STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

IN REPLY TO:

September 13, 2013

Mr. Patrick J. O'Donnell
Clerk of the Legislature
P.O. Box 94604
Lincoln, NE 68509-4604

Dear Mr. O'Donnell:

Transmitted with this letter is the 2013 "Annual Report and Plan of Work for the Nebraska State Water Planning and Review Process" as required by *Neb. Rev. Stat.* § 2-15,106.

Sincerely,

Brian P. Dunnigan

Brian P. Dunnigan, P.E.
Director

Enclosure

Annual Report and Plan of Work

for the

Nebraska State Water Planning and Review Process

Submitted to the Governor and Legislature

by the

Director of the Nebraska Department of Natural Resources

September 2013

I. INTRODUCTION

Authority

The Nebraska 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 *Neb. Rev. Stat.* §§ 2-1599 and 2-15,106.

Nebraska Revised Statute § 2-1599 provides that:

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 areawide 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.

The Department of Natural Resources (Department) utilizes several of its program areas to implement *Neb. Rev. Stat.* § 2-1599. 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 managing hydrologically connected water supplies;
4. Provide resources to map and identifying areas vulnerable to flood damage; and
5. Provide coordination of federal agencies, state agencies, local natural resources districts (NRDs), and other water interests for the development of water resources programs and projects.

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. This document provides information on several key areas of Department water planning activities, including current and future activities regarding information, data, and analysis capabilities, as well as water resources planning and management. The *summary of previous work completed* component of this report details Department activities that aided in achieving those goals over the previous year. The *future activities* component of this report details how various Department programs work towards achieving the Department's goals of implementing its authorities and related statutes; acquiring, summarizing, and disseminating water related data; increasing interagency collaboration; and utilizing planning to recognize water management opportunities.

This document contains only activities pertaining to the Department's authorities and does not include independent activities or authorities of other local, state, or federal agencies. The Department's authorities do not include water quality, groundwater management, or management of public drinking water supplies; these authorities lie with other local or state agencies. The Department does coordinate with agencies when a nexus of authorities occurs, such as in integrated management planning and floodplain planning.

To accomplish its water planning objectives, the Department primarily utilizes staff from the Integrated Water Management, Program Assistance, and Floodplain/Dam Safety/Survey Divisions, with support from five field offices located across the state. Department divisions contribute to and support water planning activities in a collaborative effort in order to achieve planning objectives.

Report Outline

The general report format utilizes the river basin framework to provide an update on Department water planning activities for the previous fiscal year, and near-term future activities in regard to its information, data, and analysis capabilities, as well as its water planning and management activities. The document provides a description of statewide activities as well as specific activities occurring in the various basins throughout the state. The basins in this document include: 1) the Big Blue-Little Blue River Basins; 2) the Lower Platte River Basin, 3) the Missouri River Tributary Basins; 4) the Niobrara-White-Hat River Basins; 5) the Republican River Basin; and 6) the Upper Platte River Basin, as shown in Figure 1 below:

Figure 1. River basins of Nebraska

The Statewide section and each basin section are divided into two subsections: *Synopsis of 2012 Activities* and *4-Year Work Projection*. These sections provide a summary and analysis of previous fiscal year events that aided in the achievement of Department objectives, as well as future planned work for the succeeding four years. These sections contain information pertaining to the Department's data and analyses capabilities, planning activities, and management activities.

Additionally, the Statewide section contains an update on the Department's objectives related to interagency coordination, as well as management alternatives and project development. These two sections are discussed in the Statewide section as the Department strives to develop and implement consistent protocols and metrics for interagency coordination across the state, as well as assist in the development of management alternatives and projects.

II. STATEWIDE

Synopsis of 2012 Activities

Interagency Coordination

The Department has contracted with the Public Policy Center of the University of Nebraska for assistance in considering its internal operations in regard to water planning, and to begin assessing potential methods of iteratively building a strategic planning process that can be used to gather input, produce needed information, and provide a framework for addressing future state-level water planning needs.

The Department continues to collaborate with the Public Policy Center of the University of Nebraska to improve its water planning, stakeholder engagement, and public participation processes. The Public Policy Center will assist the Department in evaluating its internal operations in regard to water planning and begin to assess potential methods of iteratively building a strategic, state-level planning process. This collaboration is also important to the Department's efforts to effectively disseminate water-related information pertinent to water management entities and the public.

The services provided by the Public Policy Center allow the Department to evaluate how it interacts with the public through a variety of tools including the NASIS survey, focus groups, and other directed surveys. Groups surveyed include the general public, water managers, and other state agency personnel. This type of information will allow the Department to assess its effectiveness in how it provides information to the public and other entities, how useful others find this information, and how to engage a larger sector of the public. After evaluation of the surveys and focus groups, the Public Policy Center will work with the Department to formulate options to effectively increase public outreach and participation through the planning process.

