



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 2018

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

TABLE OF CONTENTS

TABLE OF CONTENTS	<i>i</i>
<i>Table of Figures</i>	<i>iii</i>
I. INTRODUCTION	1
Authority	1
Purpose	2
Report Outline	2
II. STATEWIDE	4
Synopsis of FY 2018 Activities	4
Communications	4
Interagency Collaboration	6
Metrics Report for the Governor	7
Water Planning and Management Databases	8
Water Planning	9
Funds to Aid Local Government	9
Floodplain Management	12
Water Administration	18
Floodplain Management	19
III. Big Blue-Little Blue River Basins	20
Synopsis of FY 2018 Activities	20
Water Planning	20
Streamgaging	21
Floodplain Management	21
Four-Year Work Projection	21
Water Planning	21
Water Administration	22
Floodplain Management	22
IV. Lower Platte River Basins	23
Synopsis of FY 2018 Activities	23
Water Planning	23
Streamgaging	25
Floodplain Management	25
Four-Year Work Projection	25
Water Planning	25
Water Administration	25
Floodplain Management	25
V. Missouri Tributaries-Nemaha River Basins	27
Synopsis of FY 2018 Activities	27

Water Planning _____	27
Streamgaging _____	28
Floodplain Management _____	28
Four-Year Work Projection _____	28
Water Planning _____	28
Water Administration _____	28
Floodplain Management _____	28
<i>VI. Niobrara-White-Hat River Basins _____</i>	30
Synopsis of FY 2018 Activities _____	30
Water Planning _____	30
Streamgaging _____	31
Floodplain Management _____	31
Four-Year Work Projection _____	31
Water Planning _____	31
Water Administration _____	32
Floodplain Management _____	32
<i>VII. Republican River Basin _____</i>	33
Synopsis of FY 2018 Activities _____	33
Water Planning _____	33
Streamgaging _____	33
Floodplain Management _____	34
Four-Year Work Projection _____	34
Water Planning _____	34
Water Administration _____	34
Floodplain Management _____	35
<i>VIII. Upper Platte River Basin _____</i>	36
Synopsis of FY 2018 Activities _____	36
Water Planning _____	36
Streamgaging _____	37
Floodplain Management _____	37
Four-Year Work Projection _____	37
Water Planning _____	37
Water Administration _____	39
Floodplain Management _____	39
<i>IX. Financial Summary Table _____</i>	40

Table of Figures

Figure 1: Nebraska River Basins. 3
Figure 2: Department staff exhibiting the flood simulation model at Husker Harvest Days. 5
Figure 3: Nebraska Counties with Digital Flood Risk Maps. 13
Figure 4: Floodplain Management’s ongoing and new projects in FY 2018..... 13
Figure 5: Nebraska Communities Participating in the NFIP and CRS. 14
Figure 6: Floodplain Management proposed and ongoing projects in FY 2019..... 16
Figure 7: Floodplain Management Proposed and ongoing projects in FY 2020..... 17
Figure 8: Floodplain Management Proposed and ongoing projects in FY 2021. 18
Figure 9: Floodplain Management Proposed and ongoing projects in FY 2022. 18

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 (NRD's), 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 better manage the state's valuable water resources¹. 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 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, inter-agency 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 partnering 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 2018 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.

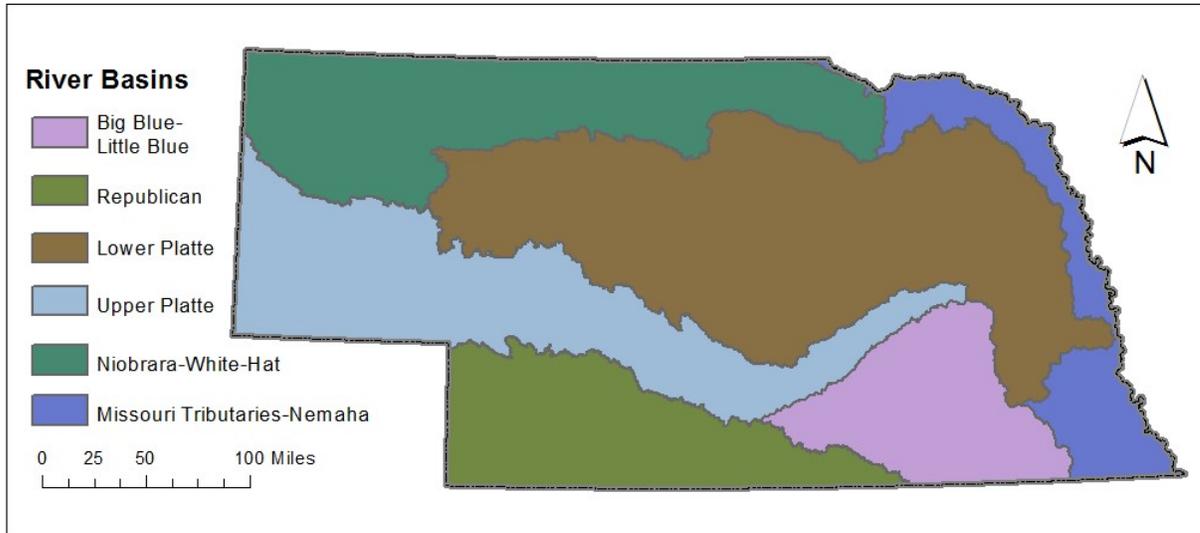


Figure 1: Nebraska River Basins.

II. STATEWIDE

SYNOPSIS OF FY 2018 ACTIVITIES

Communications

Internal

Internal communication efforts have continued to help the Department increase cross-division awareness and coordination. For example, internal agency electronic newsletters have been used to inform staff of a variety of activities that occur across Department Divisions. In addition, the Director has continued to offer internal Open Houses to convey information to all personnel, including those that work in field offices. Conference call technology has been utilized to allow for virtual attendance of remotely-based staff. Following the Open Houses, a summary of the content is shared with all Department personnel. These types of conduits help to keep personnel informed and allow them to respond to questions from stakeholders on Department topics that aren't immediately within the scope of their work.

Several 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 is made 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 2018 Water Tour covered the Missouri River and its tributaries, 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 were required to create and deliver a presentation of their tour experience, followed by a question and answer session. All Department personnel were invited to the presentation and encouraged to participate 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 has continued to actively engage with partnering local natural resources agencies across the state through water planning, floodplain management, and field office activities. In addition, the Department continues to seek opportunities to interact with stakeholders through participation in a wide variety of public outreach events. Where applicable, the Department utilizes interactive exhibits that include a touchscreen water quiz, a groundwater flow model, and a flood simulation physical model.

In FY 2018, 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 2018, the Department also engaged with stakeholders and local partnering agencies at the following community events:

- Various, locally-sponsored water tours, and
- World O! Water in Papillion.



Figure 2: Department staff exhibiting the flood simulation model at Husker Harvest Days.

DEPARTMENT NEWSLETTER

A Department newsletter continued to be published electronically on a quarterly/seasonal basis to keep stakeholders informed about Department news and to provide important information concerning water management in Nebraska.

DIGITAL NOTIFICATIONS

The Department has continued to update its social media accounts on a regular basis. In addition, 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 website in May 2017. The new website simplifies the way stakeholders receive information and provides a more up-to-date snapshot of water management in the state. The Department disseminates a large amount of information, and the new website better organizes this information to make it easier for users to access.

The website has gained notoriety, winning 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.

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. Two of these organizations, the Western States Water Council and the Interstate Council on Water

Policy, 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, the American Water Resources Association, 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 has continued close collaboration with the Nebraska Association of Resources Districts (NARD) via the Department/NARD liaison. This was a position that was created in 2013 in order to provide for coordinated and streamlined exchange of program information, data, and studies on the various water management programs between the Department and the NRD's. In addition, the liaison jointly assists the Department and NRD's 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 both the NRD and river basin level. The liaison's work greatly enhances the Department's ability to keep up-to-date on the plethora of NRD activities across the state.

In FY 2018, 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 NRD's 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 NRD's to address ways to improve uniformity of NRD database management systems, thereby promoting more efficient data dissemination between NRD's and the Department.

