

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 Natural Resources

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## **I. PLANNING AND REVIEW PROCESS ACTIVITIES**

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- 3) National Hydrography Dataset
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- 5) Soil Survey Digitization
- 6) Watershed Boundary Delineation
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### **D. PROVIDE THE STATE WITH THE CAPACITY TO PLAN AND DESIGN WATER PROJECTS**

## II. INTRODUCTION

The Nebraska State Water Planning and Review Process was initiated in 1978 to redirect and accelerate Nebraska's water planning efforts. This Annual Report and Plan of Work summarizes work completed as part of that process in FY08 and presents a work program and budget for future fiscal years. This is a report of the Director of Natural Resources and is submitted in compliance with Nebraska Revised Statutes Sec. 2-15106. Section 2-1599 of the statutes directs that the process shall be designed to: 1) provide the Legislature and the 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.

The most important and high profile water planning activity that took place in FY08, as in the last few fiscal years, was work towards implementation of LB 962, the major water legislation passed during the 2004 session of the Unicameral. Nebraska Department of Natural Resources (NDNR) staff engaged in the State Water Planning and Review Process activity provided support, information and substantial work on implementation. Major NDNR staff support was provided through the agency's Director, Assistant Director, Legal Division, Research and Technical Studies Division, and Planning and Assistance Division. Implementation of LB 962 provisions will be a major activity for both NDNR staff and Natural Resources District (NRD) staff in future years. Two primary aspects of that activity are annual reports evaluating hydrologically connected water supplies and compilation of joint integrated management plans. On October 16, 2007 the Department issued the "*2008 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*" in response to statutory requirements. It was the third annual evaluation. One Planning and Assistance Division staff member works closely with Natural Resources Districts on development of joint management plans. Other Departmental planning related efforts have included Platte River Recovery Implementation Program work and work on Republican River settlement implementation.

Another focus of the State Water Planning and Review Process has been on natural resources information management. Geographic information systems (GIS) and computer assisted data manipulation and modeling continue to be an integral part of the long range planning and management of the state's water and soil resources. The work items in this report continue to reflect that emphasis. In late 2007 the Department created a Research and Technical Studies Division which undertakes modeling and other specialized technical /geologic/hydrologic studies to assist in carrying out Departmental duties.

The State Water Planning and Review Process work items related to information management are found primarily in Section B. Some of the information management products and activities found in this report are co-products of the Department's Information Technology Division and the

Planning and Assistance Division or the Research and Technical Studies Division. This is a report of planning activities and includes no programmatic information about Information Technology Division initiatives. However, the Information Technology Division does have a major role in most of the information management/basic planning activities listed. Other divisions of the Department also participate in planning activities. For instance, the Floodplain Management and Dam Safety Division conducts floodplain planning activities and the agency's Legal Division has a high level of participation in a variety of planning activities.

Planning and review process activities are organized into the major statutory planning categories listed above. Within these categories, activities are listed roughly in the order of staff time and other non-financial support required.

### **III. STATUS REPORT ON COMPLETED AND ONGOING WORK**

#### **A. PROVIDE INFORMATION AND ALTERNATIVE METHODS OF ADDRESSING WATER POLICY ISSUES AND AREA-WIDE OR STATEWIDE WATER RESOURCES PROBLEMS**

##### **1) Interrelated Water Management (Implementation of LB 962)**

###### *General*

LB 962 as passed in the 2004 session of the Unicameral gave the Nebraska Department of Natural Resources new responsibilities in several categories – water rights transfers, identification of overappropriated or fully appropriated basins, reports evaluating hydrologically connected water supplies, and joint plans for integrated management of surface water and groundwater. NDNR responsibilities on Integrated Management Plans are largely carried out through the Planning and Assistance Division and reports evaluating hydrologically connected water supplies are largely carried out through the Research and Technical Studies Division. In addition NDNR has initiated longer term studies to provide information needed for both fully appropriated determinations and integrated management planning efforts. In 2006 the Unicameral created an Interrelated Water Management Fund to provide monies to assist natural resources districts with research related to integrated management planning efforts. That fund is administered by the Natural Resources Commission with Nebraska Department of Natural Resources staff assistance.

