NEBRASKA

DEPT. OF NATURAL RESOURCES

Annual Report and Plan of Work

for the

State Water Planning and Review Process

Submitted to the Governor and Legislature

by the

Director of the Nebraska Department of Natural Resources

September 2020

G O O D L I F E * G R E A T W A T E R

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I. INTRODUCTION

AUTHORITY

The state water planning and review process was initiated in 1978 to redirect and accelerate Nebraska's water planning efforts. This is a report of the Director of the Department of Natural Resources and is submitted in compliance with *Nebraska Revised Statutes* §§ 2-1599 and 2-15,106. *Neb. Rev. Stat.* § 2-1599 provides that:

> Statement of Purpose
>
> *In order to provide for the effective conservation and management of Nebraska's water resources, the legislature hereby endorses the concept of a state water planning and review process. The purpose of this planning process shall be to coordinate and direct the planning efforts of the state agencies and university divisions with the responsibilities and interest in the water resources field. This interagency planning process shall be designed to: (1) Provide the Legislature and citizens of Nebraska with information and alternative methods of addressing important water policy issues and area-wide or statewide water resources problems; (2) provide coordinated interagency reviews of proposed local, state, and federal water resources programs and projects; (3) develop and maintain the data, information, and analysis capabilities necessary to provide state agencies and other water interests with a support base for water planning and management activities; (4) provide the state with the capacity to plan and design water resources projects; and (5) conduct any other planning activities necessary to protect and promote the interests of the state and its citizens in the water resources of Nebraska.*

Neb. Rev. Stat. § 2-15,106 provides that:

> Annual report; contents.
>
> *On or before September 15 for each odd-numbered year and on or before the date provided in subsection (1) of section 81-132 for each even-numbered year, the director shall submit an annual report and plan of work for the state water planning and review process to the Legislature and Governor. The report submitted to the Legislature shall be submitted electronically. The report shall include a listing of expenditures for the past fiscal year, a summary and analysis of work completed in the past fiscal year, funding requirements for the next fiscal year, and a projection and analysis of work to be completed and estimated funding requirements for such work for the next succeeding four years. The explanation of future funding requirements shall include an explanation of the proposed use of such funds and the anticipated results of the expenditure of such funds. The report shall, to the extent possible, identify such information as it affects each agency or other recipient of program funds. The explanation of future funding requirements shall be in a form suitable for providing an explanation of that portion of the budget request pertaining to the state water planning and review process.*

The Department of Natural Resources (Department or NeDNR) utilizes several of its program areas to implement the state water planning and review process. Implementation focuses on the following objectives:

1. Maintain data, information, and analysis capabilities for water planning, including specific programs for collecting, maintaining, and distributing information on streamflows, as well as analyzing water uses and water supplies across the state;
2. Provide staff and resources to support planning and implementation of water resources projects;
3. Support locally developed water management plans for conjunctively managing hydrologically connected groundwater and surface water supplies;
4. Provide resources to map and identify areas vulnerable to flood damage;
5. Participate in interagency collaboration with federal agencies, state agencies, local natural resources districts (NRDs), and other water interest entities on various water resources programs and projects; and
6. Consolidate and present information in a form that is understandable and useful to the public and interagency collaborators.

PURPOSE

The purpose of the Department's Annual Report and Plan of Work document is to fulfill the Department's obligations under *Neb. Rev. Stat.* §§ 2-1599 and 2-15,106, and, in doing so, highlight progress made and planned future work for a wide range of water planning and management activities. The report will detail how various Department programs work to build and disseminate water resources information, promote collaboration, and utilize water planning and implementation to manage the state's valuable water resources[1]. The Department's Water Planning, Engineering Programs and Services, and Field Office divisions are highlighted, with the recognition that there is considerable collaboration among Department divisions through all phases of water planning and management. The Department also participates in a wide range of interagency activities and seeks to improve interagency coordination and collaboration as much as possible when these opportunities emerge.

REPORT OUTLINE

This report generally covers activities pertaining to Nebraska water planning, management, administration, and funding. The report begins with a chapter on statewide activities such as floodplain management, water data management, interagency collaboration, and state fund administration. This is followed by chapters that cover activities pertaining to specific river basins as shown in Figure 1. Here, water planning and implementation projects are discussed; the majority of these activities are collaborative efforts with Natural Resource Districts and other local, state, and federal entities. The report concludes with a financial report that covers past Fiscal Year (FY) expenditures and outlines the budget and financial plan for the current and future fiscal years. All chapters are subdivided into "*Synopsis of Fiscal Year 2019 Activities"* and "*4-Year Work Projection"* sections, to provide a summary of the previous FY activities, as well as four-year work projections for these activities.

[1] Please note that this document only contains activities that pertain to the Department's authorities and does not address activities that fall under a different agency or entity's authorities. For example, the Department's authorities do not include water quality, groundwater management, or management of public drinking water supplies, as these authorities lie primarily with other local or state agencies.

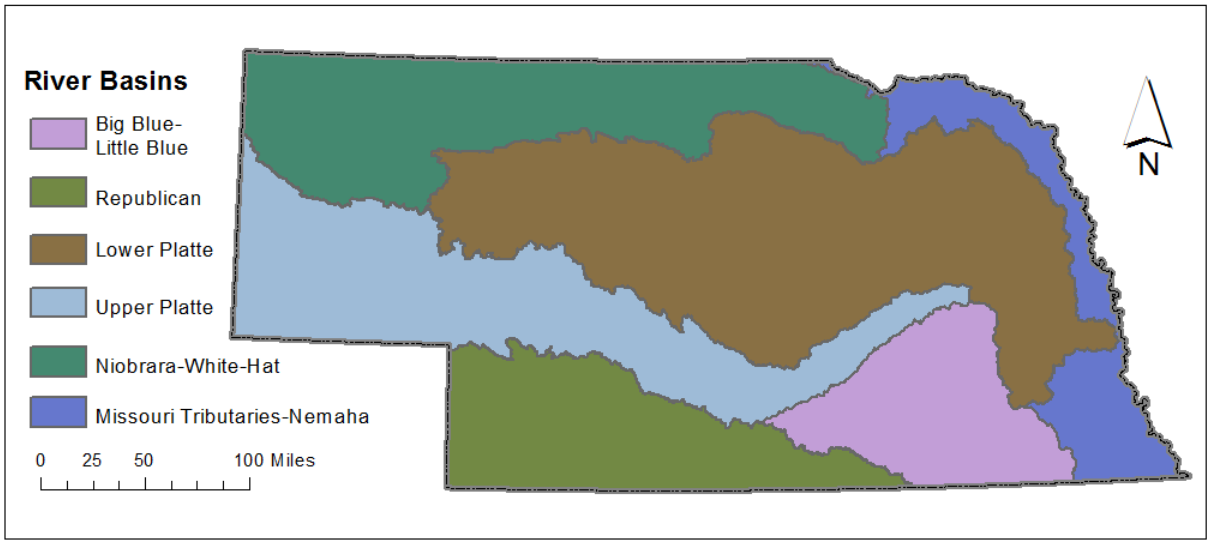

Figure 1: Nebraska River Basins.

II. STATEWIDE

SYNOPSIS OF FY 2019 ACTIVITIES

Communications

Internal

Internal communication efforts have continued to help the Department increase cross-division awareness and coordination. For example, internal agency electronic newsletters inform staff of a variety of activities that occur across Department Divisions. In addition, the Director hosts internal all-staff meetings to convey information to all personnel, including those that work in field offices, using remote attendance technology. These conduits help to keep personnel informed and allow them to respond to questions from stakeholders on Department topics that are not immediately within the scope of their work.

Procedures have also been set in place to increase staff interaction across divisions and convey information learned from outside events. For example, staff members are encouraged to conduct Department-wide "brown bag seminars" to present materials ahead of a conference talk or presentation. In doing so, the staff presenter receives feedback offered by colleagues with a wide range of backgrounds and expertise, while the audience becomes more aware of initiatives and projects that may occur outside of their own division.

The Department has also continued to offer annual Water Tours for staff members that focus on both the planning and implementation of water resources projects within a specific river basin. The FY 2019 Water Tour covered projects in the southeastern portion of the state, and allowed staff from various disciplines and divisions to engage with one another and learn more about the hydrology in that area, as well as the Department's work in the region. Upon return, participants are required to create and deliver a presentation of their tour experience, followed by a question and answer session. Department personnel were invited to the presentation to learn from the experiences of the tour attendees. Participation in the tours increases staff awareness and understanding of long-standing surface water and groundwater entities and projects across the state, which contributes to more meaningful staff engagement with citizens across the state.

External

PUBLIC OUTREACH EVENTS

The Department actively engages with local natural resources agencies across the state through water planning, floodplain management, and field office activities. In addition, the Department interacts with stakeholders through participation in a wide variety of public outreach events. The Department utilizes interactive exhibits that include a touchscreen water quiz, a groundwater flow model, the NeRAIN citizen-scientist network, and a flood simulation physical model.

In FY 2019, the Department participated in the following statewide or regional events:

- Husker Harvest Days,
- Nebraska State Fair,
- Nebraska Women in Agriculture conference,

- Nebraska Association of Resource Districts conferences,
- Nebraska Governor's Ag conference,
- Nebraska State Irrigation Association/Nebraska Water Resources Association joint convention, and
- Nebraska Planning and Zoning Association/American Planning Association--Nebraska Planning conference.

In FY 2019, the Department also engaged with stakeholders and local partnering agencies at the following community events:

- Various, locally-sponsored water tours, and
- North Platte NRD Water Expo
- World O! Water in Papillion.

Figure 2: Department staff registering a volunteer for NeRAIN at Husker Harvest Days.

Department Newsletter

A Department newsletter, published electronically on a quarterly/seasonal basis, keeps stakeholders informed about Department news and provides important information concerning water management in Nebraska.

Digital Notifications

The Department continues to update its social media accounts on a regular basis. In FY 2018, the Department expanded its utilization of GovDelivery to reach stakeholders in a convenient, consistent manner. The Department's GovDelivery notification system now includes news releases, surface water orders, notices of surface water applications, dam safety plan approvals, Department and floodplain newsletters, training opportunities, and NeRAIN updates.

Website

The Department launched a new, more user-friendly, website in May 2017. The website has won various awards such as the American Web Design Award from Graphic Design USA, the MUSE Rose Gold Award, the Davey Silver Award, and a Silver Award at the 16th Annual Horizon International Interactive Media competition. In 2019 a news page for articles by our staff and announcements was added.

Participation in Outside Organizations

The Department participates in various organizations and committees that either directly involve water planning or provide input from the Department's perspective on water quantity related topics. Three of these organizations, the Western States Water Council, the Interstate Council on Water Policy, and the National Leadership Institute of the AWRA,

allow the Department to interact and share information with other state agencies that administer similar responsibilities. The Department is involved to varying degrees with other organizations such as the Climate Assessment and Response Committee, Missouri River Recovery Implementation Committee, and the Lower Platte River Corridor Alliance. The Department also provided representation for the Nebraska Geographic Information System (GIS) Council, and the Nebraska GIS/LIS Association.

Interagency Collaboration

Nebraska Association of Resources Districts

The Department closely collaborates with the Nebraska Association of Resources Districts (NARD) via the Department/NARD liaison. This position was created in 2013 to coordinate and streamline the exchange of program information, data, and studies on various water management programs between the Department and the NRDs. In addition, the liaison jointly assists the Department and NRDs with identifying projects that promote conservation, efficient water use, and the stabilization or improvement of water supplies, as well as supporting the development of water plans at NRD and river basin levels. The liaison's work greatly enhances the Department's ability to keep up-to-date on NRD activities across the state.

In FY 2019, the liaison attended numerous NRD meetings and events to stay informed on activities, emerging issues, and opportunities. In turn, the liaison worked closely with the Water Planning Division by attending Division-wide meetings, one-on-one meetings with the Division head, and additional meetings with the Division River Basin Coordinators. In addition, the liaison worked with the Department and NRDs to communicate information regarding the Water Sustainability Fund, Water Resources Cash Fund, and other local, state, and federal funding opportunities for water conservation projects. The liaison also worked with the Department and NRDs to address ways to improve uniformity of NRD database management systems, thereby promoting more efficient data dissemination between NRDs and the Department.

The NeRAIN citizen-scientist network is a collaboration between the Department, which provides the website and support, and the Natural Resources Districts. The NRDs distribute rain gauges and spare parts, and provide local training and support. All information is transmitted to CoCoRaHS, the international umbrella organization, which provides QA/QC services and widely distributes the information.

Natural Resources Commission

In addition to administering the six natural resources assistance funds overseen by the Nebraska Natural Resources Commission (Commission), the Department evaluated Water Sustainability Fund applications to determine eligibility for the Commission's consideration.

Nebraska Department of Environment and Energy

(NDEQ is known as the Department of Environment and Energy (NDEE) as of July 1, 2019.)

The Department's Water Planning Division continued to coordinate with the Nebraska Department of Environment and Energy and the Upper Big Blue Natural Resources District (NRD) on development of both a water quantity (Department) and water quality (NDEE). Water quality inherently affects water quantity, and vice versa, yet water quantity and quality planning is typically conducted under separate frameworks in the State of

Nebraska. There are challenges to combining the planning processes. For example, NDEE water quality plans follow Environmental Protection Agency guidelines while the Department's water quantity plans Nebraska State Statutes. The timelines are different, the funding mechanisms are different, and the requirements for stakeholder interest group representatives are different.