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 project and activity applications to determine eligibility for the Commission's consideration regarding grant and/or loan funding.

Nebraska Department of Environmental Quality

Following months of discussion, the Department's Water Planning Division and the Nebraska Department of Environmental Quality (NDEQ) undertook a unique and unprecedented opportunity to coordinate both water quantity (Department) and water quality (NDEQ) plan development with a partnering Natural Resources District (NRD). The Upper Big Blue NRD was an interested partner, as they were gearing up to develop both an integrated management plan for hydrologically connected surface water and groundwater quantity, and separate water quality management plan.

Water quality inherently affects water quantity, and vice versa, yet water quantity and quality plan requirements are different on multiple points. For example, NDEQ's plans follow Environmental Protection Agency guidelines while the Department's plans follow guidelines set by Nebraska State Statute. The timelines are different, the funding mechanisms are different, and the requirements for stakeholder interest groups are different. These factors presented challenges that make it impractical to create a joint water quality and quantity plan. But the Department and NDEQ recognized that some of the *processes* in plan development are similar and could overlap. For example, each plan includes a stakeholder process to obtain local input on the plan. Additionally, multiple years of experience of staff with both State Agencies recognize that stakeholders desire to

discuss both water quantity and quality issues and question why the agencies would not want to discuss both topics.

In FY 2018, many coordination meetings were held between the Upper Big Blue NRD, the Department, and NDEQ (“parties”) to discuss a combined approach to creating the two plans. The parties worked together to form a joint stakeholder committee, whose interest group make-up would meet the requirements of both the water quantity and quality plans. Subsequently, the parties worked together to hire a consultant to facilitate stakeholder meetings and assist in plan development, and together, they created a stakeholder invitation list. From this, a combined stakeholder group was formed, and the first stakeholder meeting was held in June 2018, with a focus on both hydrologically connected surface water and groundwater quantity and water quality. There are four more stakeholder meetings planned, and some will focus only on water quantity or water quality; others will address both quantity and quality.

So far, the parties feel that there are many benefits to this approach. It is expected that money will be saved in consultant fees by overlapping the stakeholder processes. In addition, stakeholders’ time will be better valued, as certain stakeholders may have had to serve on both plan committees if the planning processes were separate. Staff from the Department and NDEQ appreciate this opportunity to learn first-hand about the other agency’s planning processes. The NRD and stakeholders gain a better understanding of the relationship between the State Agencies and appreciate the ability to discuss water quantity and quality topics in one setting. Finally, the parties believe that working together will result in complimentary goals and objectives in both the water quantity and water quality plans.

University of Nebraska Public Policy Center

In FY 2018, 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 15 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 interactive maps and data websites are 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 an in-house Process Improvement Coordinator (PIC). The PIC works with the various divisions on projects to streamline their processes, save time, and improve customer service. A recent project

saved time and postage costs by emailing documents that were previously mailed, and a project is currently underway to improve the Department's travel booking procedures.

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 steward of the Nebraska portion of the National Hydrography Dataset (NHD), which is a national, geographic dataset containing detailed information about surface water features (streams, lakes, canals, etc.).

Watershed Boundary Dataset

The Department is also the steward of the Nebraska portion of the Watershed Boundary Dataset (WBD), which is a national, geographic dataset that contains delineations of reach, subbasin, and basin boundaries.

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. Recent developments include web-based capabilities to disseminate surface water permitting data, which was previously only made available to the public through a lengthy data request process. To do this, the Department used a mapping application to create an interactive surface water rights map from which users can view and download surface water permitting information. The web application has greatly improved the efficiency by which the public can access surface water permit data.

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 800 hundred volunteers across the state. NeRAIN data is used by many organizations and individuals, including farmers and NRD's (for irrigation), the National Weather Service (drought monitoring, flood forecasting), insurance adjusters, researchers, and others. In FY 2018, an updated NeRAIN website was launched. Improvements included an updated look and feel and enhanced zooming capabilities for maps.

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

The Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) database and web portal was developed by the Department 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 primarily used internally by water planning and modeling staff, and externally by water managers, technicians, and the public. INSIGHT was recently updated to reflect Republican River Basin data as a result of final approvals of the information by the Republican River Compact Administration.

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.

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 be made available to the public through the streamgaging web portal in FY 2019.

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 2018. The Department will continue to monitor efforts through the IMP's 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 continued 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 NRD's, 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
- 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 has been used to provide 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.

It was further stated that 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.

Critical Infrastructure Facilities Fund

This fund was created by LB 957 in FY 2016 and funded by a \$13.7 million one-time transfer from the Cash Reserve Fund on June 30, 2016. The Department was directed to use the Fund to provide grants to an NRD to offset costs related to soil and water improvements intended to protect critical infrastructure facilities within the NRD, which includes military installations, transportation routes, and wastewater treatment facilities. The Papio-Missouri River NRD submitted an application for a \$13.7 million grant to help fund its Offutt Air Force Base levee project. The application was approved and a contract providing for disbursement of funds to the NRD on a cost reimbursement basis was completed. The project began in FY 2017 with work continuing through FY 2020.

Water Administration

The field offices of the Water Administration Division enforce Nebraska's surface water statutes. When demand for surface water exceeds the supply, it is the field offices that 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.

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 budgeted 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 2018, the Stream Gaging 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. Approximately 30 streamgages (out of over 200) are still in need of the satellite telemetry upgrade. 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 2018, covered 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.

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 FY 2018, the Department provided 295 BFE Determinations around 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 presented on floodplain topics at the Nebraska Floodplain and Stormwater Managers Association (NeFSMA) Annual Conference, League of Nebraska Municipalities Annual Conference, NeFSMA Membership Meeting, Professional Surveyors Association of Nebraska Annual Conference, Nebraska Municipal Clerk Institute and Academy, and the Association of State Floodplain Managers National Conference. The Department also provided Floodplain Management Workshops around the State for floodplain administrators. The workshops were held in Fairbury, Alliance, Blair, and Lincoln. 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. As of June 30, 2018, there are 57 counties that have completed digital Flood Risk Maps. Fifty-five of the counties have digital Flood Insurance Rate Maps (FIRMs), and the other two have Department Flood Risk Maps. The maps were provided by either the floodplain management section, the Federal Emergency Management Agency (FEMA), or both. It is important to note that many of these counties' maps were created on old topographic data, and will be prioritized for new mapping based on Light Detection and Ranging (LiDAR) topographic data. LiDAR data significantly improves the accuracy of Flood Risk Mapping.

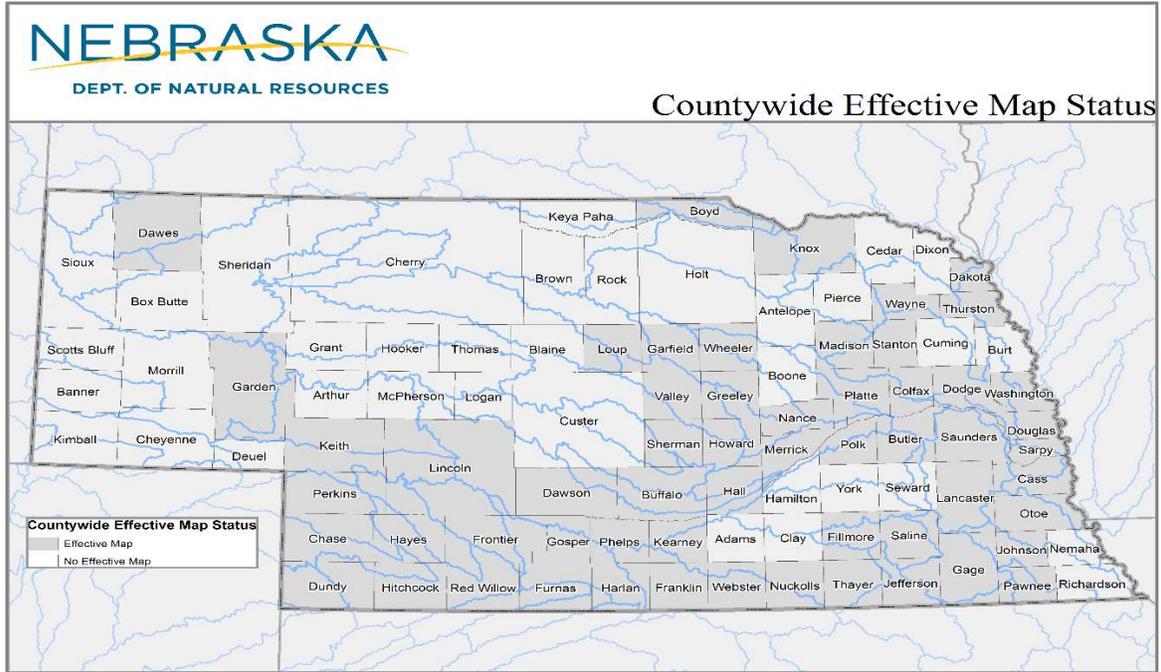


Figure 3: Nebraska Counties with Digital Flood Risk Maps.

