NORTH Dakota | Water Resources

Be Legendary.

BIENNIAL REPORT

July 1, 2019 - June 30 , 2021

NORTH Dakota | Water Resources

Be Legendary.

March 28, 2022

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

Secretary of State Al Jaeger
600 East Boulevard Avenue
Bismarck, ND 58505-0001

RE: 2019-2021 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 Jaeger:

On behalf of the Department of Water Resources, I am pleased to present the State Water Commission and Office of the State Engineer Biennial Report for the period of July 1, 2019, through June 30, 2021. Please note: on August 1, 2021, the agency formally transitioned to the Department of Water Resources, as required by House Bill 1353.

This report highlights key events, accomplishments, and other pertinent activities of the State Water Commission and Office of the State Engineer during the last biennium, for your information and consideration.

Respectfully submitted,

Andrea Travnicek, Ph.D.
Director

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HISTORY & MANDATES

The Office of the State Engineer was created in 1905 to regulate and administer matters concerning 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 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 State Water Commission into the Department of Water Resources (DWR). The reorganization became effective on August 1, 2021. An agency Director was appointed, and the agency became a member of the Governor's Cabinet.

State Historical Society of North Dakota (00024-H-008)

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, 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 as an ex-officio member, 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 employs a staff as needed to carry out the work of the Commission.

PRINCIPAL
AGENCY ACTIVITIES

- Develop Missouri River water in ways that will secure North Dakota's share of Missouri River flows for our current and future needs.
- Implement plans for the distribution of Missouri River water through regional water supply systems such as the Southwest Pipeline Project, Northwest Area Water Supply Project, Western Area Water Supply, and Red River Valley Water Supply Project.
- Manage and develop North Dakota's water resources to facilitate economic development and improve quality of life for current and future generations.
- Promote and provide water supplies needed for the expansion and diversification of North Dakota's agricultural industry.
- Complete detailed studies and research that more precisely define the nature and occurrence of water to optimize its conservation and development throughout the state.
- Maintain a water development project inventory to promote efficiency in meeting North Dakota's future water development and funding needs.
- Continue to implement the state's strategic approach to solving the Devils Lake area's flooding problems.
- Develop policies and initiatives through the Cost-Share Program that will stimulate progress toward developing flood control, water supply, conveyance, and general water projects wherever feasible.
- Pursue cooperative efforts with neighboring states and provinces to plan for beneficial water management of shared water resources.
- Cooperate with agencies that have regulatory authority over North Dakota's waters to protect and enhance the quality of North Dakota's water resources and related ecosystems.
- Enforce weather modification standards, conduct research, and supervise operational cloud seeding programs for hail suppression and rainfall enhancement.
- Provide water education for North Dakota's teachers, youth, and general public.
- Promote expanded development of North Dakota's water-based recreation resources.
- Collect water resource data for the purpose of identifying the location, condition, and temporal changes of the water resources of the state.
- Disseminate water resource information to the general public, businesses, and government agencies.
- Manage state water resources and sovereign lands within the framework of North Dakota's Century and Administrative Codes.
- Conduct or review economic and life cycle cost analyses as required by policy and statute.

WATER RESOURCES
LEGISLATION

HOUSE BILL 1020
STATE WATER COMMISSION BUDGET BILL

Within House Bill 1020, the Legislature directed $466.3 million toward water development projects with an additional $295.4 million in carryover authority. The bill designates specific funding amounts for the following:

- Salaries and Operating Costs - $63.9M
- Captial Assets - $148.5M
- Water Supply - $125M
- Rural Water Supply - $59.6M
- Flood Control - $48M
- General Water - $14.2M
- BND Line of Credit - $50M
- Basin-Wide Plan Implementation - $1.1M
- Discretionary Funding - $6M

HOUSE BILL 1353
REORGANIZATION OF THE OFFICE OF THE STATE ENGINEER AND STATE WATER COMMISSION

Effective August 1, 2021, House Bill 1353 restructured the agency into the Department of Water Resources. The bill:

- Reorganized the Office of the State Engineer and the State Water Commission;
- Changed the agency name to the Department of Water Resources (DWR);
- Required that an agency Director be appointed by the Governor, making the DWR a member of the Governor's cabinet;
- Placed the State Engineer and associated regulatory roles within the DWR.

HOUSE BILL 1431
BONDING FOR WATER PROJECTS

Among other things, House Bill 1431 allows North Dakota's Public Finance Authority to issue up to $680 million of bonds for transfer to the Bank of North Dakota in support of infrastructure projects. Specific projects and programs supported by bonds include:

- Fargo Flood Control - $435.5M
- Western Area Water Supply (WAWS) Loan Repayment - $74.5M; (Mouse River Flood Control - $74.5M)
- Infrastructure Revolving Loan Fund - $50M
- Highway Fund - $70M
- North Dakota State University - $50M

House Bill 1431 also created the Water Infrastructure Revolving Loan Fund.

HOUSE BILL 1437
SUBSURFACE WATER MANAGEMENT

House Bill 1437 amends the existing subsurface water management (i.e. tile) permitting process in North Dakota Century Code (NDCC) 61-32-03.1 (tile statute). The new statute outlines a new process for Water Resource Districts (WRD) to follow when reviewing and approving subsurface water management permit applications. The bill also:

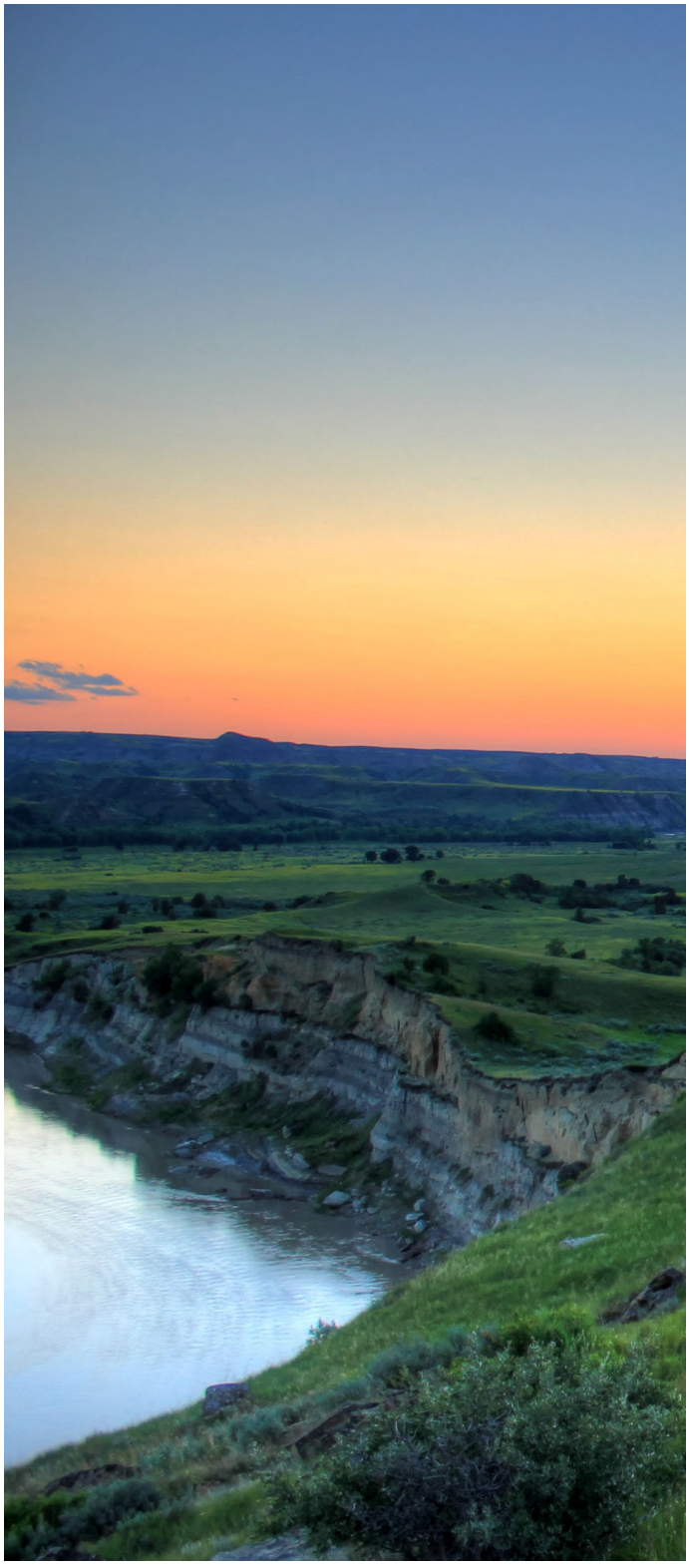
- Modifies the drain tile approval process;
- Requires an application to install a subsurface water management system;
- Requires the State Engineer to develop an updated subsurface water management permit application;
- Requires landowners to notify WRDs of projects less than 80 acres;
- Allows the Water Commission to fund drainage improvements again.

WATER RESOURCES
LEGISLATION

SENATE BILL 2208

Senate Bill 2208 established an interim study to examine many important water management policy issues including:

- Updating NDCC related to rural flood control;
- Making assessment procedures uniform;
- Establishing an appeals and mediation process;
- Managing water by watershed;
- Reviewing responsibility of culvert sizing;
- Cost-benefit analyses on projects;
- Water permits and irrigation permit processes; and
- Evaluating the relationship between the Water Commission and Water Resource Districts.



LEGAL ACTIONS

North Dakota Office of the State Engineer and North Dakota Board of University and School Lands v. United States Bureau of Land Management - The Bureau of Land Management (BLM) resurveyed land along the Missouri River to locate the boundary between public domain land owned by the United States and the riverbed owned by the State of North Dakota. The State Engineer and Board of University and School Lands appealed to the U.S. Department of the Interior Board of Land Appeals (IBLA) over the BLM's decision to officially file the Supplemental Plats of Survey posted as described in the Federal Register on July 8, 2014. The land is located in Fifth Principal Meridian, Township 154 North, Range 98 West. An unfavorable decision was received from the IBLA, and an appeal is currently pending in federal district court in North Dakota.

Sovereign Lands and Minerals Cases - In addition to the BLM case previously discussed, there are 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.

Administrative Cases - The Office of the State Engineer was also involved in several administrative cases regarding water appropriation permits and a drainage complaint appeal.

While not a named party, the Water Commission and State Engineer 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 U.S. Army Corps of Engineers' actions and positions.

UNMANNED AERIAL SYSTEMS PROGRAM

In late 2019, the SWC's Unmanned Aerial Systems (UAS or drone) program expanded and added two drone pilots from the Water Development Division's Investigations Section. These pilots include a Water Resource Engineer and the Survey Crew Chief. With the addition of new pilots, the agency became more responsive to growing demand for its lone drone, flying more frequent and diverse missions.

In spring 2021, the SWC 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 SWC 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 SWC Drone Program grew with more pilots and equipment, the number and diversity of flights also increased. Examples of drone uses include: sovereign lands investigations, ground condition monitoring, survey missions, lake gauging, Drought Disaster Livestock 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, 2021

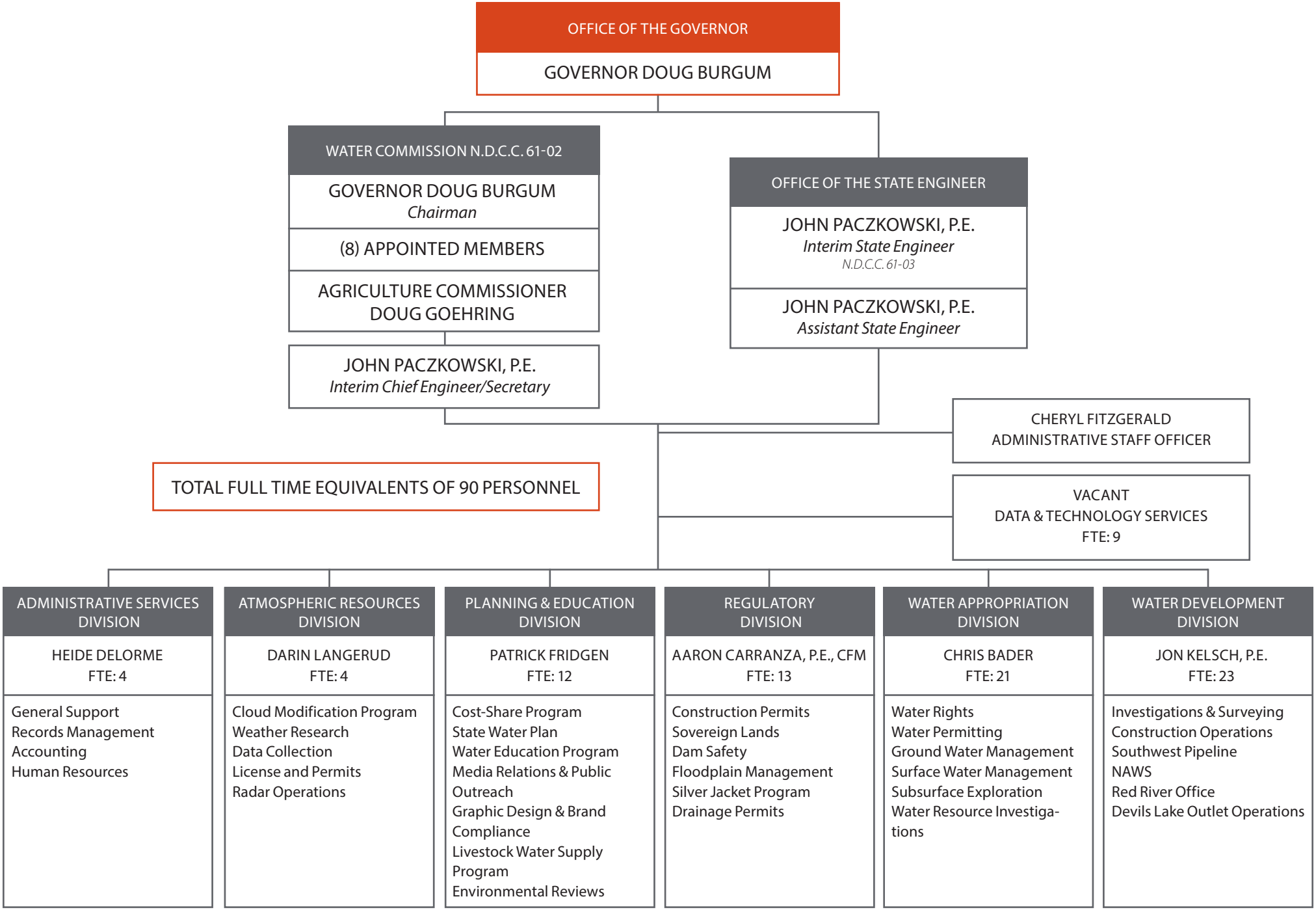
NAME	POSITION	APPOINTED	TERM ENDS
Doug Burgum	Governor - Chairman		
Doug Goehring	Department of Agriculture, Commissioner	Ex-Officio	
Katie Hemmer	James River Basin	August 10, 2017	June 30, 2025
Michael Anderson	Lower Red River Basin	August 10, 2017	June 30, 2021
Richard (Dick) Johnson	Devils Lake Basin	August 10, 2017	June 30, 2025
Steven Schneider	Little Missouri, Upper Heart, & Upper Cannonball Basin	July 31, 2019	June 30, 2025
Mark Owan	Upper Missouri River Basin	August 10, 2017	June 30, 2021
Matthew Pedersen	Upper Red River Basin	August 10, 2017	June 30, 2023
Jay Volk	Lower Missouri River Basin	July 31, 2019	June 30, 2025
Jason Zimmerman	Mouse River Basin	August 10, 2017	June 30, 2025