Nonetheless, the Department, NDEE and the Upper Big Blue NRD recognized an unprecedented opportunity to work together to find out what could be overlapped. What this resulted in, was single public participation process that met planning requirements under both the EPA and Nebraska Statutes. This public participation process brought together diverse stakeholder interests, and allowed the Upper Big Blue NRD, Department and NDEE, to develop complementary goals and objectives for both plans. By FY2020, the stakeholder process had concluded, the goals, objectives and action items were drafted and plan writing was underway.

The entities and stakeholder alike recognized many benefits of this combined approach. For example, consultant fees were reduced by overlapping the stakeholder processes for two plans. In addition, stakeholders' time was saved, as certain stakeholders may have been called to serve on two separate committees. Staff from the Department and NDEE alike appreciated the opportunity to learn first-hand about the other agencies' planning processes, while the NRD and stakeholders gained a better understanding of the relationship between the State Agencies and varied planning frameworks. All appreciated the ability to discuss water quantity and quality topics in one setting, which made development of complimentary goals and objectives possible, enabling a more cohesive and robust water management framework for the Upper Big Blue NRD.

University of Nebraska Public Policy Center

In FY 2019, the Department continued collaboration with the University of Nebraska Public Policy Center for 1) consultation with senior leadership on external and internal engagement strategies; 2) data collection and analysis, including for the annual employee survey, Nebraska Annual Social Indicators Survey (NASIS) participation for information about Nebraskans' perspectives, and design of metrics data compilation; and 3) consultation services for divisions and initiatives. Specific consultation services provided by the Public Policy Center included development and implementation of survey tools, such as a survey to gauge customer satisfaction with the Department's issuance of dam inspection reports, responses to applications for surface water appropriations, and NASIS.

Metrics Report for the Governor

Beginning in July 2015, the Department has provided monthly updates to the Governor on a number of performance indicators. The Metrics Report currently includes measurements of how many new applications to appropriate surface water are approved within 13 weeks, how many applications for dams are approved within 90 days, how many dams the Department has inspected in the current year, and the number of times each month that the Department's NeRAIN website is accessed by the public. The Metrics Report also includes information regarding the Department's accomplishments, and potential emerging issues. This section includes updates about long-term projects, such as the Water Sustainability Fund, interstate compact

compliance, and water-related litigation, as well as significant events such as flooding or dam safety issues.

Process Improvement

The Department is engaged in a number of process improvement activities with the help of a shared service Process Improvement Coordinator (PIC) who works with NeDNR half time. The PIC works with the various divisions on projects to streamline their processes, save time, and improve customer service. A recent project saved around 13,000 hours of labor for Department employees responsible for maintaining our streamgaging records, and generated cost savings by eliminating some unnecessary streamgages. An ongoing project aims to save staff time by streamlining the Department's federal grant compliance process.

Water Planning and Management Databases

The Department is a leader in statewide water planning and data management and dissemination, and has developed and/or maintains a wide variety of state water-related databases. Some of the databases are updated daily, so internal and external users can access and utilize the most recent data. Specific water planning and management database programs or activities that the Department administers are listed below.

National Hydrography Dataset

The Department is the National Hydrography Dataset (NHD) partner for Nebraska, which is a national, geographic dataset containing detailed information about surface water features (streams, lakes, canals, etc.).

Statewide Surface Water Rights Geographic Datasets

The Department creates and maintains geographically referenced delineations of land areas associated with surface water rights and their points of diversion to show where water is accessed from a stream or river. NeDNR also maintains a database tracking all the surface water rights within Nebraska.

Dams Safety

The Department creates and maintains geographically referenced delineations of water body areas associated with a dam. NeDNR also maintains a database tracking all the Dams within Nebraska. This tracks the dam inspections associated with each Dam as well. NeDNR recently created a new map interface for searching dams. This provides an more proficient means in filtering and finding the dam and specifics of the dam for internal staff and the public

Nebraska Rainfall Assessment and Information Network

The Nebraska Rainfall Assessment and Information Network (NeRAIN) is a database and website that has been active since 2004. It provides a large amount of locally-derived weather information that is uploaded daily by over 500 volunteers across the state. NeRAIN data is used by many organizations and individuals, including farmers and NRDs (for irrigation), the National Weather Service (drought monitoring, flood forecasting), insurance adjusters, researchers, and others.

Integrated Network of Scientific Information and GeoHydrologic Tools Database and Web Portal (INSIGHT)

The Department developed the *Integrated Network of Scientific Information and GeoHydrologic Tools* (INSIGHT) database and web portal in 2012. INSIGHT provides summarized information on water use and water supply, as well as current and projected future water balances for Nebraska's river basins and subbasins. It is used internally by water planning and modeling staff, and externally by water managers, technicians, and the public. INSIGHT was recently updated to include the Upper Platte Basin, using data developed in collaboration with the Upper Platte NRDs.

Streamgaging Website

The Department operates over 200 streamgages and canal flow gages statewide. The data acquired from gage measurements are summarized and disseminated to the public via a Department web portal, https://nednr.nebraska.gov/RealTime/. The software to store and analyze the gaging data was updated to a more efficient AQUARIUS application. The new application has increased customer efficiencies by creating faster web display times when pulling data from AQUARIUS for our customers.

In addition, the Department has been working to convert historical gage measurement data into electronic format. The Department's predecessor agencies started streamgaging and gaging existing canals in 1895, the year surface water laws on water appropriations became effective. Some of the gages still exist today, but many more have come and gone over the last 122 years. Streamflow data and canal diversion data are two more pieces of information that can be used by modelers, historians, and other persons interested in the hydrologic history of Nebraska. The historical streamgage information has been converted to digital formats and is planned to become available to the public through the streamgaging web portal during the summer of 2021.

Scans

The Department has scanned in documents for the past 15 years. Recently we enhanced the functionality of the website to allow all staff to import a document into the system. Any document received electronically can now be directly imported and coded within seconds.

Contacts

The workflow to merge update a contact associated with multiple wells, water rights and dams has been greatly improved. NeDNR created a web based user interface that update specific wells, water rights and dams from one contact to another with a few key strokes.

Migrated SQL licenses to OCIO's High Availability SQL system

NeDNR's databases are now on OCIO's SQL High Availability system. To be High-Availability that means that there are 2 virtual machines connected together (primary and secondary) and one is located in the Lincoln Datacenter, the other in the Omaha Datacenter. If one datacenter is down the servers will be up in the other datacenter.

CIR (Crop Irrigation Requirement)

The CIR was expanded to a broader area across Nebraska. This tool lets users calculate changes in consumptive water use that result from a change in land use and estimates the impacts to streamflow. Adding area data will allow NeDNR to serve a broader audience and give more stakeholders access to this valuable information.

Water Planning

Fully Appropriated Basins (FAB) Evaluation

The Department compiles and publishes an evaluation of the expected long-term availability of hydrologically connected water supplies for areas that are not currently participating in the development or implementation of an Integrated Management Plan (IMP). With all areas of the state now participating in the integrated management planning process, the Department was able to forego completing its annual evaluation in FY 2019. The Department will continue to monitor efforts through the IMPs to ensure that near-term and long-term water supplies and uses remain in balance and may publish future evaluations, should circumstances change.

Technical Analyses

The Department has continued to develop and improve hydrologic tools and models that, when combined, cover every major river basin in the state. These tools assist the FAB evaluation and other analyses conducted by the Department that support water planning. Details for specific models are included in subsequent river basin sections of this report.

The Department continues to improve the interactive INSIGHT web portal to share data and information on water supplies and water uses across the state. INSIGHT uses the best available scientific data, information, and technology related to streamflow and water quantity to provide a broad overview of information intended for the general public, more technical information for water managers, and access to data and model files for engineers, modelers, or other individuals and entities interested in this information. The Department also solicited input from various user groups and has begun to incorporate that input to update the web interface. Various Department programs, including Integrated Water Management and Planning, Streamgaging, and Permits and Registration, have contributed data and information to the INSIGHT project, along with source data from local NRDs, surface water irrigation districts, and other water users.

Funds to Aid Local Government

The Department administers several Nebraska natural resources funds and programs that support water related management activities, programs, or projects within the state. Two of the larger funds primarily support local units of government and include the Nebraska Resources Development Fund, and the Water Sustainability Fund.

Details regarding the administration of these and other funds can be found on the Natural Resources Commission's website (https://nrc.nebraska.gov/) and below.

Nebraska Resources Development Fund

The Nebraska Resources Development Act of 1974 created the Nebraska Resources Development Fund (NRDF) to assist with the development and wise use of Nebraska's water and land resources. The NRDF provides grants or loans to political subdivisions of the state, or an agency of the state, for development projects. The Department is responsible for administering the program, while the statutory authority for approving projects and funding levels rests with the Commission.

During the 2018 legislative session, LB 944 reduced General Fund contributions to the NRDF by $62,807 for FY 2018 and by $125,613 for FY 2019. Appropriations for both FY 2018 and FY 2019 were set at $3.08 million and $3.01 million, respectively, and are expected to complete the remaining projects: Buck & Duck Creek, Lower Turkey Creek,

Pigeon/Jones Creek, Sand Creek Environmental Restoration, Upper Prairie/Silver/Moors Creek, and Western Sarpy/Clear Creek. General Fund appropriations for this fund will be discontinued after FY 2019, but the NRDF will remain in operation while projects are completed.

Water Sustainability Fund

The Legislature created the Water Sustainability Fund in LB 906 (2014) and defined governance and appropriation in LB 1098 and LB 1098A. From July 2014 through June 2018, a net $46,170,000 has been transferred to the fund. Funds committed to projects through June 2018, are $41,702,715. Per LB 944, the appropriation for FY 2019 was reduced by $429,557 to $10,309,520. The transfer for FY 2019 is $6,000,000 per LB 945. According to *Neb. Rev. Stat.* § 2-1506, the goals of the Water Sustainability Fund are to:

- Provide financial assistance to programs, projects, or activities that increase aquifer recharge, reduce aquifer depletion, and increase streamflow;
- Remediate or mitigate threats to drinking water;
- Promote the goals and objectives of approved integrated management plans or groundwater management plans;
- Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation, and preservation of water resources;
- Assist municipalities with the cost of constructing, upgrading, developing, and replacing sewer infrastructure facilities as part of a combined sewer overflow project;
- Provide increased water productivity and enhance water quality;
- Use the most cost-effective solutions available; and
- Comply with interstate compacts, decrees, other state contracts and agreements and federal law.

The Legislature found that these goals can be met by equally considering programs, projects, or activities in the following categories:

- Research, data, and modeling;
- Rehabilitation or restoration of water supply infrastructure, new water supply infrastructure, or water supply infrastructure maintenance or flood prevention for protection of critical infrastructure;
- Conjunctive management, storage, and integrated management of groundwater and surface water; and
- Compliance with interstate compacts or agreements or other formal state contracts or agreements or federal law.

The Legislature intended the Water Sustainability Fund to be equitably distributed statewide to the greatest extent possible for the long-term and to give priority funding status to projects that are the result of federal mandates.

The Department is responsible for administering the program, while the statutory authority for approving projects and funding levels rests with the Commission. The Commission has defined and established policies and rules for the process of applications review and evaluation set out in LB 1098. Out of twenty-one new applications for project, program,

and activity funding submitted in FY 2018, thirteen applications were approved and over $10.6 million in assistance was awarded.

Water Administration

Field Office Activities

The field offices of the Water Administration Division enforce Nebraska's surface water statutes. When demand for surface water exceeds the supply, the field offices issue closing notices to protect the priority and preference of surface water appropriators. The intensity of the Department of Natural Resources' water administration efforts are totally reliant upon variable weather patterns from year to year. Surface water supplies in the Platte River Basin are dependent upon Rocky Mountain snowpack, groundwater baseflow, and annual precipitation. The remainder of Nebraska's river basins rely on rain and groundwater baseflow. When not engaged in active surface water administration, staff in the field offices monitor surface water appropriations to ensure that they are beneficially used per the conditions of their orders of approval. In 2019 the Department deployed data enabled tablets to Field Office staff. These tablets utilize ESRI's Survey 123 and Collector applications to provide our staff with maps and surface water data that greatly facilitates the efficient and effective collection of surface water usage data. Utilizing the tablets allows out staff to always have the most up-to-date information and eliminated the need for processing, printing, and carrying paper copies of the same information.

Streamgaging Program

Streamgaging and canal gaging activities are considered part of the State Water Planning and Review Process. *Neb. Rev. Stats.* §§ 46-227, 46-252, 46-258, 46-261(3), 61-208, 61-209, 61-211, 61-215, and 61-216 authorize and require the Department to measure the quantity of water in the state's streams and canals. Due to the size of the streamgaging network and the importance of accurate, timely streamflow information, significant funding is required for ongoing streamgaging activities.

The Streamgaging Program of the Water Administration Division oversees data collection procedures, reviews streamgaging records, and ensures that quality control standards are met. The Streamgaging Program works in close conjunction with the five Department field offices. The field offices are responsible for making streamgaging measurements, operating and maintaining streamgaging stations and equipment, and for general water administration. Data collected through the streamgaging network is used by the Department to make informed decisions when administering water rights, issuing permits, studying surface water/groundwater interactions, responding to flood emergencies, modeling floodplains, quantifying water supplies and uses, calibrating groundwater models, complying with interstate compacts, and planning for future water demands.