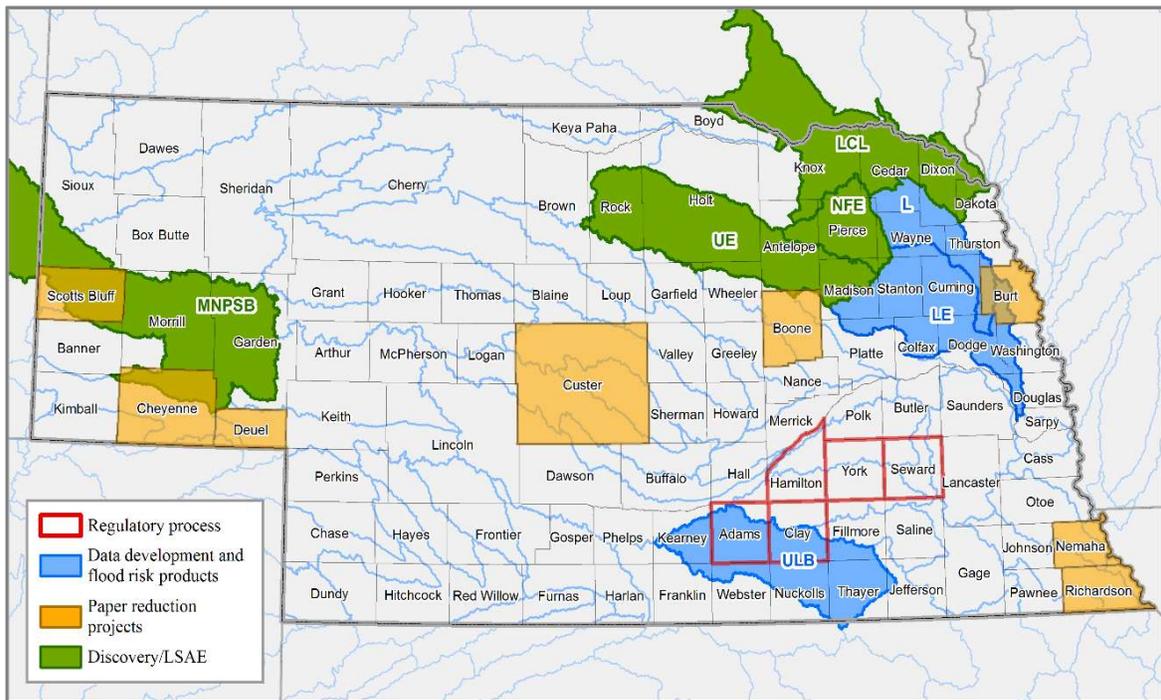


Figure 4: Floodplain Management's ongoing and new projects in FY 2018.

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. Numerous Community Assistance Visits, Community Assistance Contacts, and Ordinance Review Assistance efforts have been

completed around the State (Figure 5). This typically involves floodplain management or flood insurance-related technical assistance that may be used to support community floodplain management decision-making. Department staff provides technical assistance to help 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 \$743,000 per year in flood insurance premium costs. There are currently five communities in Nebraska participating in CRS and there are four new communities working on their applications. NFIP coordination activities and CRS assistance activities provide resources to communities that support floodplain management planning and the management of floodplain development.

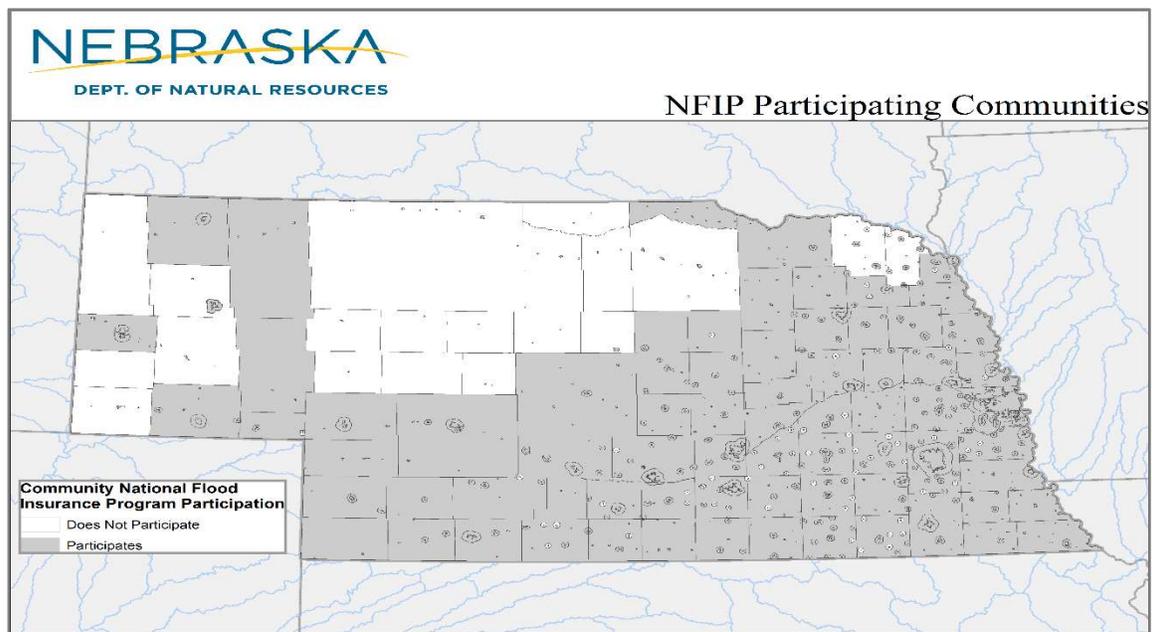


Figure 5: Nebraska Communities Participating in the NFIP and CRS.

In FY 2018, the Department partnered with the City of Beatrice and FEMA to do a Loss Avoidance study for the 2015 flood event that occurred on the Big Blue River in Beatrice. The study showed an estimated \$12.9 million in avoided losses in Beatrice from this one flood event. Beatrice was selected for this study because of their proactive property acquisition program. Before the 2015 flood, the City had acquired 120 properties, including 95 structures, for a total cost of \$4.9 million (in FY 2017 dollars). This means they had an \$8 million return on investment (263%). For more information on this study please see the story map, <http://arcg.is/1LXin5>.

Mitigation

The Department provides technical assistance to any entity implementing flood mitigation planning and related projects. The Department provides NRD's, 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 the NEMA with two other FEMA

programs: The Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) grant program. In February 2017, the FMA grant awarded nearly \$155,000 for a flood mitigation project and a planning project in Nebraska.

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 among the Department, NEMA, the U.S. Army Corps of Engineers, FEMA, the U.S. Geological Survey, National Oceanic and Atmospheric Administration, and other partners to coordinate and expand communication about flood risk. This last fiscal year, Silver Jackets worked on a new hydrologic study for the Platte River between the mouth and Columbus, and the Sandpit Lake Risk Assessment and Risk Management Evaluation project. The Platte River hydrology study will be used as leverage data in future mapping projects. The Sandpit Lake Risk Assessment and Risk Management Evaluation project will be used to educate homeowners and community officials of the risk in these developments.

The Department also assists 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 for the rivers in Nebraska. Department staff monitor the rivers and stay in contact with NEMA staff throughout high water events. In FY 2018, there were no major events, but a minor event in Pender. The Department was able to capture drone footage of this event.

