follow, including the one-foot of freeboard requirement for new or substantially improved structures.

The Community Rating System (CRS) was developed to reward communities that go above and beyond FEMA's minimum requirements. Twelve North Dakota communities are currently enrolled in the CRS, which gives NFIP flood insurance policyholders a discount on their premium. The current total annual savings statewide are estimated to be approximately $318,000.

CIVIL TOWNSHIP STUDIES

During spring 2022, an issue was identified regarding how NFIP insurance policies were being incorrectly written by insurance agents for policies located within civil townships in the state. The main issue was tied to errors in which the community was associated with any given NFIP insurance policy. Department Floodplain staff have been engaging in the following studies, which remain in development.

FEMA Township Study

- In summer 2022, FEMA Region VIII began a 100% FEMA-funded study to aggregate and verify which civil townships in the state have zoning authority, including floodplain management authority.

- The FEMA study also seeks to document which civil townships within the state have an active power transfer agreement with their county for the purposes of floodplain management.
- FEMA township study results are expected during the 2023-2025 biennium.

SB 2365 - ND Legislative Study

- During the 68th legislative assembly, SB 2365 was passed. SB 2365 required an interim legislative study to review how insurance agents and the public may find which entity has floodplain management authority at the parcel scale. SB 2365 study results are expected during the 2023-2025 biennium and may include both programmatic and legislative recommendations for the 69th legislative assembly to consider.

Water Appropriation Division

The Water Appropriation Division is responsible for the appropriation and management of the state's water resources in accordance with Article XI of the North Dakota Constitution and Chapter 61 of the North Dakota Century Code. These laws are based on the Doctrine of Prior Appropriation.

DATA ACQUISITION

The Water Appropriation Division Drilling Program completed 162 test holes during the 2021-2023 biennium, 142 of which had monitoring wells installed. There were 177 monitoring wells plugged or plugged and replaced.

RESEARCH, STUDIES,& REPORTS

The Water Appropriation division has also released a Request for Proposal to complete an initial assessment of North Dakota's aquifers for evaluating and ranking managed aquifer recharge opportunities throughout the state.

WATER USE MANAGEMENT

A total of 622 temporary industrial water permits for oil field use were issued during the 2019-2021 biennium. However, consumptive use in all other categories increased.

PERMIT & WATER USE

In addition to the permitting and water use data below, Water Appropriation staff completed the following functions during the 2021-2023 biennium:

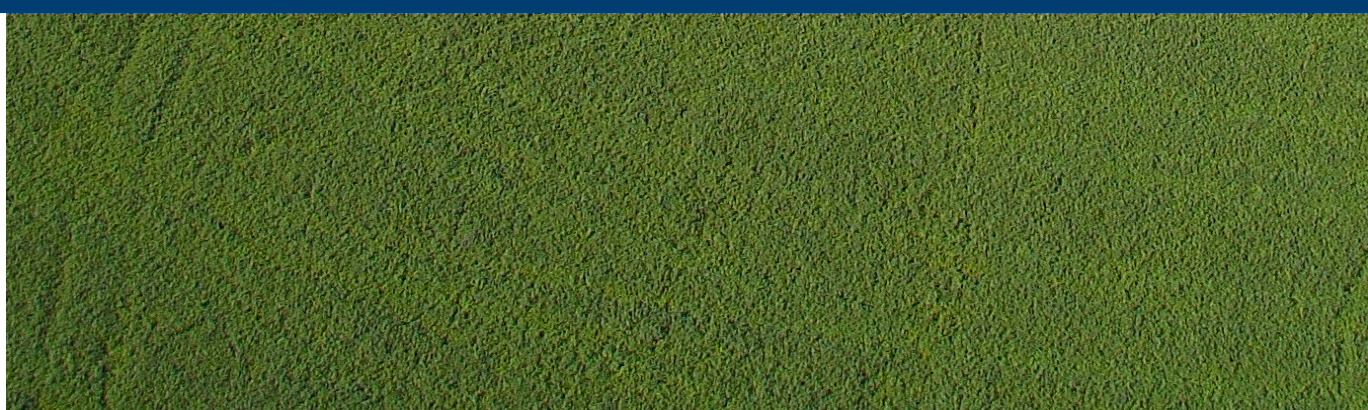
- 62 water depot inspections;
- 174 inspections of constructed works associated with conditional water permits;
- 1,045 temporary water permits were issued;
- 87 conditional or perfected water permits were canceled for non-development or use;
- 17 conditional water permit applications were denied; and
- 162 perfected water permits were issued.

DATA ACQUISITION

The Water Appropriation Division Drilling Program completed 162 test holes during the 2021-2023 biennium, 142 of which had monitoring wells installed. There were 177 monitoring wells plugged or plugged and replaced. Periodic stream-gaging was conducted at a variety of locations equipped with PRESENS devices to measure the stream stage.

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- Identifying the availability and chemical quality of the state's water resources
- Assisting municipalities and other public entities in developing solutions to particular water supply problems
- Assessing the impacts of existing water use on ground water levels, stream flow, and chemical quality of water for the purposes of future allocation and management
- Collecting, storing, and disseminating data on water use
- Carrying out the administrative procedures required for water permit applications, water permits, and water rights
- Conducting analyses and providing recommended decisions to the State Engineer on water permit applications
- Conducting field inspections to verify permit compliance and investigate potential violations
- Developing and maintaining a system for the storage and retrieval of water permit records
- Monitoring the utilization of each conditional and perfected water permit through annual water use reports, and maintaining a permanent record
- Participating in committees and task forces pertaining to water quantity and/or quality issues as required
- Investigating and employing new technologies and strategies to improve the understanding and knowledge of the occurrence and movement of the state's surface and ground water resources



ECONOMIC DEVELOPMENT

Economic development is a major state initiative. In most instances, water is needed to serve new enterprises. The Appropriation Division provides information to the North Dakota Department of Commerce and local economic development organizations regarding the availability and chemical quality of water to serve a proposed enterprise.

RESEARCH, STUDIES, & REPORTS

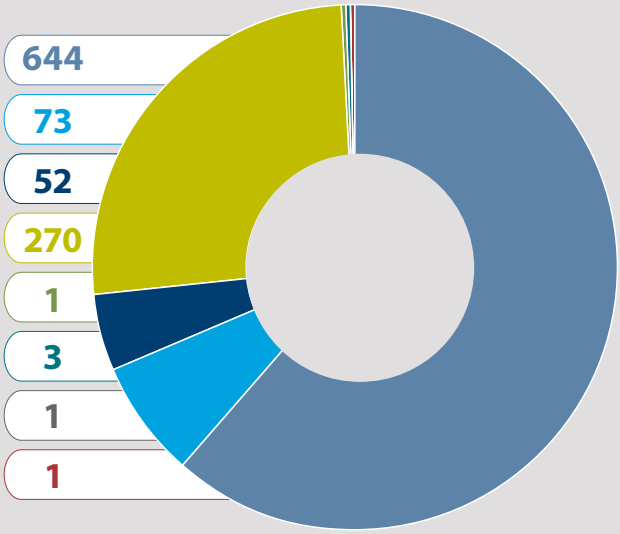
During the 2021-2023 biennium, the Water Appropriation Division engaged UND to study the opportunities to apply cold region modeling for refining utilities to provide more accurate projections related to aquifer recharge resulting from winter snowpack. This study is anticipated to be completed during the 2023-2025 biennium and could be used to enhance overall groundwater modeling capabilities related to the management of North Dakota's groundwater resources.

AGENCY REPRESENTATION

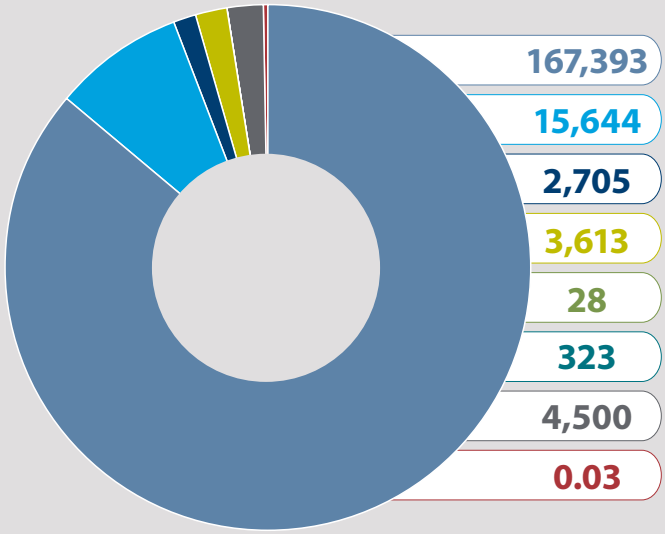
The Water Appropriation Division represents the Department on state, regional, and national natural resource organizations. Members of the division have provided soils, ground, or surface water assistance in meetings or reviews pertaining to: Section 319 Task Force, Working Committee of the State Pesticide in Ground Water Protection Plan, North Dakota Board of Water Well Contractors, North Dakota Water Resources Research Institute, North Dakota Public Service Commission Mining Plans, North Dakota State University Extension Irrigation Workshops, Yellowstone River Compact review meetings, the International Red River and Souris River Boards, North Dakota Water Quality Planning Committee, and the Williston Area Model Consortium.

TEMPORARY WATER PERMITS **ISSUED: 2021-2023**

NUMBER ISSUED



PERMITS BY ACRE-FEET



IND. - WATER DEPOT | IRRIGATION | INDUSTRIAL | CONSTRUCTION

LIVESTOCK | RESOURCE PLANNING | MUNICIPAL | FIRE PROTECTION

LANDFILL & MINE REVIEW

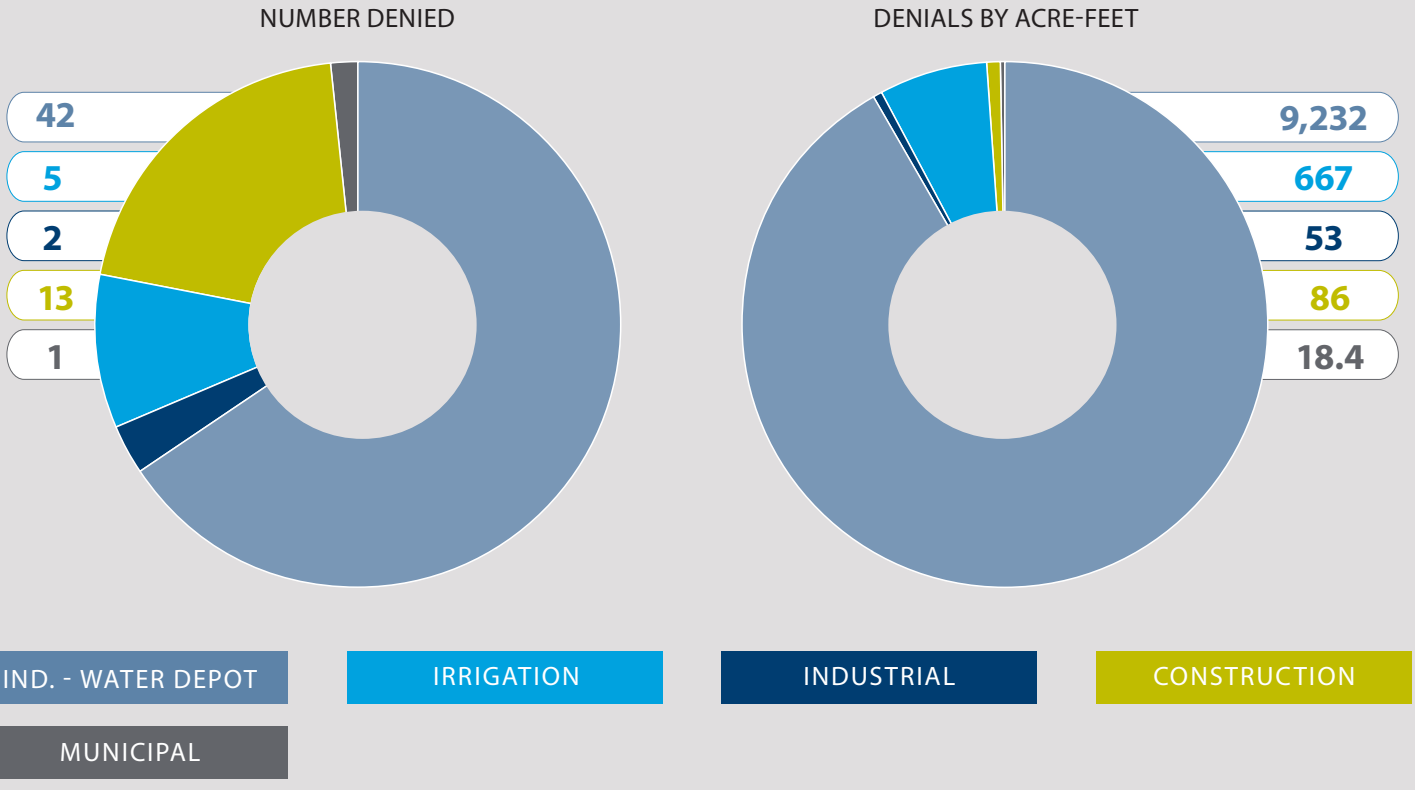
The Water Appropriation Division cooperates with the Department of Environmental Quality (DEQ) in reviewing groundwater aspects of landfill applications. The Water Appropriation Division reviews coal mining permits and revisions regarding groundwater and wells. The mine-related environmental reviews range from quarterly reviews of continuations of nationwide permits to reviews of plans for mine expansions. The reviews consider groundwater and surface water resources in the area and evaluate potential impacts of mine-related activities on these resources. Comments from the Water Appropriation Division staff are passed on to mine staff and other regulatory agencies.