In FY 2019, the Streamgaging Program focused on continuing to update its telemetry system from landline and cellular to satellite telemetry. This enables efficient transfer of data from remote locations to the Department servers. Only 6 streamgages (out of over 200) are still in need of upgrading cellular to satellite telemetry. Upgrading more streamgages to satellite telemetry reduces costly cell phone bills and further facilitates our goal of providing users with timely data through the Department's streamgaging website.

Surface Water Use-Voluntary Reporting Program

The Department initiated the Surface Water Use-Voluntary Reporting Program in fall 2014, in the Loup and Niobrara River Basins. The program has since been incrementally expanded, and, as of FY 2019, covers the entire state. To implement the program, postcards are sent to surface water irrigators, requesting a voluntary submission of surface water use information via the Department's water use reporting website. The data received is summarized and stored on Department servers. The online survey tool helps to better assess current water use, project future water needs, and enhance management and oversight of surface water throughout the state. One application of this program has been to create NRD-specific surface water use summaries and then disseminate that information to the NRD and the public as part of integrated water management implementation. As more data is gathered, this information will assist the Department with more accurate estimates of surface water use across the state and will improve the data that is provided through the INSIGHT web portal.

Floodplain Management

The Department is responsible for handling floodplain management matters for the State of Nebraska. The Floodplain Management Section of the Engineering and Technical Services Division coordinates an overall program aimed at addressing the wise use of land that is subject to flooding. This program includes multiple elements related to hazard mitigation and floodplain management planning.

The Floodplain Management Section was selected as the honorable mentioned CTP of the Year. Each year FEMA reaches out to contractors, CTPs, and FEMA staff across the country to select those CTPs most deserving of recognition for achieving program goals. NeDNR's Floodplain Management Section was nominated by peers for the response during the 2019 spring flood.

The Floodplain Management Section was also recognized by FEMA's Federal Insurance and Mitigation Administration (FIMA) as the 2019 NFIP State Coordinator of the Year. The Section was selected, based on peer nominations, for contributions to floodplain management and flood loss reduction measures in Nebraska following the 2019 spring flooding.

Technical Assistance

The Department provides technical assistance to communities, state agencies, federal agencies, and the general public on a daily basis. One unique form of technical assistance that the Department provides to local floodplain administrators is Base Flood Elevation (BFE) Determinations. These BFEs allow administrators to make informed floodplain management decisions related to proposed development. During this fiscal year, the Department provided 256 BFE Determinations throughout the State.

The Department also provides technical assistance on implementing local floodplain management ordinances, in part, through outreach and training for local officials. During the last fiscal year, the Department logged more than 531 general technical assistance calls. The Department presented on floodplain topics at the Nebraska Floodplain and Stormwater Managers Association (NeFSMA) Annual Conference, the Professional Land Surveyors of Nebraska Northeast Conference, the Independent Insurance Agents of

Nebraska Annual Convention, the University of Nebraska - Lincoln Regional Planning Program, the NeFSMA Member's Meeting, the Professional Surveyors of Nebraska Annual Convention, and the Nebraska Planning and Zoning Association Meeting. This year instead of workshops, NeDNR performed post-disaster community visits to ensure communities stay in good standing with the NFIP after the March 2019 flood. The section completed 63 virtual community visits between May 1 and June 30. NeDNR will complete an additional 100 in the first two quarters of FY2021. The section also publishes a quarterly Floodplain Management Today Newsletter for local floodplain administrators and other interested parties.

Mapping

The Department identifies and delineates floodplains and floodways using both Federal and State dollars. Figure 3 shows the digital mapping products as of June 30, 2020. Areas marked "Digital Flood Risk Data" were created on old topographic data and will be prioritized for new mapping based on Light Detection and Ranging (LiDAR) topographic data in the future. LiDAR data significantly improves the accuracy of Flood Risk Mapping. The figure shows the best available flood data for each area.

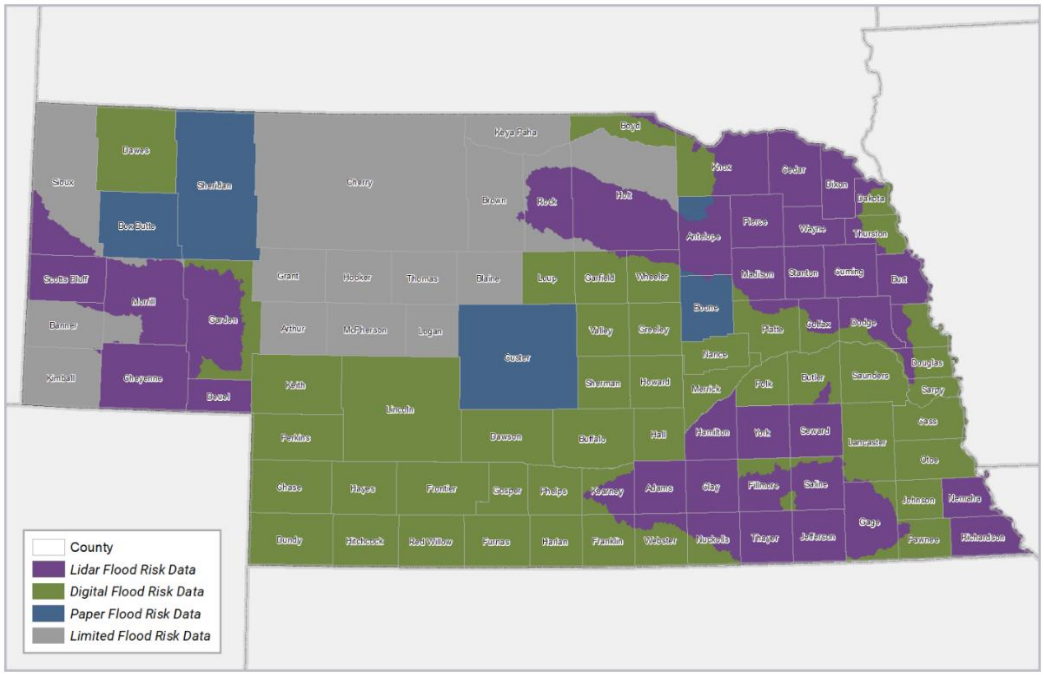

Figure 3: Nebraska Counties with Digital Flood Risk Maps.

In FY2020, NeDNR received $1.6 million from FEMA to initiate regulatory projects in part of Morrill, Cedar, and Dixon Counties, and to continue ongoing Risk MAP projects in the Middle Big Blue, Turkey, South Fork Big Nemaha, and Big Nemaha HUC-8 watersheds. The Department also received funds to initiate a statewide regression equation project.

Ongoing work from previous grants included Paper Inventory Reduction projects in Custer, Boone, Cheyenne, Deuel, and Scottsbluff Counties, Risk MAP projects in North Fork Elkhorn, Upper Elkhorn, Lower Elkhorn, and Middle North Platte – Scottsbluff HUC-8

watersheds, community mapping projects in Bayard and Bridgeport and regulatory projects in Burt, Nemaha, Richardson, Seward, Hamilton, York, Wayne, Thayer, Nuckolls, and Kearney Counties.

NeDNR completed several mapping projects during the FY2019 fiscal year. These projects include York and Hamilton on August 1, 2019, Seward County on May 1, 2020, and Burt County on June 5, 2020.

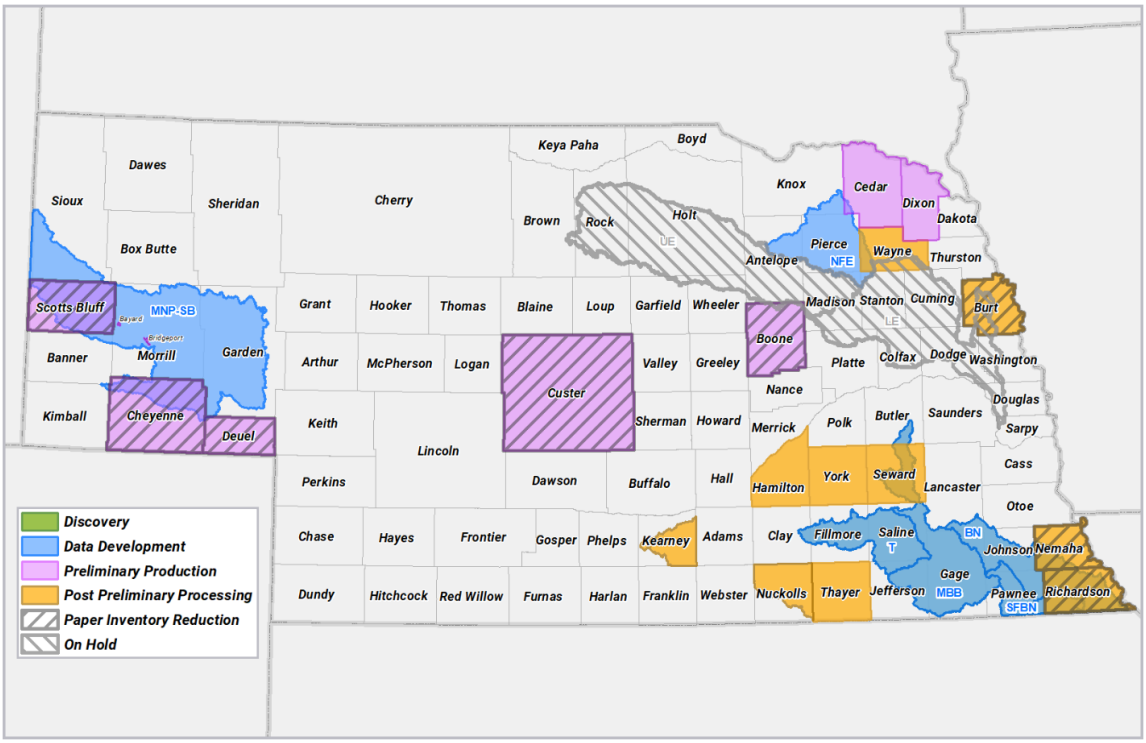

Figure 4: Floodplain Management's ongoing and new projects in FY 2019.

National Flood Insurance Program

The Department serves as the National Flood Insurance Program (NFIP) Coordinating Office for the State of Nebraska. The NFIP Coordinator serves as a liaison between FEMA, Nebraska community floodplain administrators, and the general public. This typically involves floodplain management or flood insurance related technical assistance that may be used to support community floodplain management decision-making. These activities include Community Assistance Visits, Community Assistance Contacts, Ordinance Review Assistance and assistance to communities wanting to join the NFIP. As of July 17, 2020, Nebraska has 414 NFIP Communities, 9,164 NFIP policies, and a total coverage of $1,918,704,000. Five communities joined the NFIP during the last fiscal year: the Village of Belgrade on 8/29/2019, the Village of Hadar on 4/10/20, the Village of Marquette on 4/24/20, the Village of Prosser on 4/24/20, and the Village of Stockham on 4/24/20.

Department staff also provides technical assistance to communities interested in joining the Community Rating System program. CRS allows communities to get credit for implementing floodplain management activities above the NFIP minimum requirements, in the form of flood insurance premium reductions. The Department helps the communities in the State save approximately $700,000 per year in flood insurance

premium costs. There are currently six communities in Nebraska participating in the CRS: the City of Fremont, class 8, the City of Omaha, class 7, the City of Valley, class 8, the City of Lincoln, class 5, the City of Papillion, class 7, and the City of Scottsbluff, class 9. NFIP coordination activities and CRS assistance activities provide resources to communities that support floodplain management planning and development.

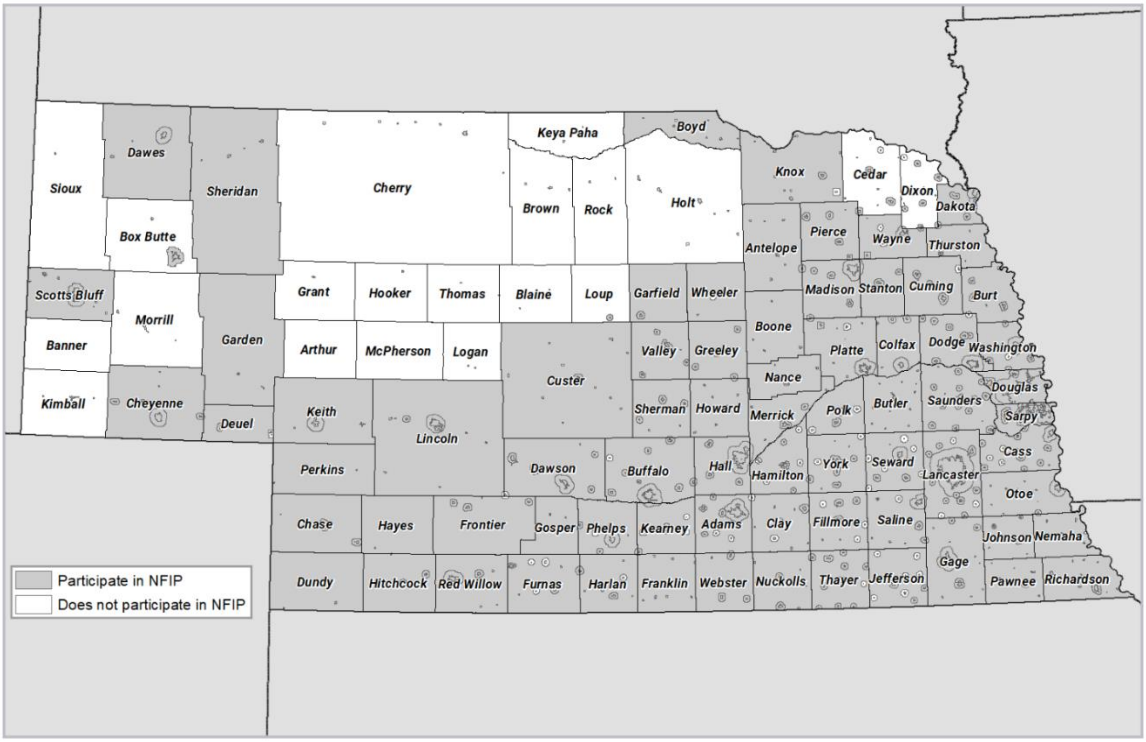

Figure 5: Nebraska Communities Participating in the NFIP and CRS.