STATE WATER COMMISSION MEETINGS
JULY 1, 2019 THROUGH JUNE 30, 2021

DATE	LOCATION
August 8, 2019	Bismarck
October 10, 2019	Bismarck
December 6, 2019	Bismarck
February 13, 2020	Bismarck
April 9, 2020	Virtual
June 9, 2020	Virtual
July 16, 2020	Virtual
August 13, 2020	Virtual
October 8, 2020	Virtual
December 11, 2020	Virtual
February 11, 2021	Virtual
April 8, 2021	Virtual
April 20, 2021 (Emergency)	Virtual
June 8, 2021	Virtual

NORTH DAKOTA STATE WATER COMMISSION

AS OF JUNE 30, 2021



STATE WATER COMMISSION EMPLOYEES

ADMINISTRATIVE SERVICES DIVISION

State Engineer: John Paczkowski (Interim)

Assistant State Engineer: John Paczkowski

Administrative Staff Officer: Cheryl Fitzgerald

Director of Adiministrative Services: Heide Delorme

Account/Budget Specialist: Sarah Felchle

Human Resource Officer: John Brintnell

Records Management Specialist: Karen Heinert

DATA & TECHNICAL SERVICES

IT Administrator: Vacant

Data Processing Coordinator: Paul Moen

Data Processing Coordinator: Travis Stramer

GIS Specialist: Rodney Bassler

Hydrologist Manager: David Hisz

Engineering Technicians: Albert Lachenmeier, Neil Martwick, Terry McCann, Ryan Novak

ATMOSPHERIC RESOURCE BOARD

Division Director: Darin Lagerud

Executive Staff Officer: Kelli Schroeder

Environmental Sciences Administrator: Mark Schneider

Environmental Scientist: Daniel Brothers

WATER APPROPRIATION DIVISION

Division Director: Chris Bader

Administrative Assistant: Kati Arneson

Hydrologist Managers: Rex Honeyman, Andrew Nygren, Scott Parkin, Kimberly Fischer, Abigail Franklund

Hydrologists: Bryce Klasen, Michaela Halvorson, Mark Potucek, Ryan Wolbert, Sam Swanberg, Jennifer Martin, Braden Rambo, Rubina Firdous, Vacancy

Water Resource Program Administrators: Chris Colby, Andrew Gorz

Water Resource Engineer: Bassel Timani

Water Resource Senior Manager: Courtney Evoniuk

Rotary Drill Operator: Terry Olson

Equipment Operator: Dan Bahm

PLANNING & EDUCATION DIVISION

Division Director: Patrick Fridgen

Administrative Assistant: Dawn Martin

Water Resource Education Program Manager: Tina Harding

Water Resource Planners: Steve Best, Jared Huibregtse

Natural Resource Economist: Duane Pool

Public Information Officer: Jessie Wald

Graphic Artist: Sheila Fryer

Water Resource Engineer Managers: Jeffrey Mattern, Julie Prescott

Water Resource Program Adminstrators: Beth Nangare, Lori Noack

REGULATORY DIVISION

Division Director: Aaron Carranza

Water Resource Engineer Managers: Karen Goff, Matthew Lindsay

Water Resource Engineers: Kelsey Huber, Katelyn Kelly, Joe Morrissette, Hunter Obrigewitch

Engineer Technicians: Chance Nolan, Sara Van Ningen

Water Resource Program Administrators: Gerald Heiser, Laura Horner, Tia Dolechek, Cole Baker

Silver Jackets Program Coordinator: Michael Hall

WATER DEVELOPMENT DIVISION

Division Director: Jon Kelsch

Administrative Assistant: Patty Power

Water Resource Engineer Managers: Timothy Freije, David Nyhus, Randy Gjestvang, Sunduja S. Pillai-Grinolds, Chris Korkowski

Water Resource Engineers: Laura Ackerman, Tim Dodd, Damon Grabow, Jessie Kist, Vacant

Engineering Technicians: Clint Codgill, Tom Engberg, Dan McDonald, James Ternes, Bryan Hanson, Jeremy Berreth

Water Resource Senior Managers: Dale Binstock, Perry Weiner

Maintenance Supervisor: Jeff Trana

General Trades Worker: Del Nordrum

Water Resource Project Manager: Darron Nichols

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 principles or rules of that law.

The State Engineer served as North Dakota's representative on various boards and associations. The State Engineer served as the United States Co-Chairman of the International Souris River Board. The State Engineer also served on the Board of Directors for the Red River Basin Commission, the Red River Retention Authority, the Upper Missouri Water Users Association, the North Dakota Water Education Foundation, as chairman of the Devils Lake Outlet Advisory Board, and the High-Level Radioactive Waste Advisory Council. The State Engineer also served as an executive council member of the Western States Water Council, Board of Director's Ex-Officio member of the North Dakota Water Users Association, and a member of the Association of Western States Engineers.

SPECIFIC STAFF RESPONSIBILITIES INCLUDE:

- The State Engineer and Water Commission's 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; and
- Coordinating contracts and agreements.

DATA & TECHNICAL SERVICES

The State Water Commission utilized IT in almost all aspects of water resource management. The primary responsibility of Data & Technical Services is to provide the technology infrastructure and data collection activities required to support the scientific and regulatory functions, as well as the routine office and back-office automation functions the agency utilizes to meet its stated mission.

Data and technical services staff have created a robust network of internal records management and routing databases. These tools have created efficiencies across the agency, with more improvements planned for the future. In total, the services provided require at least 800 Terabytes of storage.

DATA ACQUISITION

The Commission was involved in a wide range of data collection activities to support various aspects of the agency's mission. This includes stream gaging activities, monitoring water levels, collecting and measuring pumping rates, collection of precipitation data, and a host of other activities surrounding water resource data. Historically, these efforts were largely supported by division staff through mostly manual data collection activities.

In order to drive better efficiencies related to data collection activities and to provide real-time data to support and drive water resource management initiatives, the Commission began development of the PRESENS (Pushing REmote SENSors) project. This project was designed to provide a low-cost solution for deploying real time sensors to address the wide range of data collection activities required by the agency. During the 2017-2019 biennium, the Commission completed the design, development, and early testing of the PRESENS data loggers. Limited deployment began in summer and fall 2018, with more wide scale deployment beginning in spring and summer 2019. Through the 2019-2021 biennium, the agency has deployed over 250 PRESENS devices, and there are plans to deploy several hundred more over the coming biennium.

While the initial focus for the PRESENS project was to address remote data collection for many of the monitoring wells and staff gages currently maintained by the agency, the intent of this project was to accommodate a wide range of sensors and data collection activities. During the 2019-2021 biennium, the PRESENS platform was modified and expanded to provide the ability to collect precipitation, soil moisture, and soil temperature. During the 2021 field season, the first PRESENS devices were deployed for purposes of collecting precipitation and soils temperature and moisture at various depths.

The PRESENS platform can also easily be extended to other data collection initiatives in which the agency is currently involved, which could include pumping rates and water use data collection activities. The collection of both pumping rate and water use information will be evaluated during the 2021-2023 biennium.

DATA MANAGEMENT

As demands on the state's water resources continue to grow and evolve, the agency is faced with additional challenges to provide more and better information to the residents of North Dakota. These challenges continue to place an increasing emphasis on both the spatial and temporal relationships that are inherent to managing water resource systems. In order to address these challenges, the agency has developed and deployed additional spatial and graphical tools to address the complex relationships within the water resource data. In many cases, tools have been integrated directly into the data management applications in order to address these complexities within the data development and data management processes.

Beyond the basic requirement for better tools and management capabilities, the agency has also been faced with significant demand for additional bandwidth and capacity to support an array of management initiatives, increased storage needs, and computational processes to manage and analyze these data. Increasing needs for aerial imagery and Light Detection and Ranging (LiDAR) data have placed tremendous demands upon the agency infrastructure for data storage, and for the associated tools to maintain and disseminate these data. The agency's storage infrastructure has grown from just under 1 terabyte (TB) in 2002 to over 500 TB in 2015, and exceeded 1 petabyte in 2019.

All of the water resource data for North Dakota are made available through the agency website (www.dwr.nd.gov). This includes all of the site information that is used for monitoring ground water resources in the state, which includes sub-surface lithology, water levels, water chemistry, and associated site information. The agency website also includes data on precipitation, dams, drains, dikes, and other retention structures that are monitored by the Department. In addition to the wide range of data resources that are integrated into the agency's web services, the agency maintains a site dedicated to the surveying community, that includes more than 2,800 Government Land Office plat maps, along with all of the first and second order benchmarks (survey.dwr.nd.gov).

During the 2011-2013 biennium, the Commission developed map services originally designed to address the storage and dissemination of the massive amounts of LiDAR data collected in North Dakota (lidar.dwr.nd.gov). This site has grown, and now includes LiDAR data from more than a dozen different projects, which includes approximately 60 TB of raw data. During the 2013-2015 biennium, the Department added an image map service (aerial.dwr.nd.gov) designed to catalog all existing historic aerial photography available within the agency. This site has grown to include approximately 300 TB of raw image data, and could exceed 500 TB by the end of the 2021-2023 biennium. Also in the 2019-2021 biennium, the NDRAM Flood Risk Assessment service was added which utilizes both the LiDAR and aerial map services for base map information.

Data available for public use:

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

ATMOSPHERIC RESOURCE BOARD

Photo courtesy of Keisuke Yoshimura.

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 is comprised of ten members: seven are appointed by the Governor, with ex-officio members including the State Engineer (now the Director of the Department of Water Resources), the Director of the State Aeronautics Commission, and a representative from the Department of Environmental Quality.

SPECIFIC STAFF 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; and
- Monitoring, collecting, and disseminating accurate precipitation and climate data.

NORTH DAKOTA CLOUD MODIFICATION PROJECT

The North Dakota Cloud Modification Project (NDCMP) served six western counties during the 2019-2021 biennium. Those counties were Bowman, McKenzie, Mountrail, Ward, 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 5.4 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 to seven 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 results, while hail suppression was evaluated at 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 yields estimated economic returns of more than $53 dollars for every $1 spent on the program. Viewed more conservatively, using rainfall enhancement of 5 percent, results are still impressive, yielding nearly $31 dollars 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.

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 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 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 National Weather Service (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. 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.

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 inception in 1975, 397 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 safety margin. 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 2019-2021 biennium. A total of eight interns assisted NDCMP radar meteorologists at radar-equipped operations centers in Bowman and Stanley, and at the ARB office in Bismarck, raising the total to 67 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

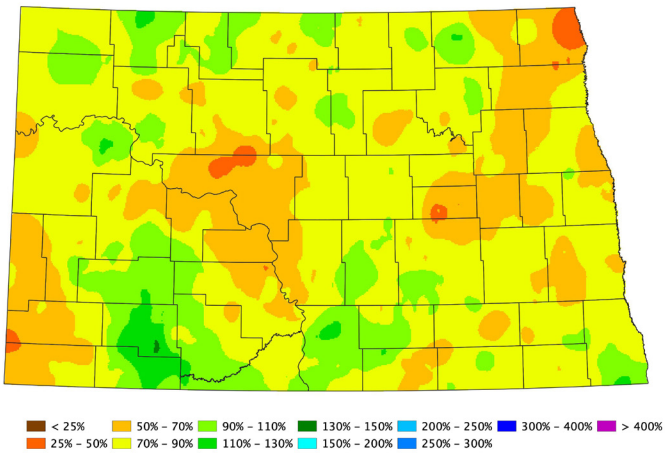
The ARB Cooperative Observer Network (ARBCON) continued reporting precipitation in North Dakota during the biennium. ARBCON observers numbered about 500 volunteers statewide, building on a database dating back to 1977. The network has logged more than five million daily observations since the network 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.

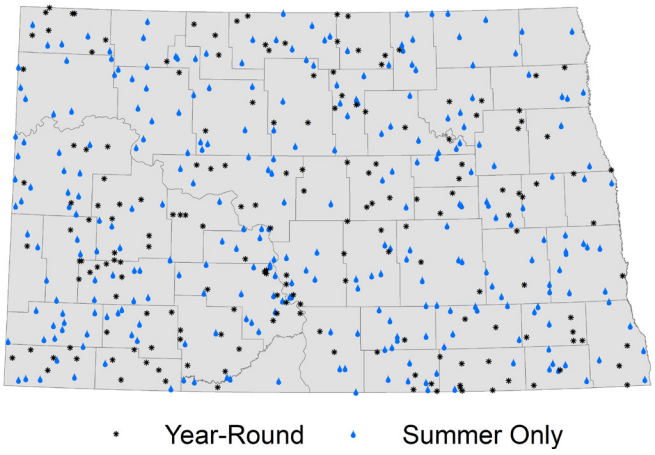
Rain, hail, and snow data, as well as color maps depicting monthly and growing season precipitation, departure from normal, and 30-year averages can be publicly accessed and downloaded directly through the agency's website. The data have proven to be very helpful in the assessment of excess rain, snow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

APRIL-SEPTEMBER 2021 PERCENT OF NORMAL RAINFALL

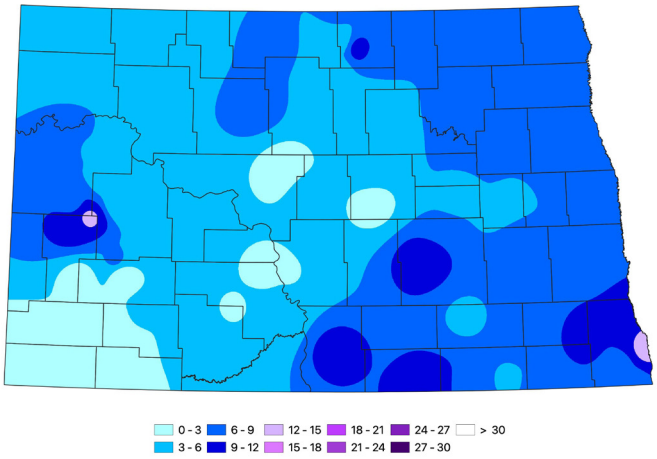


Source: NDARB Cooperative Observer Network

2021 ARBCON OBSERVERS



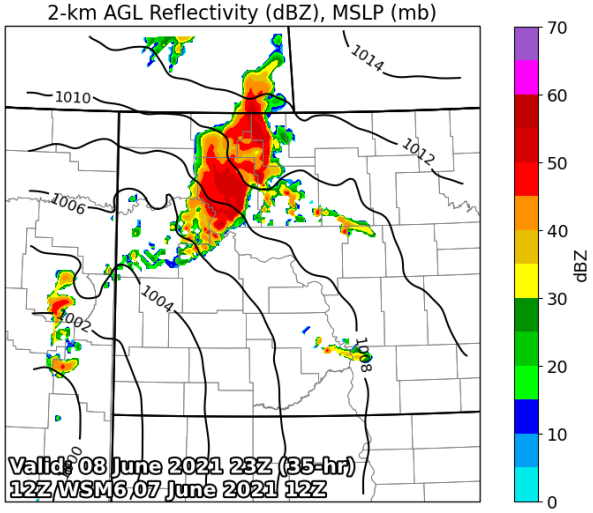
JANUARY 2020 SNOWFALL (IN INCHES)



Source: NDARB Cooperative Observer Network

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.

2-km AGL Reflectivity (dBZ), MSLP (mb)



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.