WATER USE MANAGEMENT

Water use by the oil industry in western North Dakota increased during the 2021-2023 biennium compared to the previous biennium. Authorized water use for the oil industry is granted through conditional and temporary permits. A total of 644 temporary industrial water permits for oil field use were issued during the 2021-2023 biennium.

All water supply depots are required to install telemetry that transmits daily water meter readings in real-time using a state-determined protocol. Violations of water permit limitations and conditions incur heavy fines to ensure compliance. Fines for unpermitted pumping are profit-based to ensure that illegal pumping is not profitable. The division utilizes administrative consent agreements (ACAs) as the preferred method to resolve water use violations to avoid lengthy and costly court processes. In the 2021-2023 biennium, 16 violations were resolved through administrative consent agreements, resulting in total fines of $310,087, with $201,186 paid, and the remainder suspended. Monies collected in fines through ACAs are deposited into the state's general fund.

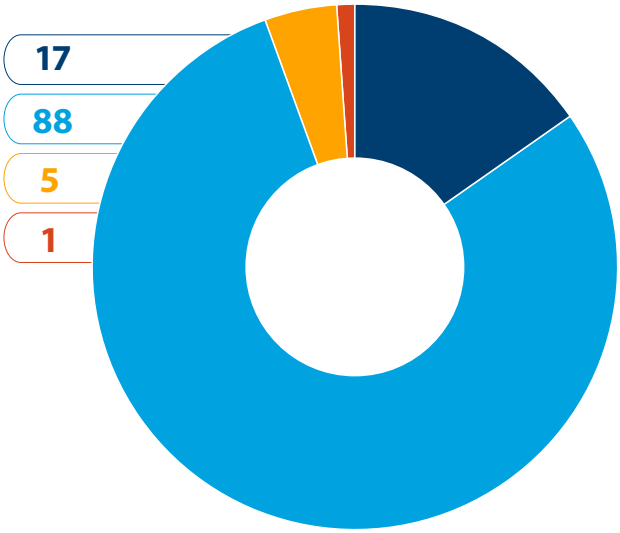
TEMPORARY WATER PERMITS **DENIED: 2021-2023***



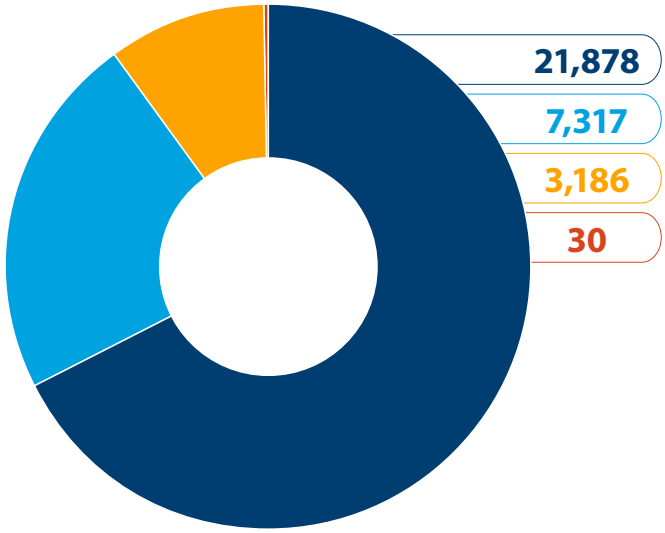
* If the DWR determines an application or portion of an application does not meet the criteria prescribed in NDCC 61-04-06 for any reason, the application or portion must be denied. Common examples for the denial of a water permit application would include: the withdrawal of the application by the applicant, available data indicating there is no viable water source to support the application, water chemistry coupled with non-irrigable soils make the project unfeasible, or the applicant does not have or has lost access to the water source.

RECEIVED CONDITIONAL WATER PERMITS
GROUNDWATER APPLICATIONS: 2021-2023

NUMBER RECEIVED



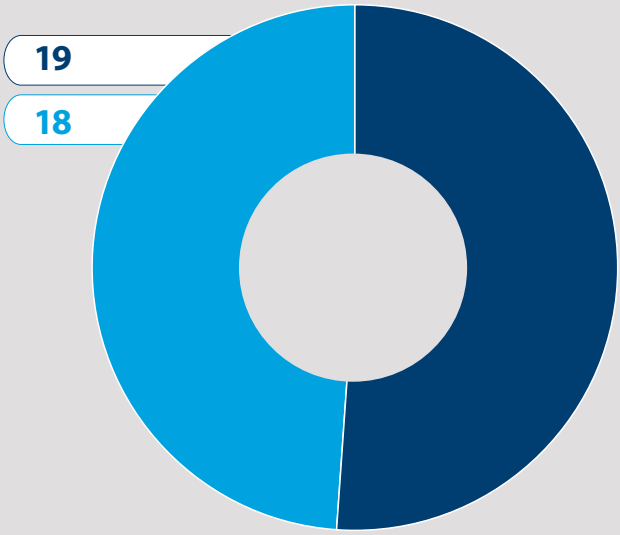
APPLICATIONS BY ACRE-FEET



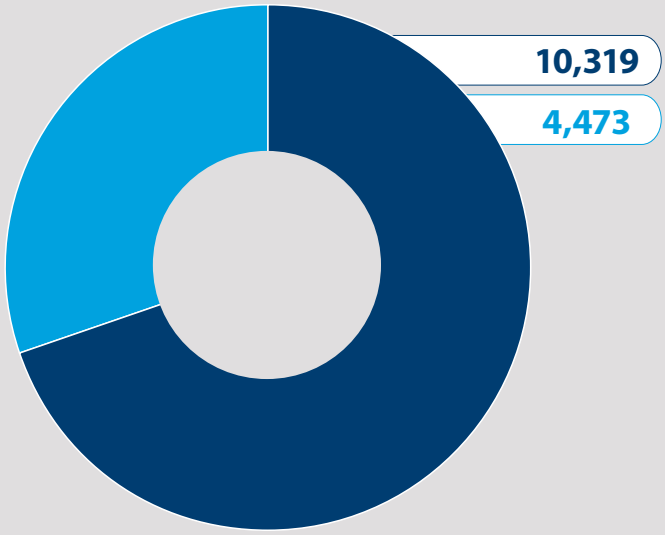
INDUSTRIAL | IRRIGATION | RURAL WATER | STOCK