###### *Funding and Research*

The combined FY08- FY09 appropriation for LB 962 implementation activities, including carryover is about \$7.9 million. The combined FY08 and FY09 budget includes about \$3.8 million for LB 962 activities by the Nebraska Department of Natural Resources and about \$4.1 million for state assistance to local governments for LB 962 implementation activities. The budgeted funds were/are to be used for a number of purposes, including incentives for water use reduction in fully and overappropriated areas, additional staff and supplies for NDNR management and planning, contract funds for needed studies, and assistance to natural resources

districts in the area subject to the cooperative agreement. In addition to the above mentioned funding, \$2.5 million per year for two years was appropriated to the interrelated water management plan program.

Since 2005, funding has been used to hire a Legal Division staff member, a geologist/interrelated water management specialist in the Planning and Assistance Division, two Water Administration Division staff members, a ground water modeler and a senior ground water modeler. As of this report the Department of Natural Resources also has committed or expended for contract studies or related data collection a total of \$1,694,259 for the combined periods of FYs 05-06, 06-07, 07-08 and 08-09. This does not include the separate Natural Resources Commission commitment through the Interrelated Water Management Fund. Table 1 identifies that research and related completion dates. In addition to the activities with specific budget figures provided in Table 1 funds have been set aside but not yet committed for a Platte Conjunctive Use Study, a Niobrara model consultant, a conservation study and Platte Water Action Plan contracts. Because they are not yet contracted, no amounts are included.

In addition to the contract studies, the new staff members have enabled the Department to address a number of needs associated with the implementation of interrelated water management legislation. The two ground water modeling positions have provided needed Departmental expertise on ground water models which have uses for both interstate compacts and agreements and for other internal modeling uses in support of interrelated water management plans. The geologist/interrelated water management specialist has helped provide expertise to direct research activities into needed areas and apply results to departmental needs. The position has also directed efforts on the Annual Evaluation of Availability of Hydrologically Connected Water Supplies.

In addition to the above activities, in April 2008 the Nebraska Environmental Trust notified the Department it had received Environmental Trust grants for three separate projects. Each of those projects addresses research or educational needs closely related to the Department's Integrated Water Management activities. In each instance the Department has signed agreements with the University of Nebraska to complete the work. The grants include a \$215,000 award for "Enhancing the Value of Water through Management Education"; a joint effort between Nebraska's center pivot manufacturers and the University to provide education on optimal water use. A project entitled "Riparian Vegetation Impacts on Water Quantity, Quality, and Stream Ecology" received a grant of \$224,490 for FY09 with an indication of intent for another \$199,479 in FY10. Also funded was a project entitled "Quantifying Evaporation, Crop Evapotranspiration, and the Water Balance for Tilled and Untilled Fields". It is to receive \$313,986 in FY09 with intent indicated for \$179,906 in FY10 and \$180,268 in FY11.

#### 2008 Annual Evaluation of Hydrologically Connected Water Supplies

On October 16, 2007 the Department published the "2008 Annual Evaluation of Availability of Hydrologically Connected Water Supplies". The report was required to reach a preliminary conclusion on whether any additional basins were fully appropriated beyond those previously identified by the Department.

The report was the third annual evaluation of the expected long term availability of hydrologically connected water supplies, including fully appropriated status. As a general concept, in a fully appropriated basin, uses of both surface water and hydrologically connected ground water supplies are equal to but do not exceed the available supplies over the long term.

The preliminary conclusion of the report was that the Niobrara Basin between Mirage Flats Diversion Dam and the Spencer Hydropower Facility is fully appropriated. The fully appropriated determination results in a temporary stay on new high capacity well development, new surface water appropriations, and new irrigated acreage and requires the NRD and NDNR to begin work on a joint integrated management plan. The reports preliminary conclusion was made final on January 25, 2008 following three public hearings.

The report is required on an annual basis by statute. Planning and Assistance Division staff compiled the report utilizing a variety of hydrologic, water use and water rights information as well as other related data. Major assistance was provided through the NDNR Legal Division. The next report is due no later than the end of December 2008.