SPECIFIC STAFF 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 State Engineer and State Water Commission (now Department of Water Resources) 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; and
- Supporting the agency's Unmanned Aerial Systems (UAS) Program.

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 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. However, 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 2019-2021 biennium, the Planning Division processed almost 1,650 cost-share requests and payments. There were approximately 136 new projects approved totaling over $356 million.

MUNICIPAL, RURAL, & INDUSTRIAL WATER SUPPLY

In federal fiscal years 2020 and 2021, the Municipal, Rural, and Industrial (MR&I) Water Supply Program received $35.8 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 $434.4 million since the program was authorized in 1986.

The 2020 and 2021 federal MR&I funds were allocated to the Northwest Area Water Supply (NAWS) Project for development of the biota water treatment plant, intake, and water transmission pipelines. The Commission also provided funding toward 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 State Water Commission 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 2021. The purpose of the 2021 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 2021 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 2021 Plan estimates the potential financial needs of water-related infrastructure in ten years, twenty years, and beyond.

AGENCY STRATEGIC PLANNING

In advance of the 2017 Legislative Assembly, the Planning and Education Division coordinated the development of an agency Strategic Plan for the State Water Commission and Office of the State Engineer. The purpose of the Strategic Plan is to provide the agency with an opportunity to set the bar for itself, and to more effectively measure performance in the future. This process is expected to continue on a biennial basis.

The Planning and Education Division completed the agency's current Strategic Plan during the 2019-2021 biennium, which is intended to provide direction and clearly articulate where the agency will prioritize efforts during the 2021-2023 biennium and beyond.

The Strategic Plan included the following overarching goals for water resources in North Dakota:

1. Promote development and investment in water resource projects;
2. Utilize technology and education to increase our understanding for the improved management of the state's water resources; and
3. Continue our strong commitment to sustainable water management.

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, and other platforms to distribute current events and agency news are also used.

The Planning and Education Division's Public Information Officer 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.

BIENNIAL REPORTING

The primary purpose of this 2019-2021 Biennial Report, published in January 2022, is to highlight key events, accomplishments, and other pertinent activities of the State Water Commission and the Office of the State Engineer (now the Department of Water Resources). The biennial report and strategic plan work in concert, setting out agency goals, and then evaluating the agency's progress toward those goals.

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 project updates from each division. An employee engagement effort called Agency Spotlight was also developed as an effective internal communication strategy to encourage collaboration and team building, and consists of informative, educational, and entertaining presentations by staff members about their roles in the agency.

DROUGHT DISASTER LIVESTOCK WATER SUPPLY PROJECT ASSISTANCE PROGRAM

The Drought Disaster Livestock Water Supply Project Assistance Program (Program) provides cost-share assistance to livestock producers experiencing livestock water supply shortages caused by drought. The Program was originally created in 1991 in response to a severe statewide drought. This Program does not operate continually, but is initiated by the State Water Commission in response to a drought disaster declaration issued by the Governor.

The Program was previously activated in June 2017 through December 2019, resulting in $1.5 million in cost-share assistance on more than 500 water supply projects across the state.

On April 8, 2021, Governor Burgum declared another drought disaster, activating the Program again. Through June 30, 2021, $3 million in cost-share assistance had been approved for 778 water supply projects. At the time of this report's publication, the 2021 activation remained ongoing.

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 (EA); and Environmental Impact Statements (EIS).

Throughout the 2019-2021 biennium, the State Water Commission 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 2019-2021 biennium, the agency received 530 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 State Engineer 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 gages, 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, the State Engineer 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, the Water Commission contracted with HDR Inc. to assist the agency in drafting Economic Analysis (EA) and Life Cycle Cost Analysis (LCCA) processes. In addition, 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.

OTHER GOVERNMENTAL & NON-GOVERNMENTAL ORGANIZATION INVOLVEMENT

The Planning and Education Division also participated, to varying degrees, on several other governmental and non-governmental organizations, providing input from the State Engineer and State Water Commission's perspectives. 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 Basin Commission; and Assiniboine River Basin Initiative.

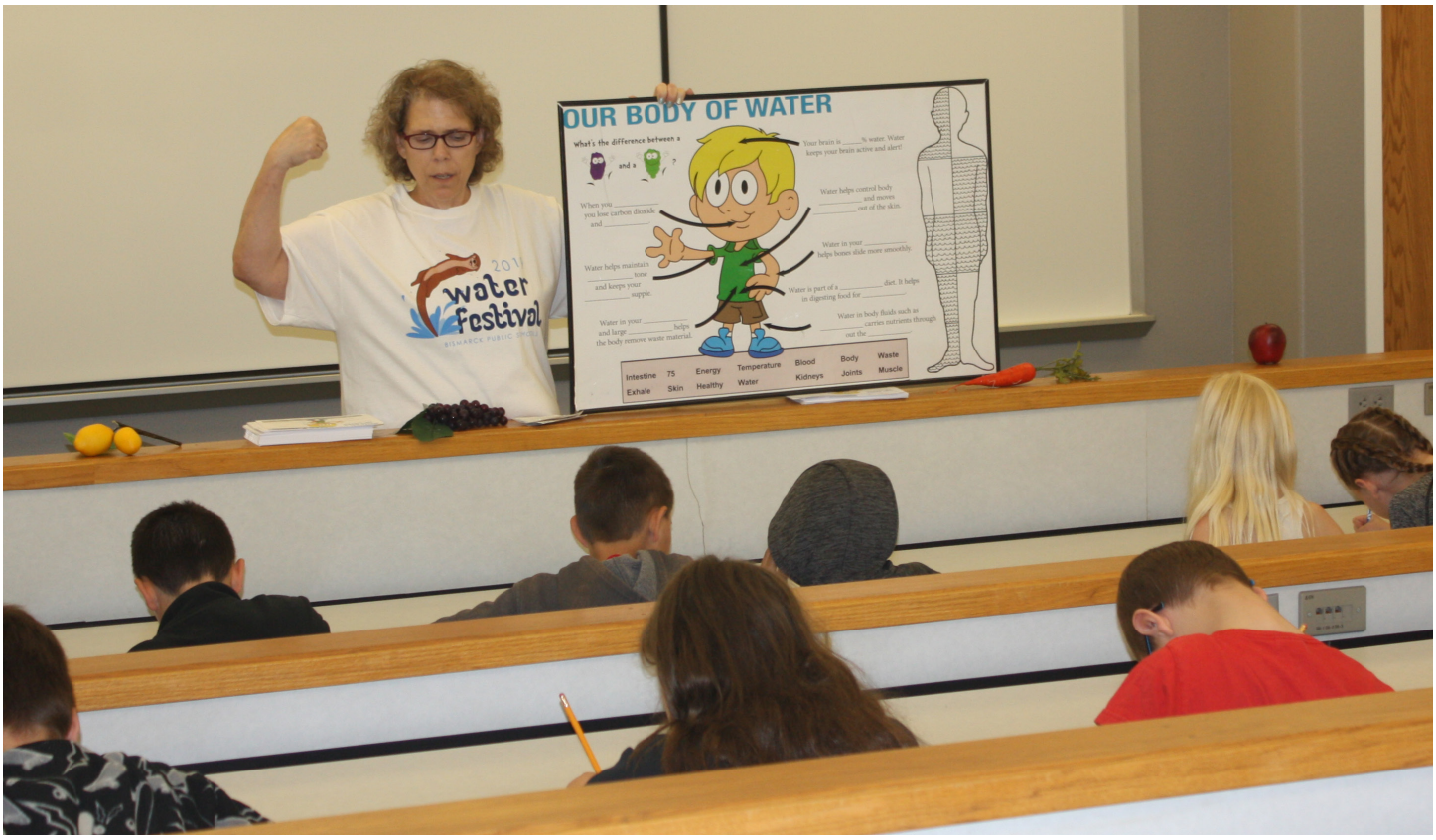
THE CURRENT

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 average distribution of the newsletter is approximately 2,600 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 2019-2021 biennium, average monthly distribution of the magazine was approximately 9,000 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.



NORTH DAKOTA WATER EDUCATION

In 1984, the 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 water users, 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.

REGULATORY DIVISION

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

SPECIFIC STAFF 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, navigable waters identification;
- Reviewing projects located within navigable waters;
- Coordinating the state's participation in the U.S. Army Corps' Silver Jackets Program; and
- Reviewing determination requests, complaints, and complaint appeals.

PERMITS

The agency has several statutory requirements regarding 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 permit requirements 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 review of water-related complaints, review of appeals of water resource district decisions, review of stream crossing and watercourse determination requests, processing of subsurface water management permits, and environmental review assistance coordinated with the Planning Division.

Division members also represented 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.

2019-2021 BIENNIUM RECEIVED & PROCESSED PERMITS

	RECEIVED/ INITIALLY PROCESSED	PROCESSED/ COMPLETED[1]	AGENCY DECISION[2]
Construction Permit Applications	85	83	77
Surface Drain Permit Applications	69	62	61
Emergency Drain Permit Applications	26	26	23
Subsurface Water Management Permits[3]	301	–	–
Sovereign Lands Permit Applications	78	65	62
Special Problems or Other Determination Requests[4]	46	28	15

[1] Processed/Completed applications or requests include requests received before the 2019-2021 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.

ENGINEERING & PERMITTING

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

The purpose of the Engineering & 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 to provide sound technical review of jurisdictional projects for the State Engineer's consideration. The E&P Section reviews permit applications for drainage and flood control projects to ensure the projects proposed are following the state of engineering practice as well as following 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 include water resource district permitting authority. The E&P Section routinely works with other state and federal agencies, political subdivisions, and the general public regarding the permitting processes. The E&P Section also conducts reviews of complaints, complaint appeals, and assessment appeals as well as review requests for stream crossing determinations and watercourse determinations. These duties require the E&P Section to be well versed in many areas of civil engineering practice as well as in statutes, rules, policy, and case history to ensure water control and management projects are completed within the engineering and legal requirements at the time of construction.

The E&P Section was active in the development of several new policies during the 2019-2021 biennium, including Construction Permit Water Management Policy (REG-2020-1), Drainage Permitting Definition Policy (REG-2020-2), and Statewide or Interdistrict Significance Policy (REG-2020-3).

CONSTRUCTION PERMIT WATER MANAGEMENT POLICY (REG-2020-1)

This policy effectively repealed and replaced the Construction Permit Applications affected property rights policy, also commonly referred to as the "0.1-foot policy."

REG-2020-1 was created to detail the construction permit application requirements with respect to water management considerations as well as answer common permit application and procedural questions regarding construction permitting. This policy is specific to projects requiring a construction permit under North Dakota Century Code section 61-16.1-38 and North Dakota Administrative Code article 89-08.

DRAINAGE PERMITTING DEFINITION POLICY (REG-2020-2) & STATEWIDE OR INTERDISTRICT SIGNIFICANCE POLICY (REG-2020-3)

These policies were created to provide forward-facing agency perspective to answer common jurisdictional and procedural questions regarding surface drainage permitting as well as address more specifically how the agency views "drainage of statewide or interdistrict significance."

The policies are specific to surface drainage projects requiring a permit under North Dakota Century Code section 61-32-03 and North Dakota Administrative Code chapter 89-02-01. These policies do not limit or alter the definitions of a "drain" and "assessment drain" in North Dakota Century Code title 61 as they pertain to assessment or legal drain projects. Specifically, these policies are intended to enhance existing Century and Administrative Code for the purposes of providing clarity on agency perspective of the surface drainage permitting process.

SOVEREIGN LANDS MANAGEMENT

North Dakota's sovereign lands are those areas, including beds and islands, lying within the ordinary high water mark of the state's navigable lakes and streams. The State Engineer (prior to agency reorganization into the Department of Water Resources in 2021) is responsible for determining which of those lakes and streams were navigable in fact, at the time of statehood, and therefore sovereign lands of the state; delineating the ordinary high water mark (OHWM) of those navigable water bodies; and administering and managing the state's non-hydrocarbon related mineral interests in North Dakota's sovereign lands.

The goal is to manage, operate, and supervise North Dakota's sovereign land, for multiple uses, that are consistent with the Public Trust Doctrine, and are in the best interest of present and future generations. Meeting these goals can be challenging, given the increasing popularity of water-based recreation, and the draw 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. This plan outlines the authority to manage sovereign lands, and it includes recommendations and corresponding action strategies that are intended to improve management of this valuable resource. The State Engineer also developed the OHWM Delineation Guidelines in 2007. These guidelines are intended to provide a consistent and repeatable method for accurately delineating the OHWM, in both riverine and lake environments. Any OHWM delineations conducted on state sovereign lands must be done in full compliance with the State's Delineation Guidelines.

During the 2017 and 2019 North Dakota Legislative Sessions, legislation was passed amending the ownership of riverbed segments and defining requirements for ordinary high water mark determinations. Any projects that occur, either partially or wholly upon state sovereign lands, require authorization in the form of a Sovereign Land Permit, from the State Engineer (now the Director), prior to construction.

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

The agency also works with city, county, federal, and other state land managers, to improve 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 63 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.

Responsibility for the review of construction permit applications for dams and ponds was transferred to the dam safety program starting in January 2020. From that time to the end of the biennium, 14 construction permit applications were reviewed by the dam safety program and approved by the State Engineer. In addition, one emergency construction permit was reviewed and approved, one emergency permit extension was reviewed and approved, and 42 construction permit applications were reviewed and processed as not requiring a construction permit.

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 2019-2021 biennium, full periodic dam safety inspections were completed on 34 high and medium hazard dams, or approximately 30% of North Dakota's high and medium hazard dams. An additional 19 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, inspect flood damage at dams, read dam instrumentation, investigate permit applications and complaints, and observation of new dam construction.

During this biennium, work also continued on a project to update the North Dakota Dam Design Handbook (North Dakota State Engineer, June 1985), which outlines design standards for dams in North Dakota. The project was initiated in 2017 and will incorporate state-of-the-practice design standards for dam design in North Dakota, and will help clarify and strengthen North Dakota's minimum dam design standards and requirements for dam construction permits. This project is being funded by National Dam Safety Program (NDSP) grants through the Department of Homeland Security (DHS), and the Federal Emergency Management Agency (FEMA).

A Statewide Probable Maximum Precipitation (PMP) study was completed by Applied Weather Associates in June 2021. This study was initiated in 2018 with support from the North Dakota Silver Jackets program. Spillway design standards for dams are based on the PMP, so it is an important facet of dam safety to have PMP values that are up-to-date using current precipitation data and state-of-the-art methods. During this biennium, the dam safety program continued to work toward developing guidance for dam-related work in the future.

NORTH DAKOTA SILVER JACKETS PROGRAM

The North Dakota Silver Jackets is an Army Corps of Engineers sponsored program to establish a joint Federal/State Flood Risk Management Team (in every state) with a mission of enhancing and promoting 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 Services (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 identification, development and implementation of selected projects and measures with a 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 2019-2021 biennium.

LiDAR (Light Detection and Ranging) Collection:

The Commission has been involved with collecting LiDAR since 2010, and completed and posted coverage for the entire State in 2017. In 2018, the Commission continued this effort for new LiDAR Quality Level II, one step higher than our current LiDAR data - in keeping with the USGS's new federal standard for LiDAR collections. This new effort is progressing from east to west with funding and participation primarily from the USGS, the NRCS and FEMA Region VIII, along with the St. Louis Corps. To date, North Dakota has completed new collections of the Red River, Devils Lake and James River Basins. As this data is processed, it is posted on the agency's website and is available for use by all local, state, and federal agencies to include the general public.