GROUNDWATER PERMITS APPROVED: 2021-2023

NUMBER APPROVED



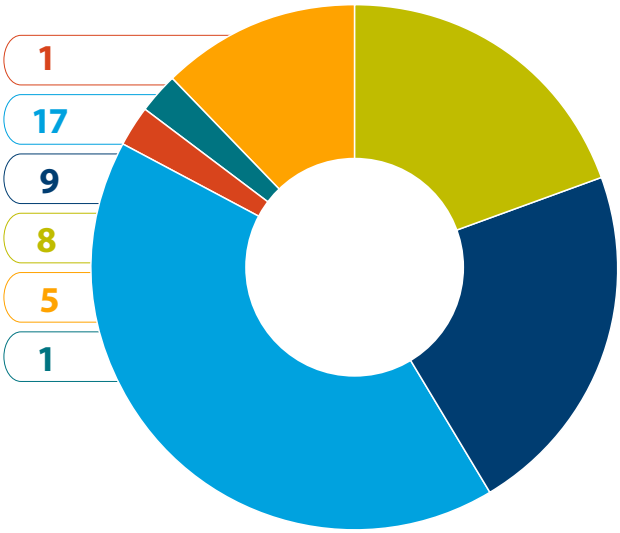
APPROVALS BY ACRE-FEET



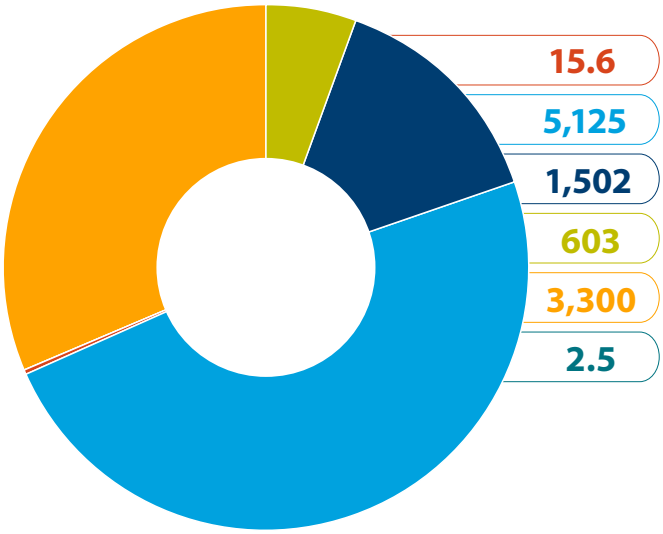
INDUSTRIAL | IRRIGATION

RECEIVED CONDITIONAL WATER PERMITS
SURFACE WATER APPLICATIONS: 2021-2023

NUMBER RECEIVED



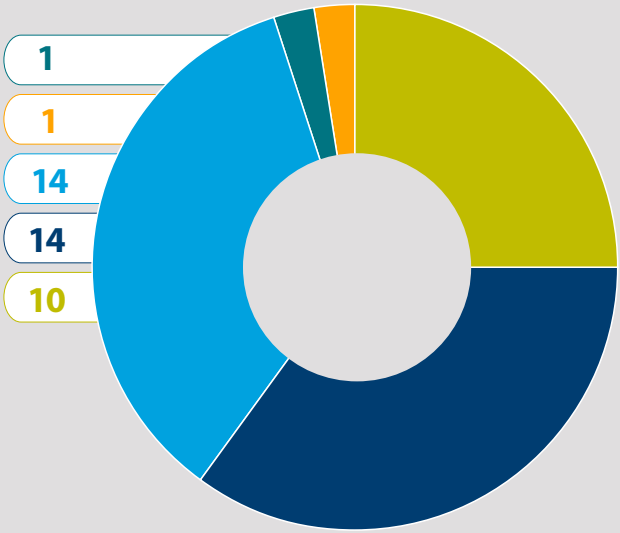
APPLICATIONS BY ACRE-FEET



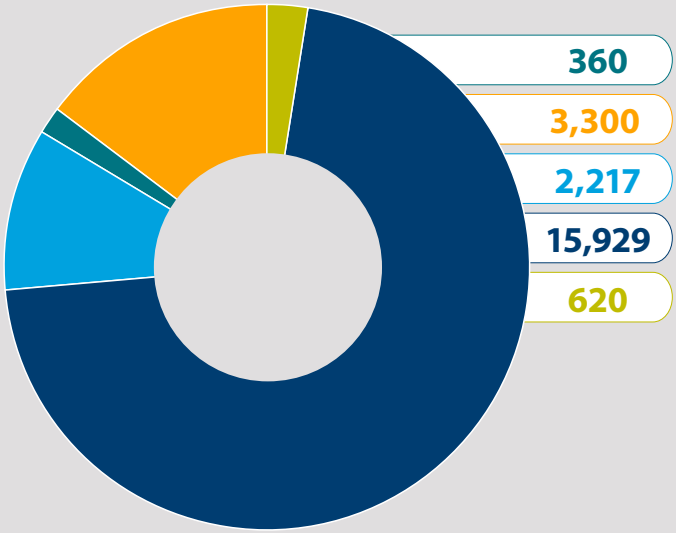
STOCK | IRRIGATION | INDUSTRIAL | FISH & WILDLIFE | RURAL WATER | RECREATION

SURFACE WATER PERMITS APPROVED: 2021-2023

NUMBER APPROVED

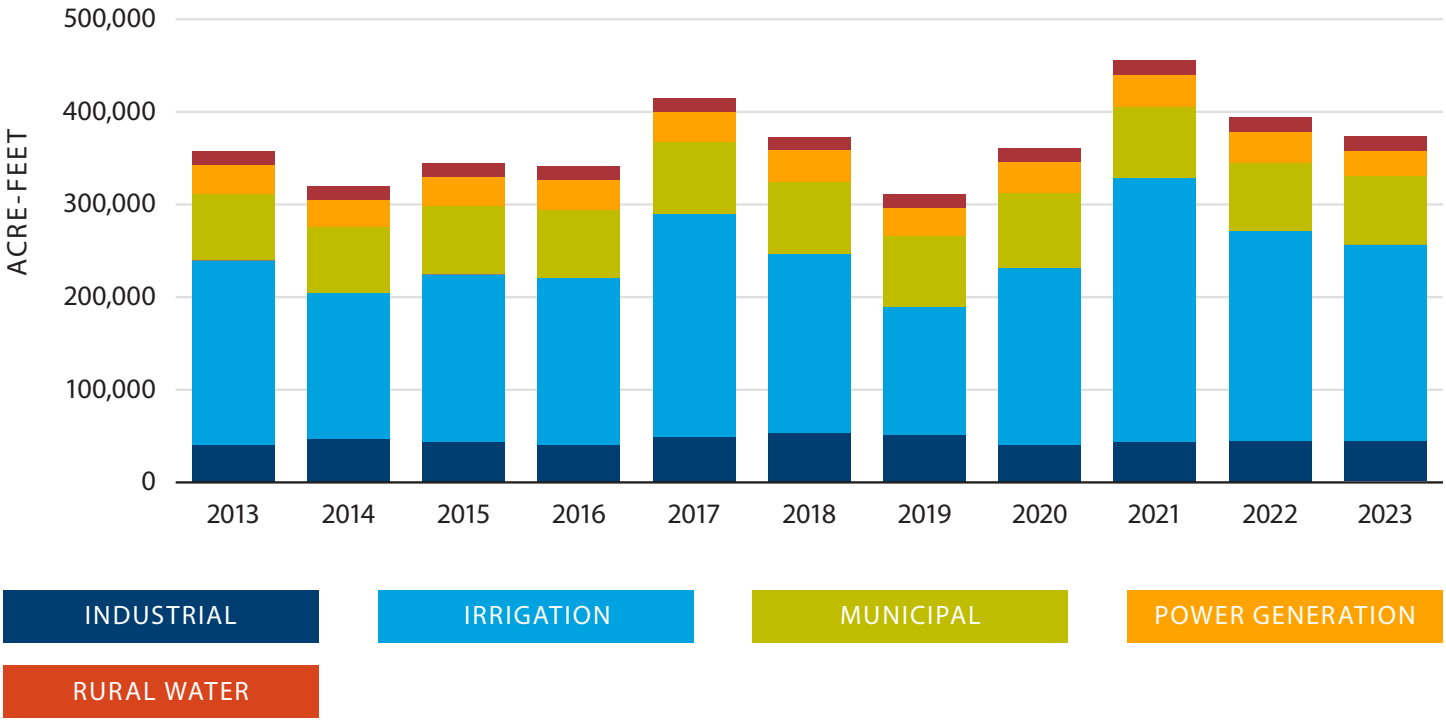


APPROVALS BY ACRE-FEET

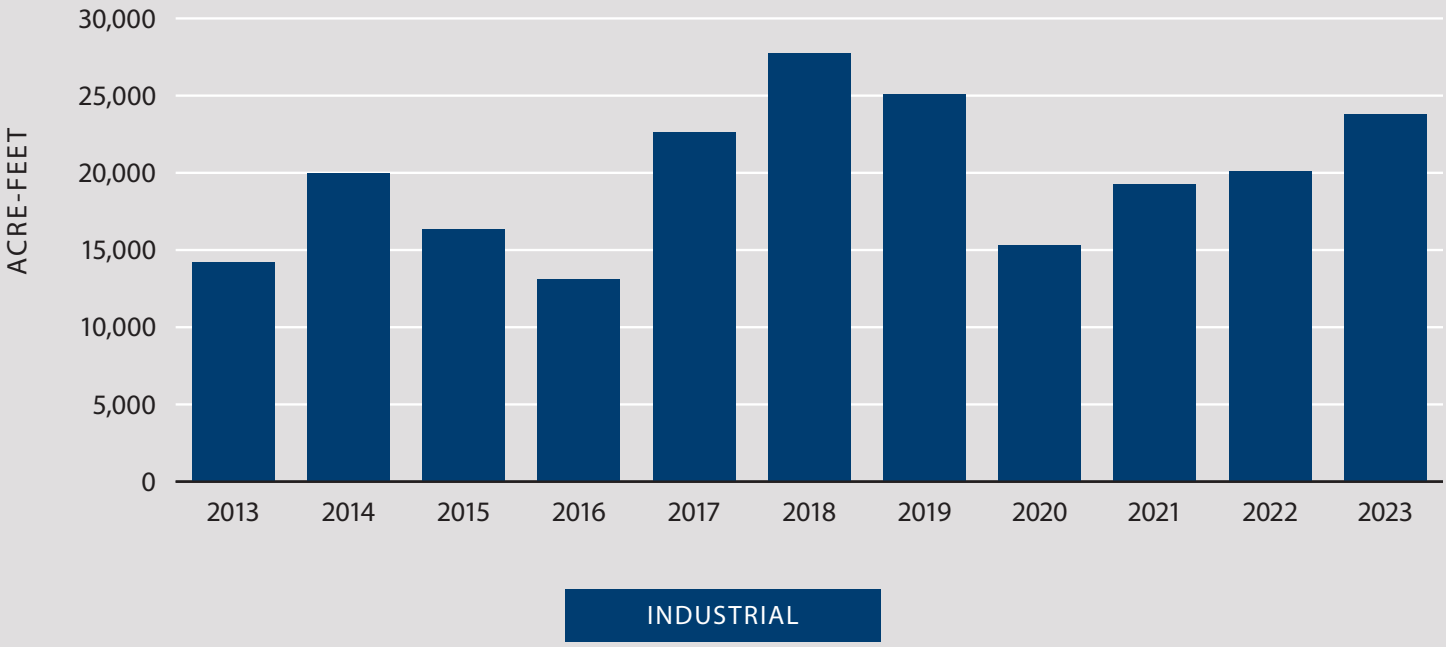


INDUSTRIAL | IRRIGATION | RURAL WATER | FISH & WILDLIFE | RECREATION

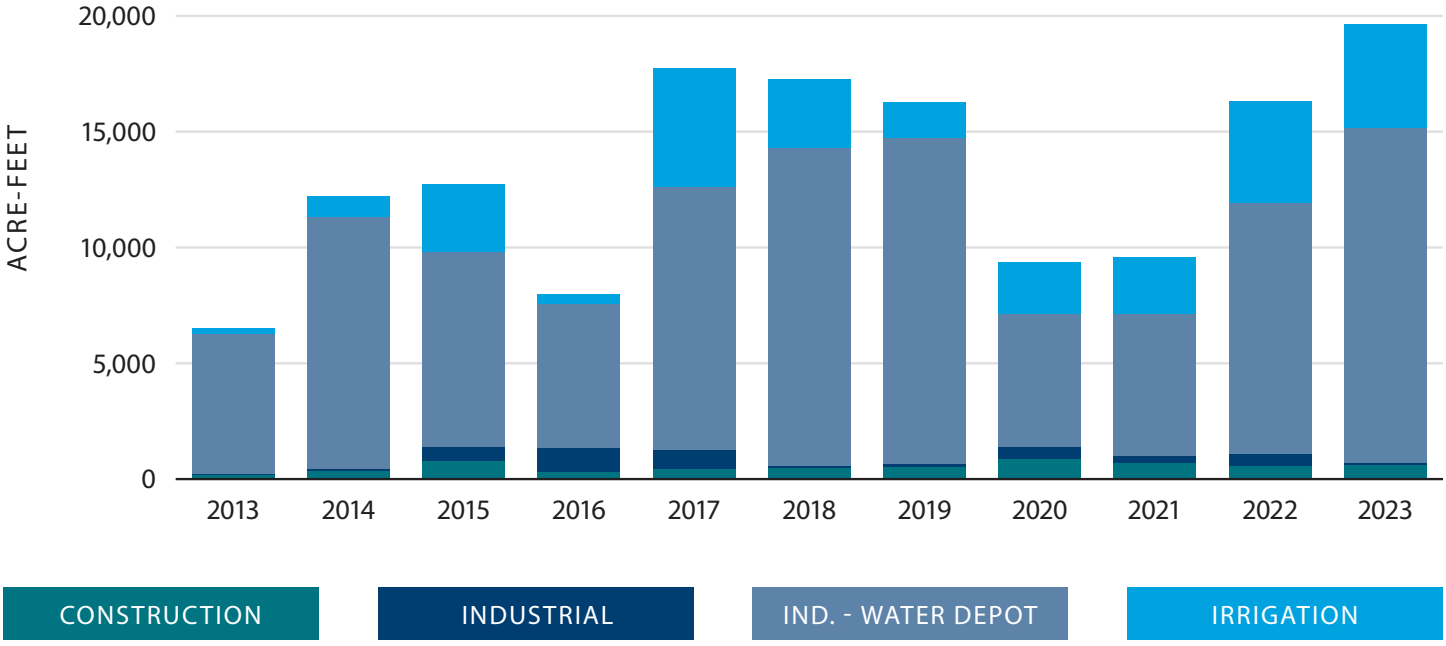
CONDITIONAL **PERMIT WATER USE: 2013-2023**