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 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 NRD's, counties, and communities with planning assistance for the purpose of updating local hazard mitigation plans (HMPs). According to NEMA, most of the state's population is now covered by a hazard mitigation plan. HMPs include flood mitigation components.

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 on a yearly basis.

In FY 2019, the Department is planning to request \$1.5 million from FEMA to initiate Risk MAP projects in the Middle Big Blue, Turkey, South Fork Big Nemaha, and Big Nemaha HUC-8 watersheds, Regulatory projects in part of Kearney, part of Nuckolls, part of Morrill, Thayer, and Wayne counties, and to fund the next steps in ongoing projects in the Lower Elkhorn, Lewis & Clark Lake, North Fork Elkhorn, and Upper Elkhorn HUC-8 watersheds. Ongoing work from previous grants would include the Risk Map project in Lower Elkhorn, Regulatory projects in Hamilton, York, and Seward counties, and the Paper Inventory Reduction projects in Boone, Burt, Cheyenne, Custer, Deuel, Nemaha, Richardson, and Scotts Bluff counties (Figure 6).

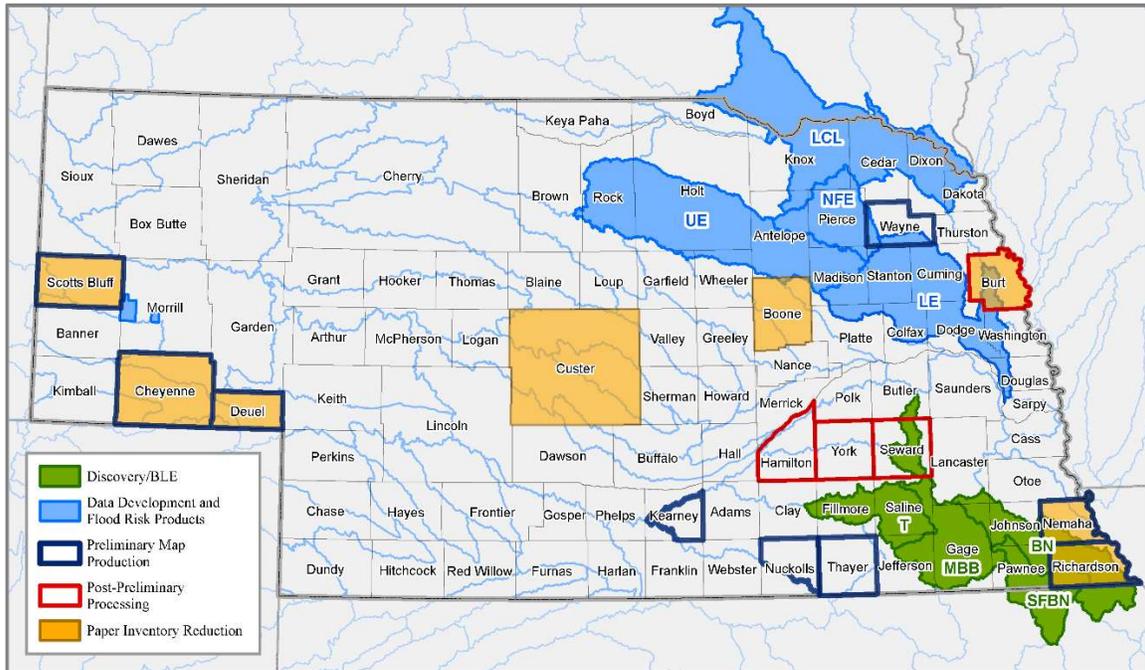


Figure 6: Floodplain Management proposed and ongoing projects in FY 2019.

In FY 2020, the Department is planning to request \$1.7 million from FEMA to initiate Risk MAP projects in the Salt, Keg-Weeping Water, and Little Nemaha HUC-8 watersheds, Regulatory projects in part of Morrill, Cuming, Stanton, part of Colfax, part of Dodge, Cedar, Dixon, and Pierce Counties, and to fund the next steps in ongoing projects in the Middle Big Blue, Turkey, South Fork Big Nemaha, and Big Nemaha HUC-8 watersheds. Ongoing work from previous grants would include the Risk MAP project in Upper Elkhorn, Regulatory projects in part of Kearney, part of Nuckolls, Thayer, Seward, and Wayne counties, and the Paper Inventory Reduction projects in Boone, Cheyenne, Custer, Deuel, Nemaha, Richardson, and Scotts Bluff counties (Figure 7).

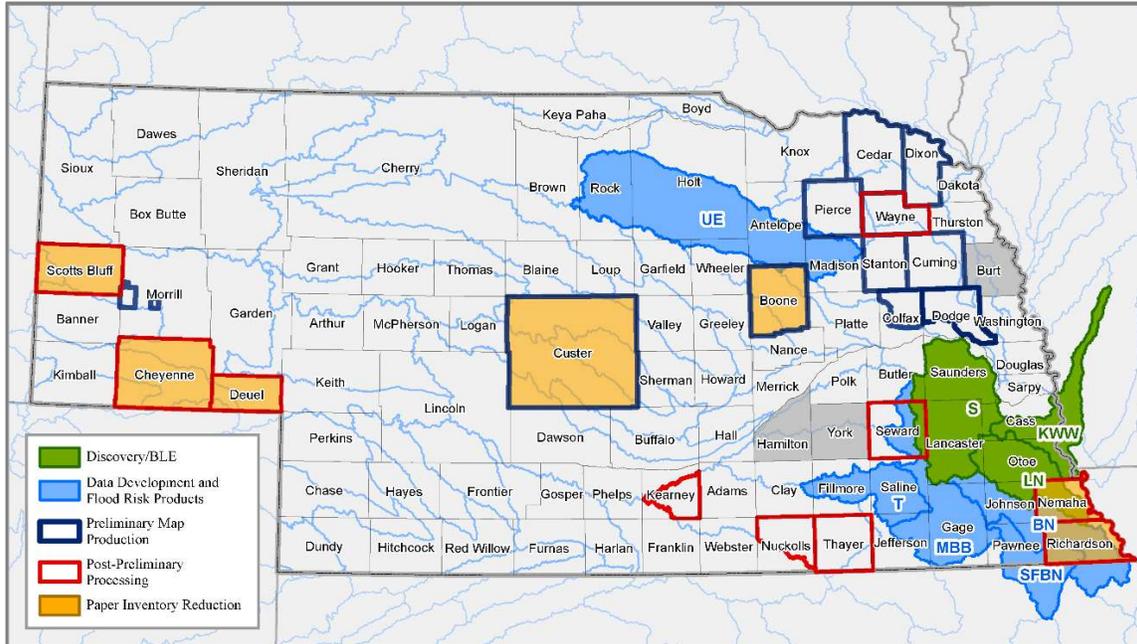


Figure 7: Floodplain Management Proposed and ongoing projects in FY 2020.

In FY 2021, the Department is planning to request \$1.6 million from FEMA to initiate Paper Inventory Reduction projects in Sheridan and Box Butte Counties, and Regulatory projects in part of Polk, part of Holt, Antelope, and Madison counties and to fund the next steps in ongoing Risk MAP projects in the Salt, Keg-Weeping Water, and Little Nemaha HUC-8 watersheds. Ongoing work from previous grants would include the Risk MAP projects in Middle Big Blue, Turkey, South Fork Big Nemaha, and Big Nemaha HUC-8 watersheds, Regulatory in part of Morrill, Cuming, Stanton, part of Colfax, part of Dodge, Wayne, Dixon, Cedar, Pierce, Thayer, part of Nuckolls, and part of Kearney counties, and the Paper Inventory Reduction projects in Boone and Custer counties (Figure 8).

In FY 2022, the Department is planning to request \$1.2 million from FEMA to initiate Risk MAP projects in the Lower North Platte, Lower South Platte, Middle Platte-Buffero, Medicine, and Red Willow HUC-8 watersheds and Regulatory projects in part of Polk, part of Butler, Gage, Fillmore, Saline, and Pawnee counties. Ongoing work from previous grants would include Risk MAP projects in Salt, Keg-Weeping Water, and Little Nemaha HUC-8 watersheds, Regulatory in part of Morrill, Cuming, Stanton, part of Colfax, part of Dodge, Dixon, Cedar, Pierce, part of Holt, Antelope, and Madison counties, and the Paper Inventory Reduction projects in Sheridan and Box Butte counties (Figure 9).