Mitigation

The Department provides technical assistance to any entity implementing flood mitigation planning and related projects. The Department provides NRDs, counties, and communities with planning assistance for the purpose of updating local hazard mitigation plans (HMPs). According to the Nebraska Emergency Management Agency (NEMA), most of the state's population is now covered by a hazard mitigation plan. HMPs include flood mitigation components.

The Department currently administers the Flood Mitigation Assistance (FMA) grant on behalf of FEMA. In addition to this program, the Department assists NEMA with two other FEMA programs: The Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) Grant Program.

The HMGP grant is provided to Nebraska after a Presidential Disaster Declaration and the proposed projects are reviewed by the Governor's Task Force on Disaster Recovery, for which the Department is a co-chair, along with NEMA. As part of the Task Force, the Department assists with review of the applications and provides technical assistance for project implementation as appropriate, per existing authorities.

Interagency Partnerships

The Department continues to facilitate partnerships with numerous state and federal agencies to make Nebraska more resilient from flooding. The Nebraska Silver Jackets team is a partnership between the Department, NEMA, the U.S. Army Corps of Engineers (USACE), FEMA, the U.S. Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), and other partners to coordinate and expand communication about flood risk. During FY2020 the Silver Jackets team continued work on the Sandpit Lake Risk Assessment and Risk Management Evaluation project, the Repetitive Loss 2.0 project and the Nebraska Flood Workshops projects. The Sandpit Lake Risk Assessment and Risk Management Evaluation project will be used to educate homeowners and community officials of the risk associated with these developments. The Repetitive Loss 2.0 project involves reviewing and updating the Nebraska Repetitive Loss list, which will include a statewide evaluation of the 2018 repetitive loss properties and a nonstructural assessment. The Nebraska Flood Workshops project included presentations on flood risk and preparedness, emergency response and flood fighting, and mitigation funding. The Silver Jacket's team received funds for three new projects summarized below:

Educational Resources Toolkit: This project aims to develop short modules and study guides, linked to state curriculum standards, which can be integrated into multiple subjects and grade levels to educate students on the dangers of moving water, historic floods, and how to avoid flood risks. The project is being piloted in the Educational Service Unit #5 region, with the goal of additional Educational Service Units implementing the curriculum in the future. The project partners are NeDNR, NEMA, USACE, FEMA, NOAA, the Nebraska Forest Service, the University of Nebraska Extension Office, ESU #5.

Wood River Flood Risk Identification: This project aims to update the Wood River hydrology, while using HEC-RAS 2D to better understand the complex flow splits and sub-basin interflow. The project will be conducted in parallel with a USACE Section 22 that will update the Central Platte hydrology and determine whether ice impacts are a factor in this reach of the Platte River. The ice impact determination will be used to determine the influence Platte River ice events have on the Wood River, since the Platte River spills into the Wood River in multiple locations during high water events. The project partners are NeDNR, Hall County, USACE, and USGS.

Little Papillion Creek Hydraulic Modeling and Mapping: The project team will modify the existing 1D model for Little Papillion Creek and develop a 2D model near the confluence of the Little Papillion Creek with the Big Papillion Creek. The goal of the modelling effort is to better understand the flood risk from both streams at the confluence. The USGS will then incorporate the information into their Flood Inundation Mapper for public distribution. The project partners are NeDNR, Papio-Missouri River NRD, USACE, and USGS.

Disaster Activities

The Department also assists other state agencies when requested. When high water threatens communities and properties in Nebraska, the Department assists NEMA in providing and helping the public to understand real-time flood information. Department staff monitor the rivers and stay in contact with NEMA staff throughout high water events. In FY2019, there was one major disaster, FEMA DR 4420, from March 9, 2019 to July 14, 2019. It included 84 of Nebraska's 93 counties. The Department had a staff member at the State Emergency Operation Center (EOC) each day it was active from March 13

through 29, 2019 and continued to be involved with several different recovery support functions (RSF) through the Governor's Task Force for Disaster Recovery. This includes co-leading the Hazard Mitigation Grant Program RSF.

Four-Year Work Projection

Floodplain Management Planning

The Department will continue to provide technical assistance to communities for floodplain management administration activities and deliver related training to local officials. The Department will continue to offer technical assistance to any entity implementing flood mitigation planning and related projects. This includes assisting NEMA, as requested. The Department will also continue to provide NRDs, counties, and communities with planning assistance for updating local hazard mitigation plans (HMPs).

The Department will continue to work with FEMA on Risk MAP projects throughout the State. Figures 6 through 9 illustrate the watersheds and counties proposed to receive new flood hazard data during the next four fiscal years. Final authorization to commit funds will be made by FEMA annually. Applications are typically submitted in June of each year and funds are awarded in August. The grant begins on October 1 of each year.

In FY2021, the Department requested $1.2 million from FEMA to initiate Risk MAP projects in the Salt, Keg-Weeping Water, and Little Nemaha HUC-8 watersheds, Paper Inventory Reduction projects in Sheridan and Box Butte Counties, and a regulatory project in Scotts Bluff County.

Ongoing work from previous grants include the Risk MAP projects in Middle North Platte – Scotts Bluff, Upper Elkhorn, Lower Elkhorn, North Fork Elkhorn, Middle Big Blue, Turkey, South Fork Big Nemaha, and Big Nemaha HUC-8 watersheds, Paper Inventory Reduction projects in Boone, Custer, Cheyenne, Deuel, and Scotts Bluff counties, community mapping projects in Bridgeport and Bayard, and regulatory projects in Nemaha, Richardson, Cedar, Dixon, Kearney, Nuckolls, Thayer, and Wayne counties, and the statewide regression equation project (See Figure 6).

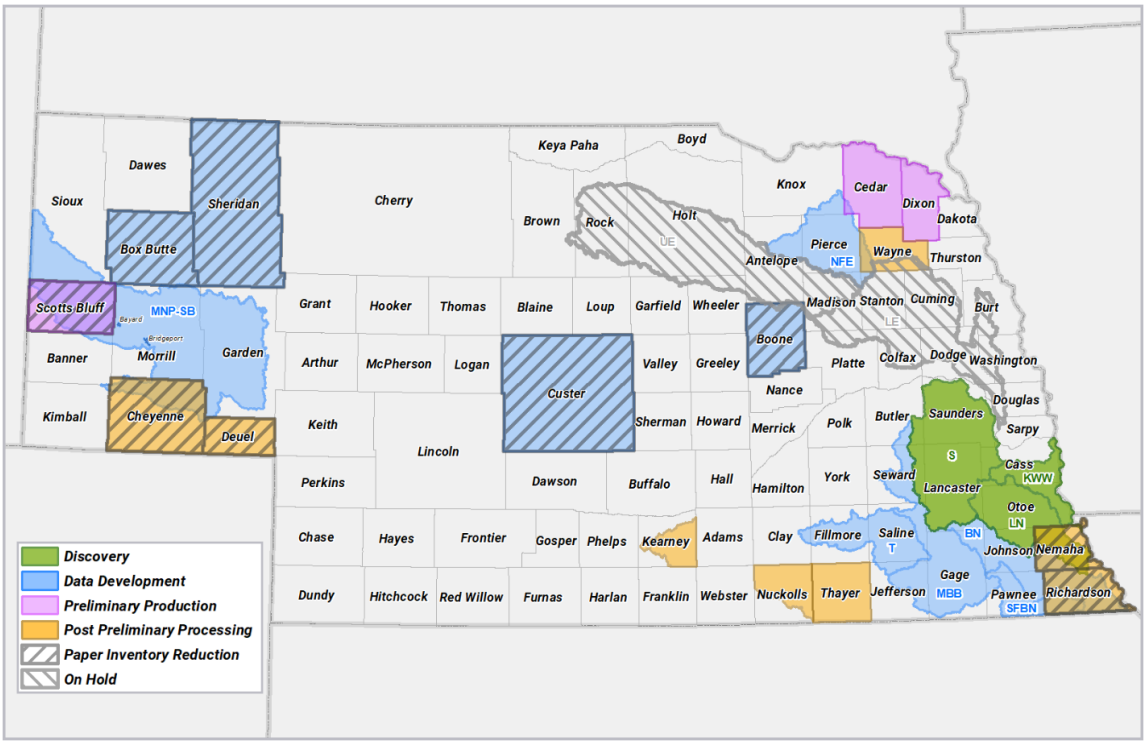

Figure 6: Floodplain Management Proposed and ongoing projects in FY 2020.

In FY2022, the Department plans to request approximately $800,000 from FEMA for regulatory projects in Pierce, Johnson, and Pawnee Counties and funds to complete the statewide regression equation project.

Ongoing work from previous grants would include the Risk MAP projects in Upper Elkhorn, Lower Elkhorn, Middle Big Blue, Turkey, South Fork Big Nemaha, Big Nemaha, Salt, Keg-Weeping Water, and Little Nemaha HUC-8 watersheds, Paper Inventory Reduction projects in Boone, Custer, Scotts Bluff, Sheridan, and Box Butte counties, community mapping projects in Bridgeport and Bayard, regulatory projects in Cheyenne, Deuel, Scotts Bluff, Nemaha, Richardson, Cedar, Dixon, Kearney, Nuckolls, Thayer, and Wayne counties, and the statewide regression equation project (See Figure 7).

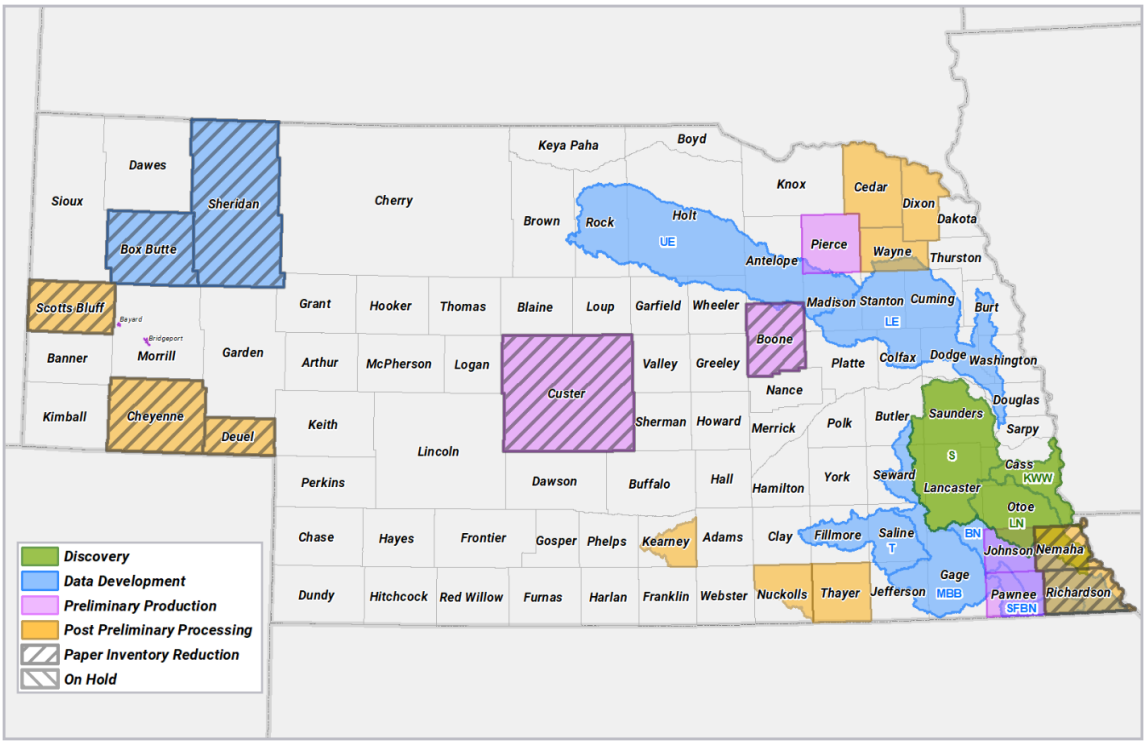

Figure 7: Floodplain Management Proposed and ongoing projects in FY 2021.