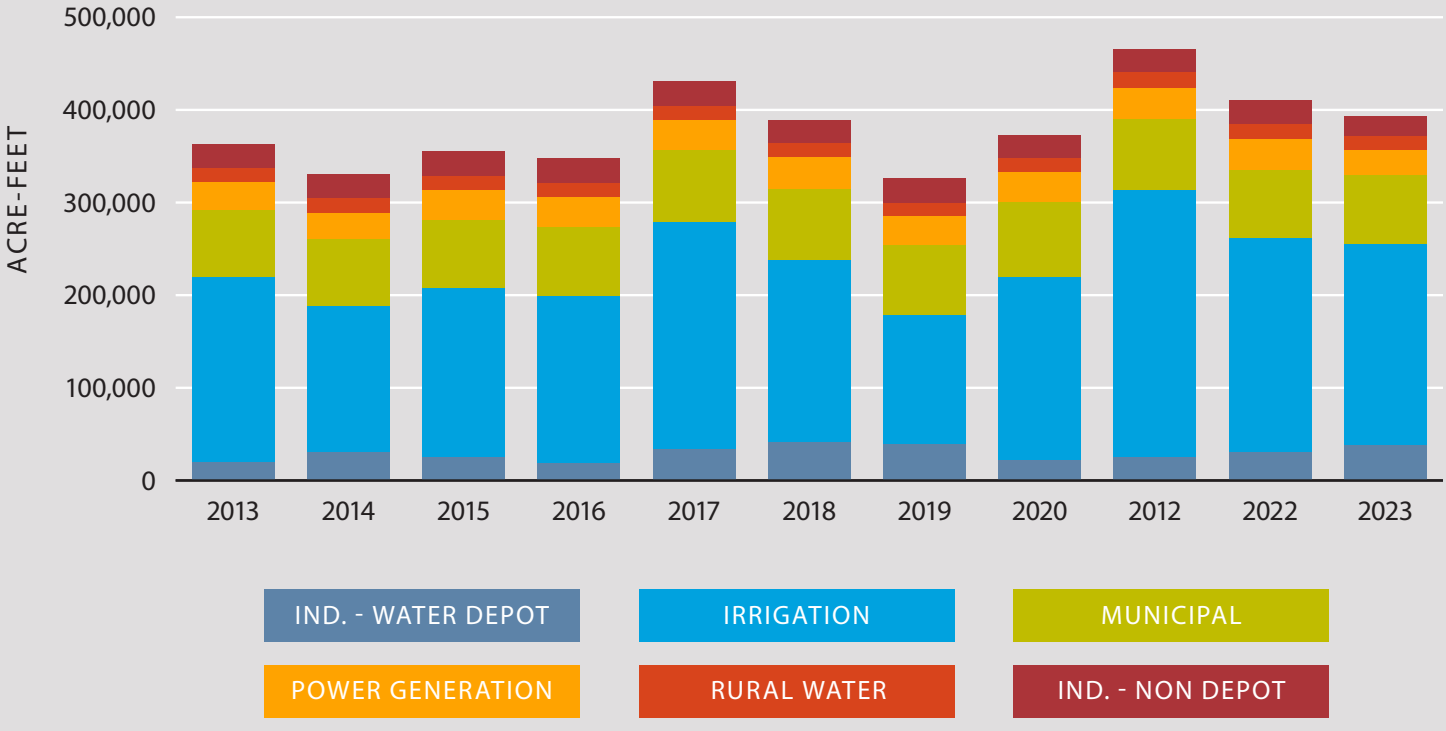
INDUSTRIAL **PERMIT USE (DEPOT): 2013-2023**



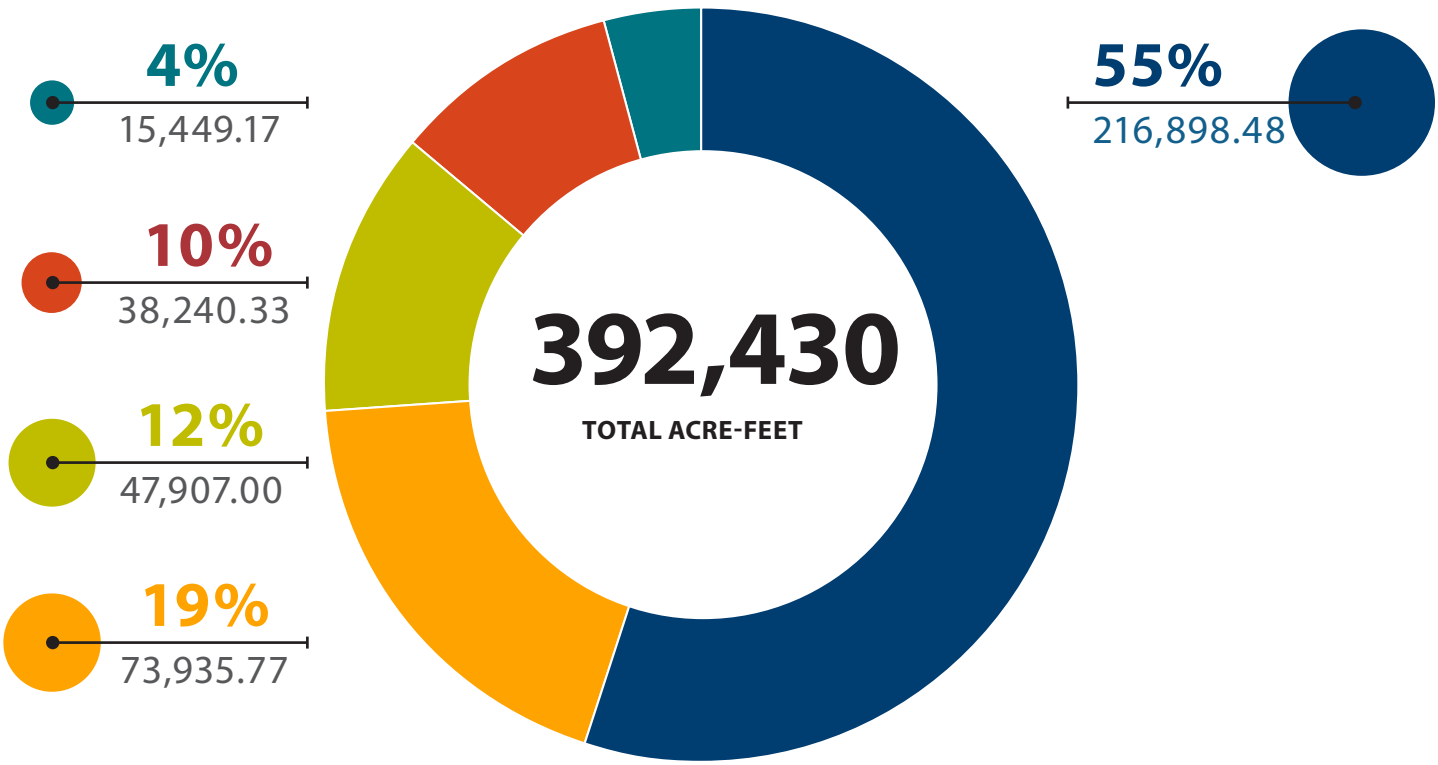
TEMPORARY **WATER PERMIT USE: 2013-2023**



TOTAL **PERMITTED WATER USE: 2013-2023**



2023 NORTH DAKOTA **CONSUMPTIVE WATER USE**



IRRIGATION

MUNICIPAL

INDUSTRIAL (NON-WATER DEPOT), POWER GENERATION, MULTI-USE

INDUSTRIAL (WATER DEPOT)

RURAL WATER

Water Development Division

The Water Development Division supports various efforts of the Department of Water Resources by providing technical expertise through the management of various projects and programs.

INVESTIGATIONS

During the 2021-2023 biennium, the Investigations Section provided support on several projects and studies, which are described below.

SURVEY, DESIGN, & CONSTRUCTION

Multiple survey, design, and construction efforts were completed by DWR team members - benefiting water management and development across the state.

STATE PROJECTS

State-owned projects under the DWR and SWC include the Devils Lake Outlets, Northwest Area Water Supply, and Southwest Pipeline Project.

INVESTIGATIONS SECTION

Activities of the Investigations Section related to the Mouse River, Missouri River, and Survey Crew are described in more detail in separate sections of this report.

MERCER COUNTY STUDY

As part of the Planning and Assistance to the States agreement between the U.S. Army Corps of Engineers and the Mercer County Water Resource District, staff completed an analysis of flood risk for the City of Beulah in 2018. The flood risk analysis included the development of a hydrologic model for the Knife River Basin, a hydraulic model for the Knife River near Beulah, preliminary engineering on a dry dam site on West Tributary near Beulah, a structural inventory within the City of Beulah, and an alternative analysis to prevent flooding within the City of Beulah. An amendment to the agreement added similar tasks for the City of Zap. These tasks include the creation of a hydraulic model of Spring Creek near the City of Zap, a structural inventory within the City of Zap, and an alternative analysis to mitigate flooding within the community. Final documentation on the hydraulic model and completion of the alternatives analysis within the City of Zap are ongoing.

SPECIFIC TEAM MEMBERS' RESPONSIBILITIES INCLUDE

- Preparing engineering and feasibility reports and designs for the construction, maintenance, and major repair of water resource projects
- Completing various hydrologic and hydraulic modelling efforts, technical review of other studies and models, and technical support to other areas of the agency
- Providing technical assistance to water resource district boards
- Managing and operating the Devils Lake outlet projects and Tolna Coulee Control Structure
- Managing the design, construction, and operation of the Southwest Pipeline Project
- Managing the design and construction of the Northwest Area Water Supply Project
- Participating in the collection of statewide survey data
- Providing surveying services for the agency and other cooperating agencies
- Providing engineering and construction services for the repair of small dams and gauging stations
- Providing technical support during flood response
- Surface water elevation monitoring
- Participating in international and national water resource committees such as the International Souris River Board (ISRB), International Red River Watershed Board (IRRWB), and Missouri River Recovery Implementation Committee (MRRIC)

SPIRITWOOD AND ALKALI LAKE STUDY

In February 2020, the Investigations Section entered into an Investigation Agreement with the Stutsman County Water Resource District to evaluate flood risk along Spiritwood and Alkali Lakes. Study tasks include a site survey, identification of contributing drainage area, estimation of potential runoff volumes to each lake, analysis of potential outlet alternatives, and delivery of a report summarizing findings and supporting data. This investigation was completed in January 2023.