#### *Integrated Management Plan Activity*

By the end of FY 08 fourteen natural resources districts had areas that had been declared fully appropriated or overappropriated. The Department and the NRDs are responsible for producing an integrated management plan for those areas. Three NRDs (the Lower Republican, Middle Republican and Upper Republican) have already adopted integrated management plans, and work in most other NRDs with fully or overappropriated areas is well underway. Work of the NRDs and the Department is especially challenging in overappropriated areas and other areas where reductions in consumptive water use are needed to bring about a balance. Not only has this presented technical challenges for all involved, but economic concerns also figure prominently in discussions. The five NRDs (North Platte, Central Platte, Twin Platte, South Platte and Tri-Basin) sharing the overappropriated area are working with the Department to produce a basin-wide plan to coordinate their individual efforts. The Lower Niobrara and Middle Niobrara Districts were subject to fully appropriated determinations in the most recent annual evaluation of hydrologically connected water supplies. The Upper Niobrara White NRD had a portion of its area declared fully appropriated in 2004 and is well into its integrated management planning process. Relatively small portions of the Upper Loup NRD, Upper Elkhorn NRD and Upper Big Blue NRD are also subject to fully appropriated determinations. The Planning and Assistance Division has one staff member who spends 80 to 90 % of her time working with the IMP/basinwide planning process. Considerable technical assistance is provided by other NDNR staff members.

## **2) Platte River Recovery and Implementation Program**

On July 1, 1997 the governors of Nebraska, Colorado and Wyoming and the U.S. Secretary of Interior signed a cooperative agreement outlining a proposed basin wide recovery implementation program for endangered species in the Central and Lower Platte Basins. In October 2006 Nebraska Governor Heineman signed the formal document agreeing to the Platte River Recovery

and Implementation Program (Program). Until her retirement in March of 2008, NDNR Director Ann Bleed had most recently served as the State representative to the Governance Committee of the Program. Kirk Nelson of the NGPC is serving as the State's alternate representative. Members of the Governance Committee represent nine groups, the Bureau of Reclamation, US Fish and Wildlife Service, State of Colorado, State of Nebraska, State of Wyoming, Downstream Water Users, South Platte Water Users, Upper North Platte Water Users and Environmental Groups.

The Program proposes to reduce shortages to U.S. Fish and Wildlife Service "target flows" and provide additional land habitat for endangered species in the Lexington to Chapman reach of the river. Portions of the shortages to target flows will be obtained through water conservation and water supply projects identified by the Governance Committee in the Water Action Plan. Assessments of each project's feasibility and impact to target flows have begun through contracts between the Governance Committee and Boyle Engineering.

On the land habitat side, the Program has begun the evaluation of several tracts of land that have the potential to serve as habitat for the Program. With Congressional approval of funding, the Program expects to begin purchasing land in the next fiscal year.

Since March of 2007 the Planning and Assistance Division has provided the major assistance to the Director in coordinating and conducting agency Program efforts and New Depletion Plan implementation work. Personnel from both the Nebraska Game and Parks Commission and the Nebraska Department of Environmental Quality are also carrying out some of the work related to this project when their respective areas of expertise are relevant to the specific work task.

An additional responsibility under the Program is for each state to mitigate, offset or prevent any new depletion to the river's target flows as part of the proposed program. This responsibility is shared between the State of Nebraska and the Natural Resources Districts and is being carefully coordinated with the Integrated Management Plan (LB962) activities described previously.

Implementation of the new depletion plan will depend on use of the Cooperative Hydrology Study (COHYST) models or other models and tools developed from COHYST, discussed elsewhere in this document and through adoption of regulations by the boards of seven Natural Resource Districts.

The amount, timing and location of depletions caused by new irrigation uses of hydrologically connected groundwater that were begun between July 1, 1997 and December 31, 2005 were reported to the Governance Committee in the spring of 2007. The state is still determining the depletions caused by other new uses. All offsets are to be in place by the end of calendar year 2008.

The anticipated cash demand for the first thirteen-year increment of the Program is \$187 million. The federal administration has agreed that the federal share of that cost should equal \$157M. Congress authorized the Program and has appropriated funds for the next fiscal year. Colorado and Wyoming have been making cash contributions as it has been needed to carry out the work of the Governance Committee. Nebraska will receive enough credit for the water and land contributions being made by CNPPID and NPPD such that no cash will be required from

Nebraska for any portion of the \$187M. As noted earlier, however, Nebraska will have substantial costs in offsetting depletions caused by new uses begun after July 1, 1997.

In future fiscal years, Department staff are expected to participate in the activities of the Governance Committee and its various advisory committees. Staff are also expected to contribute to implementation of the state new depletion plan, run modeling scenarios that may show the effects of different implementation mechanisms for meeting new depletions plan needs, contribute to advancement of projects for the water conservation and supply plan, assist in land use delineation, and help with land use and mapping. Land use analysis and planning and implementation of programs and projects for mitigation of future water uses could conceivably become a major activity for Department staff if a basin wide program is established. The extent of that work will depend upon direction from the Governor and the Legislature. However, an internal draft document has been developed to help coordinate action and assign responsibilities for NDNR work on Program activities.