North Dakota Statewide Probable Maximum Precipitation (PMP) Analysis:

With funding approved by the State Water Commission in October 2018, staff developed a Request for Proposal (RFP) for a Statewide Probable Maximum Precipitation (PMP) Analysis. The purpose of this study is to develop updated, more comprehensive PMP estimates for use when evaluating flood safety, dam safety and construction criteria, and for calibrating event specific hydrological models. The current PMP data covering North Dakota was published by the National Oceanic and Atmospheric Administration (NOAA) in the late 70s and early 80s and was in need of updating. With the support of the North Dakota Silver Jackets, a Comprehensive State and Federal PMP Steering Committee was developed to lead and review the PMP analysis. This team consists of the Commission, the Grand Forks and Bismarck Offices of the NWS, the NRCS, the Omaha Corps and the North Dakota State Climatologist. A firm was selected in March 2019, and the PMP analysis officially began in May 2019 with a two-day public "kick off" meeting in Bismarck. This analysis was completed in June 2021 and was presented virtually to the public, local, state and federal agencies. This analysis will be posted on the agency's website and is expected to be available for use in early 2022.

ND Risk Assessment Map (NDRAM) Enhancement:

The Commission is working with the Omaha Corps and FEMA Region VIII to include the Corps' "Building Structure Database" along with their "Damage Curve Data" to the agency's current NDRAM platform. This project was submitted in spring 2020 and is expected to be a multi-year project with initial funding approved by the Omaha Corps in April 2021. Upon completion it will assist federal and state agencies in identifying both the flood risk and associated damages throughout North Dakota.

Missouri River Basin Non-Stationarity Study:

The Commission is partnering with the USGS and the Omaha Corps to determine the impact of changing precipitation and hydrology on the Missouri River Basin. This is a multi-state/multi-year effort with our participation beginning in spring 2020 and funding being provided by FEMA Region VIII. Most recently the scope of this study has expanded to include additional river basins in North Dakota.

Discharge-Frequency Curve Update on the Mouse River:

This project was requested through the St. Paul Army Corps in spring 2020. Upon approval, this project will update the discharge frequency curves at the Sherwood and Westhope gages and allow for better flood forecasting throughout the Mouse River Basin.

NORTH DAKOTA SILVER JACKETS PROGRAM

Mouse River Basin Flood Inundation Mapping:

This project has been ongoing since 2016 as a multi-year project with the Commission, St. Paul Corps, USGS, the Bismarck NWS Office, and Souris River Joint Board (SRJB). Phases 1 through 3 include the Mouse River Basin, and most recently in 2020 the project was expanded to include the Des Lacs River Basin (Phase IV). Upon approval this project will be provided to the SRJB and posted on the NWS Advanced Hydrologic Prediction Service web portal. This project will allow all users to identify their location in the vicinity of the Mouse and Des Lacs River Basins and determine their risks of flooding based upon current conditions.

Mouse River Basin Soil Instrumentation Project:

This effort is being supported by the Commission, St. Paul Corps, Bismarck NWS Office, USGS, USFWS and SRJB with a goal to install soil moisture and temperature gages throughout the Mouse River Basin (MRB). Through the recent development and use of the agency's new PRESENS (Pushing REmote SENSors) network, the agency identified the potential to use this cost-efficient system to collect data which could then be used by the NWS (and all agencies) to enhance their flood forecasting capability. The Silver Jacket Team is currently identifying locations for a small pilot project in the MRB with deployment for six select sites to be installed in fall 2021. Upon completion of this effort there is potential for the project to be expanded throughout the MRB in the near future.

Red River Bathymetry Collection:

This project was requested by the Red River Basin Commission through the North Dakota Silver Jackets to provide updated bathymetry on the Red River main stem from the South Dakota border to the Canadian border. Updated Bathymetry data on the Red River will enhance and improve all hydrology and hydraulic (H&H) studies in the Red River Basin and related flood risk reduction projects accordingly. At the time of this report's publishing, the DWR was in the process of finding a local partner to move forward with this effort.

Little Missouri Hydrology and Hydraulics (H&H) Study:

The Commission has identified current flood risk in the Little Missouri River Basin and has requested the Omaha Corps to conduct a study of the Little Missouri from its headwaters in Wyoming to the mouth with the Missouri River. Updated data is currently lacking in North Dakota and would enhance all flood risk mitigation and reduction efforts in the Little Missouri River Basin. If approved, this project would be funded and completed by the Omaha Corps with selected engineering support from the Commission's Investigations Section. This project is currently pending Omaha Corps approval.

FLOODPLAIN MANAGEMENT

Two staff members work with FEMA-funded floodplain programs within the Regulatory Division. 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 2019, 2020, and 2021 FEMA grant cycles, an additional $3,989,305 was allocated through FEMA Risk MAP Grants to be used toward the collection of Quality 2 level LiDAR acquisition, Statewide 15cm 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 National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities. The State NFIP Coordinator assists the 334 participating communities in North Dakota. Through local participation, roughly $2.3 billion in flood insurance coverage is provided, with over 8,200 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 § 61-16.2 explains the higher state floodplain standards that communities are expected to follow, including the one-foot of freeboard requirement for new or substantially improved structures.

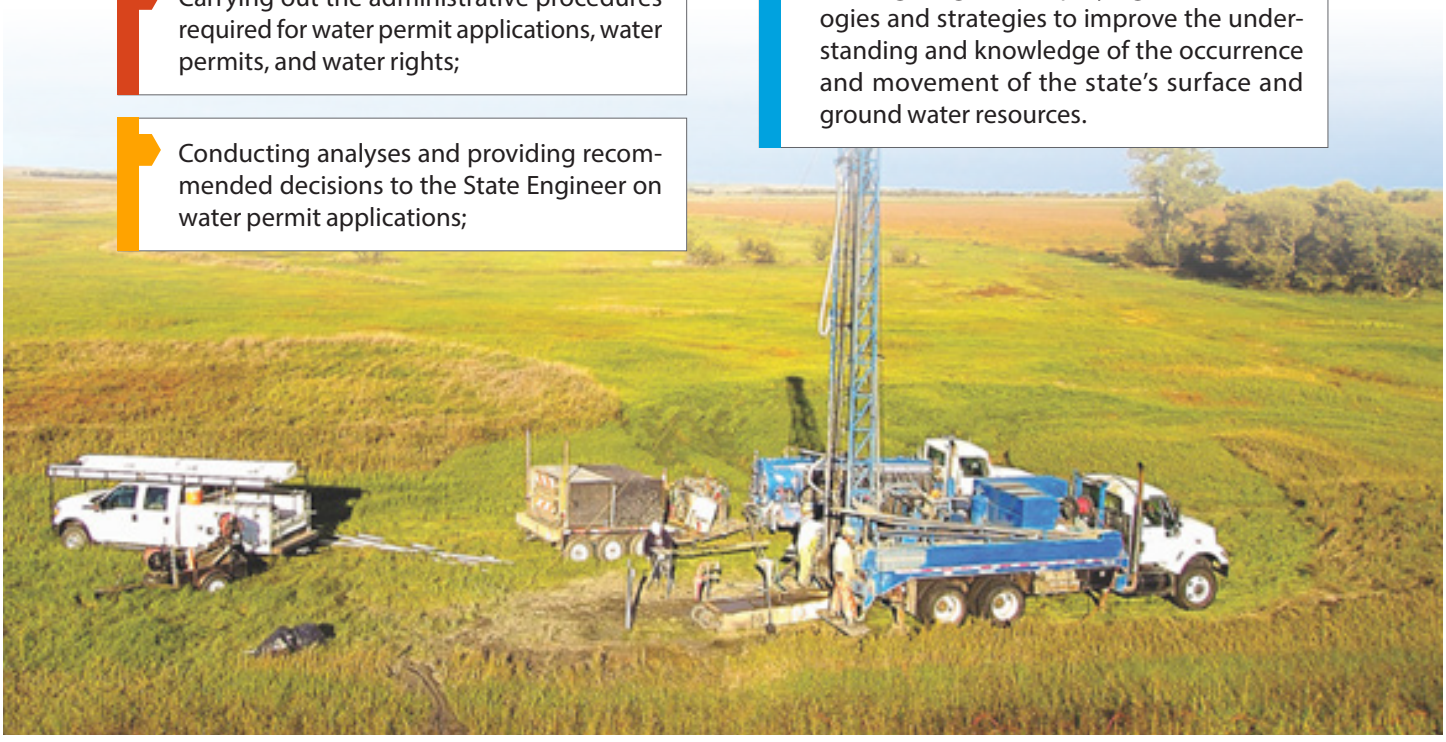
The Community Rating System (CRS) was developed to reward communities that go above and beyond FEMA's minimum requirements. Twelve North Dakota communities are currently enrolled in the CRS, which gives NFIP flood insurance policy holders a discount on their premium. The current total annual savings statewide is estimated to be approximately $248,000.

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. The laws are based on the Doctrine of Prior Appropriation.

SPECIFIC STAFF 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; and
- 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.



PERMIT & WATER USE

In addition to the permitting and water use data below, Water Appropriation staff completed the following functions during the 2019-2021 biennium:

- 37 water depot inspections;
- 80 inspections of constructed works associated with conditional water permits;
- 1,045 temporary water permits were issued;
- 116 conditional or perfected water permits were canceled for non-development or use;
- 14 conditional water permit applications were denied; and
- 75 perfected water permits were issued.

DATA ACQUISITION

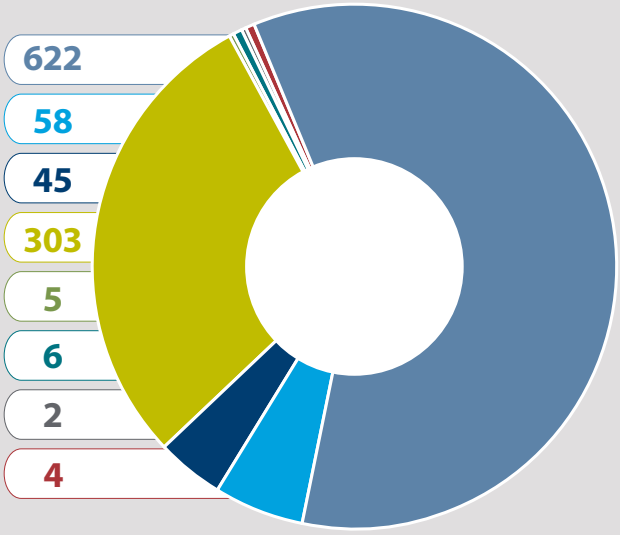
The Water Appropriation Division Drilling Program completed 111 test holes during the 2019-2021 biennium, 101 of which had monitoring wells installed. There were 82 monitoring wells plugged or plugged and replaced. In 2019, an airborne electromagnetic survey was completed in the Spiritwood aquifer in portions of Griggs, Foster, Eddy, Nelson, Ramsey, Benson, and Towner counties. Periodic stream-gaging was conducted at six locations equipped with PRESENS devices to measure the stream stage.

ECONOMIC DEVELOPMENT

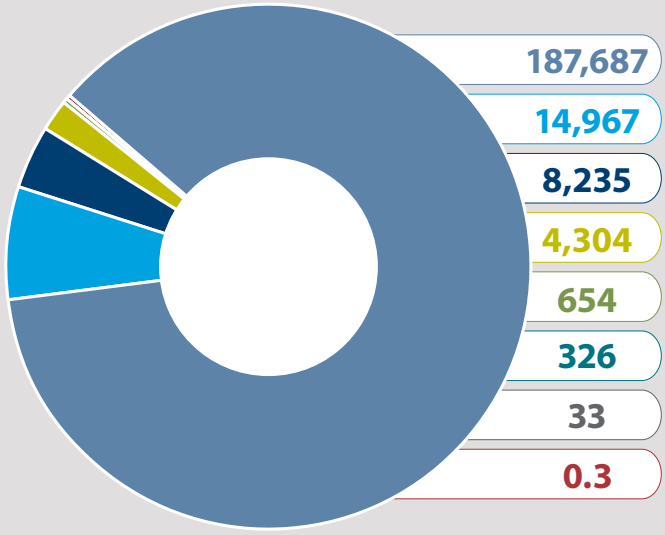
Economic development is a major state initiative. In most instances, water is needed to serve new enterprises. The Appropriation Division provides information to the North Dakota Department of Commerce and local economic development organizations regarding the availability and chemical quality of water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

TEMPORARY WATER PERMITS ISSUED: 2019-2021

NUMBER ISSUED



PERMITS BY ACRE-FEET



IND. - WATER DEPOT | IRRIGATION | INDUSTRIAL | CONSTRUCTION

LIVESTOCK | RESOURCE PLANNING | MUNICIPAL | FIRE PROTECTION

RESEARCH, STUDIES, & REPORTS

During the 2019-2021 biennium, the Water Appropriation Division completed the following report on aquifer water level changes in the Fox Hills - Hell Creek aquifer:

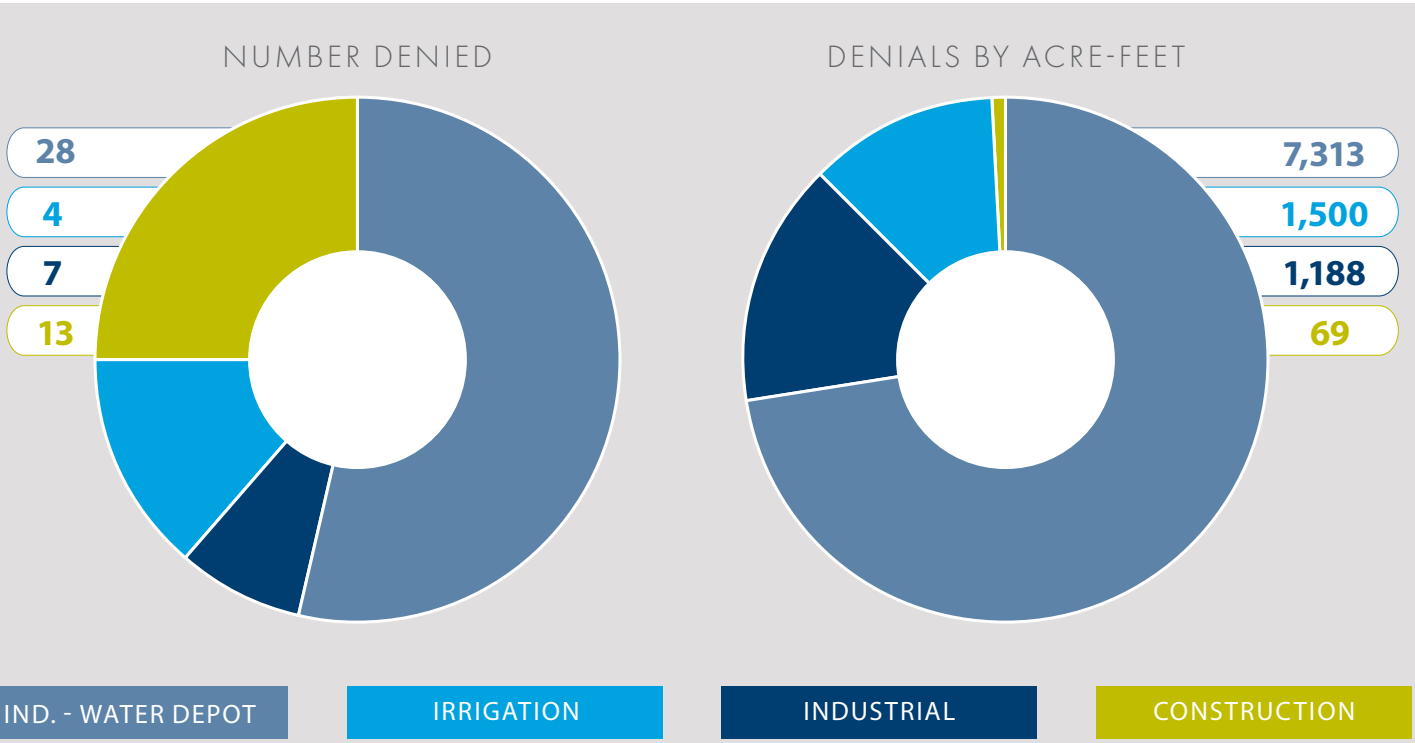
- Fox Hills - Hell Creek Aquifer 2016 Conditions: Pressure Head and Water Quality, which documented the decadal changes in the Fox Hills - Hell Creek aquifer from the last update completed in 2005.