The Department continues to dedicate resources toward the development of water management projects and management alternatives. These efforts largely fall under the authorities of the integrated management responsibilities of the Department. The Department has played various roles in the development, design, and implementation of management alternatives. The Water Resources Cash Fund is used to support water management efforts in fully appropriated or overappropriated basins. These funds can be utilized to aid management actions taken to reduce consumptive uses of water, or to enhance streamflows or groundwater recharge. Through the use of funds made available by the Water Resources Cash Fund, the following are examples of projects that the Department has partnered on with local NRDs since 2009:

- The J-2 Re-Regulating Reservoir
- Development of conjunctive management projects on the Cozad Canal, Orchard-Alfalfa Canal, and Thirty-Mile Canal
- Temporary surface water and groundwater leases
- Obtaining permanent conservation easements
- Recharge projects
- Augmentation projects

The Department's statewide water planning activities center on acquiring relevant water data, summarizing and analyzing the information, utilizing the information for planning and management activities, and providing that data and information in an easily accessible format to the public. Water-related information, such as streamgage measurements, water use diversions, land cover, stream locations, etc., are important components to hydrologic analysis, and these types of information are currently scattered throughout a myriad of databases, departments, or other entities. Through its planning and management efforts, the Department has either acquired these types of information, worked with other entities to obtain their data, or has plans to develop and/or acquire such data in the future with the intention of providing this information to water managers and the public in order to aid in water management decisions.

Data Acquisition

The Department maintains various programs to acquire or update databases relevant to water planning activities. Specific state-wide programs or activities that aid in water planning are listed below:

- National Hydrography Dataset
    - Department staff coordinate stewardship of the NHD, which provides a common reference digital hydrographic dataset of surface water features
- Water Rights Digitizing
- NeRAIN
- Watershed Boundary Delineation
- Section Corner Database
- NE GIS Council and Sub-Committees

Funds to Aid Local Government

The Department administers several funds that support water related management activities, programs, or projects within the state. These include:

- Nebraska Resources Development Fund
- Interrelated Water Management Plan Program Fund

Details regarding the administration of these funds can be found on the Department's website (http://dnr.ne.gov/website/MainPage.aspx) 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 can be 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 Nebraska Natural Resources Commission (Commission). During the 2013 fiscal year, the Commission met five times.

The 2013 fiscal year appropriation was $3,140,325; equal to the 2012 fiscal year appropriation. Fiscal year 2014 funds were requested for four out of seven projects which were previously approved for funding and already in progress. Because requests far exceeded the general fund appropriation, fund distribution was accomplished through sponsor review of project planning and status, and a meeting of all sponsors. Information gathered through sponsor reviews and meetings was reported to the Commission, which decided to partially fund the four requests. Increased project cost estimates were presented by sponsors of three projects and increases in existing project cost share commitments were requested. Increased allocations were granted for the following projects: Lower Turkey Creek, Upper Prairie/Silver/Moores Creek, and Western Sarpy/Clear Creek. Both the Buck & Duck Creek project and the Pigeon/Jones Creek project have yet to be fully allocated and neither has received an obligation.

Despite the fact that it may be several years before funding is available to reimburse for outlays, current fund constraints have caused project sponsors to borrow funds in order to continue project work in a timely and efficient manner. Due to limited available funding, no new applications are being taken at his time.

On June 25, 2013, the Lower Platte South NRD returned $838,409.77 to the NRDF as over payment for the Antelope Creek project that was completed in 2010. This over payment resulted from federal "close-out" and subsequent "true-up" between the United States Army Corps of Engineers and local Antelope Creek project partners.

Interrelated Water Management Plan Program Fund

The Interrelated Water Management Plan Program Fund (IWMPPF) was created in 2006 with the passage of LB 1226, Section 20. This grant program was intended to facilitate the duties delegated to the NRDs by the Nebraska Ground Water Management and Protection Act, and to help offset costs incurred in the performance of those duties. The Department is responsible for administering the program, while the statutory authority for approving projects and funding levels rests with the Commission.

Guidelines for the IWMPPF were originally adopted by the Commission on July 13, 2006, and subsequently revised in November 2006, July 2007, November 2007, January 2009, and November 2009. These guidelines state that previously funded multi-year projects shall have priority in the allocation of each year's available funds. Due to limited available funds in the 2011 fiscal year, the Commission acted to ensure the successful completion of previously approved projects by suspending the consideration of new applications.

Compared to funding provided in the preceding biennium budget, the appropriations bill for the 2013-2015 biennium (LB 195) reflected a reduction of $150,000 per year. In addition, LB 195 stated the legislature's intent that no new projects were to be approved for funding and that existing projects had to be completed by June 30, 2015.