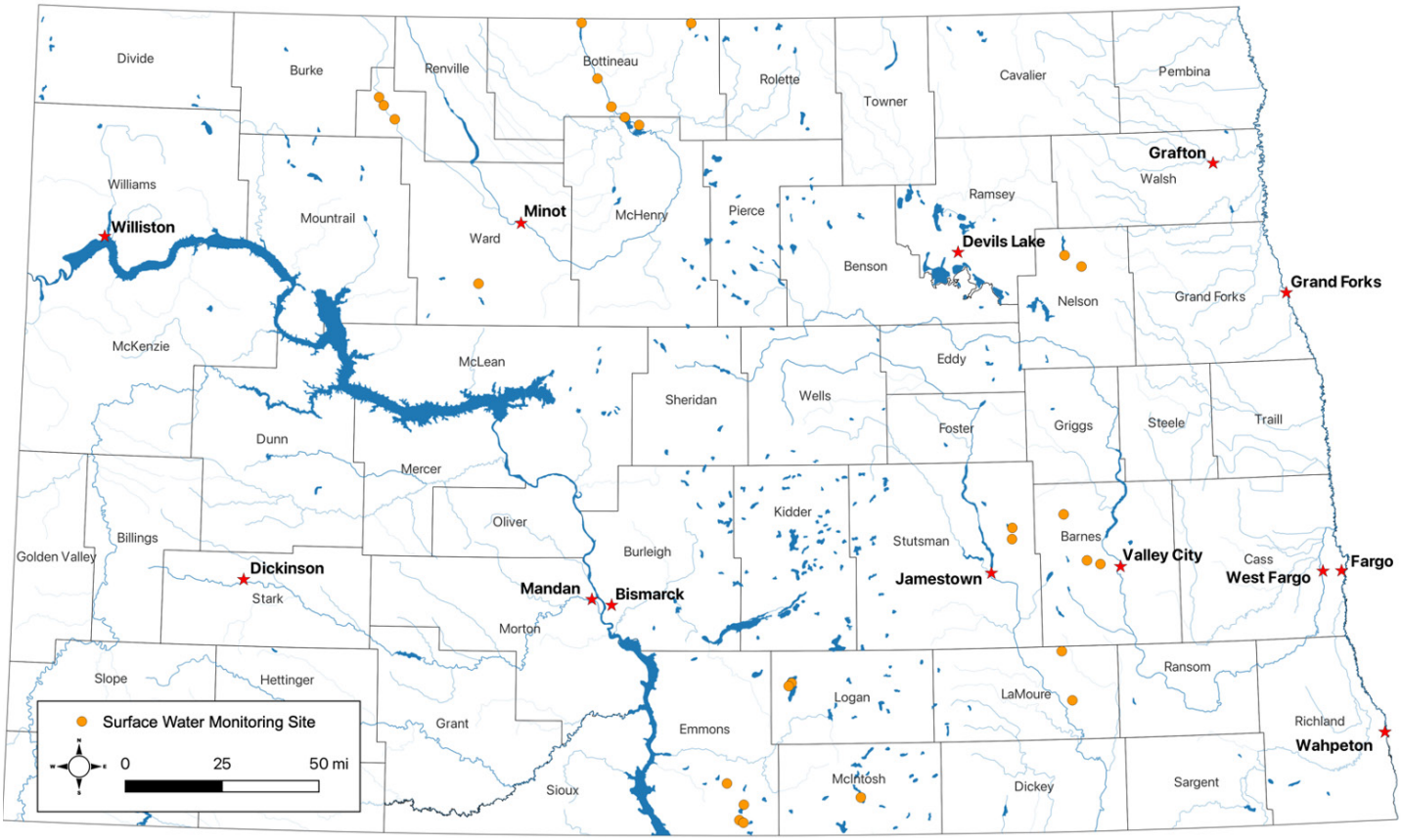
RICE LAKE STUDY (EMMONS COUNTY)

In April 2020, the Investigations Section entered into an Investigation Agreement with the Emmons County Water Resource District to evaluate flood risk at Rice Lake. Phase 1 focused on collecting field data, analyzing existing conditions at the lake, and evaluating the topography of the downstream flow path. Phase 1 was completed in August 2020. Phase 2 focused on evaluating flood mitigation alternatives, which included hydrologic and hydraulic modeling and analysis of the Rice Lake system. Substantial progress was made on Phase 2 during the biennium. Final documentation is ongoing.

CITY OF FLASHER STUDY

In October 2020, the Investigations Section entered into an Investigation Agreement with the Morton County Water Resource District to evaluate flood risk on the west side of the City of Flasher. Study tasks included data collection, site survey, hydrologic analysis, hydraulic analysis, identification of improvements to the city's stormwater infrastructure, development of cost estimates for alternatives, and compilation of findings. The final report was sent to the Morton County Water Resource District in July 2021.

Investigations Section
Surface Water Monitoring Sites



CLOSED-BASIN LAKE AND RESERVOIR MONITORING

The Investigations Section monitors water levels of numerous closed-basin (land-locked) lakes and reservoirs throughout North Dakota. Measurements are obtained through a combination of data from Pushing Remote Sensor (PRESENS) gauges and elevation surveys using a Global Positioning System. The following identifies the water level monitoring locations. A map of the monitoring locations is also provided on the previous page.

- Hobart Lake (Barnes County)
- Sanborn Lake (Barnes County)
- Ten Mile Lake (Barnes County)
- Lake Metigoshe (Bottineau County)
- Dam 332 Reservoir, J. Clark Salyer National Wildlife Refuge (Bottineau County)
- Dam 341 Reservoir, J. Clark Salyer National Wildlife Refuge (Bottineau County)
- Dam 357 Reservoir, J. Clark Salyer National Wildlife Refuge (Bottineau County)
- Minna Lake (Emmons County)
- Rice Lake (Emmons County)
- Strasburg Slough (Emmons County)
- Unnamed Slough (Emmons County)
- Boom Lake (LaMoure County)
- Twin Lakes (LaMoure County)
- McKenna Lake (Logan County)
- West Lake (Logan County)
- Dam 320 Reservoir, J. Clark Salyer National Wildlife Refuge (McHenry County)
- Dam 326 Reservoir, J. Clark Salyer National Wildlife Refuge (McHenry County)
- Dry Lake (McIntosh County)
- Lake Laretta (Nelson County)
- McHugh Slough (Nelson County)
- Alkali Lake (Stutsman County)
- Spiritwood Lake (Stutsman County)
- Rice Lake (Ward County)
- Upper Des Lacs Lake, Des Lacs National Wildlife Refuge (Ward County)
- Middle Des Lacs Lake, Des Lacs National Wildlife Refuge (Ward County)
- Lower Des Lacs Lake, Des Lacs National Wildlife Refuge (Ward County)

SURVEY CREW

DWR has employed a Survey Crew since the creation of the agency as the Water Conservation Commission in 1937. The Survey Crew collects survey data statewide for a variety of purposes: survey of water bodies for hydraulic and hydrologic modeling, aquifer monitoring, high water marks, drainage issues, geomorphic changes, sovereign lands issues, ground truthing of real-time data obtained by the agency using PRESENS gauges, and water level monitoring. The Survey Crew completes surveys for the agency, water boards, cities, counties, and other public agencies. The Survey Crew also conducts snowpack monitoring in coordination with the U.S. Army Corps of Engineers in the Missouri River basin.

Several bathymetric surveys of the Missouri River were completed, with emphasis on the confluence of the Heart and Missouri Rivers. Additional bathymetric surveys were also completed at areas of concern throughout the state. Several water surface profiles were surveyed each field season on the Missouri River, from Double Ditch to Graner Bottoms.

The Survey Crew also has one of three licensed drone pilots on staff who collect imagery for studies and publications. Drone imagery collected by the Survey Crew has also aided in the collection of statewide LiDAR, identification of low-head dams, and resolution of many known water resource issues.

The Survey Crew has also helped the National Geodetic Survey improve the accuracy of the upcoming North American-Pacific Geopotential Datum of 2022, which will be replacing the North American Vertical Datum of 1988.

DEVILS LAKE OUTLETS

Flood relief for the Devils Lake Basin continued to be a high priority for the agency over the 2021-2023 biennium. In July 2021, the Devils Lake water surface elevation was 1,448 feet due to the dry conditions in 2021, approximately 6.3 feet below the peak elevation experienced in 2011. The dry conditions in 2021 left little margin for mixing lake water into the Sheyenne River, resulting in lower pumping volumes through the 2021 season. The wetter-than-normal conditions in 2022 and 2023 resulted in a high water surface elevation of approximately 1,451 feet in July 2022 and June 2023. The Devils Lake outlets were started in June 2022 and May 2023 with the maximum allowable discharge, which is limited by channel capacity and water quality standards within the Sheyenne River. The discharge volumes from the outlets increased greatly for 2022 and 2023 compared to 2021. The minimum operating levels for the outlets are 1,445 and 1,446 feet for the West Outlet and East Outlet, respectively. All elevations in this section are in NGVD 29.

Unlike riverine flooding, where each flood event is typically distinct, the flooding of Devils Lake is a result of long-term climate conditions. Over the past three decades, wetter-than-normal conditions have resulted in a historically high lake level, causing emergency response through levees, road raises, and pumping.

The Devils Lake Outlets are regional flood mitigation projects that have slowly and steadily contributed to lake level stabilization by discharging water to the Sheyenne River throughout the ice-free months. The summer of 2023 marked the eighteenth year of operation for the West Outlet and the twelfth for the East Outlet. The outlets discharged approximately 100,000 acre-feet during the 2021-2023 biennium, and overall, they have a combined total discharge of over 1.4 million acre-feet of floodwater. Without the outlet discharge, it is estimated that the lake would be over seven-and-a-half-feet higher than the current elevation.

DEVILS LAKE OUTLET OFFICE

The Devils Lake outlets are crucial infrastructure that require continual maintenance and monitoring to provide the expected level of service. To maintain the outlets, the Department of Water Resources employs two Devils Lake Outlet operators in the Devils Lake region. The operators are primarily responsible for operating, maintaining, and monitoring all of the outlet works. They perform weed control operations, collect water quality samples, and provide immediate response to any outlet operational challenges. During the winter season, they also conduct snowpack monitoring in the Devils Lake Basin.

NORTHWEST AREA WATER SUPPLY (NAWS)

Construction on the NAWS project progressed at a record pace in the 2021-2023 biennium following the resolution of the long-protracted environmental review and litigation in 2019. Ten construction contracts, totaling $76 million, were awarded during this period. Additionally, construction progressed on nineteen active contracts from the previous biennium, with a total contract cost exceeding $170 million. Approximately $74 million was invested in the project from various sources, including the City of Minot, federal MR&I funds, and the state.

Construction of the Biota Water Treatment Plant in Max, which began in spring 2021, continued throughout the biennium. Intake modifications to the Snake Creek Pumping Plant and the South Prairie Reservoir and Hydraulic Control Structure, the two principal remaining project components necessary to deliver Lake Sakakawea water to the City of Minot, were bid, and construction commenced during the biennium.

The pipeline contract from Souris to Bottineau on the distribution system was completed in the 2021-2023 biennium, and the construction of the pipeline to serve the City of Westhope using the All Seasons Water Users District was mostly completed. Construction of the Lansford Reservoir and Pump Station was finished in fall 2022, and the design of the Souris and Bottineau reservoirs and pump stations were completed, with the Bottineau facility bid and under contract during the biennium. Construction of the Phase II improvements to the Minot Water Treatment Plant achieved substantial completion at the end of 2022.

Legislation replacing the NAWS Advisory Committee with the NAWS Authority was passed during the 2023 legislative session and was signed into law by the Governor. Efforts to transition to the Authority began in 2023.

SOUTHWEST PIPELINE PROJECT

In the 2021-2023 biennium, work progressed to meet the goal of increasing the raw water transmission, intake capacity, and treated water distribution capacity needs of the Southwest Pipeline Project (SWPP) to address the growing water demand in southwest North Dakota.

Construction of upgrades at the Dodge and Richardton pump stations, aimed at increasing raw water transmission capacity, was completed during this period. The scope mainly involved replacing three existing 700 horsepower (HP) vertical turbine pumps with 1,000 HP vertical turbine pumps at the Dodge pump station, and replacing three 900 HP vertical turbine pumps with 1,250 HP pumps at the Richardton pump station. Additionally, associated valves, piping, and electrical components were installed. The project also included construction of two new surge control systems, a 6,079 cubic foot (CF) air chamber at the Richardton pump station, and a 1,507 CF air chamber downstream of the Dodge pump station.

Progress continued on the three-pronged approach devised to address the treated water distribution capacity needs of the project. This approach includes:

1. Improvements to the transmission facilities from the Ray Christianson Pump Station to the first tanks in the distribution system;

2. Addressing the waiting list of users through hydraulic improvements such as booster pump stations, parallel piping, and water reservoirs at strategic locations; and

3. Canvassing targeted service areas for users interested in signing up for rural water and designing a rural distribution system for those areas.

Design of improvements to the transmission pipelines from the Ray Christianson Pump Station to the New England, Belfield, and Davis Buttes reservoirs, aimed at addressing the first prong, was mostly completed in the 2019-2021 biennium. However, construction was put on hold due to reduced revenue in the Resources Trust Fund. Construction of the transmission pipelines from the Ray Christianson Pump Station was bid and mostly completed in the 2021-2023 biennium.