The Water Appropriation division is also involved with NDSU and the USGS in a study to improve the understanding of rural water system water-use across the state of North Dakota.

AGENCY REPRESENTATION

The Water Appropriation Division represents the Commission 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.

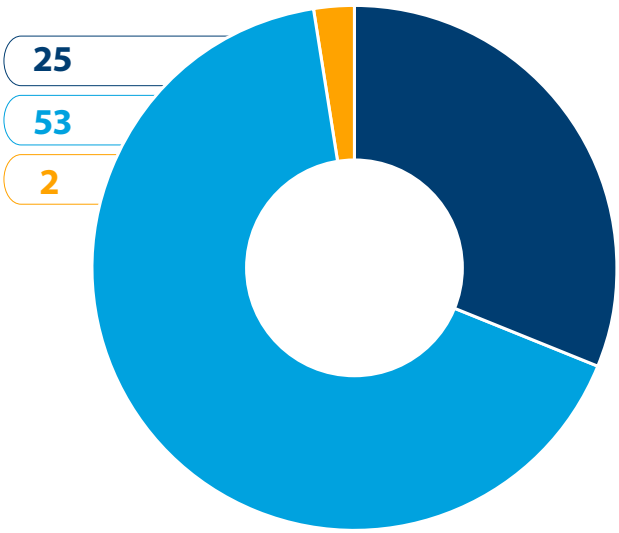
TEMPORARY WATER PERMITS DENIED: 2019-2021*



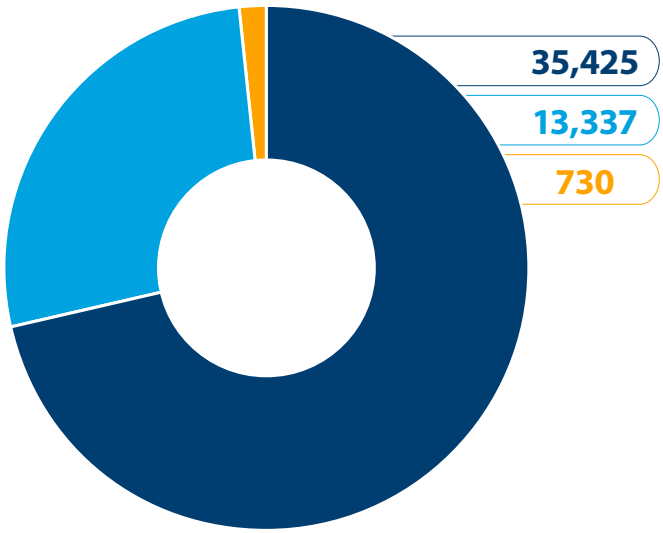
* If the DWR determines an application or portion of an application does not meet the criteria prescribed in NDCC 61-04-06 for any reason, the application or portion must be denied. Common examples for the denial of a water permit application would include: the withdrawal of the application by the applicant, 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 : 2019-2021

NUMBER RECEIVED



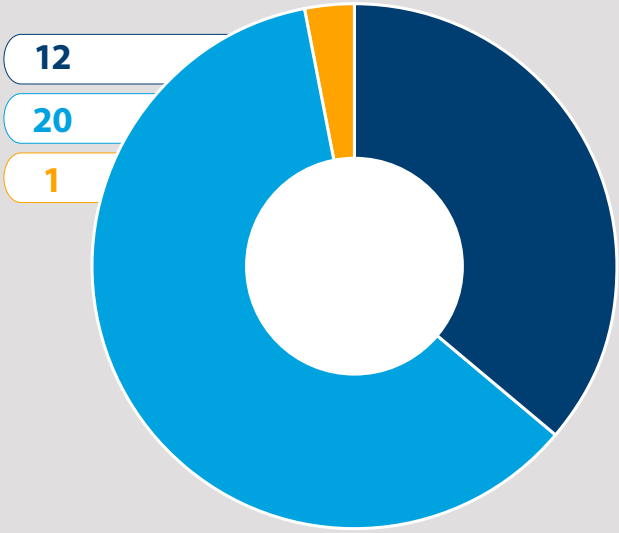
APPLICATIONS BY ACRE-FEET



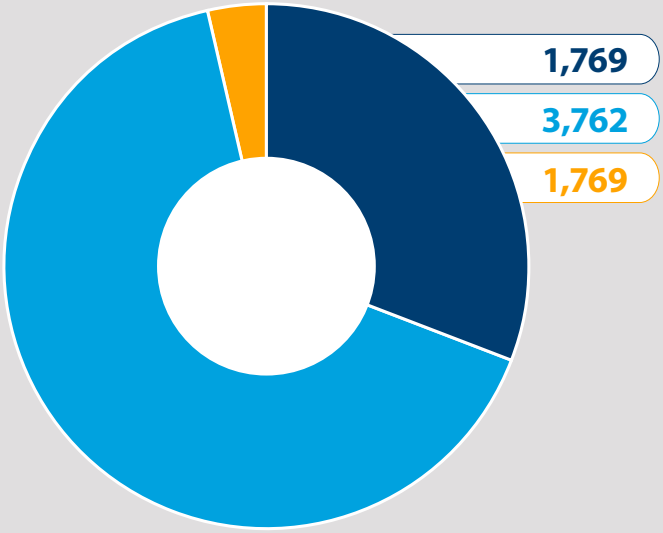
INDUSTRIAL | IRRIGATION | RURAL WATER

GROUNDWATER PERMITS APPROVED : 2019-2021

NUMBER APPROVED



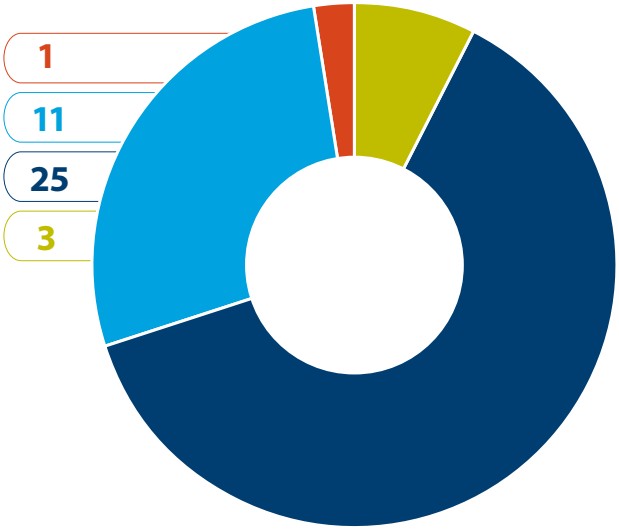
APPROVALS BY ACRE-FEET



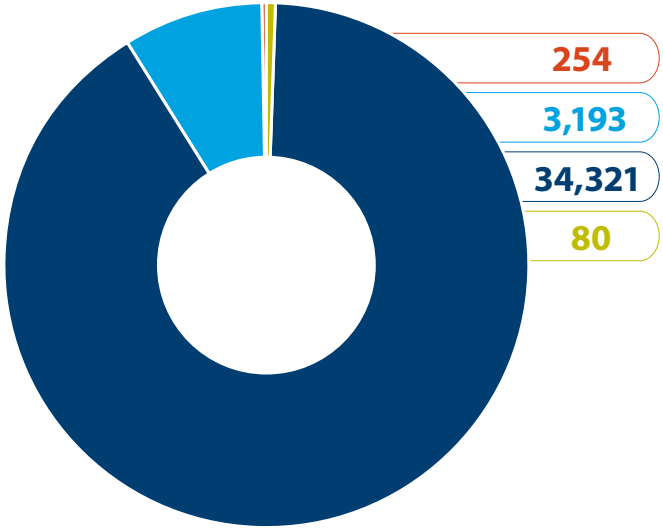
INDUSTRIAL | IRRIGATION | RURAL WATER

RECEIVED CONDITIONAL WATER PERMITS
SURFACE WATER APPLICATIONS

NUMBER RECEIVED



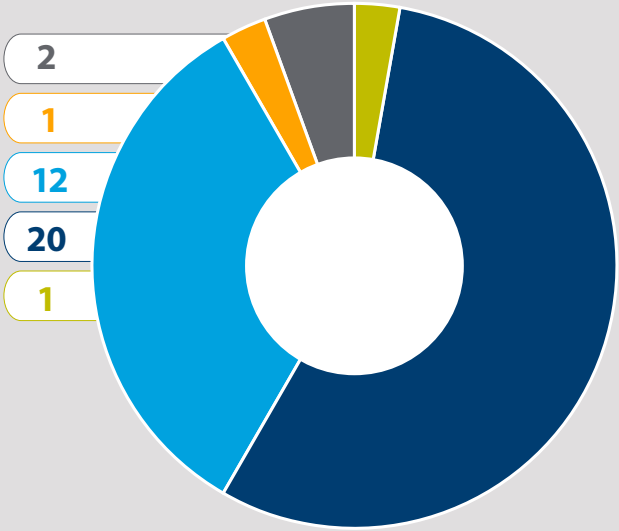
APPLICATIONS BY ACRE-FEET



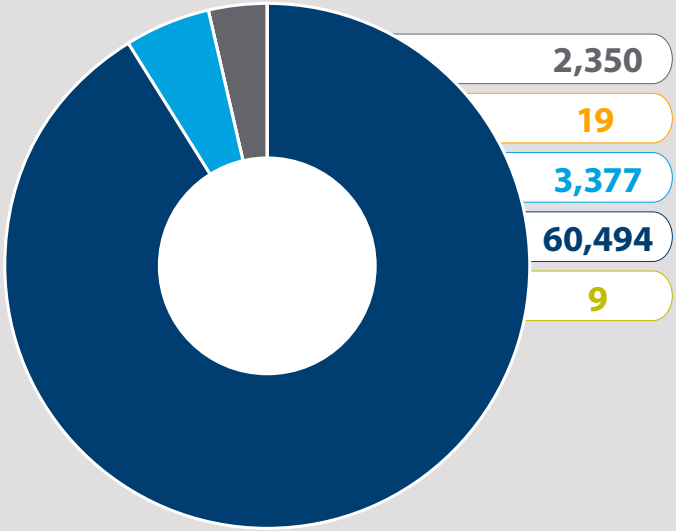
STOCK | IRRIGATION | INDUSTRIAL | FISH & WILDLIFE