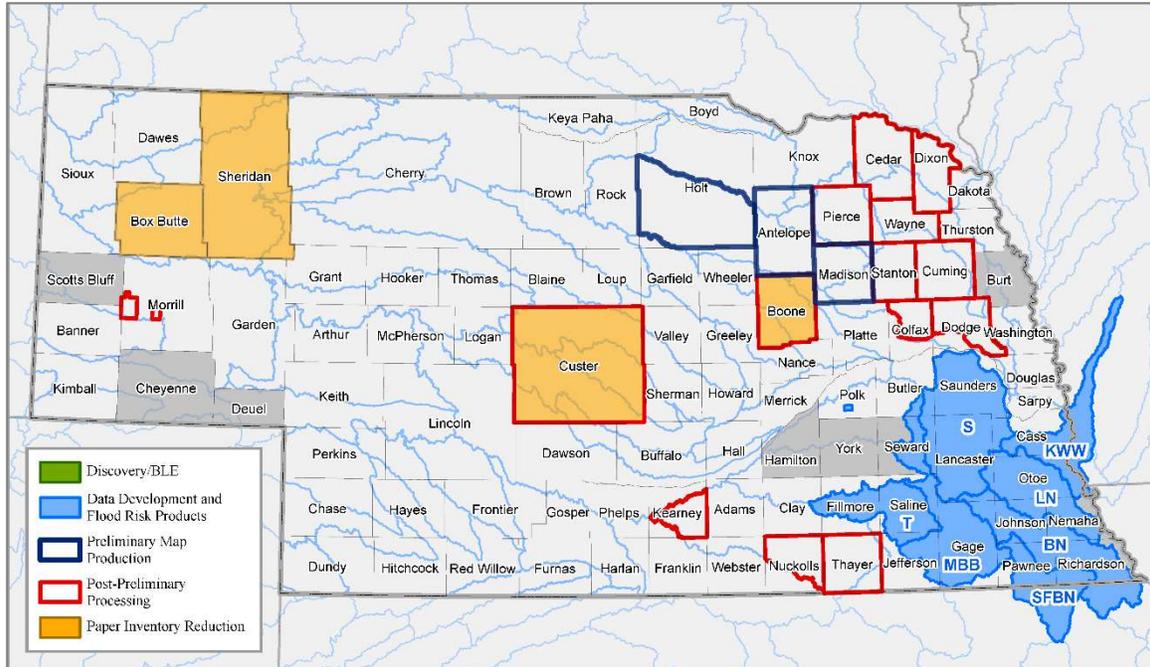


Figure 8: Floodplain Management Proposed and ongoing projects in FY 2021.

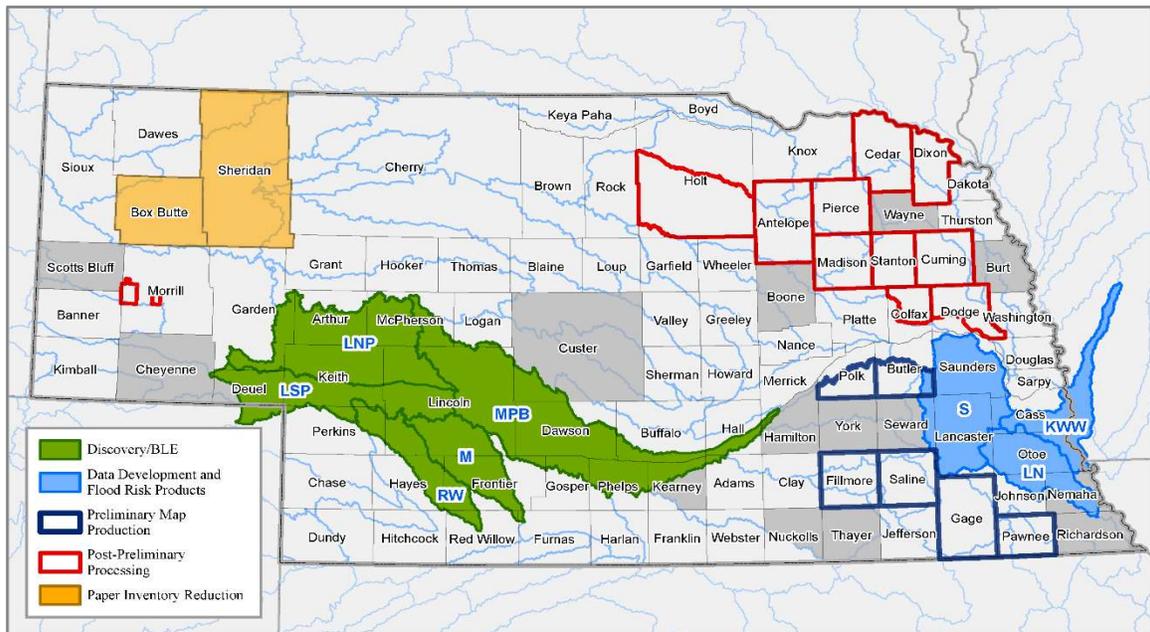


Figure 9: Floodplain Management Proposed and ongoing projects in FY 2022.

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 to 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.

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 NRD's, 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 NRD's 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, IMP's, and basin-wide water accounting and water administration programs.

III. Big Blue-Little Blue River Basins

SYNOPSIS OF FY 2018 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 NRD's in an effort to develop a regional groundwater model that is aimed at providing a foundational modeling tool that can support future modeling activities.

Fully Appropriated Basins (FAB) Evaluation

For the 2018 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 NRD's on two joint voluntary IMP's; the IMP's 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. Individual stakeholder meetings were completed in spring 2018. Throughout the process, there had been a divide among the stakeholders over whether or not the group should recommend groundwater irrigation regulations (i.e. allocations) as a part of the IMP process. During a spring meeting, the stakeholder group reached consensus for the first time in the entire process. They collectively made the decision to request that a proposed allocation analyses write-up, created by a group of stakeholders, be included as a part of the IMP as a recommendation to the NRD Board. The NRD and the Department agreed to incorporate the write-up into the final IMP, as desired by the group. Since that meeting, the Department and Little Blue NRD staff have been writing various sections of the voluntary IMP. There will be one joint stakeholder meeting (for both Tri-Basin and Little Blue NRD stakeholder groups) at the completion of IMP writing, to present the respective IMP's to the other group.

Big Blue River Basin

As discussed in the "Interagency Collaboration" section, the Department has been working with both the Nebraska Department of Environmental Quality (NDEQ) and the Upper Big Blue NRD combined stakeholder process for two water management plans. One of those plans is a voluntary IMP with the Department, and the other is a Water Quality Management Plan with NDEQ. The Upper Big Blue NRD, Department, and NDEQ ("parties") have been working together to make the stakeholder process as efficient and comprehensive as possible, by addressing both interrelated water quality and hydrologically connected surface water and groundwater quantity. This is not typical, as the water quality and water quantity plans are under very separate frameworks (water quality plans follows EPA guidelines; hydrologically connected surface water and groundwater quantity plans follows guidelines set by Nebraska Revised Statute). So far, the process has been successful. One stakeholder meeting has been held, and this was a combined stakeholder meeting for both water quality and water quantity.

The Lower Big Blue Basin voluntary IMP development has been initiated, and is expected to begin a stakeholder process in FY 2019.

Blue River Basin Compact

The Blue River Basin Compact Administration met for the 45th Annual Meeting in May 2018 in Beatrice, Nebraska, where regular business was conducted. This included reports from Nebraska and Kansas on water administration activities in the Basin and standing committee reports on water levels, streamgauge readings, legal activities, and budget items. Department staff supplied support for compact administration and standing committees. Intrastate coordination on the Blue River Basin Compact water quality issues mainly occurs between the NDEQ and the local NRD's.