In FY2023, the Department plans to request approximately $670,000 from FEMA to initiate regulatory projects in Gage, Fillmore, and Saline Counties and initiate new Risk MAP projects in the Lower Platte and Lower Platte - Shell HUC-8 watersheds.

Ongoing work from previous grants would include the Risk MAP projects in Upper Elkhorn, and Lower Elkhorn, HUC-8 watersheds, Paper Inventory Reduction projects in Sheridan and Box Butte counties, community mapping projects in Bridgeport and Bayard, and regulatory projects in Cedar, Dixon, Pierce, Johnson, Pawnee, Boone, Custer, and Scotts Bluff counties (See Figure 8).

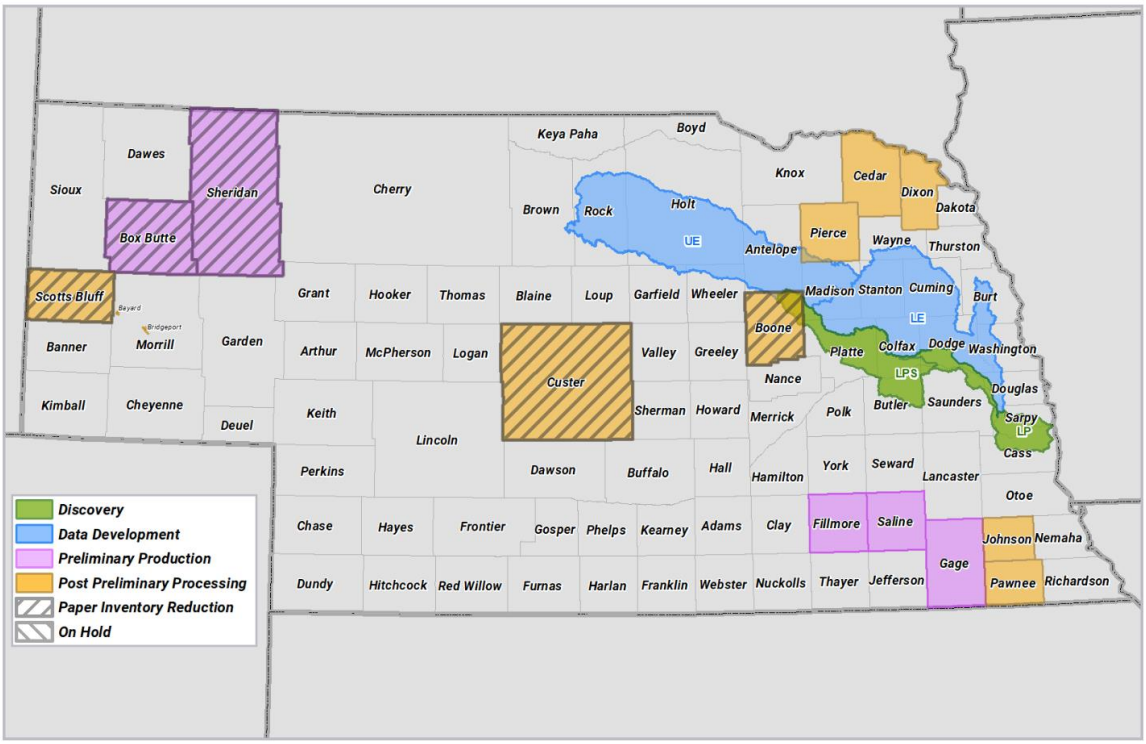

Figure 8: Floodplain Management Proposed and ongoing projects in FY 2022.

In FY2024, the Department is planning to request $1.3 million from FEMA to initiate regulatory projects in Antelope, Colfax, Cuming, Dodge, Holt, Madison, and Stanton Counties and to continue ongoing projects in the Keg – Weeping Water and Little Nemaha HUC-8 watersheds.

Ongoing work from previous grants would include the Risk MAP projects in Lower Platte and Lower Platte - Shell HUC-8 watersheds and regulatory projects in Pierce, Johnson, Pawnee, Boone, Custer, Gage, Fillmore, Saline, Sheridan, and Box Butte counties (See Figure 9).

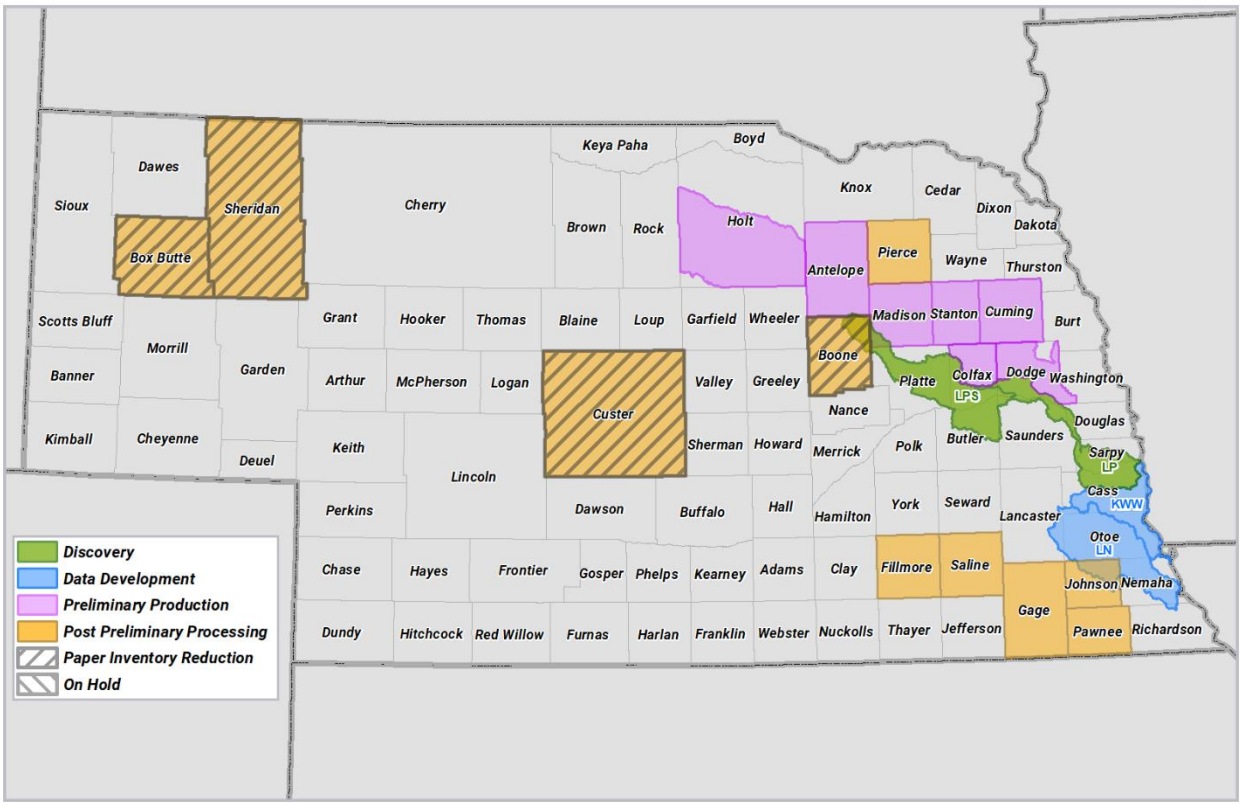

Figure 9: Floodplain Management Proposed and ongoing projects in FY2024.

Floodplain Management

The Department will continue to provide technical assistance to communities for floodplain management administration activities and deliver related training to local officials. The Department will also continue to offer technical assistance to any entity implementing flood mitigation planning and related projects. This includes assisting NEMA as requested. The Department also provides NRDs, counties, and communities with planning assistance for the purpose of updating local hazard mitigation plans, which include flood mitigation components. According to NEMA, most of the state's population is now covered by a hazard mitigation plan.

The Department will continue to work with FEMA on Risk MAP projects throughout the state. In the next four years, the following watersheds are proposed to receive new flood hazard data (although final authorization to commit funds will be made from FEMA on a regular basis): Upper Little Blue, West Fork Big Blue, Upper Big Blue, Middle North Platte–Scotts Bluff, Lower Elkhorn, Logan, North Fork Elkhorn, Upper Elkhorn, and Lewis and Clark. Counties that are proposed to receive new flood insurance rate maps in the next four to six years include Adams, Clay, Hamilton, York, Seward, Scotts Bluff, Cheyenne, Deuel, Richardson, Nemaha, Burt, Custer, and Boone.

The Department will continue to update existing models and tools, as well as develop new tools that support water management. Some of these future tool updates will be collaborative efforts with NRDs in regard to the planning process and evaluation of overall

plan goals. Other efforts will be geared toward developing new tools or updating existing models to support the FAB Evaluation, IMPs, and basin-wide water accounting and water administration programs.

Water Administration

The Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts based on needs across the state. The Water Administration Division, through its Streamgaging Program and the field offices, will continue to work to develop improved workflows, implement automated quality checks, and increase data accessibility. The Water Administration Division will continue to work with the Information Technology Division to develop and refine mobile applications that will be utilized by the field offices to administer surface water, complete inspections, and collect data in the field in a more efficient and effective manner.

With the majority of streamgages updated to telemetry technology, the next steps will be to complete satellite telemetry updates to canals within the gaging network. In addition, and in order meet the Department's and the public's needs, the Department is developing a systematic approach to evaluate and rank the adequacy of the existing streamgaging network, as well as determining the need for additional gages.

The Department has determined that the Streamgaging Program will be better served by transferring records and workflow to AQUARIUS. This is a streamgaging-specific time series software program, which is also used by the U.S. Geological Survey and all surrounding states that share basins with Nebraska and also operate their own streamgaging program (Colorado, South Dakota, and Wyoming). The Department expects to realize improved efficiency in record working, review and analysis, and in sharing data and training with other organizations.

III. Big Blue-Little Blue River Basins

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Blue River Basin Model

The Department completed development of a groundwater model of the Big and Little Blue River basins in 2013 and utilized this model for the 2017 Fully Appropriated Basins (FAB) report. The Department continued to collect data and information that will be used for model updates. The Department has initiated a work plan with the Blue Basin NRDs in an effort to develop a regional groundwater model that is aimed at providing a foundational modeling tool that can support future modeling activities. To date, the hydrogeologic framework for this model has been completed and calibration has begun.

Fully Appropriated Basins (FAB) Evaluation

For the 2019 FAB evaluation, the Department did not evaluate the Blue River Basins, as all NRD's have developed or are currently working to develop and IMP. The Department may evaluate these basins in the future, should ongoing monitoring indicate the need for evaluation.

Voluntary Integrated Management Plans

Little Blue River Basin

The Department continued work with the Little Blue River Basin NRDs on two joint voluntary IMPs; the IMPs cover the Tri-Basin NRD and Little Blue NRD portions of the Little Blue River Basin, respectively. The overarching purpose of each IMP is to jointly manage hydrologically connected groundwater and surface water, protect existing users, and sustain a balance between water uses and supplies.

Both IMPs for the Little Blue River Basin were adopted in FY2020, thus concluding a multi-year planning process. The Little Blue NRD voluntary IMP and the Tri-Basin NRD voluntary IMP (Little Blue Basin portion) became effective on August 15, 2019 and April 15, 2020, respectively. The public participation process was conducted over a three-year period. It incorporated two joint meetings (both NRD stakeholder groups), four "TBNRD only" stakeholder meetings, and five "LBNRD only" stakeholder meetings. In addition, a public hearing was held in each NRD to take testimony on the proposed IMP prior to adoption.

Each of the Little Blue River Basin IMPs is unique, portraying varied stakeholder interests, and at times showing influences of different regulatory groundwater management between NRDs. There are, however, common elements to both IMPs, which could indicate a slow but steady movement towards more holistic water management across the basin. For example, the IMPs have action items geared towards having more regular meetings, coordinating management actions where possible, increased data sharing, evaluation of data, and resolving of data discrepancies. The Department's surface water action items are consistent across the IMPs. The Department's action items include requiring measuring devices on new surface water uses, continuation of the Department's voluntary surface water use reporting program, and required reporting for all surface water uses if/when a surface water availability trigger is met.

Big Blue River Basin

The Department continued to coordinate with both the Nebraska Department of Environment and Energy (NDEE) and the Upper Big Blue NRD on a combined water quality and water quantity planning process. Here, the Department works with the Upper Big Blue NRD on a voluntary integrated management plan (IMP) that focuses on water quantity, and NDEE works with the NRD on a Water Quality Management Plan (WQMP). One major advantage of combining these processes is that goals, objectives and action items in the voluntary IMP compliment and support goals and objectives in the WQMP, and vice versa. Goals, objectives and action items were developed through consultation with a diverse stakeholder group who provided input and ideas in a combined setting for both the water quantity and water quality plans. Combining the process in this way had many benefits that are discussed in more detail in the **Interagency Coordination** section of this report. In FY2020, much focus was on the writing of the WQMP which had more stringent deadlines due to EPA funding timelines. The WQMP was completed on time, and was subsequently reviewed and approved by the EPA.

The Department initiated work on a voluntary integrated management plan with the Lower Big Blue NRD. The Department and District have contracted with HDR, Inc. for facilitation services and, to date, possible stakeholders have been identified and invited to participate in an initial stakeholder meeting which will be held virtually due to the COVID-19 pandemic. The initial stakeholder meeting is scheduled for July 2020.