Funding needs were discussed in a November 2012 meeting with the sponsors of all approved, but not fully funded, IWMPPF projects. At that time, the funding needed to complete approved projects was estimated to total $1,087,487. An agreement on a proposed approach for distribution was reached based upon the assumption that funding in fiscal years 2014 and 2015 would remain at the fiscal year 2013 level ($500,000). Due to the ultimately reduced IWMPPF appropriation and the impending elimination of the program, Department staff have been asked to work with sponsors on a re-evaluation of needs. This re-evaluation will result in an agreement on how the remaining funds should be allocated in order to ensure that all ongoing projects can be brought to beneficial conclusions.

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 with and share information with other state agencies that administer similar responsibilities. The Department is involved to varying degrees with other organizations, including: the Climate Assessment and Response Committee, Nebraska Carbon Sequestration Advisory Committee, Missouri River Input Group Meetings, Missouri River Recovery Implementation Committee, Missouri River Ecosystem Restoration Plan, Missouri River Recovery Program, Lower Platte River Corridor Alliance, and the Lower Platte River Cumulative Impacts Study.

Streamgaging Program

Stream and canal gaging activities are considered part of the State Water Planning and Review Process. *Neb. Rev. Stat.* §§ 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 is currently undergoing some organizational changes to improve efficiency and data quality. The most significant change was the creation of a Streamgaging Section within the Floodplain/Dam Safety/Survey Division. This section will be responsible for the overall administration and coordination of the Department's streamgaging program. This includes overseeing data collection procedures, managing hydrological data, publishing streamgaging records, disseminating data, and ensuring that quality control standards are met. The Streamgaging Section works in close conjunction with the five Department field offices. The field offices are responsible for making streamgaging measurements and for operating and maintaining streamgaging stations and equipment. The field offices also provide valuable assistance with data processing and review.

Department staff collect and report flow data for streams, canals, and pump diversions, as well as storage in reservoirs. 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.

Floodplain
The Department currently administers three flood mitigation programs on behalf of the Federal Emergency Management Agency (FEMA). These include the Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and Severe Repetitive Loss (SRL) programs. In addition to these programs, the Department assists the Nebraska Emergency Management Agency (NEMA) with two other FEMA programs: the Hazard Mitigation Grant Program (HMGP) and the Pre-disaster Mitigation Program (PDM).

Due to the significant flood events that occurred during 2011, there was a significant amount of money allocated to the state in 2012 for hazard mitigation projects through FEMA's HMGP, administered by NEMA. Several grant applications were received that included flood risk mitigation projects, including the acquisition and removal of flood prone structures along the Missouri River. These applications are currently under review and may obtain funding assistance and begin implementation over the course of the next year. During the 2012 fiscal year, the Department also provided coordination assistance for a mitigation project in the Village of DeWitt, NE that received grant funding under FEMA's FMA program. This project included the installation of floodgates on several culverts that will significantly reduce repetitive flooding in portions of the community.

Floodplain (Mapping)
The Department acquires the necessary data to develop floodplain maps that are utilized by various agencies and entities. As of June 30, 2013, the Department and the Federal Emergency Management Agency's (FEMA) contractors and cooperating technical partners have produced county-wide, digital, effective Flood Insurance Rate Maps (FIRMs). One of these county-wide FIRMs became effective within the past year. The mapping process is underway in another eight counties: one preliminary map is underway in Jefferson County, one is on hold in Colfax County, and six work maps are in place in Adams, Cedar, Dixon, Hamilton, Seward, and York counties.

During this fiscal year, the Department completed its portion of the Jefferson County county-wide maps that were funded in FEMA fiscal year 2010. The Department also completed the Discovery phase of the FEMA Risk Mapping Assessment and Planning (Risk MAP) program for the Lower Elkhorn and the Lewis & Clark watersheds. The Department began work on the Wahoo PMR project, and expects modeling completion in the upcoming fiscal year. The Department intends to develop digital work maps for Nemaha and Richardson counties in the next fiscal year.

Integrated Water Management
The Department is tasked annually to complete and publish an evaluation of the expected long-term availability of hydrologically connected water supplies. In December 2012, the Department published its 8th annual evaluation, titled, "2013 Annual Evaluation of Availability of Hydrologically Connected Water Supplies," also known as the Fully Appropriated Basin (FAB) report. Statute requires that the report be completed on an annual basis by January 1 of each year. The Integrated Water Management staff compiled

the report using a variety of hydrologic, water use, and water rights information, as well as other related data.

Recognizing that the current methodology for determining fully appropriated status did not adequately transition to planning and management frameworks, the Department determined that the development of a new methodology was necessary. Changes to the methodology require simultaneous changes to Department rules. The Department held a series of public meetings to receive input regarding the new rules and methodology and will hold a hearing later this year to determine if the new rules should be adopted.