Streamgaging

The Department operates five streamgages in the Big Blue River Basin and three streamgages in the Little Blue River Basin. Two of these streamgages in the Little Blue River Basin were added in 2017 through cooperation with the Little Blue NRD.

Floodplain Management

Floodplain management staff continued work on FEMA Risk MAP projects in the Upper Big Blue, West Fork Big Blue, and Upper Little Blue watersheds. The end goal from these projects are updated digital FIRMs. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will work to improve and update the Blue Basin model that provides data and information necessary for the Department's FAB Evaluation and other water planning analyses. The Department will continue discussions with the Blue River NRD's 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

The Department will continue to work with the Little Blue, Tri-Basin, Upper Big Blue, and Lower Big Blue NRD's on development of their respective voluntary IMP's. This will include completing the stakeholder processes, working with each NRD to write the plans, adopting the plans through the prescribed public meeting/hearing process, working together to implement the plans, and monitoring progress towards meeting goals and objectives set forth in each plan. IMP writing for the Little Blue IMP's (Tri-Basin and Little Blue) is expected to be completed by the close of calendar year 2018, with adoption occurring in early 2019. For the Upper Big Blue NRD, the joint water quality/quantity stakeholder process will continue into 2019 and writing of the IMP between the NRD and the Department will follow. Finally, the Department and the Lower Big Blue NRD will work together to develop and implement a stakeholder process that will begin in 2019.

There is currently significant planning activity in the Little Blue and Big Blue River Basins; within the next two years, there will likely be four new voluntary IMP's in place as a result of this collaborative, locally-based work. With each new voluntary IMP comes expanded and enhanced relationships with NRD's and local citizens, as well as a carefully considered framework for managing water to be better prepared for drought or other water issues, while avoiding potential over-use that could otherwise lead to an imbalance of water uses and supplies. Working together on joint IMP's also brings the technical analyses and planning efforts in the basin more closely

together, as the goals and objectives adopted in the plans will drive the development of the models and necessary analyses to evaluate the IMP's.

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.

Floodplain Management

Over the next four years, the Department will be working with FEMA to complete Risk MAP projects in the Upper Big Blue, the West Fork Big Blue, and the Upper Little Blue watersheds. These are ongoing projects, where all-new enhanced and basic hydrologic and hydraulic engineering has been completed, and the projects are now starting the FEMA regulatory process. It is anticipated that Adams and Clay counties will receive digital FIRMs in FY 2018, Hamilton and York counties in FY 2019, and Seward County in FY 2020. It is also anticipated that FEMA will fund data development (new hydrology and hydraulics) in Thayer and Nuckolls counties in FY 2018. The Risk MAP process includes outreach and planning events to promote resilient communities and risk reduction throughout the lifetime of the project.

IV. Lower Platte River Basins

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

SYNOPSIS OF FY 2018 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 NRD's to evaluate management actions as a part of IMP implementation.

The Department has continued to work with consultants on development of a regional numerical groundwater model for the Lower Platte and Missouri River Tributaries basins. When complete, the model will be used for the Department's FAB Evaluation and IMP monitoring and will also be available for use by NRD's. The model is divided into two parts: the northern model, which covers the upper two-thirds of eastern Nebraska; and the southern model, which covers the Nemaha Basin. Initial set-up and documentation of the northern model was completed in fall 2016, with subsequent calibration occurring through 2018. The southern model and dataset development was initiated in spring 2016, and is continuing with the goal of completion in FY 2019.

Fully Appropriated Basins (FAB) Evaluation

For the 2018 FAB evaluation, the Department did not evaluate the Lower Platte River Basins, as all NRD's 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 NRD's in the Lower Platte River Basin and the Department signed a five-year 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 NRD's 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 IMP's. As such, agreement by all Coalition members is paramount to the future success of the Basin-wide Plan.

In FY 2018, the Coalition members held an annual meeting in Lincoln and shared reports on a variety of monitoring and permitting activities. The Department also worked to build and improve upon existing data and analyses that is 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 was entered into in order to create 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. In FY 2018, multiple coordination meetings, stakeholder meetings, and an open house were held to acquire input from various interest groups in the Lower Platte River Basin.

Voluntary Integrated Management Plans (IMP's)

ADOPTED VOLUNTARY IMP'S

The following NRD's have adopted voluntary IMP's in the Lower Platte River Basin:

- Lower Platte South NRD, effective May 2014,
- Pappio-Missouri River NRD, effective August 2014,
- Lower Loup NRD, effective June 2016,
- Upper Loup NRD, effective July 2016, and
- Lower Platte North NRD, effective July 2018.

Upon adoption of the voluntary IMP's, the Department and NRD's 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 typically 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 at an NRD Board Meeting or annual Basin-Wide Plan meeting. The Department's annual review reports and presentations are made available via the Department's website at <https://dnr.nebraska.gov/water-planning/lower-platte-river> (see the "planning" tab).

So far, none of the IMP's have undergone amendments since the time of adoption; however, amendments are anticipated with completion of the voluntary Lower Platte River Basin-wide Plan. The Basin-wide Plan outlines accounting and managed growth specifics that will be implemented through the individual voluntary IMP's.

VOLUNTARY IMP DEVELOPMENT

In FY 2018, the voluntary IMP for the Lower Platte North NRD was adopted with the Lower Elkhorn NRD's plan nearing completion. The Upper Elkhorn NRD initiated development of a voluntary IMP with the Department in June 2015. This process has been on hold due to variety of factors, such as development of the Lower Platte River Basin-wide Plan and multiple requests made to the Department for voluntary IMP development following passage of LB 1098. The Department has been consistently communicating with the Upper Elkhorn NRD and is currently resuming the process with the goal of completion in FY 2019.

Streamgaging

The Department does not operate Platte River Basin streamgages in the lower portion of the Basin, but instead, 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.

Floodplain Management

In FY 2018, the Department started the scoping phase of Risk MAP, called Discovery, in the Logan and Lower Elkhorn watersheds. This includes new basic hydrologic and hydraulic analyses, engagement meetings, and a needs assessment. This mapping information will be utilized by FEMA to scope future projects in the Elkhorn River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analysis

The Department and consultants will continue development and calibration of the Lower Platte River and Missouri Tributaries models. Expected completion will occur in late 2018 and mid 2019 for the northern and southern models, respectively. Data from the models will be incorporated into INSIGHT analyses and made available to water managers and the public via the INSIGHT web portal.

Additionally, the Department will continue to collect data for the CENEB model to assess portions of the Niobrara, Loup, and Elkhorn River Basins. These modeling tools will be updated as needed and utilized in the Department's annual FAB report and in support of implementation of IMP's.

Voluntary Integrated Management Plans (IMP's)

The Department will continue to work jointly to implement voluntary IMP's, including regular assessment of progress being made toward the goals and objectives of the plans. The Department and NRD's expect that, with adoption of the Lower Platte River Basin-Wide Plan, the voluntary IMP's will be amended to be consistent with the basin-wide strategy agreed to by all Lower Platte River Basin NRD's and the Department. The Department will also resume work with the Upper Elkhorn NRD to develop a voluntary IMP through a stakeholder process and joint NRD and Department writing of the plan, ensuring consistency with the Lower Platte River Basin-Wide Plan.

Basin-wide Planning

The Department will also continue working with the Lower Platte River Basin Coalition and the Lower Platte River Consortium to complete and implement, when/where applicable, the Basin-wide Plan, conveyance study, 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.

Floodplain Management

It is anticipated that FEMA will fund the next phase of data development for the Logan and Lower Elkhorn watersheds; the scoping phase for Upper Elkhorn and North Fork Elkhorn watersheds; and the Paper Inventory Reduction projects for Boone and Custer counties. This would include eight enhanced hydrologic models, 16 enhanced hydraulic models, new basic hydrologic and hydraulic studies, and finalization of the basic hydrologic and hydraulic studies completed in FY 2017. These projects also include community outreach meetings. The end goal is to have new effective FIRM panels; however, this goal is contingent on the next phase being funded by FEMA.