Blue River Basin Compact

On May 13, 2020, the Department represented Nebraska at the 47th annual Big Blue River Compact (Compact) meeting to discuss shared management of the River with Kansas. Prior to the meeting, representatives from Kansas and the Department discussed the best course of action regarding the COVID-19 situation and related travel restrictions. The decision was made to hold the meeting at the usual time of year, but to conduct the meeting remotely using Zoom video conference technologies. The entities worked together to devise a plan and agenda fitting for a video conference setting, while meeting Compact requirements and enabling effective communication and data exchange.

The video conference worked well, with 37 attendees that included Compact Representatives. The meeting was also livestreamed/recorded via YouTube to allow the public or other interested parties to observe the meeting either as it happened, or at a later time. The YouTube recording is available for viewing here.

Reports from Nebraska and Kansas covered water administration activities, water levels, streamgage readings, and budget items. Department staff provided support for Compact Administration and standing committees. The Intrastate coordination on the Blue River Basin Compact water quality issues mainly occurs between the NDEE and the local NRDs.

Streamgaging

The Department operates five streamgages in the Big Blue River Basin and three streamgages in the Little Blue River Basin, two in cooperation with the Little Blue NRD.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will continue to collaborate with Blue Basin NRDs to complete and update the new Blue Basin model, which will be used to provide data and information necessary for the Department's FAB Evaluation and other water planning analyses. The Department will continue discussions with the Blue River NRDs regarding potential collaboration in future modeling activities. The Department will also continue to coordinate with other state and local water management agencies to expand data collection activities and analyses of hydrologic data to better understand hydrologically connected water resources.

Voluntary Integrated Management Plans

In the Big Blue River Basin, the Department will continue to work with the Upper Big Blue NRD on voluntary IMP writing. For the Lower Big Blue NRD, the Department and NRD will continue the stakeholder process and work with HDR, Inc. to complete a draft voluntary integrated management plan.

In the Little Blue River Basin, the Department will work with the Little Blue NRD and Tri-Basin NRD on implementation of the new IMPs, with the first annual review for these IMPs planned for mid-2021.

Blue River Basin Compact

The Department will continue to fulfill its obligations under the Blue River Basin Compact and does not expect an increased level of commitment under this obligation.

Water Administration

Based on needs across the state, the Department will continually evaluate and prioritize data collection and analyses to support basin surface water administrations activities and state and local planning efforts. These efforts will continue for streamgaging, floodplain management, and water planning activities in the Blue River basins. Other details regarding the four-year projection of work are contained in the "Statewide" section of this report.

IV. Lower Platte River Basins

(ELKHORN RIVER, LOUP RIVER, AND LOWER PLATTE RIVER BASINS)

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Technical Analyses

The Central Nebraska Model (CENEB) is a regional groundwater model that encompasses the Niobrara and Loup River basins and portions of the Elkhorn River Basin; the Loup and the Elkhorn basins are tributaries of the Lower Platte River Basin. Model construction was completed by the Department and consultants in July 2013. Data from this model has

been incorporated into INSIGHT for the entire Loup River Basin and the portion of the Elkhorn River Basin that is contained in the model. The CENEB model is available to NRDs to evaluate management actions as a part of IMP implementation.

The Department completed work on a regional numerical model for the northern portions of the Lower Platte and Missouri River Tributaries basin area (LPMT model) in 2018. Since then the Department has worked with members of the Lower Platte Basin Coalition to incorporate Airborne Electromagnetic (AEM) data into the model. The first phase of these activities concluded in FY 2019 and the second phase was initiated in early FY 2020. More details on this ongoing plan of work can be found in the 4-year work projection section of this document.

The AEM data being utilized in the modeling work described above originates with the efforts of the Eastern Nebraska Water Resources Assessment (ENWRA) organization. The Department continued to support the efforts of ENWRA by attending ENWRA meetings and workshops to stay up-to-date on study progress and developments, and technical expertise pertaining to ENWRA data. The Department's primary interest in the AEM work is to increase understanding the effectiveness of airborne geophysical studies in assessing hydrologic connection of aquifers and streams through groundwater modeling tools.

Fully Appropriated Basins (FAB) Evaluation

For the 2019 FAB evaluation, the Department did not evaluate the Lower Platte River Basins, as all NRDs have developed or are currently working to develop an IMP. The Department may evaluate these basins in the future, should ongoing monitoring indicate the need for evaluation.

Basin-wide Planning

Lower Platte River Basin Coalition

In 2013, the seven NRDs in the Lower Platte River Basin and the Department signed an interlocal agreement to form the Lower Platte River Basin Coalition (Coalition). A Board of Directors, technical committee, and managerial committee were formed as a part of the Coalition. The Coalition's efforts are completely voluntary and, as such, planning activities do not have statutorily prescribed components, in contrast to other basin-wide planning activities described in later sections of this report.

The purpose of the Coalition is to develop and implement a Lower Platte River Basin-Wide Water Management Plan. The Basin-wide Plan was adopted in FY 2018 and is now in the process of being implemented. It was recognized through plan development that the NRDs and the Department have their own powers for planning and management of water resources within defined boundaries, but the water supplies and uses across the Basin are interrelated. The Basin-Wide Plan includes a framework for water accounting and managed development across the Basin. Implementation of many of the components of the Basin-Wide Plan are carried out through individual IMPs. As such, ongoing communication and mutual understanding among Coalition members is important to the future success of the Basin-wide Plan.

In FY 2020, the Coalition members held technical committee, management committee and board member meetings during which members shared reports on a variety of monitoring, permitting and study activities. The Department and the Coalition also worked to build and improve upon existing data and analyses that are a part of the Department's

INSIGHT web portal. The improved INSIGHT data and analyses serves as the foundation of the basin-wide accounting system.

Lower Platte River Consortium (Drought Contingency Planning)

In fall 2016, an interlocal agreement between the Lower Platte South NRD, the Lower Platte North NRD, Metropolitan Utilities District, Lincoln Water System, and the Department created the Lower Platte River Consortium (Consortium). The purpose of the Consortium is to develop forecasting tools to provide advanced notice of likely drought conditions in the Lower Platte River Basin, as well as mitigation and responsive actions that can be deployed during the onset of drought conditions to protect public water systems, agricultural uses, and instream flows.

The Department has been involved in all Consortium activities, including regular Consortium meetings, the hiring of a consultant, and oversight of project work that includes a water conveyance study and preparation of a drought contingency plan. The Drought Contingency Plan was approved by the Bureau of Reclamation in FY 2020 and the Consortium members began implementing this plan. Monthly communications about the current water supplies in the Platte Basin are shared among members with conference calls occurring as needed to discuss current conditions. The Consortium members are also working with the National Drought Mitigation Center to develop a drought table-top exercise to occur in the upcoming fiscal year.

Voluntary Integrated Management Plans (IMPs)

All seven of the Lower Platte River Basin NRDs are working with the Department to implement joint management of groundwater and surface water through voluntary IMPs. A brief timeline of IMP adoption in the Lower Platte River Basin follows:

- Lower Platte South NRD, effective May 2014,
- Papio-Missouri River NRD, effective August 2014,
- Lower Loup NRD, effective June 2016,
- Upper Loup NRD, effective July 2016,
- Lower Platte North NRD, effective July 2018,
- Lower Elkhorn NRD, effective November 2018, and
- Upper Elkhorn NRD, effective February 2019.

Upon adoption of the voluntary IMPs, the Department and NRDs work to implement management actions and monitoring as specified in each voluntary IMP. Each year, the Department and the NRD conduct an annual review of the voluntary IMP. The annual reviews include an initial meeting between the Department and NRD to discuss the previous year's progress towards meeting the goals and objectives of the IMP. Joint action steps that are to be implemented in the subsequent year are also discussed. The Department and NRD prepare a report outlining the previous year's actions, monitoring activities, and jointly-identified actions for the succeeding year. As of 2018, reports prepared for the Lower Platte Basin Water Management Meeting will suffice for an IMP annual review report, if this is desired by the NRD. The NRD and the Department may opt to present highlights of the annual review report at a publicly-noticed meeting within the NRD, such as an NRD Board Meeting or annual Basin-Wide Plan meeting. The Department's annual review reports and presentations are available via the Department's website at https://dnr.nebraska.gov/water-planning/lower-platte-river-basin (see the "planning" tab).

Formal IMP Annual reviews in FY2019

The Upper Elkhorn NRD and the Department jointly held their first annual review in June 2020 for the voluntary IMP that was adopted in February 2019. Preparation for the review included discussions between Upper Elkhorn NRD and Department staff on how management activities from February 2019 through December 2019 would be presented and what future activities would be pursued through implementation of the IMP. The annual review was presented to Upper Elkhorn board members and was also open to the public.

The fifth annual review was conducted for the Lower Platte South NRD's voluntary IMP in August 2019. This review included meetings between the NRD and the Department to discuss progress made and future planned activities for IMP implementation. An IMP progress report that covered the calendar year 2018 was jointly written by the Department and the NRD. Department and NRD staff shared highlights of the report at the regularly scheduled August 2019 Board meeting.

A fifth annual review for the Papio-MR IMP was conducted in June 2019. This annual review also included meetings between the NRD and the Department to discuss past progress and planned activities for IMP implementation. A presentation was jointly prepared by Department and NRD staff and shared at the regularly scheduled Programs, Projects and Operations Board subcommittee.

Streamgaging

The Department does not operate Platte River Basin streamgages in the lower portion of the Basin, but utilizes five gages operated by the U.S. Geological Survey. The Department operates 11 streamgages, one canal gage, and cooperates with the U.S. Geological Survey on one streamgage in the Elkhorn River Basin. The Department operates 12 streamgages and 24 canal gages in the Loup River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analysis

Currently, the Department is working with the Lower Platte Basin Coalition to update the northern Lower Platte River and Missouri Tributaries model with Airborne Electromagnetic (AEM) data. This work first focused on a pilot area of the Lower Elkhorn NRD which was completed in 2019 and is currently being expanded to cover the entire Lower Elkhorn NRD. Expected completion of the work with Lower Elkhorn NRD is for spring 2021. Also the Papio-Missouri RNRD and Lower Platte North NRD have submitted a grant application to the Water Sustainability Fund to begin work on the AEM data in their NRDs, so that it could be incorporated into the LPMT groundwater model. The timeline for the expansion of AEM data into the model for other NRDs will depend on available funding and resources to complete the work.

The Lower Platte River Basin includes a second geographic area outside of the LPMT model that is currently covered by two separate models, the CENEB model and Elkhorn-

Loup Model. In this area the Department is working with Lower Platte Basin Coalition members to compare the two models and determine if a single model could be adopted for use by the Coalition for basin-wide planning purposes.

In addition to working on the structure of the models in this basin, the Department is working with the Coalition to collect and compile water use and water supply data in these areas and perform a 5 year water balance update as is called for in the Coalition's Lower Platte River Basin-Wide Water Management Plan. As these data and modeling tools are updated they will be utilized in the Department's annual FAB report, support implementation of IMPs, be incorporated into INSIGHT analyses, and made available to water managers and the public via the INSIGHT web portal.

Voluntary Integrated Management Plans (IMPs)

The Department will continue to work with the Lower Platte NRDs to implement the seven voluntary IMPs in the Basin. This includes regular assessment of progress being made toward the goals and objectives of the plans. In the next four years, IMP amendments are anticipated for several NRDs' IMPs to achieve consistency with the Lower Platte River Basin-Wide Water Management Plan. The Basin Plan outlines accounting and managed growth specifics that are implemented through the individual voluntary IMPs.

Basin-wide Planning

The Department will continue working with the Lower Platte River Basin Coalition and the Lower Platte River Consortium to complete and implement the Basin-wide Plan and drought contingency plan.

Water Administration

Based on needs across the state, the Department will continually evaluate and prioritize data collection and analyses to support basin surface water administrations activities and state and local planning efforts. These efforts will continue for streamgaging, floodplain management, and water planning activities in the Lower Platte River Basin. Other details regarding the four-year projection of work are contained in the "Statewide" section of this report.

V. Missouri Tributaries-Nemaha River Basins

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Technical Analyses

This area constitutes the southern portion of the Lower Platte Missouri Tributaries model area. Work in this area is dependent upon the current efforts in the norther portion of the Lower Platte Missouri Tributaries area. Originally, this area was conceptualized as one model area, and was subsequently broken into northern and southern areas. Progress on the northern model and the relationship to the Department's work with ENWRA is discussed in the **Chapter IV. Lower Platte River Basins** section of this report. The northern model (LPMT model), covers the northern two-thirds of eastern Nebraska, and the southern model (Nemaha model), covers the Nemaha Basin. Like the northern model, the southern model will be used for the Department's FAB Evaluation, IMP monitoring, and will be available for use by NRDs. Data from the model will be incorporated into the INSIGHT analysis and available through the INSIGHT web portal. The southern model development was initiated in spring 2016 and will continue development once the AEM work on the northern portion concludes.

Fully Appropriated Basins (FAB) Evaluation

For the areas with sufficient data and appropriate hydrologic conditions to use the current evaluation methodologies, in the most recent FAB evaluation the Department reached a preliminary conclusion that the basins were not fully appropriated. For the 2019 FAB report, the Department did not evaluate the basins, as all NRDs have developed or are currently working to develop an IMP. The Department may evaluate these basins in the future, should ongoing monitoring or improved data indicate the need for evaluation.