### **3) Republican River Basin Cooperative Activities**

NDNR and the Republican River NRDs have continued to implement the Comprehensive Settlement of the Kansas v. Nebraska and Colorado lawsuit. NDNR and the Lower, Middle and Upper Republican NRDs have completed and adopted updated Integrated Management Plans (IMP). The plans will be effective from 2008 through 2012.

The Republican River basin is still experiencing water supply shortfalls. While the basin water supply increased considerably during 2007 and the spring of 2008, it is likely that Nebraska will need to continue to limit water consumption. Therefore, NDNR entered into negotiations with three surface water irrigation districts/companies to purchase the use of part or all of their 2008 water supply.

- The first agreement is with the Riverside Canal Company to forgo diversion from Frenchman Creek during the 2008 irrigation season. The diversion is immediately above the confluence of Frenchman Creek with the Republican River. It is estimated that action will maintain 2,000 AF in the river above Harlan County Lake, which would have been diverted into Riverside canal. It will also reduce Nebraska's Computed Beneficial Consumptive Use (CBCU) on the Frenchman sub-basin.
- The second agreement is with the Frenchman Valley Irrigation District (FVID). FVID's Culbertson Canal diverts from Frenchman Creek above the Riverside Canal headgate near Palisade, Nebraska. An estimated 8,000 AF will remain in the river above Harlan County Lake, which would have been diverted into Culbertson Canal. This will also reduce Nebraska's CBCU on the Frenchman sub-basin.
- The third agreement is with Frenchman Cambridge Irrigation District (FCID). The FCID has agreed to not divert water to the Cambridge Canal until June 22, 2008, in order to increase water stored in Harlan County Lake prior to June 30, 2008. An estimated 5,000 acre-feet will therefore be available for storage in Harlan County Lake that would have otherwise been diverted.

Planning and Assistance Division and the Research and Technical Services Division worked with ground water modeling experts to review the performance of the Republican River Ground Water Model. It is important to continue to analyze the performance of the model, since it is the tool that is used to compute the consumptive use of stream flow by ground water pumping.

#### **4) The Platte River Cooperative Hydrology Study**

The Platte River Cooperative Hydrology Study (COHYST) is an effort to develop an understanding of the hydrological, geological and climatological conditions in the Platte Basin in Nebraska upstream of Columbus, Nebraska. The project involves the Department of Natural Resources along with six Natural Resources Districts, two power districts and the Nebraska Game & Parks Commission. The costs for the project come from the involved parties and in-kind services.

NDNR expanded its efforts related to COHYST with the hiring of a ground water modeler and a senior ground water modeler in late 2006, and continued expanding efforts by hiring an additional groundwater modeler in June 2008. One is a member of the COHYST technical advisory committee. That Committee drafted the work plan and advises the sponsors on technical matters. The additional staff enabled the Department to better examine the technical accuracy of modeling work as well as providing in-kind services to the study. NDNR modelers have provided database design and maintenance, model building support, technical reviews, software evaluation, data collection and development, and educational seminars in support of the COHYST study.

Two other NDNR staff members continued to contribute to this project. One of these staff is also a member of the technical committee. That member is also the programmer for the study responsible for developing routines for projecting crop and irrigation distribution back in time and historical pumping relating to irrigation. The other member's time has been committed to fulfill the GIS, database, web development and programming needs of the study in support of projected crop and irrigation distribution through time. Additional GIS and programming support is provided by this member to a surface-water modeling pilot study that was recently developed by COHYST.

COHYST data and models have been used to assist in determining the hydrologically connected area to the overappropriated basin in support of LB 962. The models have also been helpful in calculating necessary offsets for proposed new uses in the Platte Basin. COHYST data collection and development efforts have been critically important to the development and implementation of local studies in support of management decisions. These efforts will continue in the FY 2009 period.

#### **5) Floodplain Planning / Hazard Mitigation Planning**

The New Years ice storm of December 2006-January 2007 left thousands of people – including

entire communities – without power for up to a month. From that event, the State of Nebraska received over \$22 million for hazard mitigation. A portion of these funds can be used for mitigation planning, so the State’s priority of completing plans for natural resources districts was able to be funded.

Mitigation plans are under way for the Lower Platte South, Lower Platte North, Lower Elkhorn, Lower Big Blue, Little Blue, and several other natural resources districts. Through offering technical assistance and helping to lead public meetings, NDNR staff has assisted the consultants who are completing these plans.