V. Missouri Tributaries-Nemaha River Basins

SYNOPSIS OF FY 2018 ACTIVITIES

Water Planning

Technical Analyses

The Department has continued to work with consultants on a regional numerical model for the Lower Platte and Missouri River Tributaries basins. The model is divided into two parts: the northern model, which covers the northern two-thirds of eastern Nebraska, and the southern model, which covers the Nemaha Basin. The model will be used for the Department's FAB Evaluation, IMP monitoring, and is also available for use by NRD's. Data from the model will be incorporated into the INSIGHT analysis and available through the INSIGHT web portal. Initial development of the upper model was completed in summer 2016, with documentation completed in fall 2016. Final calibration is currently underway, with conclusion of the northern model project expected in 2018. The southern model development was initiated in spring 2016 and will follow on the completion of the northern model, with expected completion in 2019.

The Department continued to assess potential advancements in the best available science and methods that could be incorporated into these modeling tools by supporting efforts of the Eastern Nebraska Water Resources Assessment (ENWRA) organization. To accomplish this, Department staff attended ENWRA meetings and workshops to stay up-to-date on study progress and developments, and technical expertise pertaining to ENWRA data. A portion of ENWRA's work involves utilization of airborne geophysical studies to assist in mapping of subsurface geology/hydrogeology in Eastern Nebraska. The Department's primary interest in this 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 areas with sufficient data and appropriate hydrologic conditions to use the current evaluation methodologies, in the most recent FAB report, the Department reached a preliminary conclusion that the basins were not fully appropriated. For the 2018 FAB evaluation, the Department did not evaluate the basins, as all NRD's 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 (IMP's)

The Lewis and Clark NRD and Department voluntary IMP became effective in 2016. As a part of joint surface water and groundwater management, and at the NRD's request, the Department has contributed funds towards U.S. Geological Survey (USGS) maintenance of a streamgage on Bow Creek, a tributary to the Missouri River. The gage is not in a location that is feasible for the Department to take over the maintenance (far from the nearest field office), but the Department agreed to help fund maintenance of gage for three years; that funding will expire in December 2018.

Also, as a part of joint groundwater and surface water management, the Department is working 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 first review for the voluntary IMP will occur in late 2018.

On March 10, 2017, the Nemaha NRD submitted a letter of intent to develop a voluntary IMP with the Department. The Department reciprocated this letter on March 20, 2017. The Department

subsequently met with the NRD to discuss groundwater modeling efforts that could provide foundational data for the voluntary IMP process. The Department expects to begin work with the NRD on the voluntary IMP in spring 2019. The initiation of the Nemaha NRD voluntary IMP marked an exciting milestone, as it represents the point in time where all 23 NRD's in the State are participating in joint integrated water management with the Department.

Streamgaging

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

Floodplain Management

In FY 2017, the Department was awarded funds from FEMA to complete Paper Inventory Reduction projects for Burt, Nemaha, and Richardson counties. These projects have a quick timeline (3 years) in comparison to Risk MAP projects (5 years). This year, the Department contracted out the Nemaha and Richardson projects and completed most of the hydrology and hydraulics for the Burt County project in-house. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department and consultants will work to incorporate the recently developed Lower Platte-Missouri Tributaries model (northern portion) into the INSIGHT analysis and annual FAB evaluation. The Department will continue development of the southern portion (Nemaha Basin), with completion of this model expected to occur in FY 2019. 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 (IMP's)

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. Also, the Lewis and Clark NRD and the Department will hold their first joint review of the voluntary IMP in fall 2018 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 2019.

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.

Floodplain Management

Work will continue for Burt, Nemaha, and Richardson counties, and it is anticipated that all three counties will go Preliminary before the end of FY 2018. It is also expected that FEMA will fund a Discovery update for the Lewis and Clark Watershed. The update will include the basic hydrologic and hydraulic analyses to determine which projects should be scoped for the future.

VI. Niobrara-White-Hat River Basins

SYNOPSIS OF FY 2018 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 NRD's to evaluate management actions as a part of IMP implementation. In FY 2017, the Department began work to update and refine the CENEB model in the areas in which the model overlaps with the Upper Niobrara Model (western boundary of Cherry County). Once refinements are complete, the Department plans to release an updated model and delineation of hydrologically connected areas in the Niobrara River Basin.

Fully Appropriated Basins (FAB) Evaluation

For the 2018 FAB evaluation, the Department did not evaluate the Niobrara River Basin, as all NRD's 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 (IMP's)

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.

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. This IMP planning effort is currently pending, due to discussions between the Niobrara River Basin Alliance, Nebraska Public Power District, and the Nebraska Game and Parks Commission regarding the assessment and implementation of LB 1038 and associated management issues (further discussed below).

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 NRD's. 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.

LB 1038 IMPLEMENTATION

The Nebraska Legislature passed LB 1038 on April 12, 2016. The bill included several environmentally related provisions, including a provision that addressed a water rights agreement between the NRBA, Nebraska Public Power District, and the Nebraska Game and Parks Commission regarding the Spencer Dam. The bill was signed into law by the Governor on April 18, 2016. Since that time, the Department has been assessing and outlining the implementation of the bill, along with a variety of related water resources and water rights administration issues in the Basin.

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 2017 meeting, the members discussed the states' water supply conditions, surface water administration, a Niobrara River Basin WaterSMART grant with the Bureau of Reclamation, the conjunctive management model project between the Upper Niobrara White NRD and the Department, a UNL Conservation and Survey Division study of "aquifer absent" areas in the Upper Niobrara White NRD, and a National Park Service/U.S. Geologic Survey Niobrara National Scenic River hydrogeologic study and modeling efforts. An additional technical subcommittee meeting was held in spring 2018 to discuss current hydrologic conditions, integrated management planning, and updates regarding the studies discussed at the fall 2017 meeting.

Streamgaging

The Department operates 15 streamgages, 19 canal gages, and uses information from an additional two gages operated by the U.S. Geological Survey in the Niobrara-White-Hat River Basins.

Floodplain Management

In FY 2018, there were no specific projects occurring in the Niobrara-White-Hat River basins. Please see the Statewide section of this report, which references general statewide floodplain activities related to the Niobrara, White, and 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.

Integrated Management Plans (IMP's) and Basin Planning

The Department will continue to conduct annual IMP reviews with the Upper Niobrara White and the Lower Niobrara NRD's to evaluate progress being made towards goals and objectives of each IMP. The Department will also work with the Middle Niobrara NRD to engage stakeholders and continue development of this voluntary IMP. 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. Additional coordination with the Bureau of Reclamation is expected with regard to finalizing a Niobrara River Basin climate variability study.

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.

Floodplain Management

Currently there are no anticipated floodplain management projects in the next four years in the Niobrara-White-Hat River basins. However, it remains a priority of the Department to update the paper maps in Box Butte and Sheridan counties with digital information in the future.

VII. Republican River Basin

SYNOPSIS OF FY 2018 ACTIVITIES

Water Planning

Integrated Management Plans (IMP's)

The Department and the Republican River Basin NRD's continually assess the implementation of IMP's in the Basin. In FY 2018, the Department and Republican River Basin NRD's have continued to discuss the need to develop a fifth generation IMP for each of the three primary NRD's in the Basin. The Department has begun to identify what changes to these three IMP's are necessary in order to align the accounting and forecasting procedures outlined in the IMP's with agreements reached by the Republican River Compact Administration (RRCA) in August 2016 and May 2017.

This year's accounting and forecast indicated the potential for non-compliance with the Republican River Compact (Compact), unless certain management actions were put into place. Those actions are specified in the IMP's and are proactively being implemented by both the NRD's and the Department to help ensure Compact compliance for Nebraska. This year's forecast was the sixth consecutive year that has been designated 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. In 2015, the Department and four Republican River Basin NRD's (including Tri-Basin NRD) began a series of meetings with a group of Basin stakeholders to consult and collaborate on the formulation of the Basin-wide Plan and included management actions. Those stakeholder meetings concluded in June 2018. In February and March 2018, the Department and the NRD's exchanged letters jointly agreeing to extend the deadline for the plan to be completed, adopted, and take effect by one additional year (to April 17, 2019), which is the final extension allowed in *Neb. Rev. Stat. § 46-755 (3)*.