Voluntary Integrated Management Plans (IMPs)

The Department and Lewis and Clark NRD (LCNRD) held the first biennial review for the LCNRD voluntary IMP in October 2019. This review covered the reporting period of 2017 and 2018 (the IMP was adopted in 2016). The Department provided a report and power point that overviewed surface water permits changes, voluntary water use reporting, and briefings on the Missouri River Recovery Implementation Committee meetings that the Department attends. In 2020 and as a part of IMP implementation, the Department has been working with the NRD on a contract to share maintenance costs of the Bow Creek near Wynot stream gage. The U.S. Geological Survey (USGS) has and will continue to maintain operation of the streamgage, with the Department providing partial funding of those costs through September 2024.

The Department and the Nemaha NRD have initiated the voluntary integrated management planning process, marking an important milestone that all 23 NRDs in the state are now participated in integrated management planning or have completed an integrated management plan. The Department and District are working with HDR, Inc. to facilitate the stakeholder process. To date, potential stakeholders have been identified

and the first meeting is scheduled for July 2020. This meeting will be held virtually due to the COVID-19 pandemic.

Streamgaging

The Department does not currently operate any streamgages in the Missouri Tributaries-Nemaha River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will continue development of the southern portion of the model area (Nemaha Model), with completion of this model expected to occur in FY 2024. Upon completion, the southern model will also be incorporated into the INSIGHT and FAB analyses. In addition, the Department will continue to support efforts of ENWRA to evaluate whether the coupling of groundwater modeling tools and airborne geophysical studies will help improve understanding of hydrologic connections between aquifers and streams.

Voluntary Integrated Management Plans (IMPs)

As a part of IMP implementation, the Department will work to develop educational materials that will accompany any future surface water appropriation approvals. The NRD will also prepare educational materials for groundwater permits that mirror the Department's materials. The development of educational materials was an important groundwater and surface action item specified in the IMP. The Department will continue to work with LCNRD on other IMP action items, including ensuring continued maintenance of the Bow Creek near Wynot streamgage.

The Department will continue to work with the Lewis and Clark NRD to jointly implement actions identified in their voluntary IMP. Specifically, this will include completing the educational materials for the new surface water permits educational requirement and evaluating options with the NRD to potentially continue maintenance of the Bow Creek streamgage. The Lewis and Clark NRD and the Department will hold their first joint review of the voluntary IMP in August 2019 to assess progress made toward accomplishing the goals and objectives of the IMP. The Department will also work with the Nemaha NRD to develop the voluntary IMP for this area, with an expected kick-off for IMP development occurring in spring 2020.

The Department will continue to work with the Nemaha NRD and HDR, Inc. to complete the stakeholder process and develop a draft voluntary integrated management plan.

Water Administration

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support basin surface water administrations activities and state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Other details regarding the four-year projection of work are contained in the "Statewide" section of this report.

VI. Niobrara-White-Hat River Basins

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Technical Analyses

The Department has continued to utilize the Upper Niobrara White integrated surface water and groundwater model that was developed by the Department and Upper Niobrara White NRD in 2013. This model includes the upper portions of the Niobrara River Basin and small regions of the White River and Hat Creek basins. Data generated from the model are incorporated into the Department's INSIGHT and FAB evaluations.

The Central Nebraska Model (CENEB) is a regional groundwater model that encompasses the Niobrara and Loup River Basins, and portions of the Elkhorn River Basin. Model construction was completed by the Department and consultants in July 2013. Data generated from the model have been incorporated into the Department's INSIGHT analyses and FAB evaluations. The CENEB model is available to NRDs to evaluate management actions as a part of IMP implementation.

In FY 2019, the Department initiated an effort with the National Park Service, U.S. Fish and Wildlife Service (USFWS), and USGS to develop a Niobrara basin groundwater model that will suit the needs of the Department, NRDs, the Park Service, and USFWS, including future accounting of river depletions for a potentialagreement on which the federal partners and the Department are also currently working. This work effort has built upon and replaces the effort the Department began in 2017 to update and refine the CENEB model where it overlaps with the Upper Niobrara Model. Upon completion of this work effort an updated model and delineation of the hydrologically connected areas in the Niobrara River Basin is anticipated. This new model is anticipated to be used in future FAB evaluations, IMP planning and for INSIGHT analyses.

Fully Appropriated Basins (FAB) Evaluation

For the 2019 FAB evaluation, the Department did not evaluate the Niobrara River Basin, as all NRDs have developed, or are currently working to develop, an IMP. The Department may evaluate these basins in the future, should ongoing monitoring indicate the need for evaluation.

Integrated Management Plans (IMPs)

The Upper Niobrara White NRD and Department jointly adopted an IMP in 2009 for the portion of the NRD that is upstream of the Mirage Flats Irrigation District, following a determination of fully appropriated for that area. This IMP was amended in 2011 to clarify actions and incorporate minor changes. The Department and Upper Niobrara White NRD have conducted annual reviews to jointly assess progress being made towards IMP goals and objectives, and to prioritize future actions. Additionally, the NRD submitted a letter to the Department in October 2017 to initiate the process of developing a voluntary IMP for the portion of the NRD that is not fully appropriated. The Department and District worked together to identify possible stakeholders to be involved in the voluntary integrated management planning process and scheduled an initial stakeholder meeting; however, this meeting was postponed due to weather and later postponed indefinitely due to the COVID-19 pandemic.

In 2014, the Department and the Lower Niobrara NRD jointly adopted a voluntary IMP for the NRD. Since then, the Department and the Lower Niobrara NRD have conducted annual reviews to evaluate progress made towards achieving the goals and objectives of the IMP and to plan future actions.

In January 2015, the Middle Niobrara NRD requested to work with the Department on a voluntary IMP for their NRD and an IMP development process was initiated. A stakeholder meeting was held in spring 2016 to assess potential goals and objectives, and another was held in November 2018 to further refine goals and objectives. The Department and the District sent out a draft IMP to the stakeholder group in the spring of 2020 to collect feedback, and the IMP is currently in the final stages of revision before being put forward to public hearing.

Basin-wide Planning

The Department and the Niobrara River Basin Alliance (NRBA) initiated a voluntary basin-wide planning process in 2014. The NRBA includes the Upper Niobrara-White, Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn NRDs. In FY 2016, the basin-wide planning effort was put on hold as the NRBA, the Nebraska Game and Parks Commission, and the Nebraska Public Power District negotiated an agreement to work together to protect future economic activity, agriculture, other water users, fish and wildlife, and recreation activities along the Niobrara River. This negotiation included the potential transfer of the Spencer hydropower dam and water right, which impacts land ownership, appropriations, and easements. Since this time, the Department has been working with the partners to consider a comprehensive path forward on a wide variety of water management and stakeholder processes, including consideration for the basin-wide planning process. The Department and NRBA re-initiated conversations on the basin-wide planning process in late 2018.

As mentioned above, the Department is also working with two Department of the Interior agencies (the National Park Service and USFWS) to evaluate the potential for developing an agreement for the Niobrara basin that will ensure needs of all parties are met and that the Federal agencies, so long as the agreement is in place, will not seek federal action to exercise federal reserve water right claims. The Department has had ongoing meetings and is working in collaboration with these federal partners and other state and local water managers.

Niobrara River Compact

The Upper Niobrara River Compact (Compact) was ratified by the states of Wyoming and Nebraska in 1962. The Compact provides for an equitable division of the available surface water supply of the Basin. It provides for acquisition of information regarding groundwater and underground water flow that is necessary for apportioning said flow, in addition to calling on the states to address issues that may lead to disagreements. The Department and the Wyoming State Engineer's Office discuss the Compact at a regularly occurring meeting in the fall of each year.

At the fall 2019 meeting, the members discussed the states' water supply conditions, surface water administration, groundwater modeling efforts, and a groundwater recharge potential study that was being completed for the Upper Niobrara White NRD. An additional technical subcommittee meeting was held in spring 2020 to discuss current hydrologic

conditions, integrated management planning, and updates regarding the studies discussed at the fall 2019 meeting.

Streamgaging

The Department operates 15 streamgages, 19 canal gages in the Niobrara-White-Hat River Basins.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will continue to work with the Upper Niobrara White NRD to collect the information needed to update and refine the integrated groundwater and surface water operations model discussed in previous sections, and will use the model to evaluate various management actions and how these may affect water supply and use. The Department will continue to collect data to update the CENEB model to assess the central and lower portions of the Niobrara River Basin. Both models will be updated as needed and will be utilized in upcoming FAB evaluations, IMP monitoring, and future INSIGHT editions. Additionally, the Department will continue to work with the National Park Service, USFWS, and USGS to complete a groundwater model for the Niobrara basin.

Integrated Management Plans (IMPs) and Basin Planning

The Department will continue to conduct annual IMP reviews with the Upper Niobrara White and the Lower Niobrara NRDs to evaluate progress being made towards goals and objectives of each IMP. The Department will also work with the Middle Niobrara NRD to complete its voluntary IMP, and with the Upper Niobrara White NRD to re-initiate the stakeholder process for its voluntary IMP that was put on hold due to the COVID-19 pandemic. The Department will continue to stay up-to-date with basin-wide planning activities, including discussions regarding the assessment and implementation of LB 1038 and associated management issues.

Niobrara River Compact

The States of Wyoming and Nebraska will continue to meet at least once annually to discuss the Compact.

Water Administration

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support basin surface water administrations activities and state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Other details regarding the four-year projection of work are contained in the “Statewide” section of this report.

VII. Republican River Basin

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Integrated Management Plans (IMPs)

The Department and the Republican River Basin NRDs continually assess the implementation of IMPs in the Basin. In FY 2020, the Department and Republican River Basin NRDs have worked on developing a fifth generation IMP for each of the three primary NRDs in the Basin. Some changes are necessary in order to align the accounting and forecasting procedures outlined in the IMPs with agreements reached by the Republican River Compact Administration (RRCA) in August 2016 and May 2017 and to align the IMPs with the Republican River Basin-wide Plan that took effect in March 2019.

This year's accounting and forecast did not indicate the potential for non-compliance with the Republican River Compact (Compact) unless certain management actions were put into place, as specified in the IMPs; therefore, the Department did not designate 2020 as a Compact Call Year.

Basin-wide Planning

The passage of LB 1098 in the 2014 legislative session mandated the creation of a basin-wide plan for the hydrologically connected portion of the Republican River Basin by the Department and the four Republican River Basin NRDs. Since the completed plan became effective in early 2019, the Department and the NRDs have been working together to implement the plan. In February 2020, the Department and NRDs held the first annual meeting to report progress on and discuss plan implementation. The meeting was open to the public. One accomplishment for FY 2020 was finalizing procedures for evaluating two of the plan's Measurable Hydrologic Objectives, which are metrics specified in the plan that will be used to assess plan progress throughout the plan's 25-year implementation timeframe. The Department and NRDs also began preparing to hold a drought-planning exercise for the basin.

Republican River Compact

The States of Colorado, Kansas, and Nebraska are currently focused on supporting efforts by the irrigation districts using water from Harlan County Reservoir to develop alternatives for more efficient use of water from the reservoir. In addition, 2019 was the first year that the flood flows provisions of the Final Settlement Stipulation and accounting procedures have been triggered by high streamflows, so the states have been working together throughout FY 2020 to consider and implement the flood flows provisions so that 2019 accounting can be approved at the Compact Administration's 2020 Annual Meeting.

Water Resources Cash Fund

A significant source of funding for the activities in the fully appropriated areas of the Republican River Basin is the Water Resources Cash Fund. A total of $6.6 million (including funds obtained via a grant from the Nebraska Environmental Trust) are

allocated to this fund annually, and a significant portion is utilized to meet the requirements of IMPs and interstate decrees, compacts, or agreements in the Republican River Basin. The Department currently has contracts with the Upper Republican ($6 million), Middle Republican ($3.3 million), and Lower Republican ($3.3 million) for this purpose. In addition, $4 million from a recent settlement with Colorado was added to the Water Resources Cash Fund, specifically for use for surface water improvements in the Republican River Basin. In FY 2020 the Department entered into a contract with the Frenchman Cambridge Irrigation District for a portion of the Colorado settlement funds ($2 million). Details on the projects and expenditures of the Water Resources Cash Fund can be found in the annual report to the legislature regarding this cash fund.

Streamgaging

The Department operates 19 streamgages, two canal gages, and cooperates with the U.S. Geological Survey on three streamgages in the Republican River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will work with the Republican River Basin NRDs to develop and test specific conjunctive management action scenarios via modeling tool outputs from the Republican River Basin Conjunctive Management Project. Each irrigation district in the Basin can be analyzed with this set of modeling tools. A work plan is being implemented with the Nebraska Bostwick Irrigation District (NBID) and initial screening of water supply improvements are being evaluated. These conjunctive management efforts will likely involve the Lower Republican NRD, NBID, and the Department, and have largely come about as a result of setting aside previous litigation and moving forward in a more cooperative manner. The Department will continue to evaluate the tools and data to determine if updates or additional data are necessary.