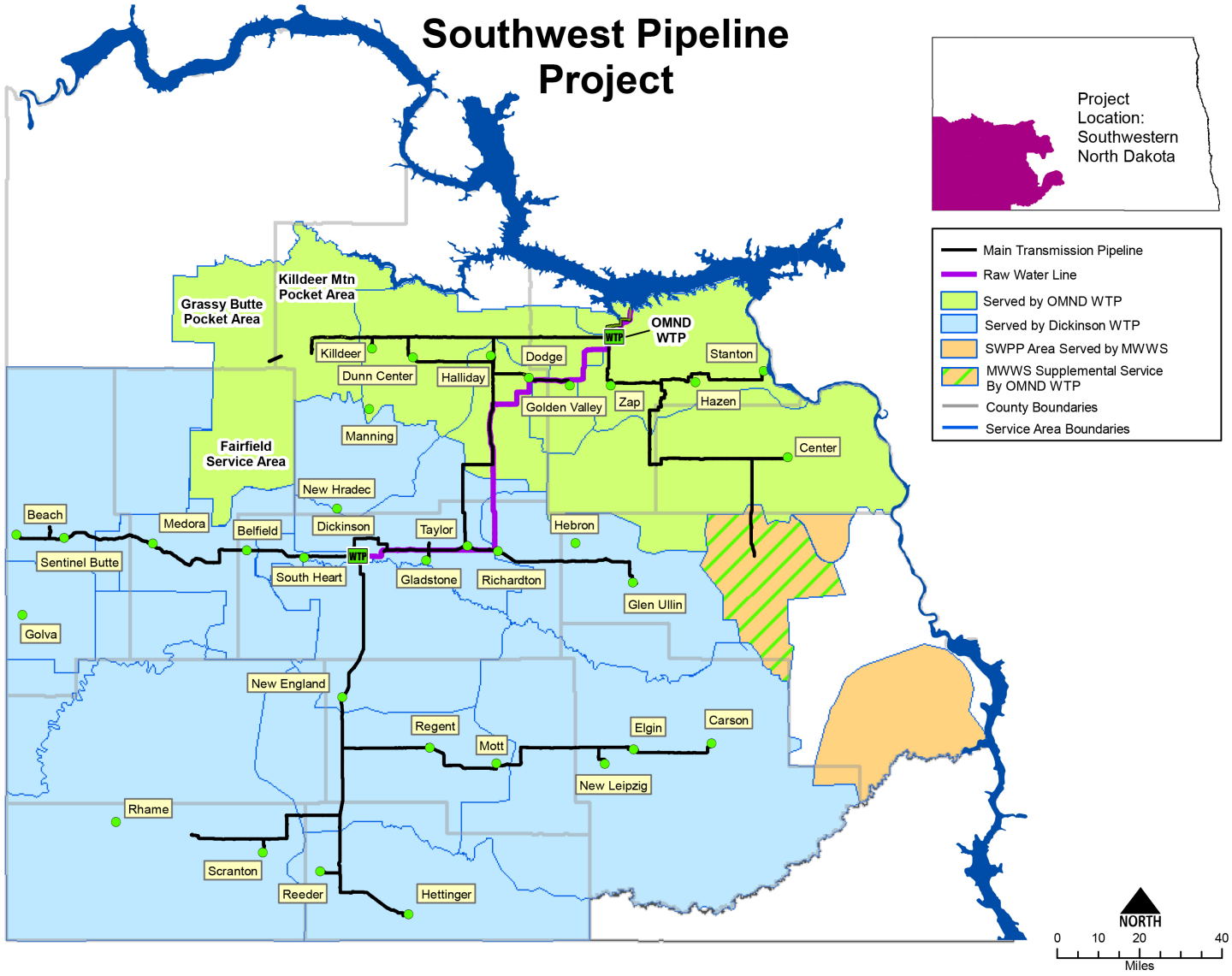
For the second prong, construction of the Taylor elevated tank, a 400,000 gallon pedestal spheroid tank with an overflow height of 156 feet, was completed. Contract HI 2021, which includes hydraulic improvement projects in Twin Buttes, Fairfield, New Hradec, and Killdeer Mountain Service Areas, was bid and awarded. The SWC also approved the prioritization matrix for identifying future strategic hydraulic improvement projects.

Regarding the third prong, preliminary design for the expansion into Burt and Hebron Service Areas began, along with discussions on modifying the SWPP's feasibility criteria for rural contracts.

The SWC approved guidance for using SWPP's Replacement and Extraordinary Maintenance funds for capital projects, and approved a 75% cost-share on the metallic raw water main transmission line replacement project by the Southwest Water Authority using the State Fiscal Recovery Fund.

The supplementary intake project faced setbacks with the failure of the Horizontal Directional Drilling method for completing the intake pipeline construction. Despite these setbacks, DWR and the SWC are actively planning a solution to achieve the ultimate goal of a new intake, which is crucial for increasing long-term intake capacity for SWPP.

Capital repayment collected from July 2021 through June 2023 totaled $11,600,385.66, all of which was deposited in the Resources Trust Fund.



DESIGN & CONSTRUCTION SECTION

During the 2021-2023 biennium, the Design and Construction Section conducted repairs and modifications to water resource structures throughout the state, as well as assisting in the maintenance and operations of the Devils Lake outlets and other state-owned projects.

DAVIS BUTTES RESERVOIR, STARK COUNTY

The Davis Buttes Reservoirs are owned by the SWC, with operations and maintenance responsibility completed by the Southwest Water Authority for the SWPP. The tanks are located atop the Davis Buttes northeast of Dickinson.

A large erosion scarp formed below the reservoirs on the south side of the butte. Due to concerns that the scarp would continue to grow and possibly undermine the tanks, it was decided to armor the scarp to prevent further erosion.

The project involved several steps. First, the DWR construction crew and well drilling staff pumped 7 cubic yards of bentonite grout into voids and cracks in the eroded area. Then, 46 cubic yards of sand were placed to construct a filter over the eroded area. The sand layer was covered with a geotextile fabric, 29 tons of drainage rock, and 80 cubic yards of rock riprap to armor the area from further erosion.

HARVEY DAM, WELLS COUNTY

Harvey Dam is located just south of the town of Harvey and serves as the embankment for ND Highway 3. It is an earth embankment dam with an arched corrugated metal pipe principal spillway conduit. The Wells County Water Resource District, along with DWR dam safety staff, wanted to perform an inspection of the floor of the conduit pipe, which is normally underwater. To further complicate things, the low-level outlet valve in the inlet structure could not be fully closed due to debris in the valve and corrosion of the operating stem.

The DWR construction crew helped with the inspection by clearing the debris from the valve and removing the operating stem so the valve could be closed by hand and removed. The beaver dams located below the downstream end of the pipe were removed to improve the drainage of the plunge pool. Then, on the day of the inspection, the construction crew operated pumps to dewater so dam safety staff and representatives of the water board could inspect the floor of the pipe.

BOURBANIS DAM, CAVALIER COUNTY

In early May 2022, Bourbanis Dam in east Cavalier County experienced a flood event that damaged its auxiliary spillway and put the dam at risk of failure. To combat the floodwaters, the DWR dispatched two pumps to the dam, which were the first pumps on the scene. Construction personnel set up the two six-inch pumps and established intake and discharge points. The pumps were operational for approximately a week until larger pumps could be obtained but remained on-site as backups. Additionally, Governor Doug Burgum dispatched the ND National Guard to help with the emergency. One-ton sandbags were airlifted into place as part of the effort to combat the threat.

CROWN BUTTE DAM, MORTON COUNTY

Crown Butte Dam is a 48-foot-high embankment dam constructed in 1963 in Morton County. The principal outlet consists of a concrete drop inlet and a 60-inch Reinforced Concrete Pipe (RCP). The dam is owned by the North Dakota Game and Fish Department (GFD), with maintenance responsibility shared between the GFD and the Morton County Park Board. In response to requests from both entities, DWR entered into an agreement to complete the following tasks:

- Grout the original, but redundant low-level drawdown conduit;
- Replace energy dissipator blocks in the principal spillway stilling basin;
- Add concrete pads at the filter diaphragm drain outlets; and
- Complete concrete repairs in the principal spillway.

The construction crew completed this work in the summer of 2023.

BOWMAN HALEY DAM, BOWMAN COUNTY

Bowman-Haley Dam is a 79-foot-high dam constructed in 1967, and is located in Bowman County. The principal outlet consists of a glory hole with an outlet pipe. The dam is owned by the U.S. Army Corps of Engineers (USACE). The GFD stocks the lake with fish, maintains the boat ramps, and fishing piers. They also operate the low-level drawdown to improve water quality in the lake. The Bowman County Water Board leases the land from the USACE for the campsites and recreational facilities.

The Bowman County Water Board requested cost-share, technical, and construction support from DWR to repair the hypolimnetic outlet pipe. The pipe was installed in 1988 to improve water quality for the fishery. In the early 2010s, the pipe disconnected from the dam's principal outlet structure, apparently due to corrosion of the bolts attaching the pipe to the control valve on the structure.

Two attempts to reconnect the pipe were unsuccessful. The first attempt to float the pipe by filling it with air did not work because of a hole in the pipe. The second attempt, completed in fall 2022, failed because portions of the pipe were covered with lake sediment, making it difficult for the dive subcontractor to remove it with lift bags.

The construction section pursued the design that included the installation of new pipe. Necessary permits for the construction and procurement of diver services were completed. Installation of the new pipe was completed in fall 2023.

DEVILS LAKE OUTLETS

The Devils Lake Outlets, owned by the SWC and operated by the DWR, discharge a maximum of 600 cubic feet per second of water from Devils Lake. There are two outlets. One on the west end of Devils Lake at Round Lake (south of Minnewaukan) pumps water out of Devils Lake through a system of pump stations, canals, and pipes to an outfall structure along the Sheyenne River 14 miles away. The East Outlet pumps water out of Devils Lake through a pump station on East Devils Lake through an 8-foot-diameter, five-and-a-half-mile-long pipe to an outfall structure on Tolna Coulee.

The DWR construction crew assisted the Devils Lake Outlet staff with several projects to maintain the facilities. These included maintenance of flow meters, canals, inspection of pumps, repairs to the vacuum system, repairs to erosion at the terminal structure, installation of splash pads to prevent erosion, repair of drain pipes, and installation of fences. At the East End Outlet, during startup of the pumps for the 2023 discharge season, a leak was observed. The construction crew helped with the investigation of the leak and supported access to vaults for surveyors.

US GEOLOGIC SURVEY

DWR continued to cooperate with the U.S. Geological Survey (USGS) on the maintenance and improvement of the USGS's stream gauging sites throughout the state. The construction crew participated in the construction and rehabilitation of several gauge houses across the state, which included rehabilitating sheet pile weirs at Foxholm and at Burnt Creek north of Bismarck.

MISSOURI RIVER ISSUES

FEDERAL ISSUES

DWR staff closely monitor federal overreach of North Dakota state rights, including water appropriation and sovereign land rights. DWR manages all North Dakota lands below the ordinary high water mark of navigable water bodies, including islands and sandbars of the Missouri River. Groups proposing a project on sovereign lands must seek authorization from the DWR before beginning a project. In the 2021-2023 biennium, DWR sent a letter to the USACE reminding it to obtain a sovereign land permit before placing signage on sandbars and completing chemical vegetation removal. The signage and chemical vegetation activities are completed by the USACE for protecting nesting habitat for the threatened piping plover.

MISSOURI RIVER RECOVERY IMPLEMENTATION COMMITTEE

The DWR has been involved in the Missouri River Recovery Implementation Committee (MRRIC) since the end of 2011. MRRIC is a group comprised of nearly 70 members, representing a broad array of local, state, tribal, and federal interests throughout the Missouri River Basin. The purpose of MRRIC is to provide guidance and recommendations to the USACE and the United States Fish and Wildlife Service (USFWS) on actions taken to recover the threatened piping plover and endangered pallid sturgeon.