The new approach to determining basin status transitions more readily to planning activities by providing an assessment of the location and timing of the basin's water supplies and uses. This initial assessment provides water managers with both a short and long-term view of whether water supplies and demands are in balance. This information can be further refined to identify periods of water surpluses and water shortages. This new approach will aid areas currently developing voluntary integrated management plans (IMPs) by providing foundational information pertinent to the determination of necessary management actions.

To further its obligations under *Neb. Rev. Stat*. § 46-713, the Department has been developing new hydrologic tools and models, and intends to have them in place for every region of the state. These tools are in different stages of development: some models are complete, others are in the development phase, some are still in the design phase, and others have yet to be determined as to the appropriate tool for development. Details for each model are provided in the basin sections below.

In order to assist the examination of planning options and management alternatives, the Department has developed an Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT). INSIGHT will provide the best available scientific data, information, and technologies related to water quantity management. Various Department programs, including Integrated Water Management, Program Assistance, Streamgaging, and Surface Water Administration, will contribute data and information to the INSIGHT project along with source data from local NRDs and surface water irrigation districts. The INSIGHT project is intended to provide an easily accessible, transparent web portal for information regarding Department data and analyses on water supplies and water uses.

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. The Department is currently working to update the hydrologic data management software system that it uses to process and store streamgaging data. The current system is outdated and no longer fully meets the needs of the Department. The Department is working to identify and implement a replacement in the near future. As part of this change, the Streamgaging Section and field offices will work together to develop improved workflows, implement automated quality checks, and increase data accessibility.

Improvements to data accessibility are also expected with the implementation of the streamgaging portion of INSIGHT.

Further improvements are expected as the Streamgaging Section, along with assistance from the field offices, begins to develop plans to sustain and upgrade the streamgaging network to meet the Department's current and long-term stream information needs. This will include identifying and developing systematic approaches to evaluate the adequacy of the existing streamgage network, as well as determining the need for additional gages and the consolidation of existing gages.

The Department will continue to offer technical assistance to any entity implementing flood loss mitigation planning and related projects. This includes assisting NEMA as requested. The Department also provides NRDs, counties, and communities with planning assistance for the purpose of updating local Hazard Mitigation Plans (HMPs). According to NEMA, most of the state's population is now covered by an all Hazards Mitigation Plan, or will be covered by a plan in the future. HMPs typically include flood mitigation components.

Under the guidance of NEMA, the state will begin the process of updating the State Hazard Mitigation Plan during 2013, which will include information from the State Flood Mitigation Plan produced by the Department. In May 2013, the Department completed an update to the State Flood Mitigation Plan which was funded by a Flood Mitigation Assistance (FMA) grant provided by FEMA. Information included in this updated State Flood Mitigation Plan will be incorporated into the next revision of the State Hazard Mitigation Plan, anticipated for approval in 2014. The state plan update identified flood hazard mitigation goals that can be achieved through a wide range of mitigation program and project efforts. In cooperation with local Hazard Mitigation Plans, the plan will also provide a planning framework that will allow communities the ability to apply for and receive grants to complete local mitigation projects.

The Department will continue to work with all NRDs (either through FAB determinations or voluntary approaches) that have IMPs or are developing IMPs. IMPs are continually evolving documents and may be modified as the needs or goals within a particular basin change through time. Each adopted IMP is evaluated annually to determine if modifications or updates to the plan, tools, or data are necessary.

The Department will continue to update existing models and tools, as well as develop new tools. Some of these future tool updates will be collaborative efforts with NRDs in regard to the planning process and evaluation of overall plan goals. Other efforts will concentrate on developing new tools or updating existing models to support the FAB analyses.

III. Blue (Big & Little) River Basins

Synopsis of 2012 Activities

Streamgaging Activities

In the Blue River Basin, the Department operates six streamgages.

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Blue River Basin.

Blue River Basin Model

The Department began development of a groundwater model of the Big and Little Blue River basins. Expected model completion is summer 2013. The Department will utilize this model for its FAB report. The Department will continue to collect data and information to modify the model as necessary. In addition to fulfilling FAB responsibilities, the Department will work with various NRDs who choose to use the model as part of cooperative activities.

Fully Appropriated Basins Report

For the most recent FAB report, the Department reached a preliminary conclusion that the Big and Little Blue basins are not fully appropriated.

Blue River Basin Compact

The Blue River Basin Compact Administration meets in May of each year. During the annual meeting, regular business includes reports from Nebraska and Kansas on water administration activities in the basin and standing committee reports on water levels, stream gage readings, legal activities, and budget items. Department staff supply support for compact administration and standing committees. Intra-state coordination on the Blue River Basin Compact mainly occurs with the Department of Environmental Quality and the local NRDs.