Integrated Management Plans (IMPs)

The Department and Republican River Basin NRDs will continue to meet annually to review the IMPs and progress made towards achieving the goals of each plan. These reviews focus on the assessment of two key compliance standards: limitations on groundwater depletions and limitations on groundwater pumping, with the purpose of ensuring long-term groundwater depletions remain stable or decrease. The Department and NRDs will assess the compliance standards and make necessary adjustments, as needed. The Department and NRDs will also assess how the new basin-wide plan and recent RRCA agreements may necessitate future modifications to the individual NRDs IMPs. Now that the Republican River Basin-wide Plan has been completed, the Department and the three primary NRDs in the basin have been working on development of fifth-generation IMPs. The fifth-generation IMPs will include changes to align the IMPs with current RRCA agreements and accounting procedures and with the basin-wide plan. The Department will later also work with Tri-Basin NRD to evaluate whether the IMP for the Republican Basin portion of Tri-Basin NRD will need to be updated for consistency with the basin-wide plan.

Basin-wide Planning
The Republican River Basin-wide Plan took effect March 1, 2019. The overarching goal of the plan is to sustain a balance between water uses and supplies in the basin. The Department and the four NRDs in the Republican Basin will continue to implement the plan's action items and will hold public meetings annually to exchange data and information about the basin's water supplies and uses and to discuss progress toward the goals and objectives of the plan.

Republican River Compact
The Department will continue to work to implement the Compact and ensure compliance through integrated management planning activities.

Water Administration

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support basin surface water administrations, activities, and state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Other details regarding the four-year projection of work are contained in the "Statewide" section of this report.

VIII. Upper Platte River Basin

SYNOPSIS OF FY 2020 ACTIVITIES

Water Planning

Technical Analyses
Two regional modeling efforts have been developed in the Upper Platte River Basin: the Cooperative Hydrology Study (COHYST) and the Western Water Use Management (WWUM) model. The models are being used to help achieve and measure progress towards the goals of the Upper Platte Basin NRDs' IMPs as well as the Basin-Wide Plan. Similar to other Department modeling efforts, these models integrate watershed, surface water operations, and groundwater modeling components to create tools capable of analyzing varied water management scenarios. Scenarios have included analyses of conjunctive management projects, well pumping, alternative surface water operations, etc. The Department's Water Planning staff have expended significant resources in support of the development of the models and model analyses, in partnership with the local NRD's and irrigation districts.

To meet the requirements of state statutes, these technical tools are needed to perform studies and modeling analyses. The studies include assessing the impacts of soil and water conservations measures on water supplies, evaluating the difference between current and fully appropriated levels of development, and a robust review of integrated management actions implemented in the Basin.

A robust review evaluation of the Upper Platte Basin's overappropriated area IMPs for the first planning increment (2009-2019) was completed in June of 2019 using these modeling tools. This evaluation included estimates of changes in streamflow due to land

use changes, the effects of management actions such as allocations and groundwater recharge projects, and incorporated municipal and industrial impacts to streamflow.

The third phase of the conservation measures work kicked-off in FY 2020. This phase involves surveying actual tillage practices in the three central Platte NRDs, Central Platte, Tri-Basin, and Twin Platte NRDs. The information gathered may then be used to update the modeling tools to reflect current producer practices.

Work is currently being done to update the COHYST model land use through 2020. The WWUM model will also be updated with data from the North Platte and South Platte NRDs through the most recent year. This is in preparation for the next robust review.

Integrated Management Plans (IMPs)

There are currently six IMPs in place within the Upper Platte River Basin. Five of the IMPs are for the overappropriated area of the Platte River Basin. As needed, modifications are made to the IMPs to ensure progress is made towards the goals of the plan, as well as to accommodate other overarching changes (socio-economic, policies, etc.). The IMPs for the five NRDs in the overappropriated area were developed for the years 2009 through 2019 (first planning increment). Preparation for the stakeholder processes to update the IMPs for second planning increment of 2019-2029 began in FY 2018 and concluded in FY 2020. The IMPs for the second increment were adopted and became effective in September 2019.

Basin-wide Planning

There is one Basin-wide Plan in place in the Upper Platte River Basin, which is for the overappropriated area of the Platte River, upstream of Elm Creek, Nebraska. The plan was developed for the years 2009 through 2019 (first planning increment) in accordance with *Neb. Rev. Stat.* § 46-715. The Department and five Upper Platte River Basin NRDs met regularly during FY 2019 to discuss progress for implementation of the Basin-wide Plan and of the IMPs for the overappropriated area. In addition, every year, an annual meeting is held in June or July that is directed toward dissemination of information to Basin stakeholders and the general public. In July 2019, the Department and five Upper Platte River Basin NRDs held the annual meeting. The stakeholder and associated planning process for the second increment (2019-2029) of the Basin-wide Plan was initiated in 2015. The stakeholder group met through September of 2018 to develop the second increment Basin-wide Plan, also in accordance with *Neb. Rev. Stat.* § 46-715. At the September 2018 meeting the stakeholder group voted on approval of the plan that was then submitted to the five Upper Platte NRDs and the Department for consideration for adoption. The draft Basin-wide Plan was published in June of 2019 and hearings on the draft Basin-wide Plan were held in July of 2019. In September of 2019 the Department and the five Upper Platte Basin NRDs agreed to adopt the Basin-Wide Plan and it became effective that month.

A voluntary Basin-wide Plan was developed and adopted for the Lower Platte River Basin. While this plan focuses on the Lower Platte River, upstream entities, particularly NRDs, will be encouraged to stay informed as this plan is implemented.

Interstate Agreements

Three interstate agreements involve the Upper Platte River Basin: the Modified North Platte Decree, the Platte River Recovery Implementation Program, and the South Platte

Compact. For the Department, implementation of interstate agreements includes the administration of water rights, various reporting elements, and support of various subcommittees and annual meetings. The Department is on schedule with implementation of tasks in support of these interstate agreements.

Water Resources Cash Fund

A significant source of funding for the activities in the overappropriated and fully appropriated areas of the Upper Platte River Basin is the Water Resources Cash Fund. A total of $6.6 million (including funds obtained from the General fund and a Nebraska Environmental Trust grant) are allocated to this fund annually, and a significant portion is utilized to meet the requirements of integrated management plans and interstate decrees, compacts, or agreements in the Upper Platte River Basin. Details on the projects and expenditures of the Water Resources Cash Fund can be found in the annual report to the legislature for that cash fund.

Streamgaging

The Department operates 49 streamgages, 55 canal gages, and cooperates on one additional gage operated by the U.S. Geological Survey in the Upper Platte River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department plans to use the WWUM and COHYST models and pertinent datasets for future IMP analyses, which will include implementing additional management actions and scenarios to improve understanding of conjunctive management of groundwater and surface water. A robust review of management actions at the river basin scale will also be conducted using these models in 2023 and 2027. The results of that study, the soil and water conservation measures study, and the evaluation of differences between current and fully appropriated levels of development study will be used to guide planning efforts in the Basin. The Department and others will review the data, tools, and models, and update as needed to fulfill goals and objectives of planning efforts.

The Department is also working to develop a decision support system (DSS) to further improve management and administration of streamflows within the Platte River Basin. This new system is expected to improve data integration, monitoring, permitting, and planning efforts, while also supporting more targeted, state-led initiatives to address integrated management planning goals. The current timeline for the deployment of the DSS for internal Department use is later in 2020 and in 2021 for project sponsors.

Integrated Management Plans (IMPs)

The five IMPs in the overappropriated area of the Upper Platte River Basin, in accordance with state statute, were written with a first increment to last no more than ten years. The first increment ended in 2019. State statute requires an evaluation of progress in meeting goals and objectives of the IMPs. From this evaluation, plans for a new 10-year increment of integrated management planning were developed. The second increment plans were developed jointly with the NRDs, using stakeholder input, and became effective in

September of 2019. The Department and the NRDs will continue to work together to implement the IMPs through the second increment.

Basin-wide Planning

The stakeholder process for the second increment of the Basin-wide Plan has been completed and the Plan became effective in September of 2019. The next step will be to implement the plan in conjunction with the NRDs. In the next four years, the plan calls for the development of a drought contingency plan as well as a robust review technical analysis of the progress being made toward plan goals and objectives. Both the drought planning action and the need for interim technical analyses were an outcome based upon valuable input received from the local basin stakeholders. The stakeholders represented various interests across the Basin, including irrigation districts, reclamation districts, public power and irrigation districts, mutual irrigation companies, canal companies, fish and wildlife interests, industries, and municipalities.

Most coordination for IMP implementation occurs between the NRD's and the Department. However, for specific projects, additional coordination occurs with irrigation districts, canal companies, and other state agencies such as the Department of Environmental Quality, the Department of Transportation, the Department of Health and Human Services, and the Nebraska Game and Parks Commission. As the second increment Basin-wide Plan and related IMPs are implemented over the next several years, Department staff will continue to supply technical and administrative support to develop, implement, and maintain planning efforts. Ongoing monitoring of the projects and their impacts on streamflows and groundwater levels make up a significant section of each IMP. The Department supports monitoring activities by disseminating information, data, and the technical capabilities to analyze and use the existing hydrologic tools. Many of the monitoring activities carried out under the IMPs are utilized by the state to satisfy the reporting requirements under interstate agreements.

Interstate Agreements

Ongoing activities of implementation related to the interstate agreements are expected to continue as scheduled. Regular monitoring for compliance with the agreements will also continue. For the North Platte Decree, regular coordination is carried out with the Bureau of Reclamation, the State of Colorado, and the State of Wyoming. Within Nebraska, the local irrigation districts and the North Platte NRD are contacted to coordinate on Decree meetings and any issues which impact their interests. As part of the interstate agreements, the Department supplies technical and administrative support for the development of projects according to the agreement schedules. The North Platte Decree Committees will continue an ongoing project to inventory and study irrigation practices and consumptive use along the North Platte River in Wyoming.

As a part of the Platte River Recovery Implementation Program (PRRIP), the Department works with the states of Colorado and Wyoming, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, water users across the Platte River Basin, and environmental groups. The Department also holds regular meetings with the Nebraska Department of Environmental Quality, the Nebraska Department of Transportation, the Nebraska Game and Parks Commission, and a downstream water users group composed of the five overappropriated area NRDs, the Central Nebraska Public Power and Irrigation District, and the Nebraska Public Power District.

The Governance Committee of PRRIP has developed plans to extend the current increment of PRRIP for an additional 13-year increment beyond the initial 2019 target date. This extension required National Environmental Policy Act (NEPA) review and new Congressional authorization. The Department met with stakeholders to ensure support for the extension and plans to continue engaging stakeholders and providing briefings to support the extension implementation.

Conjunctive Management Projects

The Department and the NRDs in the overappropriated area of the Upper Platte River Basin have been very active in implementing various management alternatives and projects to meet the goals and objectives of the IMPs. In many cases, the projects being implemented also meet the terms of PRRIP.

Several conjunctive management projects are being developed and implemented in the Upper Platte River Basin. Conjunctive management projects involve the use of both surface water and groundwater resources to maximize water use and minimize negative impacts on streamflows and groundwater levels. In this way, availability and reliability of the regional water supply is increased, and use of the whole water supply is optimized. The NRDs have entered into agreements with canal companies to utilize the existing infrastructure of the canal systems so that streamflows in excess of system demands, as well as other transferred surface water rights, can be used to recharge the groundwater aquifers and increase baseflow to the stream over time. As partners in the IMPs, the Department cooperates on these projects by providing technical, administrative, and monetary support. These efforts are expected to continue as the plans are implemented. The DSS will help the Department in tracking and monitoring these projects.

Water Administration

The Department continually prioritizes and evaluates its data collection and analysis capabilities to support basin surface water administrations activities and state and local planning efforts based on needs across the state. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Certain details regarding the four-year projection of work are contained in the “Statewide” section of this report.

IX. Financial Summary Table

Budget & Actual - Program Assistance, Streamgaging, IWM, & Litigation
Prog. 334 - Subprog. 04, 07, 19, & 21
(Subprogram 04 merged into other subprograms FY21 forward)
As of 08/07/2020

	FY 2018 Actual	FY 2019 Actual	FY 2020 Actual	FY 2021 Plan	FY 2022 Plan	FY 2023 Plan
Personal Services (Salary & Fringe)	$1,895,928	$1,941,425	$2,026,010	$2,263,106	$2,309,356	$2,356,801
Travel Expenses	$35,540	$49,269	$34,411	$51,760	$51,760	$51,760
Operating Expense – SOS Temporary Personnel	$124,599	$16,486	$35,883	$75,000	$75,000	$75,000
Operating Expense- Mgmt Consultant, Contractual Services, and Engineering Services	$1,391,656	$1,169,996	$861,456	$800,000	$800,000	$800,000
Equipment, Computer, and Software	$28,233	$197,057	$61,697	$80,500	$80,500	$80,500
Operating Expense - Other	$208,874	$231,493	$216,968	$336,413	$336,413	$336,413
Capital Outlay/Fixed Assets Except Computer	$147,013	$0	$94,755	$125,000	$125,000	$125,000
Interstate Water Matters	$258,226	$27,831	$4,800	$178,261	$400,000	$400,000
TOTAL	**$4,090,069**	**3,633,557**	**$3,602,337**	**$3,910,040**	**$4,178,029**	**$4,225,474**