NDNR has also been working on local hazard mitigation plans for Elmwood, South Bend, Bloomfield, and Hall County. The Elmwood plan has been completed, and the other three plans are approaching completion.

## **7) Lower Blue River Basins Flow Augmentation Study**

The Lower Blue River Basins Flow Augmentation Study is a joint effort by the Nebraska Department of Natural Resources, U.S. Bureau of Reclamation, the Little Blue Natural Resources District, and the Lower Big Blue Natural Resources District to determine whether augmentation of surface water supplies during critical periods may provide a cost effective method of both meeting the Nebraska-Kansas Big Blue River Compact (Compact) target flows and providing additional benefits. Nebraska has sometimes needed to close junior surface water appropriations to meet the terms of the Compact and the resultant loss of water by irrigators has had significant economic impacts on those junior surface water appropriators. Providing sufficient water to meet Compact state-line targets in times of shortage could allow many junior surface water appropriators to continue irrigating through critical periods.

This study is to:

1. Determine the total annual augmentation water needed (acre-feet) in order to meet the state-line targets for both the Big Blue and Little Blue Rivers without closing junior water rights.
2. Determine the value (dollars/acre-foot) of the augmentation water to the junior irrigators in Nebraska and to the water users in Kansas junior to the Minimum Desirable Streamflows (which are the same as the compact state-line target flows).
3. Describe the legal issues that would need to be addressed in order to put in place a flow augmentation system.
4. Identify and conduct a preliminary analysis of potential solutions to meet flow augmentation needs. This should include a very rough analysis of the potential cost per acre-foot of water and a description of potential project benefits other than flow augmentation for the compact.

Most of the work on the study to date has been provided through Department of Natural Resources staff. The study has been a lower priority and has experienced major delays, although

completion is expected in the next year.

#### **9) Lower Platte River Corridor Alliance**

The Lower Platte River Corridor Alliance is an umbrella organization of state and local agencies working to foster the development and implementation of locally drawn strategies, actions and practices to protect, enhance, or restore the vitality of the river's resources between Columbus and Plattsmouth. The organization meets on a quarterly basis and through FY 08 received limited funding support from NDNR.

#### **10) Lower Platte Cumulative Impacts Study**

The Lower Platte Cumulative Impacts Study is a joint effort to determine the cumulative impacts of development in and adjacent to the floodplain of the lower Platte River. Partners in the effort include the Lower Platte North NRD, the Lower Platte South NRD, the Papio-Missouri River NRD, the Nebraska Game and Parks Commission, the Nebraska Department of Roads, and the Nebraska Department of Natural Resources. The study has been conducted through the U.S. Army Corps of Engineers. The second phase of the project is now underway. Much of the effort has centered on providing digital geographic information for various land use and development characteristics in the study area. The Department of Natural Resources has a very limited role, agreeing only to provide limited in-kind services to the study. Study completion is expected during the current fiscal year.

#### **11) Environmental Education Activities**

Limited agency environmental education activities included: 1) participation in planning and staging the Nebraska Envirothon, and 2) participation in the Earth Wellness Festival, annually held at Southeast Community College in Lincoln.

#### **12) Frenchman Valley Appraisal Study**

The Frenchman Valley Appraisal Study is a cooperative effort with the U.S. Bureau of Reclamation to develop and evaluate alternative water management scenarios in the study area with a view toward optimizing the economic and environmental benefits of the water resources in the study area. Participants in the study process include: the U.S. Bureau of Reclamation, the Nebraska Department of Natural Resources, Frenchman Valley and H&RW Irrigation Districts, the Upper Republican Natural Resources District, the Middle Republican Natural Resources District, and the Nebraska Game and Parks Commission. A revised draft plan of study was completed in February 2007. Study objectives currently include:

- Optimize economic benefits of irrigation to the study area, including surface and ground

water irrigation

- Optimize economic benefits of Enders Reservoir for recreation, fish and wildlife
- Evaluate environmental benefits/values of recreation, fish and wildlife and water quality to the study area
- Evaluate economic benefit of flood control provided by Enders Dam
- Provide alternative water management scenarios to aid partners/stakeholders in future planning
- Minimize adverse environmental impacts

This study has involved extensive work by the Department of Natural Resources ground water modeling staff. Draft scenarios for the study have been completed and are currently being incorporated into a Bureau of Reclamation appraisal level study report. Study participants are considering whether any further effort is needed in a potential future phase of the study.