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

The Blue River Basin Model is expected to be completed this year. This model will provide some of the data and information necessary for the Department to evaluate both the Big and Little Blue River basins in the FAB report. The Department will continue to evaluate both the Big and Little Blue River basins.

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.

Department staff will continue to coordinate with other state and local water management agencies in order to refine the hydrologic data that supports a better understanding of hydrologically connected water resources. These efforts will likely focus on expanding the network of information that is available on water uses. Additional efforts may be made to assess existing data sources and models. These efforts may include assessment of local aquifer properties and recharge characteristics, refinement of hydrologic modeling tools, and further analysis of these resources.

IV. Lower Platte River Basin

Synopsis of 2012 Activities

Streamgaging Activities

Note: this section includes the Elkhorn, Loup, and Lower Platte River basins. In the Lower Platte River Basin, the Department does not operate streamgages on the Platte River. However, the Department does utilize five Platte River gages operated by the U.S. Geological Survey. On the Elkhorn River and its tributaries, the Department operates 11 streamgages, one canal gage, and cooperates with the U.S. Geological Survey on one streamgage. On the Loup River and its tributaries, the Department operates 10 streamgages and 23 canal gages.

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Lower Platte River Basin.

CENEB—Central Nebraska Model

The Central Nebraska Model (CENEB) is a regional model that encompasses portions of the Loup and Elkhorn River Basins, which are tributaries to the Lower Platte River Basin. Model construction was completed in July 2013. The Department's new FAB methodology will utilize this model to evaluate portions of the Niobrara and Elkhorn River basins, as well as the entire Loup River Basin. The CENEB model will also provide useful information to the NRDs currently pursuing voluntary IMPs.

Missouri Tributaries Assessment Study

The Department initiated a study to assess the current datasets available and the current feasibility of developing hydrologic tools for portions of the Platte River Basin and Missouri Tributaries. HDR completed work on this initiative this year, which included recommendations on building several numerical and analytical tools. These tools will be utilized in the Department's annual FAB report.

Fully Appropriated Basins Report

The Department made a preliminary determination in 2008 that the Lower Platte River Basin was fully appropriated, and in 2009 made a final determination that the basin was not fully appropriated. Pursuant to *Neb. Rev. Stat.* § 46-713(1)(a), at the Director's discretion, the Lower Platte River Basin was not evaluated. Currently, no portion of the Lower Platte River Basin is fully appropriated.

Voluntary IMPs

Several NRDs (Lower Elkhorn, Lower Platte North, Lower Platte South, and Papio-Missouri) have initiated the voluntary IMP process with the Department. The Lower Platte South NRD has identified its stakeholder group and will have finalized IMP goals and objectives by the end of the year. The Papio-Missouri NRD has identified its stakeholder group and is currently developing its IMP goals and objectives. The Lower Elkhorn NRD and Lower Platte North NRD are currently discussing the scope of their IMPs and stakeholder processes.

Lower Platte River Basin-Wide Plan Development
The Department and several Lower Platte River Basin NRDs (Upper Loup, Lower Loup, Upper Elkhorn, Lower Elkhorn, Lower Platte North, Lower Platte South, and Papio-Missouri) recently signed an inter-local cooperative agreement to begin efforts to develop a basin-wide plan for the Lower Platte River Basin. Over the next several months and subsequent years, this group will continue to develop broad goals and objectives for water quantity management in this portion of the basin.

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

The Department and consultants will continue to work to develop various numerical and analytical tools to assess portions of the Platte River Basin and Missouri Tributaries. These tools will continue to be updated and utilized in the Department's annual FAB report. Additionally, the Department will continue to collect data to update the CENEB model in order to assess portions of the Niobrara, Loup, and Elkhorn River basins. This tool will continue to be updated as needed and utilized in the Department's annual FAB report.

The Department will continue its current work with the Lower Elkhorn, Lower Platte North, Lower Platte South, and Papio-Missouri NRDs to develop their respective voluntary IMPs. It is the intention of each NRD to complete and adopt an IMP within the next four years. These local IMPs will be supported through efforts of the Lower Platte River basin-wide planning efforts. The Department will continue to work with the NRDs within the basin and identified in the inter-local cooperative agreement to develop a basin-wide plan for the Lower Platte River Basin.

V. Missouri River Tributaries

Synopsis of 2012 Activities

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Missouri River Tributary Basins.

Missouri Tributaries Assessment Study

The Department initiated a study to assess the current datasets available and the current feasibility of developing hydrologic tools for portions of the Platte River Basin and Missouri Tributaries. HDR completed work on this initiative this year, which included recommendations on building several numerical and analytical tools. These tools will be utilized in the Department's annual FAB report.

Fully Appropriated Basins Report

For the areas with sufficient data to do an analysis, in the most recent FAB report the Department reached a preliminary conclusion that the basins are not fully appropriated.