SURFACE WATER PERMITS APPROVED : 2019-2021

NUMBER APPROVED

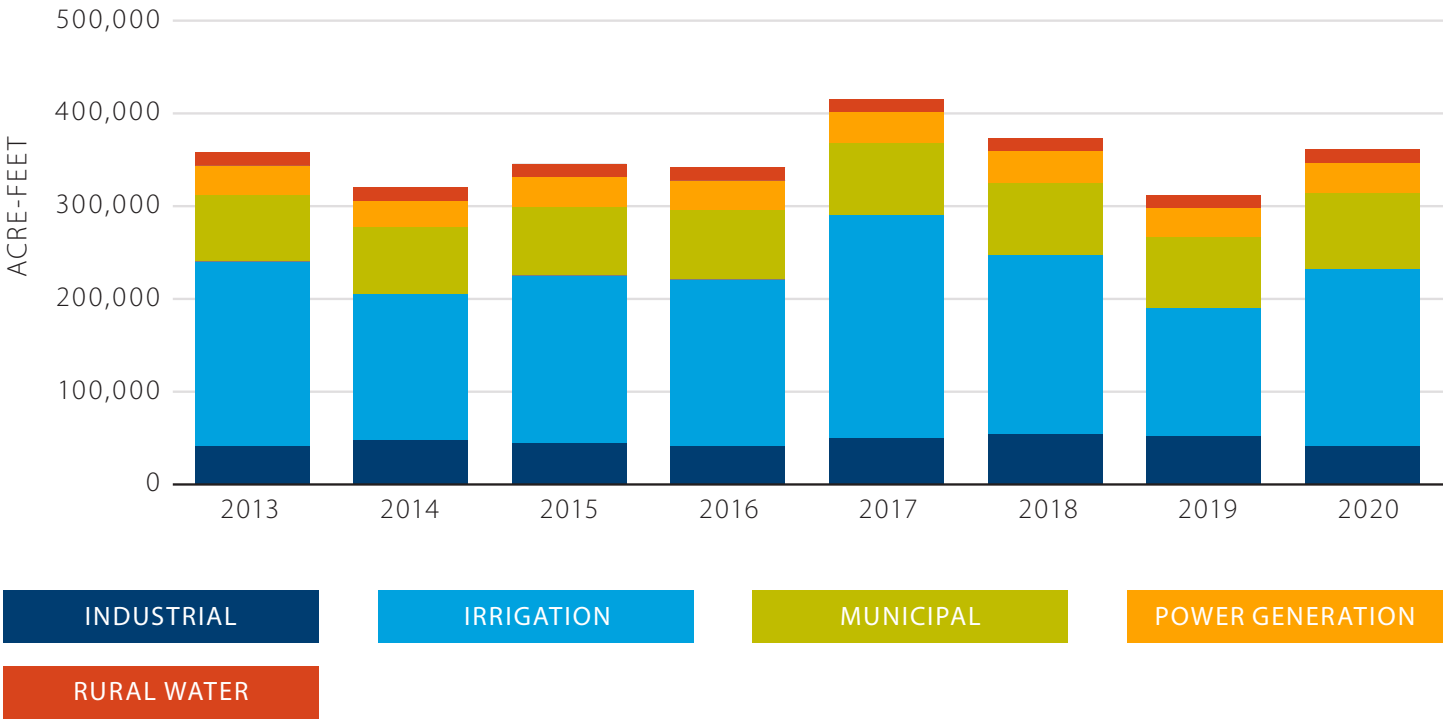


APPROVALS BY ACRE-FEET

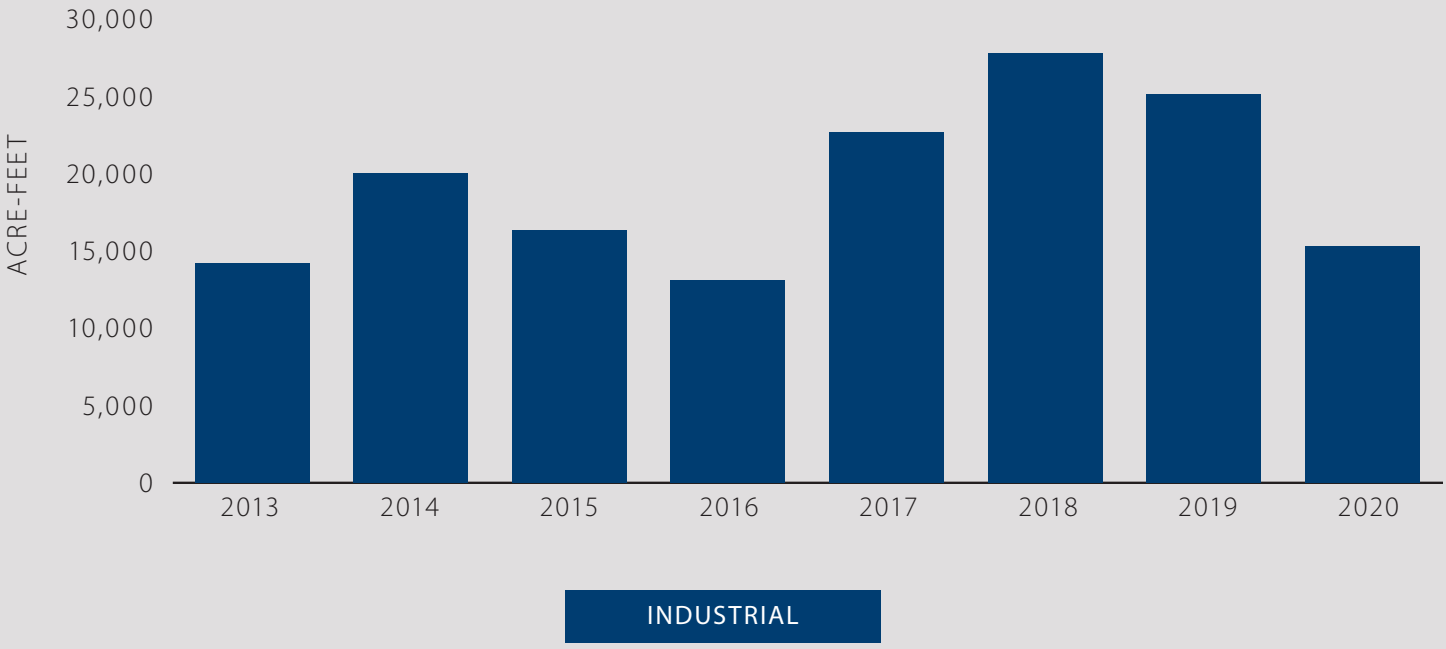


INDUSTRIAL | IRRIGATION | MULTI-USE | FISH & WILDLIFE | MUNICIPAL

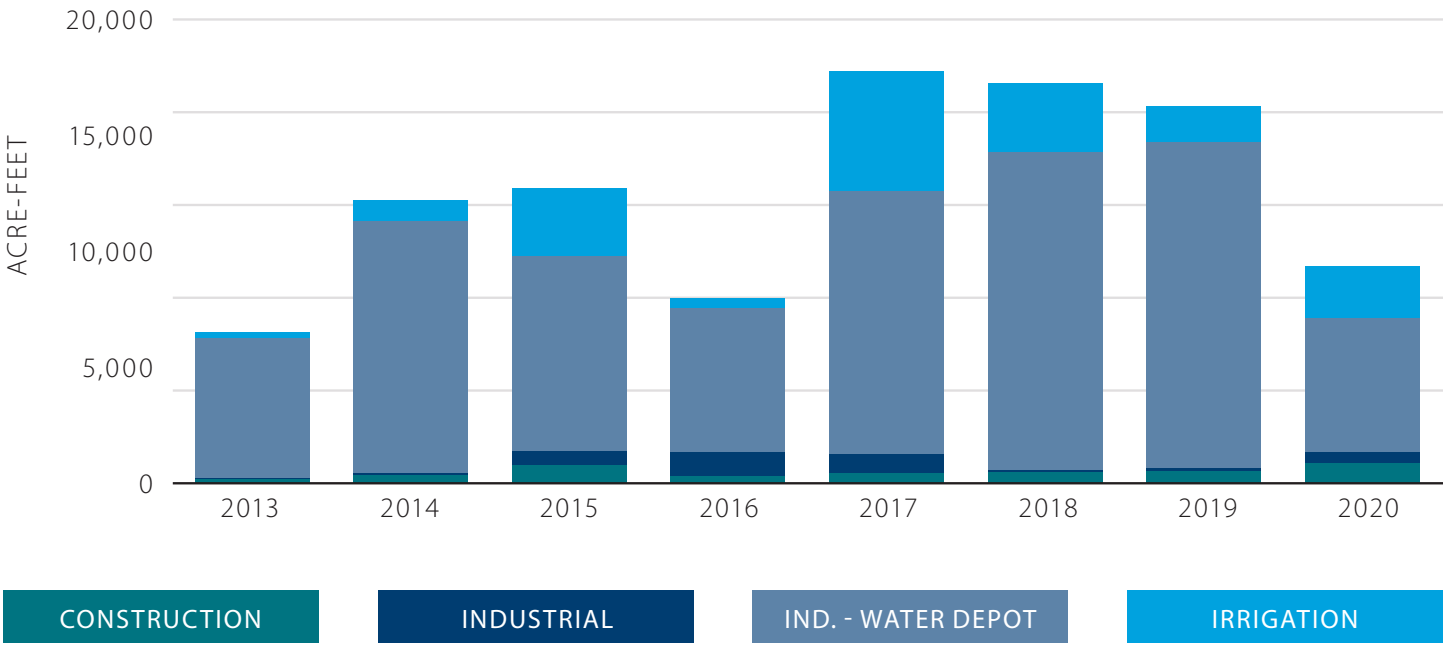
CONDITIONAL PERMIT WATER USE: 2013-2020



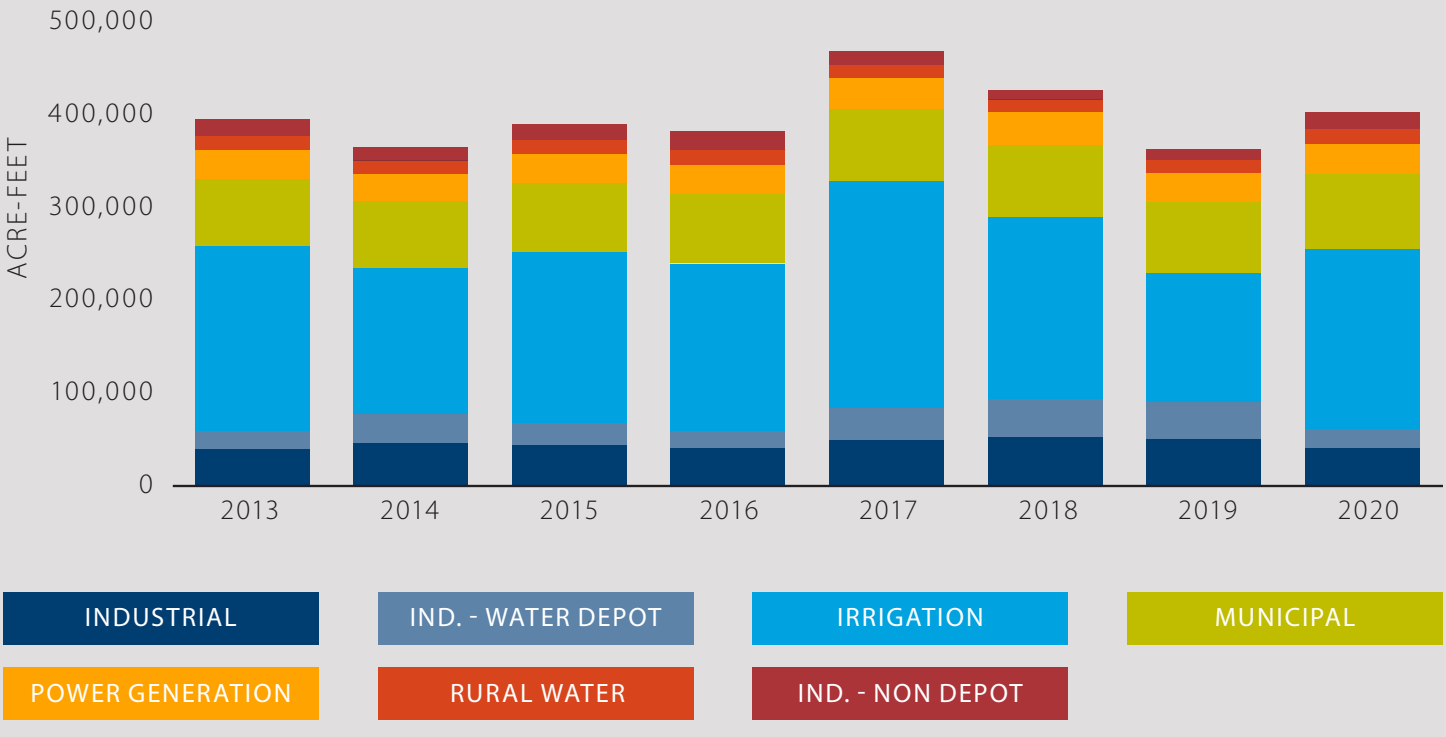
INDUSTRIAL PERMIT USE (DEPOT): 2013-2020



TEMPORARY WATER PERMIT USE: 2013-2020



TOTAL PERMITTED WATER USE: 2013-2020



LANDFILL & MINE REVIEW

The Water Appropriation Division cooperates with the Department of Environmental Quality (DEQ) in reviewing ground water aspects of landfill applications. However, from July 1, 2019, through June 30, 2021, no landfill pre-applications were reviewed for the Department of Environmental Quality.

The Water Appropriation Division reviews coal mining permits and revisions regarding ground water and wells. The Division performed 16 mine-related environmental reviews during the 2019-2021 biennium. The mine-related environmental reviews range from quarterly reviews of continuations of nationwide permits to reviews of plans for mine expansions. The reviews consider ground water and surface water resources in the area and evaluate potential impacts of mine-related activities to these resources. Comments from the Water Appropriation Division staff are passed on to mine staff and other regulatory agencies.

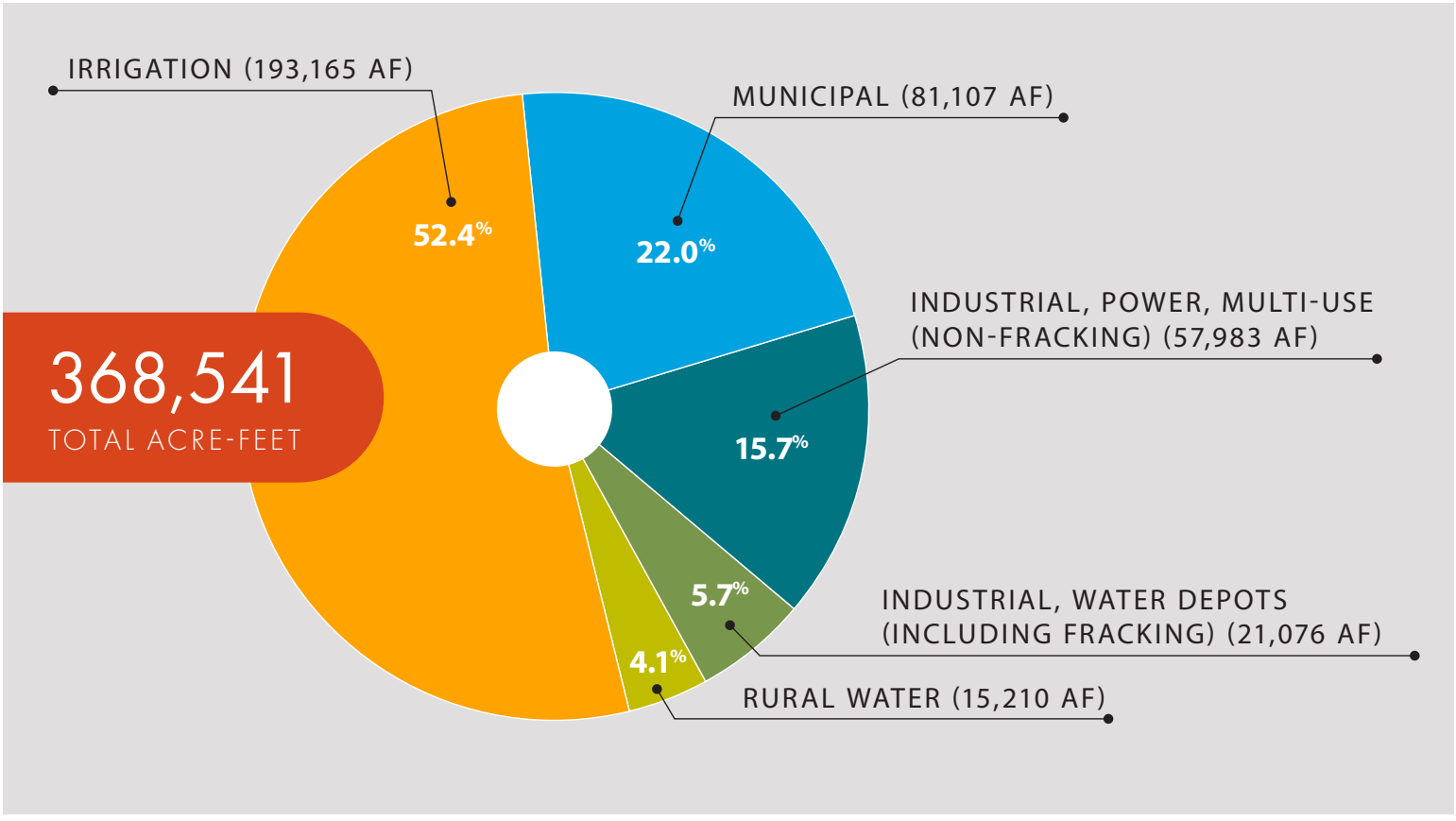
In addition, about five reviews per week of water appropriation requirements for public works projects are conducted.

WATER USE MANAGEMENT

Water use by the oil industry in western North Dakota decreased during the 2019-2021 biennium compared to the previous biennium. Authorized water use to the oil industry is given through conditional and temporary permits. 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.

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 are heavily fined to assure compliance. Fines for unpermitted pumping are profit based to assure that illegal pumping is not profitable. The division uses administrative consent agreements (ACAs) as the preferred method to resolve water use violations to avoid lengthy and costly court processes. In the 2019-2021 biennium, 12 violations were resolved through administrative consent agreements, resulting in total fines of $255,952, with $174,452 paid, and the remainder suspended. Monies collected in fines through ACAs are deposited into the state's general fund.

2020 NORTH DAKOTA CONSUMPTIVE WATER USE



WATER DEVELOPMENT DIVISION

The Water Development Division supports various efforts of the State Water Commission and State Engineer (now the Department of Water Resources) by providing technical expertise through its management of various projects and programs.

SPECIFIC STAFF 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; and
- Providing engineering and construction services for the repair of small dams and gaging stations.

INVESTIGATIONS SECTION

During the 2019-2021 biennium, the Investigations Section provided support on several projects and studies, which are described below. 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. 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. Completion of tasks within the City of Zap are still ongoing.

Emmons County Study

As part of the Planning and Assistance to the States agreement between the U.S. Army Corps of Engineers and the Emmons County Water Resource District, staff completed an analysis of flood risk for the City of Linton. The flood risk analysis included the development of a hydrologic model for the Beaver Creek Basin, a hydraulic model for Beaver Creek near Linton, a structural inventory within the City of Linton, and an alternative analysis to mitigate flooding within the City of Linton. An amendment to the agreement added an assessment of Strasburg Slough near the City of Strasburg. Work on the Emmons County Study was completed in January 2020.

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 staff's findings and supporting data.