MRRIC has primarily been involved in implementing the Adaptive Management Plan that was adopted in 2018 when the USACE issued a Record of Decision for the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP-EIS).

The MRRMP-EIS involved the development and evaluation of a range of alternatives for the purposes of avoiding jeopardy for the piping plover, least tern, and pallid sturgeon due to operation of the Missouri and Kansas River reservoir systems, and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project.

During the 2021-2023 biennium, DWR staff continued to represent the State of North Dakota on MRRIC. This involved participation in various committees, such as the Bird and Agenda Work Groups.

SNAKE CREEK EMBANKMENT

DWR staff have been working closely with the Garrison Diversion Conservancy District (GDCD) to review information released as part of the USACE's Dam Safety Modification Study for the Snake Creek Embankment (Embankment), including the Snake Creek Embankment Environmental Assessment and Finding of No Significant Impact (EA) released in February 2023.

The Embankment is part of the congressionally authorized Garrison Diversion Unit and is authorized to provide relocation routes for a highway, railroad, and utilities inundated by the creation of Lake Sakakawea, and to serve as a sub-impoundment dam for wildlife, recreation, and for the diversion of Missouri River waters into the James and Sheyenne Rivers.

The preferred alternative in the EA changes how the Embankment will be operated. North Dakota's Red River Valley Water Supply Project (RRVWSP) will rely on the Embankment, and there is a possibility that it could not operate during a severe drought if the USACE's preferred alternative is implemented. The DWR has advocated for a structural fix of the Embankment that ensures its water supply, recreation, and wildlife enhancement benefits in all foreseeable climate conditions. The DWR has submitted letters to the USACE with concerns, worked with the North Dakota congressional delegation on the topic, and Andrea Travnicek, DWR Director, testified on May 16, 2023, at the United States Senate Committee on Environment and Public Works' Subcommittee on Transportation and Infrastructure on the topic.

RED RIVER OFFICE

The Red River Office was established in 1984 at the request of the Red River Joint Water Resource District (RRJWRD). Originally located in West Fargo, the office was moved to Fargo in 2014. The RRJWRD provides 50 percent cost-share for office expenses of one full-time, Water Resource Engineer Manager position. Since April 2023, an additional full-time employee of the DWR's Investigations Section is also located at the Red River Office. Although that employee is located at the Red River Office, the expense of that employee is not included in the cost-share agreement with the RRJWRD. During the 2021-2023 biennium, the Water Resource Engineer Manager at the Red River Office took part in various DWR activities in eastern North Dakota.

Technical assistance was provided in support of the RRJWRD, including:

- Participating as a technical team member for the Lower Red River regional detention analysis;
- Assisting with reconnaissance level studies of potential dams;
- Providing technical assistance on various committees that were formed as a result of the Red River basin's flooding problems;
- Updating the proposed project list for the RRJWRD watershed management strategy;
- Working with ND Agriculture Weather Network (NDAWN) to obtain additional all-season gauges in the Red River basin;
- Working with International Water Institute (IWI) to obtain agreement for the update of the IWI map portal with the latest LiDAR information;
- Working with the Red River Retention Authority, Natural Resources Conservation Service, and local sponsors to pursue completion of watershed protection studies through the Regional Conservation Partnership Program (RCPP) and the PL-566 program;
- Attending meetings of task teams for the four remaining RCPP and PL-566 watershed studies in North Dakota;
- Providing recommendations on cost-share requests for various projects; and
- Assisting individual water resource boards on several water-related issues.

In addition, the Water Resource Engineer Manager was active in performing the following:

- Providing technical assistance to the International Red River Watershed Board (IRRWB);
- Being a member of the hydrology committee of the IRRWB;
- Being a technical advisor for the Pembina River Basin Task Team organized in 2018 by Governor Burgum;
- Attending various meetings concerning the proposed Fargo-Moorhead Diversion project;
- Being a member of the agency committee and technical committee for rehabilitation studies for six high hazard dams which include Larimore Dam, Matecjek Dam, Fordville Dam, Bylin Dam, Senator Young Dam, and Olson Dam;
- Attending meetings of the Border Townships Alliance Group for the study of a flood damage reduction project along the Red River near Oslo, Minnesota;
- Being a DWR representative to assist in the development of the scope of work for the North Dakota Department of Transportation study of flood problems in the northeast part of ND; and
- Observing and providing updates on conditions during flood events.

SOURIS (MOUSE) RIVER ISSUES

Flood risk reduction in the Souris River Basin continued to progress with several different initiatives during the 2021-2023 biennium.

MOUSE RIVER ENHANCED FLOOD PROTECTION PROJECT

The Minot and Souris River Joint Board-sponsored Mouse River Enhanced Flood Protection Project (MREFPP) is a basin-wide project designed to reduce flood risk in the Mouse River Basin within North Dakota. During the 2021-2023 biennium, DWR staff continued to monitor updates on the MREFPP and provided the necessary support for the project.

INTERNATIONAL SOURIS RIVER BOARD

The International Souris River Board (ISRB) ensures compliance with international water-sharing agreements between Canada and the United States in the Souris River basin, provides oversight for flood operations, maintains an ecosystem approach to transboundary water issues, including water quality issues, and assists the International Joint Commission (IJC) in preventing and resolving transboundary disputes. In November 2022, following the completion of the International Souris River Study (September 2017 to January 2022) and a governance review (April 2021 to May 2022), the IJC updated the ISRB's directive and restructured the board and committees. During the 2021-2023 biennium, DWR staff continued to be involved with ISRB activities. Before the restructuring, DWR staff fulfilled the U.S. co-chair and co-secretary positions. After the restructuring, the IJC appointed DWR staff to a U.S. ISRB member seat and to the U.S. co-chair seat of the Natural Flow and Apportionment Subcommittee.

INTERNATIONAL SOURIS RIVER STUDY

Agency staff continued to participate in the IJC's review of the operating plan established in the 1989 International Agreement for Water Supply and Flood Control (Agreement). Unprecedented flooding in the Souris River Basin in 2011 focused attention on the ISRB to review the Agreement, with specific emphasis on flooding and water supply in the basin. The ISRB previously completed a Plan of Study in 2013, which proposed how to evaluate the Agreement and submitted it to the IJC, the intergovernmental agency under which the ISRB was formed.

In September 2017, after a series of meetings and task force initiatives between the governments of Canada and the United States, the IJC formed the International Souris River Study Board (Study Board) to complete the Plan of Study proposed by the ISRB. DWR, through the Investigations Section, entered into a Planning and Assistance to States Agreement with the USACE to fund and provide technical work-in-kind assistance on the study. Over the course of the study, staff contributed over $370,000 worth of work-in-kind.

Agency staff participated in, and co-chaired, the Study Board's Resource and Agency Advisory Group (RAAG), which was created as a conduit for federal, provincial, state, and municipal agency input, as well as industry input. RAAG input was utilized by the Study Board to test and refine operational alternatives.

The Study Board and IJC also engaged with First Nations, Tribes, and Métis in Canada and the United States to understand their interests in the Souris River Basin and management of the river. Based on this engagement, the IJC added Indigenous members to the ISRB when they restructured the board.

During the 2021-2023 biennium, the Study Board completed their work, and the final report was submitted to the IJC in September 2021. The IJC conducted a review and public consultation, and submitted the report and its findings to the United States and Canadian governments in January 2022. Some key findings from the study are listed below:

- The Agreement is effective in achieving its intended objectives of flood protection and water supply benefits;
- Based on modeling, only marginal benefits to water supply and flood protection could be identified;
- Five alternative measures were recommended for further consideration to achieve incremental improvements to the Agreement; and
- Adaptive management approaches in managing water levels and flows of the Souris River should be considered.

Financial Information

The following pages contain financial information summarized in various formats.
The remainder of the report addresses project and object expenditures.

TABLES & CHARTS INCLUDE

State Water Commission Appropriations 2021-2023 Biennium

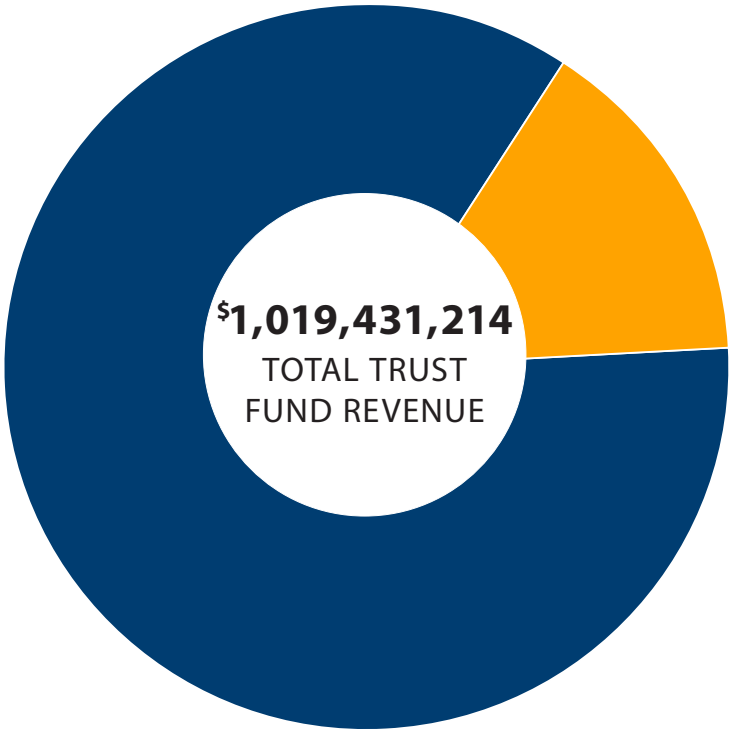
Expenditure By Fund Total And Line Item

Program Budgeting Expenditures For Biennial Period Ending June 30, 2023

State Water Commission Financial Project Summary: 2021-2023 Biennium

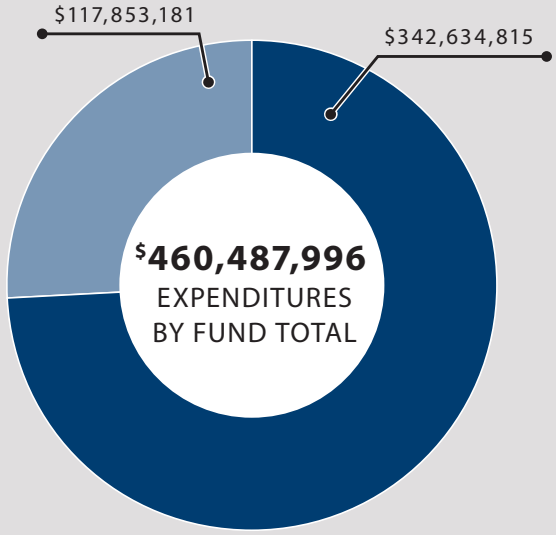
Object Expenditures For Biennial Period Ending June 30, 2023

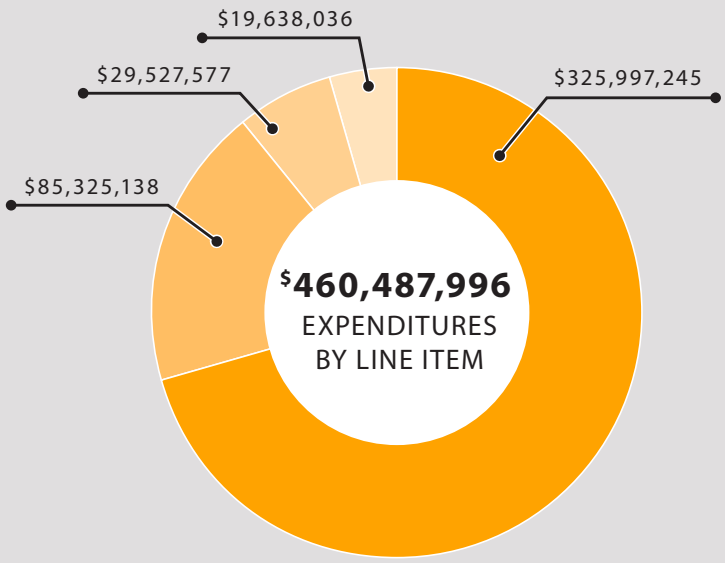
STATE WATER COMMISSION APPROPRIATIONS
2021-2023 BIENNIUM



FUNDS & TAX	TOTAL AMOUNT
RTF Beginning Balance	$287,678,660
Oil Extraction Tax	$505,222,761
Loan Repayments	$74,500,000
Resources Trust Fund Total	**$867,401,421**
Total Transferred To Water Project Stabilization Fund and Interest	**$152,029,793**

EXPENDITURES BY FUND TOTAL & LINE ITEM





SPECIAL FUNDS

FEDERAL FUNDS**

GRANTS & CONTRACTS*

SALARIES & BENEFITS

OPERATING

CAPITAL ASSETS

*State Water Commission cost-share funding is provided through reimbursements based on Commission or Secretary approved percentages. These expenditures include $30 million to pay down debt of WAWSA and $1.8 million to pay off interest due to the general fund on behalf of WAWSA, appropriated during the 2023 legislative session.