Republican River Compact

The States of Colorado, Kansas, and Nebraska are currently focused on supporting efforts to develop long-term agreements between the irrigation districts using water from Harlan County Reservoir and developing alternatives for more efficient use of water from the reservoir.

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 IMP's and interstate decrees, compacts, or agreements in the Republican River Basin. The Department has recently entered into contracts with the Upper Republican (\$6 million), Middle Republican (\$3.3 million), and Lower Republican (\$3.3 million) for this purpose. 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. In addition, \$4 million from a recent settlement with Colorado will be added to the Water Resources Cash Fund, specifically for use in the Republican River Basin.

Streamgaging

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

Floodplain Management

In FY 2018, there were no specific floodplain management projects in the Republican River Basin. Please see the “Statewide” section of this report, which references general statewide floodplain activities related to the Republican River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will work with the Republican River Basin NRD’s 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 (IMP’s)

The Department and Republican River Basin NRD’s will continue to meet annually to review the IMP’s 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 NRD’s will assess the compliance standards and make necessary adjustments, as needed. The Department and NRD’s will also assess how the new Basin-wide Plan and recent RRCA agreements may necessitate future modifications to the individual NRDs’ IMP’s. Development of fifth generation IMP’s for the three primary NRD’s in the Basin will begin after completion of the Republican River Basin-wide Plan. The fifth-generation IMP’s will include changes to align the IMP’s with current RRCA agreements and accounting procedures. In addition, the Department and all four NRD’s in the basin will evaluate whether any of the IMP’s will need to be updated for consistency with the Basin-wide Plan.

Basin-wide Planning

The Department and the four NRD’s in the Republican Basin will finalize and adopt the Basin-wide Plan no later than April 17, 2019, as required by *Neb. Rev. Stat. § 46-755 (3)*. The collaborative stakeholder process, which concluded in June 2018, set the framework for plan development, with the overarching goal of sustaining a balance between water uses and supplies in the Basin.

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.

Floodplain Management

Currently there are no anticipated projects in the Republican River Basin in the next four years.

VIII. Upper Platte River Basin

SYNOPSIS OF FY 2018 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' IMP's. 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.

In 2016, work was performed to update and improve performance of the COHYST model. The update included an extension of land use data from 2006 to 2010. The WWUM model was also updated by the South Platte and North Platte NRD's, incorporating new data through the most recent year. The current work plans anticipate that a tool capable of completing an evaluation of the Upper Platte Basin's overappropriated area IMP's for the first planning increment (2009-2019) will be available in 2018, with the evaluation analyses to follow. 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.

In 2017, the COHYST and WWUM models were used to perform preliminary estimates of the robust review scope of work which includes estimates of changes in streamflow due to land use changes. This work continues into FY 2019, performing the full robust review scope of work to evaluate not only land use changes, but also, management actions such as allocations and groundwater recharge projects, and incorporating municipal and industrial impacts to streamflow. The conservation measures Phase II work was completed, with a recommendation to do further work to estimate the impacts of reduced tillage into the future. The next phase of conservation measures work will kick-off in FY 2019.

Integrated Management Plans (IMP's)

There are currently six IMP's in place within the Upper Platte River Basin. Five of the IMP's are for the overappropriated area of the Platte River Basin. As needed, modifications are made to the IMP's to ensure progress is made towards the goals of the plan, as well as to accommodate other overarching changes (socio-economic, policies, etc.). In FY 2018, it was determined that no modifications to the IMP's were necessary. The IMP's for the five NRD's in the overappropriated area were developed for the years 2009 through 2019 (first planning increment). Preparation for the stakeholder processes to update the IMP's for second planning increment of 2019-2029 began in FY 2018.

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 NRD's met regularly during FY 2018 to discuss progress for implementation of the Basin-wide Plan and of the IMP's 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 2018, the Department and five Upper Platte River Basin NRD's held the annual meeting. The new stakeholder and associated planning process for the second increment (2019-2029) of the Basin-wide Plan was initiated in 2015. The stakeholder group met approximately every other month in FY 2018 to develop the second increment Basin-wide Plan, also in accordance with *Neb. Rev. Stat. § 46-715.*

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 NRD's, 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 48 streamgages, 58 canal gages, and cooperates on one additional gage operated by the U.S. Geological Survey in the Upper Platte River Basin.

Floodplain Management

The Department received FEMA funding in FY 2017 to complete basic hydrology and hydraulic analyses of the Middle North Platte–Scotts Bluff watershed and to complete a Paper Inventory Reduction project for Scotts Bluff, Cheyenne, and Deuel counties. These projects started in May 2017. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

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. The robust review of management actions at the river basin scale will also be conducted using these models. 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.

Integrated Management Plans (IMP's)

The five IMP's 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 will end in 2019. State statute requires an evaluation of progress in meeting goals and objectives of the IMP's. From this evaluation, plans for a new 10-year increment of integrated management planning are developed. Stakeholder meetings for the second increment of the five individual NRD IMP's will continue through FY 2019 and will follow a process similar to the basin-wide planning process.

Basin-wide Planning

The stakeholder process for the second increment of the Basin-wide Plan is expected to continue through 2019. This process incorporates an evaluation and revision of the Basin-wide Plan by stakeholders representing 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 existing Basin-wide Plan and subsequent IMP's continue to be 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 IMP's 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 Games and Parks Commission, and a downstream

water users group composed of the five overappropriated area NRD's, 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 requires National Environmental Policy Act (NEPA) review and new Congressional authorization. The Department has met with stakeholders to ensure support for the extension and plans to continue engaging stakeholders and providing briefings to support the extension process.

Conjunctive Management Projects

The Department and the NRD's 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 IMP's. 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 NRD's 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 IMP's, the Department cooperates on these projects by providing technical, administrative, and monetary support. These efforts are expected to continue as the plans are implemented.

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.

Floodplain Management

The Floodplain Management section will complete the basic hydrology and hydraulics studies for the Middle North Platte–Scotts Bluff watershed. It is anticipated that FEMA will fund the Discovery, or scoping, phase for this watershed as well. In the next four years the Department plans on completing the Paper Inventory Reduction projects in Scotts Bluff, Cheyenne, and Deuel counties. The final product of the Paper Inventory Reduction projects are new digital FIRMs that can be used for hazard mitigation and floodplain management planning activities.

IX. Financial Summary Table

Budget & Actual - Program Assistance, Streamgaging, IWM, & Litigation

Prog. 334 - Subprog. 04, 07, 19, & 21

As of 08/17/2018

	<u>FY 2016 Actual</u>	<u>FY 2017 Actual</u>	<u>FY 2018 Actual *</u>	<u>FY 2019 Plan</u>	<u>FY 2020 Plan</u>	<u>FY 2021 Plan</u>
Personal Services (Salary & Fringe)	\$1,083,761	\$1,805,230	\$1,675,000	2,186,706.90	2,186,706.90	2,186,706.90
Travel Expenses	\$60,305	\$42,745	\$47,000	61,311.00	61,311.00	61,311.00
Operating Expense – SOS Temporary Personnel	\$139,444	\$195,348	\$200,000	75,000.00	75,000.00	75,000.00
Operating Expense- Mgmt Consultant, Contractual Services, and Engineering & Architectural Services	\$2,049,539	\$1,261,903	\$1,250,000	1,000,000.00	1,000,000.00	1,000,000.00
Equipment, Computer, and Software	\$71,838	\$53,401	\$66,500	78,600.00	78,600.00	78,600.00
Operating Expense - Other	\$507,457	\$468,213	\$335,000	336,412.71	336,412.71	336,412.71
Capital Outlay/Fixed Assets Except Computer	\$600,696	\$220,032	\$200,000	250,000.00	250,000.00	250,000.00
Interstate Water Litigation	\$467,512	\$801,810	\$360,000	138,337.71	138,337.71	138,337.71
TOTAL	\$4,980,552	\$4,848,682	\$4,133,500	4,216,368.32	4,216,368.32	4,216,368.32

* FY 2018 expenditures and the FY 2019 budget reflect the effect of appropriation and re-appropriation reductions in FY 2018 (LB 994) for Department operations. Plans for FY 2020 and FY 2021 assume appropriations will continue at the reduced base amount.