Voluntary IMP

In the Missouri River Tributary Basins, one NRD, the Lewis & Clark NRD, has initiated the process of developing a voluntary IMP. This process has only recently been initiated but will be included in the Department's expected work over the next four years

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

The Department and consultants will continue to develop various numerical and analytical tools to assess portions of the Platte River Basin and Missouri Tributaries. These tools will continue to be updated and utilized in the Department's annual FAB report. The Department also intends to support efforts of the ENWRA organization to evaluate the effectiveness of geophysical techniques in assessing the hydrologic connection of aquifers and streams.

The Department and the Lewis and Clark NRD plan to work over this period to collect data, information, and stakeholder input for developing content for the IMP. The details of this process are only in the initial phases and will likely be updated further in the next annual report.

VI. Niobrara, White, & Hat River Basins

Synopsis of 2012 Activities

Streamgaging Activities

In the Niobrara management area, the Department operates 13 streamgages, 20 canal gages, and uses information from an additional two gages operated by the U.S. Geological Survey.

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Niobrara, White, and Hat River basins.

UNWNRD Conjunctive Use Model

The Department and the Upper Niobrara White NRD developed an integrated surface-groundwater model to evaluate the effects of potential management strategies. This model includes portions of the Niobrara River Basin, with small regions of the White and Hat River basins represented as well. Typical of Department modeling efforts, this model incorporates a soil-water balance model (CROPSIM), a surface water operations model (Stella), and a groundwater flow model (MODFLOW). The model construction was completed this year and management scenario development is ongoing. This modeling tool utilizes a flexible design in order to accommodate other potential water management options identified through a joint NRD-Department process. Of particular interest are the surface-groundwater effects of management strategies in the Mirage Flats Irrigation District and groundwater declines in the Box Butte county region.

CENEB—Central Nebraska Model

The Central Nebraska Model (CENEB) is a large model that encompasses portions of the Niobrara, Elkhorn, and Loup River basins. The Department initiated this study in 2011 and hired a consultant to both assess dataset availability and model development. Model construction was recently completed. The Department's new FAB methodology will utilize this model to evaluate portions of the Niobrara and Elkhorn River basins, as well as the entire Loup River Basin. The CENEB model can also provide useful information for those NRDs currently pursuing voluntary IMPs.

Fully Appropriated Basins Report

For the most recent FAB report, the Department reached a preliminary conclusion that the Lower Niobrara River Basin (area downstream of Spencer Hydropower) was not fully appropriated. Due to the 2011 reversal, the Niobrara River Basin downstream of the Mirage Flats Diversion Dam and upstream of Spencer Hydropower, was not evaluated in the Department's FAB report.

Completed IMP
In the Niobrara River Basin, one NRD, the Upper Niobrara White NRD, has completed an IMP for the portion of their district upstream of the Mirage Flats Irrigation District. This IMP is evaluated annually, with the last update to the IMP occurring in 2012.

Voluntary IMP
In the Niobrara River Basin, one NRD, the Lower Niobrara NRD, is in the process of developing a voluntary IMP. Throughout 2012, various meetings and workshops were held and stakeholder input was gathered in order to develop goals, objectives, and other components of the IMP. Plan adoption is anticipated for early 2014.

LB483 Implementation
Due to the 2011 reversal of the fully appropriated designation, the areas downstream of Mirage Flats Irrigation Diversion Dam and upstream of the Spencer Hydropower facility were subject to *Neb. Rev. Stat.* § 46-714(12). This restricts development of new surface and groundwater irrigation within each NRD. New surface water acres that were subject to approval totaled 834 within each NRD. Portions of all affected NRDs (Upper Niobrara White, Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn) developed rules and regulations to restrict irrigated acre development for the required four-year timeframe.

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 necessary for apportioning said flow, in addition to calling the states to address issues that may lead to disagreements. The Department and the Wyoming State Engineer's Office meet to discuss the Compact at a regularly occurring meeting in the fall. At this year's meeting, both states discussed streamgaging efforts, surface water administration, progress on the Niobrara River Basin WaterSMART Study, and other related hydrologic activities. In the spring, an additional technical subcommittee meeting was held to discuss the results of the joint U.S. Bureau of Reclamation and Department, Niobrara River Basin Study.

Four-Year Work Projection
Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

The Department will continue to work with the Upper Niobrara White NRD to collect the information needed in order to update the groundwater and operations models for subsequent years and analyses. The Department will also work with the District to develop various management scenarios that these modeling tools could evaluate. The Department will also continue to collect data to update the CENEB model in order to

assess other portions of the Niobrara River Basin. This tool will continue to be updated as needed and utilized in the Department's annual FAB report.