**Includes $75 million of federal ARPA state and local fiscal recovery funds appropriated in SB 2345 (2021 Special Session) for water projects.

PROGRAM BUDGETING EXPENDITURES
FOR BIENNIAL PERIOD ENDING JUNE 30, 2023

AGENCY PROGRAM	SALARIES/ BENEFITS	OPERATING EXPENSES/ CAPITAL ASSETS	GRANTS & CONTRACTS	PROGRAM TOTALS
ADMINISTRATION				
Allocated	$2,050,228	$1,635,129		$3,685,357
Expended	$2,022,176	$1,547,392		$3,569,568
ATMOSPHERIC RESOURCE				
Allocated	$1,206,824	$687,907	$4,357,026	$6,251,757
Expended	$1,136,380	$381,680	$1,242,165	$2,760,225
PLANNING & EDUCATION				
Allocated	$2,509,213	$287,100		$2,796,313
Expended	$2,564,075	$143,111		$2,707,186
REGULATORY				
Allocated	$3,391,364	$8,481,550	$4,523,069	$16,395,983
Expended	$3,063,928	$5,027,811	$4,523,069	$12,614,808
WATER APPROPRIATION				
Allocated	$6,604,497	$1,874,779	$250,000	$8,729,276
Expended	$6,467,271	$1,775,374	$135,711	$8,378,357
WATER DEVELOPMENT				
Allocated	$3,635,263	$9,199,500	$59,513	$12,894,276
Expended	$3,296,198	$4,415,665	$59,513	$7,771,376
NORTHWEST AREA WATER SUPPLY				
Allocated	$670,284	$127,638,216	$15,000,000	$143,308,500
Expended	$664,598	$75,567,053	$208,000	$76,439,652
SOUTHWEST PIPELINE				
Allocated	$470,194	$42,029,806	$7,000,000	$49,500,000
Expended	$423,410	$25,994,627	$0	$26,418,037
STATEWIDE WATER PROJECTS				
Allocated			$614,600,851	$614,600,851
Expended			$319,828,788	$319,828,788
PROGRAM TOTALS				
Allocated	$20,537,867	$191,833,987	$645,790,458	$858,162,312
Expended	$19,638,036	$114,852,715	$325,997,245	$460,487,996

STATE WATER COMMISSION
FINANCIAL PROJECT SUMMARY: 2021-2023 BIENNIUM

	2019-2021 CARRYOVER	2021-2023 APPROP.	2021-2023 TOTAL	APPROVED	APPROP. BALANCE
TOTAL	**$285,241,386**	**$457,127,274**	**$742,368,660**	**$666,760,200**	**$75,608,460**
MUNICIPAL & REGIONAL WATER SUPPLY					
MUNICIPAL WATER SUPPLY	$55,127,317	$26,916,464	$82,043,781	$82,043,781	$0
RED RIVER VALLEY	$18,006,482	$37,604,667	$55,611,149	$55,611,149	$0
OTHER REGIONAL WATER SUPPLY	$22,750,237	$20,116,920	$42,867,157	$42,867,157	$0
UNOBLIGATED MUNICIPAL/ REG WATER SUPPLY	$5,741,424	$12,761,949	$18,503,373	$0	$18,503,373
TOTAL	$101,625,460	$97,400,000	$199,025,460	$180,522,087	$18,503,373
% Obligated		86.90%			
MUNICIPAL & REGIONAL WATER SUPPLY					
RURAL WATER SUPPLY	$29,637,156	$44,806,240	$74,443,396	$74,443,396	$0
UNOBLIGATED RURAL WATER SUPPLY	$28,929	$14,793,760	$14,822,689	$0	$14,822,689
TOTAL	$29,666,085	$59,600,000	$89,266,085	$74,443,396	$14,822,689
% Obligated		75.18%			
GENERAL WATER					
GENERAL WATER	$8,626,571	$9,577,709	$18,204,280	$18,204,280	$0
UNOBLIGATED GENERAL WATER	$315,267	$4,649,565	$4,964,832	$0	$4,964,832
TOTAL	$8,941,838	$14,227,274	$23,169,112	$18,204,280	$4,964,832
% Obligated		67.32%			
SUBTOTAL	$140,233,383	$171,227,274	$311,460,657	$273,169,763	$38,290,894

STATE WATER COMMISSION
FINANCIAL PROJECT SUMMARY: 2021-2023 BIENNIUM

	2019-2021 CARRYOVER	2021-2023 APPROP.	2021-2023 TOTAL	APPROVED	APPROP. BALANCE
TOTAL	**$285,241,386**	**$457,127,274**	**$742,368,660**	**$666,760,200**	**$75,608,460**
FLOOD CONTROL					
FARGO	$50,966,383	$0	$50,966,383	$50,966,383	$0
MOUSE RIVER	$38,275,083	$10,000,000	$48,275,083	$48,275,083	$0
MOUSE RIVER HB 1431	$0	$74,500,000	$74,500,000	$74,500,000	$0
VALLEY CITY	$11,120,530	$0	$11,120,530	$11,120,530	$0
LISBON	$174,579	$0	$174,579	$174,579	$0
OTHER FLOOD CONTROL	$4,306,203	$916,080	$5,222,283	$5,222,283	$0
PROPERTY ACQUISITIONS	$7,056,475	$308,935	$7,365,410	$7,365,410	$0
WATER CONVEYANCE	$12,733,583	$6,902,865	$19,636,448	$19,636,448	$0
UNOBLIGATED FLOOD CONTROL	$980,488	$19,472,120	$20,452,608	$0	$20,452,608
TOTAL	$125,613,324	$112,100,000	$237,713,324	$217,260,716	$20,452,608
% Obligated		82.63%			
CAPITAL ASSETS					
SWPP CAPITAL ASSETS	$8,528,779	$33,528,203	$42,056,982	$42,056,982	$0
NAWS CAPITAL ASSETS	$10,865,900	$44,876,280	$55,742,180	$55,742,180	$0
UNOBLIGATED CAPITAL ASSETS	$0	$13,295,517	$13,295,517	$0	$13,295,517
TOTAL	$19,394,679	$91,700,000	$111,094,679	$97,799,162	$13,295,517
% Obligated		85.50%			
SUBTOTAL	$145,008,003	$203,800,000	$348,808,003	$315,059,878	$33,748,125

STATE WATER COMMISSION
FINANCIAL PROJECT SUMMARY: 2021-2023 BIENNIUM

	2019-2021 CARRYOVER	2021-2023 APPROP.	2021-2023 TOTAL	APPROVED	APPROP. BALANCE
TOTAL	**$285,241,386**	**$457,127,274**	**$742,368,660**	**$666,760,200**	**$75,608,460**
DISCRETIONARY FUNDING					
DISCRETIONARY FUNDING	$0	$2,430,559	$2,430,559	$2,430,559	$0
UNOBLIGATED DISCRETIONARY FUNDING	$0	$3,569,441	$3,569,441	$0	$3,569,441
TOTAL	$0	$6,000,000	$6,000,000	$2,430,559	$3,569,441
% Obligated		40.51%			
BASINWIDE PLAN IMPLEMENTATION					
BASINWIDE PLAN IMPLEMENTATION	$0	$1,100,000	$1,100,000	$1,100,000	$0
UNOBLIGATED BASINWIDE PLAN IMPLEMENTATION	$0	$0	$0	$0	$0
TOTAL	$0	$1,100,000	$1,100,000	$1,100,000	$0
% Obligated		100.00%			
STATE FISCAL RECOVERY FUND					
STATE FISCAL RECOVERY FUNDS - SB 2345	$0	$75,000,000	$75,000,000	$75,000,000	$0
UNOBLIGATED STATE FISCAL RECOVERY FUNDS - SB 2345	$0	$0	$0	$0	$0
TOTAL	$0	$75,000,000	$75,000,000	$75,000,000	$0
% Obligated		100.00%			
SUBTOTAL	$0	$82,100,000	$82,100,000	$78,530,559	$3,569,441

OBJECT EXPENDITURES
FOR BIENNIAL PERIOD ENDING JUNE 30, 2023

Permanent Salaries	$13,295,555
Temporary Salaries	$460,238
Overtime	$253,641
Fringe Benefits	$5,628,602
Total Salaries & Benefits	$19,638,036
Travel	$900,395
Supplies - IT Software	$199,053
Supply/Material - Professional	$234,817
Food and Clothing	$5,827
Bldg, Grounds, Vehicle Supply	$260,570
Miscellaneous Supplies	$59,392
Office Supplies	$23,350
Postage	$26,649
Printing	$13,678
IT Equipment under $5,000	$237,202
Other Equipment under $5,000	$179,769
Office Equip & Furniture-Under	$22,358
Utilities	$4,999,860
Insurance	$30,043
Rentals/Leases-Equipment&Other	$2,463
Rentals/Leases - Bldg/Land	$356,568
Repairs	$714,056
IT - Data Processing	$545,945
IT - Communications	$178,468
Professional Development	$207,799
Operating Fees and Services	$371,353
Professional Fees and Services	$19,957,962
Total Operating Expenses	$29,527,577
Land and Buildings	$307,293
Other Capital Payments	$84,805,485
Equipment Over $5000	$169,510
IT Equip / Software Over $5000	$42,849
Total Capital Assets	$85,325,138
Grants, Benefits & Claims	$293,805,477
Transfers Out	$32,191,768
Total Grants, Refunds, & Transfers	$325,997,245
TOTAL EXPENDITURES	$460,487,996

2021-2023
Wrap Up & Trends

In looking back, there were a number of significant occurrences and trends that shaped the 2021-2023 biennium – making it a particularly memorable funding cycle. More specifically, transformation of the agency into the Department of Water Resources and completion of a 5-year Strategic Plan provided a foundation for future efforts far into the future. Ongoing innovative efforts like the expansion of PRESENS, development of a one-stop-shop WebGrants platform for cost-share applications, and a first-ever Water Development Plan Dashboard were all implemented to improve services for DWR's constituents. And finally, the need for water for basic domestic uses and in support of an increasing number of economic development opportunities continues to grow. This can also be said for the growing financial needs of project sponsors across North Dakota who look to the state as a cost-share partner to advance critical water infrastructure related to flood protection, water supplies, and other general water management efforts.

NORTH DAKOTA DWR

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