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. Study tasks include a site survey, examination of the lake's hydrology, alternatives analysis to mitigate flood damages around the lake, evaluation of downstream impacts, and documentation of findings.

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.

Probable Maximum Precipitation Study

The Probable Maximum Precipitation (PMP) Study was initiated to develop more representative PMP estimates for the State of North Dakota for evaluating flood safety, assessing flood risk, and calibrating event-specific hydrologic models.

In June 2021, the PMP project was completed. Statewide data was updated to include both summertime and rain on snow events, 24 new storms in all and a snow water equivalent dataset. PMP estimates can now be found using a GIS tool that provides more user friendly features.

Closed-Basin Lake Monitoring

The Investigations Section monitors lake levels of North Dakota's numerous closed-basin (land-locked) lakes. Measurements are obtained through a combination of PRESENS, dataloggers, and manual measurements. Lake levels are monitored at the following locations:

- Hobart Lake (Barnes County)
- Sanborn Lake (Barnes County)
- Ten Mile Lake (Barnes County)
- Minna Lake (Emmons County)
- Rice Lake (Emmons County)
- Strasburg Slough (Emmons County)
- Unnamed Slough (Emmons County)
- Bird Lake (Kidder County)
- Bond Lake (Kidder County)
- Brock Slough (Kidder County)
- Dead Buffalo Lake (Kidder County)
- Horsehead Lake (Kidder County)
- Carls Slough (Kidder County)
- Kunkel Lake (Kidder County)
- McPhail Slough (Kidder County)
- Sibley Lake (Kidder County)
- Sink Lake (Kidder County)
- Boom Lake (LaMoure County)
- Twin Lakes (LaMoure County)
- McKenna Lake (Logan County)
- West Lake (Logan 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)

NORTHWEST AREA WATER SUPPLY

The protracted environmental review and litigation on the NAWS project was resolved early in the 2019-2021 biennium. The State of Missouri had until August 1, 2019, to appeal the District of Columbia Circuit Court of Appeals' May 3, 2019, affirmance of the District of Columbia District Court's August 2017 summary judgment and lifting of the injunction to the Supreme Court. That deadline passed with no action from Missouri.

Design and construction continued on the NAWS system during the 2019-2021 biennium. About $47 million was invested in the project from multiple sources, including the CIty of Minot, federal MR&I funds, and the state.

The design of the Biota Water Treatment Plant in Max was completed during the biennium and construction started in spring 2021. The design of the intake modifications to the Snake Creek Pumping Plant and the South Prairie Reservoir and Hydraulic Control Structure, the two principal remaining contracts necessary to deliver Lake Sakakawea water to Minot, were also underway and nearing completion. A condition assessment and repairs to the raw water line were also undertaken in the biennium.

Three of the four remaining pipeline contracts on the distribution system were completed in the 2019-2021 biennium with the final contract also underway. Construction of the Lansford Reservoir and Pump Station began late in the biennium and design of the reservoirs and pump stations near Souris and Bottineau were well underway. Construction of the Phase II improvements to the Minot Water Treatment Plant continued throughout the biennium.

SURVEY CREW

The Commission has employed a Survey Crew and engineering technicians since the creation of the agency as the Water Conservation Commission in 1937. The Survey Crew collects survey data state-wide for a variety of purposes: survey of water bodies for hydraulic and hydrologic modeling, aquifer monitoring, high water marks, construction survey, drainage issues, geomorphic changes, sovereign lands issues, and lake level monitoring. The Survey Crew completes many surveys for the agency, water boards, cities, counties, other agencies, and the public. The Survey Crew also conducts snowpack monitoring in coordination with the United States 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 near Sundown Acres to Graner Bottoms.

The Survey Crew also has one of four licensed drone pilots on staff who collect imagery for surveys and publications. Drone imagery collected by the Survey Crew has also aided in the collection of statewide LiDAR, lowhead dam identification, and collection of photography for many known water resource issues.

The Survey Crew has also helped improve the accuracy of the upcoming North American-Pacific Geopotential Datum of 2022, which will be replacing the North American Vertical Datum of 1988. The Survey Crew completed over 50, four-hour long Opus occupations on known benchmarks and submitted the occupations to be utilized in preparing the new vertical datum.

SOUTHWEST PIPELINE PROJECT

In the 2019-2021 biennium, work progressed on meeting the goal for increasing the raw water transmission and intake capacity of the Southwest Pipeline Project (SWPP) to meet the growing need for water in southwest North Dakota. Focus also shifted to increasing the treated water distribution capacity needs of the project in the 2019-2021 biennium.

Construction of upgrades at the Dodge and Richardton pump stations to increase raw water transmission capacity was mostly completed in the 2019-2021 biennium. The scope mainly consisted of replacing three existing 700 horsepower (HP) vertical turbine pumps with 1,000 HP vertical turbine pumps and installation of one new 1,000 HP vertical turbine pump at the Dodge pump station, and replacing three 900 HP vertical turbine pumps with 1,250 HP pumps at the Richardton pump station along with associated valves, piping, and electrical work. The scope of work 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.

Construction of the second Davis Buttes reservoir and the second Belfield reservoir was completed. Both reservoirs are above ground factory glass-coated bolted steel reservoirs. The 2nd Davis Buttes tank is a 1,000,000 gallon tank, 60 feet in diameter, and 47 feet to overflow, located north and east of the City of Dickinson. The 2nd Belfield reservoir is a 750,000 gallon tank, 52 feet in diameter, and 47 feet to overflow, located east of the City of Belfield.

A three-pronged approach was devised to meet the treated water distribution capacity needs of the project. The three prongs include: 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 by implementing hydraulic improvements like 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 that area. Design of improvements to the transmission pipelines from the Ray Christianson Pump Station to the New England, Belfield, and Davis Buttes reservoirs to address Prong 1 were mostly completed in the 2019-2021 biennium. However, construction was put on hold because of reduced revenue in the Resources Trust Fund.

With regard to Prong 2, based on the preliminary waiting list information, strategic hydraulic improvement projects were identified for design. The Taylor elevated tank, which is a hydraulic improvement project to serve users north and east of Dickinson, was bid and awarded. The Taylor elevated tank is a 400,000 gallon pedestal spheroid tank with an overflow height of 156 feet. As for Prong 3, based on the current service levels in comparison to the 911 addresses currently not served by the project, the Burt and Hebron service areas including Lake Tschida residents were selected for proceeding with a rural sign-up campaign.

Capital repayment collected from July 2019 through June 2021 totaled $10,734,652. All of which was deposited in the Resources Trust Fund.

An independent study to determine the merits and demerits of the State of North Dakota owning the SWPP along with a comparative analysis of other regional water systems in North Dakota was completed. A study called the Strategic Governance and Finance Study to perform a comparative analysis of alternative frameworks for the governance and finance of regional water systems and to provide guidance for a recommended governance and finance framework for future regional water systems was also mostly completed.

DESIGN & CONSTRUCTION SECTION

During the 2019-2021 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.

DAVIS DAM, SLOPE COUNTY

During the 2019 spring runoff, a sink hole was discovered over the principal spillway at Davis Dam, an embankment dam in rural Slope County. The dam is owned by the North Dakota Game and Fish Department. Subsequent investigation found the first joint upstream of the downstream end had separated, allowing embankment material to be washed away, leading to the sinkhole. The principal spillway conduit is a 36-inch diameter corrugated metal pipe (CMP).

The Game and Fish Department requested cost-share, and technical and construction support from the Water Commission to repair the conduit.

The construction crew excavated and removed the displaced piece of conduit. Sheet pile was driven into the support soil, and the salvaged piece of CMP was reinstalled with a new connecting band. Concrete saddles where constructed at the joint with the next upstream CMP and at the downstream end where the conduit discharges into a plunge pool. The pile-supported saddles will prevent future movement of the conduit and opening of the joint between the pieces of CMP.

INDIAN CREEK DAM, HETTINGER COUNTY

Indian Creek Dam is a 42-foot high, embankment dam constructed in 1979 in rural Hettinger County. The dam is owned by the North Dakota Game and Fish Department. The principal outlet consists of a 36-inch diameter reinforced concrete pipe (RCP) through the embankment. The RCP conduit is supported on a concrete cradle through the dam, with the final 24 feet cantilevering out to a plunge pool. The cantilevered cradle also supports the toe-drains which are suspended on each side. The concrete in the cantilevered portion of the cradle had deteriorated to the point where the toe-drains were falling off, and gaps had formed between the cradle and the RCP conduit. The gaps allowed water to enter, creating the opportunity for further damage of the cradle and possibly the RCP due to ice forming in the gaps.

The Game and Fish Department requested cost-share, and technical and construction support to repair the cradle.

The construction crew excavated and demolished the cantilevered portion of the cradle, approximately 24 feet, while salvaging the RCP conduit sections for reuse. The salvaged RCP was then reset, forms and reinforcing steel installed, and concrete placed to form a new cradle. The toe-drain conduits were then reinstalled with new support brackets along each side of the cradle.

WHITE EARTH DAM, MOUNTRAIL COUNTY

White Earth Dam is an embankment dam eight miles north of the town of White Earth. It creates a 160-acre recreation reservoir. The dam was built in 1970 and is owned by the Mountrail County Water Resource District.

The dam's principal outlet works consist of a 60-inch reinforced concrete pipe (RCP) riser and 113 feet of 36-inch RCP conduit through the embankment. Over the years, ice forces have caused the upper section of the RCP riser to tilt and separate from the lower section. This created a path for water to enter the outlet at a much lower elevation than originally designed and constructed, thus making it such that the reservoir level would drop below its normal pool elevation in all but the wettest years.

The work on this project began in 2019 when the Mountrail County Water Resource District requested cost-share along with technical and construction support from the Water Commission. The goal of the project was to stop the loss of water so that the reservoir could remain at or near its normal pool elevation. The construction crew started by constructing an earth berm work platform next to the riser to allow for better access to the work. They then used the Water Commission's excavator to lift and reset the top riser section to both straighten the riser and close the gap at the joint. The joint was then filled with sealant. During the course of this work, a tool was dropped into the standing

water at the bottom of the riser. When the standing water was pumped out to find the tool, it was discovered that several large holes had formed in the concrete floor from decades of water plunging down the riser. These holes were then repaired by placing concrete in the holes and an overlay of the original concrete floor.

MATTSON FAMILY TRUST DAM, WILLIAMS COUNTY

The Mattson Family Trust Dam is a privately owned dam. It was found to be in such poor condition that it presented a high risk to those downstream, so the Office of the State Engineer ordered it breached. The dam is a high hazard earth embankment dam located just upstream from an occupied farmstead. It is approximately 10 feet high and 300 feet long. Its principal spillway consisted of a 24-inch corrugated metal pipe (CMP). The downstream portion of the CMP was heavily corroded and leaking water that led to internal erosion of the embankment. Seepage was also observed along the downstream toe of the dam. If allowed to continue, these conditions could have led to failure of the dam and flooding of the farmstead.

The construction crew mobilized to the site and proceeded to excavate a portion of the embankment at the principal spillway. Initially the cut was taken down to just below the water surface elevation to get the water moving and observe if the embankment material would head-cut. The embankment material did not erode significantly, so the cut was deepened to approximately one foot and allowed to run for a few days. Upon return, the cut was further lowered, and the principal spillway conduit was removed. Finally, the breach was taken down to the elevation of the bottom of the reservoir and widened, leaving the dam in a configuration where it will not hold water.

DEVILS LAKE OUTLETS

East End Outlet - Outfall Structure Concrete Repair: The concrete apron at the plunge pool just prior to the outlet water entering the Tolna Coulee eroded due to the impact of the water coming over the wall of the outfall structure. The construction crew along with the Devils Lake Outlet staff removed the deteriorated concrete and replaced it with a high-strength, abrasion resistant concrete repair mortar.

East End Outlet - Tolna Bridge Removal: The Tolna Bridge was a small wood timber bridge downstream of the Tolna Dam, which is downstream of the East End Outlet. The bridge opening is undersized for the flow from the outlet, which has resulted in erosion and scour at the bridge since the start of outlet operations. The erosion led to the loss of the east abutment of the bridge making it unusable and a hazard to the public. This necessitated the closing and ultimate removal of the bridge. The construction crew removed the bridge and its abutments, sloped the abutments, and placed riprap to improve the channel capacity.

West End Outlet - Huffman Cattle Crossing: As part of the mitigation settlement with the Huffman family, the construction crew constructed a cattle-crossing at one of the inverted siphon locations along the West End Outlet canal which crosses the Family's property. The crossing consists of an elevated gravel pathway adjacent to a wetland area. The construction crew also assisted with fence repairs, and sandblasting and painting of critical components to extend their useful life.

US GEOLOGIC SURVEY

The agency continued to cooperate with the US Geological Survey (USGS) on maintenance and improvement of USGS stream gaging sites throughout the state. The most notable of these is the Willow Creek Near Willow City gage. The bank of the stream where the original gage house was located was failing and would eventually lead to loss of the gage. At the request of the USGS, the construction crew constructed a new gage house on the opposite bank with materials provided by the USGS.

DEVILS LAKE OUTLETS

Flood relief for the Devils Lake Basin continued to demand significant resources from the agency over the 2019-2021 biennium. In July 2020, the Devils Lake water surface elevation rose to 1,450 feet, approximately 4.3 feet below the peak elevation that was experienced in 2011. However, dry conditions from fall 2020 continuing through 2021 resulted in lower inflow volumes and the lake level dipped below 1,448.0 feet for the first time since 2009. Simultaneously, the outlets are limited by water quality standards within the Sheyenne River. The recent dry conditions have left little margin for mixing lake water into the river, resulting in lower pumping volumes through the 2021 season. Minimum operating levels for the outlets are 1,445 and 1,446 feet for the West Outlet and East Outlet, respectively.

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 of levees, road raises, and pumping. While the potential of future lake level rise continues to be a major concern, it is now paired with the inverse as lake levels drop to minimum operational levels, which are 1,445 feet for the west-end outlet, and 1,445 for the east-end outlet.

The Devils Lake Outlets are regional flood mitigation projects which have slowly and steadily contributed to lake level stabilization by discharging water to the Sheyenne River throughout the ice-free months. The summer of 2021 was the sixteenth year of operation for the West Outlet and the tenth for the East Outlet. The outlets discharged approximately 134,000 acre-feet during the 2019-2021 biennium, and overall, they have combined to discharge over 1.3 million acre-feet of floodwater. Without the outlet discharge, it is estimated that the lake would be over five and a half feet higher than the current elevation.

DEVILS LAKE OUTLET OFFICE

The Devils Lake outlets are crucial pieces of infrastructure that require continual maintenance and monitoring to provide the expected level of service. To maintain the outlets, the State Water Commission 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.

MISSOURI RIVER ISSUES

In 2008, the U.S. Army Corps of Engineers (Corps) issued Real Estate Guidance Letter No. 26, in which it was stated that no easement could be issued across Corps land without a water storage agreement.

What followed was more than a decade of conflict regarding state versus federal authority over water appropriation. This involved the Corps conducting Surplus Water Studies on the Missouri River reservoirs in 2011 and 2012, initiating a Reallocation Study in 2012, and drafting a Water Supply Rule in 2016. Throughout this time, the State Engineer expressed concern due to the Corps' misunderstanding of state versus federal jurisdiction, with respect to water appropriation and western water law, and its interpretation of the 1944 Flood Control Act. These efforts consistently failed to recognize states' rights to allocate water and interfered with states' sovereign rights.