The Upper Niobrara White NRD and the Department will continue to evaluate and modify the current IMP to meet the goals and objectives of the region. The District and the Department will also evaluate the IMP's planning objectives to determine when modifications to the current hydrologic tools are necessary. Additionally, the Lower Niobrara NRD and the Department intend to evaluate the IMP each year after its initial approval to determine if plan or monitoring modifications are necessary.

The states of Wyoming and Nebraska will continue to meet at least once annually to discuss the Compact. They may continue to hold additional technical meetings until the completion of the Niobrara River Basin Study.

VII. Republican River Basin

Synopsis of 2012 Activities

Streamgaging Activities

In the Republican River Basin, the Department operates 19 streamgages, 12 canal gages, and cooperates with the U.S. Geological Survey on three streamgages

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Republican River Basin.

Republican River Groundwater Modeling

The Department continues to provide groundwater modeling resources in support of the implementation of IMPs within the Republican River Basin. These efforts by the Department provide for the evaluation of management options that are brought forward by the NRDs in the basin.

Integrated Management Plans

The Department and Republican River Basin NRDs continually assess the implementation of the IMPs in the basin. This year's forecast indicated the potential for non-compliance without the proactive implementation of management actions. Those actions have been taken by both the NRDs and the Department.

Republican River Compact

In the spring of 2011, the United States Supreme Court accepted the case regarding issues that were previously arbitrated between Nebraska and Kansas. The current litigation focuses on Nebraska's non-compliance in 2005-2006, Kansas' proposed remedies for future compliance, and technical issues related to methods used in Compact accounting. The Special Master in the case has issued a draft report, but final proceedings will be held in August 2013 prior to finalizing the Special Master's report to the United States Supreme Court.

Nebraska has initiated non-binding arbitration proceedings to work toward the implementation of crediting for augmentation projects in the basin, as well as to utilize provisions of the Final Settlement Stipulation that provide Nebraska with the authority to develop an alternative water short year plan. These proceedings are scheduled to occur over the next year.

Republican River Basin Conjunctive Management Project and WaterSMART Study

The Republican River Conjunctive Management Study (WaterSMART) was developed to proceed in two phases. Phase I, the conceptualization of various scenarios and the development of hydrologic tools, is nearly complete. Phase II of the study focuses on the analysis of conjunctive management scenarios, evaluating those scenarios to assess hydrologic and economic implications, and developing a plan for implementation. The Department and Republican River Management Districts Association are collaborating to fund this effort.

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

Republican River Basin Conjunctive Management Project and WaterSMART Study

The Department will continue to work with the Republican River Basin NRDs to develop the Republican River Basin Conjunctive Management Project. Project output will entail several modeling tools that will be utilized on a regular basis to analyze the effects of various management options. The Department will continue to evaluate the tools and data to determine if updates or additional data are necessary.

The Department and Republican River Basin NRDs will continue to meet annually to evaluate the IMPs and progress towards meeting plan objectives. These evaluations focus on assessment of two key compliance standards: limitations on groundwater depletions and limitations on groundwater pumping. The Department and NRDs will assess the compliance standards and make necessary adjustments as needed.

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

VIII. Upper Platte River Basin

Synopsis of 2012 Activities

Streamgaging Activities

In the Upper Platte River Basin, the Department operates 47 streamgages, 58 canal gages, and cooperates on one additional gage operated by the U.S. Geological Survey. This information is available through the Department's website, or when operational, through the INSIGHT portal.

Floodplain

See the Statewide section for reference to general statewide floodplain activities related to the Upper Platte River Basin.

Integrated Management Modeling Efforts

In the Upper Platte River Basin, two regional modeling efforts are underway: the Cooperative Hydrology Study (COHYST) and the Western Water Use Model (WWUM). Both of these projects include model components for groundwater and surface water operations, as well as land processes. The three model components will work together as a tool capable of analyzing varied management scenarios such as the effects of conjunctive management projects, well pumping, alternative surface water operations, etc. The tools are being developed to meet the goals and objectives of the IMPs.

Current workplans anticipate having a tool capable of completing the evaluation of the first increment of the overappropriated area IMPs within the next few years. Analysis will be performed shortly after the tool is developed. In partnership with the local NRDs and irrigation districts, Department staff have expended significant resources over the past year to develop these models

Integrated Management Plans

Currently, there are six IMPs in place within the Upper Platte River Basin. As the need arises, modifications are made to the IMPs to accomplish plan objectives and accommodate changes in statute.

Basin-Wide Plans

There is one basin-wide plan in place in the Upper Platte River Basin. This plan is for the overappropriated area of the Platte River. The Department and five Upper Platte River Basin NRDs meet regularly to discuss implementation of the basin-wide plan as well as the IMPs for the overappropriated area. Each year, one regular meeting occurring in June or July is directed toward dissemination of information to basin stakeholders and the general public.

Another basin-wide plan is in the early development phases for the Lower Platte River Basin. While that plan focuses on the Lower Platte River, upstream entities, particularly NRDs, are encouraged to remain current on plan developments.

North Platte Decree, Platte River Recovery Implementation Program, and South Platte Compact

Three interstate agreements involve the Upper Platte River Basin: the North Platte Decree, the Platte River Recovery Implementation Program, and the South Platte Compact. Each interstate agreement is being fully implemented by the Department. This implementation includes the administration of water rights, various reporting elements, and support of various subcommittees and annual meetings. The Department is continuing on track with implementation of the agreed to schedule of tasks in support of these interstate agreements.

Four-Year Work Projection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. 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. Additional basin-specific efforts are identified below.

The Department will continue to work with NRDs in the Upper Platte Basin to develop and improve both the WWUM and COHYST models and pertinent datasets. As these tools progress as part of the ongoing integrated management planning process, the Department and others will review the data, tools, and plans to prepare for the second increment of the IMPs in the overappropriated region of the Upper Platte River Basin.

Five of the IMPs are for the overappropriated area of the Platte River Basin. These plans, in accordance with state statute, are written with a first increment to last no more than ten years. The plans are now beginning year five of implementation. State statute requires that these IMPs be evaluated for their progress in meeting the plan objectives, and based upon this evaluation as well as other factors, the plans for a new increment of integrated management planning will be built. Within the next four years the work of planning for a second increment is expected to begin. This process may include an evaluation and revision of the basin-wide plan as well. For the IMPs, most coordination occurs with the NRDs. For specific projects, coordination also occurs with irrigation districts, canal companies, and other state agencies such as the Department of Environmental Quality, the Department of Roads, the Department of Health and Human Services, and the Nebraska Game and Parks Commission.

As the existing basin-wide plan and subsequent IMPs 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 is a significant section of each IMP. The Department supports monitoring activities by offering information, data, and the technical capability to analyze and utilize the developed hydrologic tools.

Ongoing activities of implementation related to the interstate agreements are expected to continue on the agreed upon schedule. 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, Department staff supply technical and administrative support for the development of projects according to the agreement schedules. The North Platte Decree Committee's ongoing project to inventory and study irrigation practices and consumptive use along the North Platte River in Wyoming continues.

For 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. In regard to PRRIP, the Department also holds regular meetings with the Nebraska Department of Environmental Quality, the Nebraska Department of Roads, the Nebraska Games and Parks Commission, and a downstream water users group which is composed of the five overappropriated area NRDs, Central Nebraska Public Power and Irrigation District, and Nebraska Public Power District. One large-scale water project being developed through PRRIP is the J-2 Re-Regulation Reservoir Project. This project is a collaborative effort of all PRRIP parties and will utilize the existing Central Nebraska Public Power and Irrigation District infrastructure and newly constructed reservoir areas to temporarily hold excess streamflow and supply it back to the Platte River at times when it is needed to meet state protected flows and target flows.

The Department and the NRDs in the overappropriated area of the Upper Platte River Basin have been very active in implementing various management alternatives and projects to meet the goals and objectives of the IMPs. In many cases, the projects being implemented also meet the terms of PRRIP. Throughout the Upper Platte River Basin, several conjunctive management projects are being developed and implemented. 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 order to increase the availability and reliability of the water supply in a region. In other words, conjunctive management projects optimize use of the whole water supply. The NRDs have entered into agreements with canal companies to utilize the existing infrastructure of the canal systems so that streamflows in excess of system demands, as well as other transferred surface water rights, can be used to recharge the groundwater aquifers and increase baseflow to the stream. As partners in the IMPs, the Department cooperates on these projects with technical, administrative, and monetary support.

IX. Financial Summary Table

	FY 2012 Actual	FY 2013 Actual	FY 2014 Budget	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget
Personal Services	$1,641,237	$1,627,523	$1,891,419	$1,891,419	$1,891,419	$1,891,419
Travel Expenses	$66,119	$47,436	$120,066	$120,066	$120,066	$120,066
Operating Expense – SOS Temporary Personnel	$78,549	$129,575	$39,336	$39,336	$39,336	$39,336
Operating Expense- Management consultant, Contractual Services, and Engineering & Architectural Services	$450,168	$1,622,274	$2,077,974	$2,077,974	$2,077,974	$2,077,974
Equipment, Computer and Software	$79,730	$72,978	$113,000	$113,000	$113,000	$113,000
Operating Expense - Other	$99,635	$115,414	$138,168	$138,168	$138,168	$138,168
Capital Outlay/Fixed Assets Except Computer		$93,148	$70,000	$70,000	$70,000	$70,000
Interstate Water Litigation	$436,099	$302,464	$40,500	$40,500	$40,500	$40,500
TOTAL	**$2,851,537**	**$4,010,812**	**$4,490,463**	**$4,490,463**	**$4,490,463**	**$4,490,463**