In response to years of persistent concerns from states and water supply stakeholders, the Corps withdrew the draft Water Supply Rule on March 23, 2020. Real Estate Guidance Letter No. 26 was later rescinded on December 3, 2020. Agency staff continue to work with the Corps to understand and be involved in next steps on this issue.

It is important to note that while discussions on this issue are predominantly focused on the Missouri River, it pertains to all Army Corps' dams. In North Dakota, this also includes Baldhill, Bowman-Haley, Pipestem, and Homme Dams.

Missouri River Recovery Implementation Committee

The Commission 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 Corps and the United States Fish and Wildlife Service (USFWS) on actions taken to recover the threatened least tern and endangered piping plover and pallid sturgeon.

During the past biennium, agency staff continued to represent the State of North Dakota on MRRIC. This involved participation on various committees, such as the Human Considerations Work Group, Bird Work Group, Fish Work Group, and Plover Habitat Ad Hoc Group.

MRRIC has primarily been involved in implementing the Adaptive Management Plan that was adopted in 2018 when the Corps 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.

RED RIVER

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, which consists of one full-time position. During the 2019-2021 biennium, Red River Office personnel took part in various State Water Commission activities in eastern North Dakota.

Technical assistance was provided in support of the RRJWRD's pursuit of flood control projects in the Red River watershed, including;

- Acting as Co-chair of the technical committee overseeing work for the Corps' Red River Watershed Feasibility Study, completed in fall 2019;
- 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 RRJWRD 2018-2022 Watershed Management Strategy;
- Providing recommendations on cost-share requests for various projects; and
- Assisting individual water resource boards on several water related issues.

In addition, the Red River Office was active performing the following roles:

- Member of the International Red River Board (IRRB);
- Member of the Hydrology Committee for the International Red River Board;
- Technical advisor for the Pembina River Basin Advisory Team organized in 2019 by Governor Burgum;
- Attending various meetings concerning the proposed Fargo-Moorhead Diversion project;
- Working with the Red River Retention Authority (RRRA), Natural Resource Conservation Service (NRCS), and local sponsors to pursue completion of watershed protection studies through the Regional Conservation Partnership Program (RCPP);
- Attending meetings of task teams for six RCPP watershed studies in North Dakota;
- Member of the Agency Committee and Technical Committee for Rehabilitation Studies for six high hazard dams.
- Providing information on other partner projects for inclusion in six-month reports for RCPP projects; and
- Attending meetings of the Border Townships Alliance Group (BTAG) for the study of a flood damage reduction project along the Red River near Oslo, Minnesota.

SOURIS (MOUSE) RIVER ISSUES

Flood risk reduction in the Souris River Basin continued to proceed with several different initiatives during the 2019-2021 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 2019-2021 biennium, substantial progress was made on the project in Burlington and the Tierrecita Vallejo area, along with Stage 1 in Minot. Within Stage 1, two of five substantial phases have completed construction. Completion of Stage 1 will remove approximately 60 percent of Minot residents from the proposed FEMA floodplain and provide long-term flood protection.

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 issues related to water quality, and assists the International Joint Commission (IJC) in preventing and resolving transboundary disputes. During the 2019-2021 biennium, Water Commission staff were involved with ISRB activities, which include fulfilling the U.S. co-chair and co-secretary positions.

International Souris River Study

Agency staff continued to participate in the International Joint Commission's (IJC) 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, with specific emphasis on flooding and water supply in the Souris River Basin. The State Water Commission, through the Investigations Section, entered into a Planning and Assistance to States Agreement with the Corps 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 Metis 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 has started taking steps to incorporate indigenous participation on the ISRB.

During the 2019-2021 biennium, the Study Board largely completed their work, and the final report was submitted to the IJC in September 2021. The IJC will conduct a review and public consultation before submitting the report and its findings to the United States and Canadian governments in January 2022.

FINANCIAL INFORMATION

The following pages contain financial information summarized in various formats. The pie charts illustrate the agency's expenditures by fund and by line item.

The trust fund revenue pie chart on the next page includes both the Resources Trust Fund and Water Development Trust Fund revenue. The remainder of the report addresses project and object expenditures.

TABLES & CHARTS

State Water Commission Appropriations 2019-2021 Biennium

Expenditure by Fund Total And Line Item

Program Budgeting Expenditures For Biennial Period Ending June 30, 2021

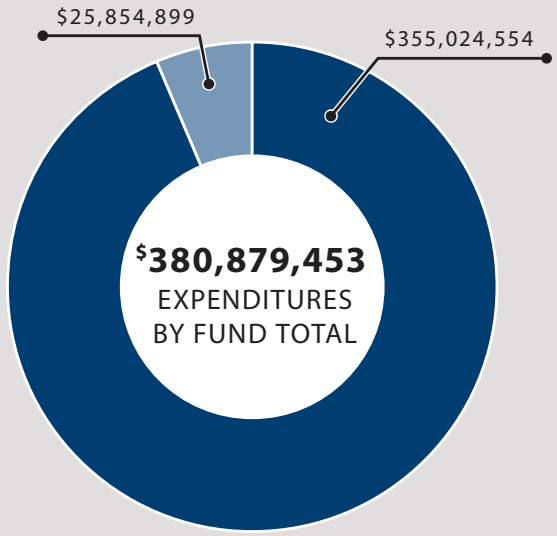
State Water Commission Financial Project Summary: 2019-2021 Biennium

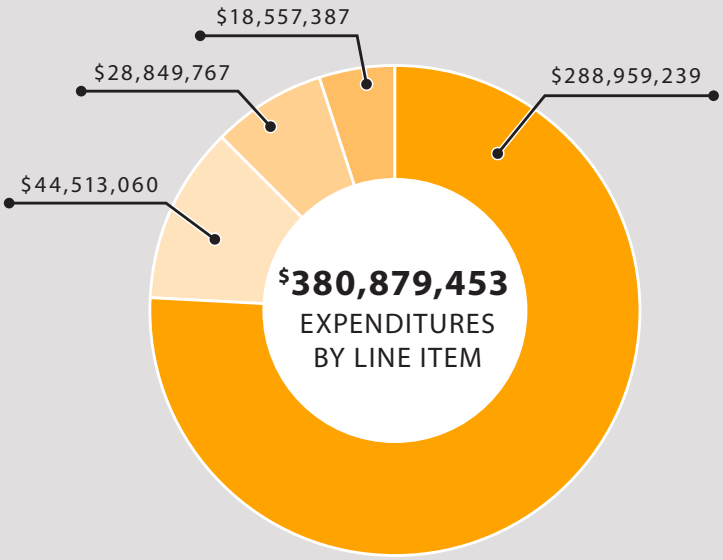
Object Expenditures For Biennial Period Ending June 30, 2021

STATE WATER COMMISSION APPROPRIATIONS
2019-2021 BIENNIUM

FUNDS & TAX	TOTAL AMOUNT
Oil Extraction Tax	$305,985,290
RTF Beginning Balance	$326,742,618
SWPP Repayments	$10,777,487
Loan Repayments	$1,521,223
Interest	$5,047,073
Royalties	$29,961
Resources Trust Fund Total	**$650,103,652**
Water Development Trust Fund Beginning Balance & Total	**$14,219,653**

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.

PROGRAM BUDGETING EXPENDITURES
FOR BIENNIAL PERIOD ENDING JUNE 30, 2021

AGENCY PROGRAM	SALARIES/ BENEFITS	OPERATING EXPENSES/ CAPITAL ASSETS	GRANTS & CONTRACTS	PROGRAM TOTALS
ADMINISTRATION				
Allocated	$2,788,247	$2,385,078	$135,000	$5,308,325
Expended	$2,477,378	$2,289,396		$4,766,774
Percent	89%	96%		90%
ATMOSPHERIC RESOURCE				
Allocated	$1,177,508	$687,907	$4,357,026	$6,222,441
Expended	$1,130,015	$409,709	$1,324,786	$2,864,511
Percent	96%	60%	30%	46%
PLANNING & EDUCATION				
Allocated	$2,314,179	$282,500	$3,068	$2,599,747
Expended	$2,186,671	$97,343		$2,284,014
Percent	94%	34%		88%
REGULATORY				
Allocated	$2,823,572	$6,487,678		$9,311,250
Expended	$2,572,657	$3,245,372	$12,807	$5,830,835
Percent	91%	50%		63%
WATER APPROPRIATION				
Allocated	$5,579,163	$1,042,405	$1,104,777	$7,726,345
Expended	$5,333,011	$677,628	$439,403	$6,450,042
Percent	96%	65%	40%	83%
WATER DEVELOPMENT				
Allocated	$3,815,779	$9,203,800	$6,184,860	$19,204,439
Expended	$3,657,855	$4,350,830	$49,225	$8,057,910
Percent	96%	47%	1%	42%
NORTHWEST AREA WATER SUPPLY				
Allocated	$666,768	$129,714,014		$130,380,782
Expended	$728,848	$48,224,413		$48,953,262
Percent	109%	37%		38%
SOUTHWEST PIPELINE				
Allocated	$666,768	$33,754,379	$0	$34,421,147
Expended	$470,952	$12,603,887	$0	$13,074,839
Percent	71%	37%	0%	38%
STATEWIDE WATER PROJECTS				
Allocated	$0	$40,990,355	$649,185,186	$690,175,541
Expended		$1,464,250	$287,133,018	$288,597,267
Percent		4%	44%	42%
PROGRAM TOTALS				
Allocated	$19,831,984	$224,548,116	$660,969,917	$905,350,017
Expended	$18,557,387	$73,362,828	$288,959,239	$380,879,454
Percent	94%	33%	44%	42%

STATE WATER COMMISSION
FINANCIAL PROJECT SUMMARY: 2019-2021 BIENNIUM

	2017-2019 CARRYOVER	2019-2021 APPROP.	2019-2021 TOTAL	SWC/SE APPROVED	APPROP. BALANCE
TOTAL	**$306,918,208**	**$536,075,469**	**$842,993,677**	**$603,656,299**	**$239,337,377**
MUNICIPAL & REGIONAL WATER SUPPLY					
MUNICIPAL WATER SUPPLY	$30,099,921	$65,456,457	$95,556,378	$95,556,378	$0
RED RIVER VALLEY	$8,728,394	$31,671,606	$40,400,000	$40,400,000	$0
OTHER REGIONAL WATER SUPPLY	$9,228,607	$30,289,000	$39,517,607	$39,517,607	$0
UNOBLIGATED MUNICIPAL/ REG WATER SUPPLY	$1,026,314	$582,937	$1,609,250	$0	$1,609,250
TOTAL	$49,083,236	$128,000,000	$177,083,235	$175,473,985	$1,609,250
% Obligated		98.74%			
RURAL WATER SUPPLY					
RURAL WATER SUPPLY	$24,234,814	$37,125,108	$61,359,922	$61,359,922	$0
UNOBLIGATED RURAL WATER SUPPLY	$30	$74,892	$74,922	$0	$74,922
TOTAL	$24,234,844	$37,200,000	$61,434,844	$61,359,922	$74,922
% Obligated		99.80%			
GENERAL WATER					
GENERAL WATER	$14,588,939	$9,649,491	$24,238,431	$24,238,431	$0
UNOBLIGATED GENERAL WATER	$536,447	$17,444,286	$17,980,733	$0	$17,980,733
TOTAL	$15,125,386	$27,093,777	$42,219,164	$24,238,431	$17,980,733
% Obligated		33.64%			
SUBTOTAL	$268,876,992	$389,293,777	$658,170,769	$559,193,483	$98,977,285

STATE WATER COMMISSION
FINANCIAL PROJECT SUMMARY: 2019-2021 BIENNIUM

	2017-2019 CARRYOVER	2019-2021 APPROP.	2019-2021 TOTAL	SWC/SE APPROVED	APPROP. BALANCE
TOTAL	**$306,918,208**	**$536,075,469**	**$842,993,677**	**$603,656,299**	**$239,337,377**
FLOOD CONTROL					
FARGO	$105,735,612	$66,500,000	$172,235,612	$149,735,612	$22,500,000
MOUSE RIVER	$42,969,758	$67,400,000	$110,369,758	$77,369,758	$33,000,000
VALLEY CITY	$4,573,075	$11,760,554	$16,333,629	$16,333,629	$0
LISBON	$1,411,117	$0	$1,411,117	$1,411,117	$0
OTHER FLOOD CONTROL	$14,123,466	$3,306,050	$17,429,516	$17,429,516	$0
PROPERTY ACQUISITIONS	$820,117	$15,175,000	$15,995,117	$15,995,117	$0
WATER CONVEYANCE	$8,075,683	$11,770,714	$19,846,397	$19,846,397	$0
UNOBLIGATED FLOOD CONTROL	$2,724,699	$21,087,681	$23,812,380	$0	$23,812,380
TOTAL	$180,433,527	$197,000,000	$377,433,526	$298,121,145	$79,312,380
% Obligated		59.74%			
CAPITAL ASSETS					
SWPP CAPITAL ASSETS	$15,792,359	$2,320,000	$18,112,359	$18,112,359	$0
NAWS CAPITAL ASSETS	$22,248,857	$0	$22,248,857	$22,248,857	$0
UNOBLIGATED CAPITAL ASSETS	$0	$140,360,092	$140,360,092	$0	$140,360,092
TOTAL	$38,041,216	$142,680,092	$180,721,308	$40,361,216	$140,360,092
% Obligated		1.63%			
REVOLVING LOAN FUND					
GENERAL WATER PROJECTS	$0	$4,101,600	$4,101,600	$4,101,600	$0
UNOBLIGATED REVOLVING LOAN FUND	$0	$0	$0	$0	$0
TOTAL	$0	$4,101,600	$4,101,600	$4,101,600	$0
% Obligated		100%			

OBJECT EXPENDITURES
FOR BIENNIAL PERIOD ENDING JUNE 30, 2021

Permanent Salaries	$12,477,396.77
Temporary Salaries	$383,816.63
Overtime	$255,895.26
Fringe Benefits	$5,440,278.43
Total Salaries & Benefits	$18,557,387.09
Travel	$689,656.04
Supplies - IT Software	$110,633.94
Supplies/Materials - Professional	$272,067.90
Food & Clothing	$3,656.70
Building, Grounds, Vehicle Supply	$389,251.84
Misc. Supplies	$63,272.42
Office Supplies	$17,681.58
Postage	$25,953.47
Printing	$18,292.00
IT Equipment Under $5,000	$254,731.40
Other Equipment Under $5,000	$99,865.15
Office Equipment & Furniture Under $5,000	$23,878.81
Utilities	$5,089,401.59
Insurance	$37,723.86
Rentals/Leases - Equipment & Other	$516.12
Rentals/Leases - Building & Land	$580,066.19
Repairs	$957,841.12
IT - Data Processing	$412,996.70
IT - Communications	$167,463.59
IT - Contractual Services	$817.31
Professional Development	$164,286.87
Operating Fees & Services	$422,899.42
Professional Fees & Services	$19,046813.23
Total Operating Expenses	$28,849,767.25
Land & Buildings	$477,358.98
Other Capital Payments	$43,897,011.62
Extra Repairs/Deferred Maintenance	$24,134.51
Equipment Over $5,000	$17,021.00
IT Equipment/Software Over $5,000	$97,534.34
Total Capital Assets	$44,513,060.45
Grants, Benefits, & Claims	$288,561,770.92
Transfers Out	$397,467.95
Total Grants, Refunds, & Transfers	$288,959,238.87
TOTAL EXPENDITURES	$380,879,453.66

NORTH Dakota | Water Resources

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