## **B. DEVELOP AND MAINTAIN THE DATA, INFORMATION AND ANALYSIS CAPABILITIES TO PROVIDE A SUPPORT BASE FOR WATER PLANNING AND MANAGEMENT**

Basic Planning Activities provide the data base and management information necessary to plan natural resource related activities. This activity is a major function within the Nebraska Department of Natural Resources. In addition to providing information to other agencies and interests, work in this activity is used to support general planning activities, administer the planning process and review projects and plans. Data base management and mapping activities are expected to remain a vital part of the Department's planning program.

### **Planning Information Base – General**

Natural resources needs can be better met by increased efficiency and effective use of natural resources data. Better techniques of information acquisition, processing, storage and use are being developed. The long-term goal of the information base is to develop the capability to analyze the relationships of a wide variety of information in a GIS environment.

The NDNR actively supports the development and use of statewide databases freely available for the use of a host of government agencies. NDNR's GIS efforts will continue to support the priorities of the GIS Steering Committee.

### **Planning Information Base – Work Completed and Planned**

#### **1) Water Rights Digitizing**

Water rights digitizing is providing a useful agency database. The activity is carried out through the Floodplain/Dam Safety/Surveys Division.

#### **2) Flood Prone Area Mapping**

This important mapping activity/dataset is coordinated and primarily carried out through the Floodplain/Dam Safety/Surveys Division with significant assistance provided through the

Planning and Assistance Division. As of June 30, 2008, NDNR has produced 34 countywide Flood Insurance Rate Maps (FIRMs) (augmented by 2 countywide maps completed by other agencies). The mapping process was underway in another 7 counties.

### **3) National Hydrography Dataset**

NHD is a dataset model developed jointly by the USGS and EPA with a goal of providing a common reference digital hydrographic dataset for a wide cross-section of applications using data related to surface water features. It will enable spatial comparison of hydrographic data with a wide range of other data. More importantly it will provide the basis for, or enhance the efficiency of, a wide range of potential water analysis activities. NHD data is available now for the entire state of Nebraska.

The Nebraska Department of Natural Resources is coordinating stewardship of the NHD in Nebraska. The NHD will be continuously maintained so that it remains a current dataset and is improved as Nebraska's requirements dictate. The NHD is being used as major input to a Stream Hydrology Project to determine and publish hydrologic statistics for streams of interest in Nebraska. This project will help address requests for flood-related information, including discharge, stage, and flood elevation information.

### **4) Creation of Nebraska Geospatial Data Center and the Metadata Clearinghouse**

In FY05, the Data Bank created a Nebraska Geospatial Data Center that provides internet access to a wide variety of geospatial databases developed and/or maintained by various state, federal and local government agencies, academic institutions, and private entities. It is a one-stop enterprise portal for on-line searching, accessing, displaying and mapping available geo-data relating to the geographic area of Nebraska.

As part of the Geospatial Data Center, the Data Bank also created a unified enterprise-wide Metadata Clearinghouse that provides a web-based metadata submission site for the State. The online entry of metadata facilitates ongoing publication of metadata into the clearinghouse. The metadata entry contains descriptive information about the specific geo-data and is structured in a standardized FGDC format. The site is designed to receive new metadata, edit existing metadata, and review available metadata resources at any time. This facilitates direct access to metadata information, and as well provides links to geo-databases across multiple participating sites. Such hypertext links are embedded in the metadata text.

Currently, both the Nebraska Geospatial Data Center and the Metadata Clearinghouse are operated and hosted by the Nebraska Department of Natural Resources (Data Bank), with oversight from the Nebraska GIS Steering Committee.

### **5) Soil Survey Digitization**

The Nebraska Department of Natural Resources, University of Nebraska Conservation and Survey Division, and the USDA Natural Resources Conservation Service worked cooperatively to accelerate soils activities and produce a digital soil survey in the state that meets SSURGO national standards.

The SSURGO Digital Soil Survey for Nebraska was completed in 2004 and work of the partners then turned to making that survey seamless. That work continued into 2008. Funding to a Soil Survey Fund administered by the NDNR ran through FY08. However, the activity of the Department on Soil Survey Activities is now very limited.

#### **6) Watershed Boundary Delineation**

This project to delineate the watersheds of Nebraska was actually started in the late 1980s and completed in the mid 1990s. Since that time, there have been three updates to improve the quality based on new technology. The latest update started in 2003 with the initial phase finished in 2005. This latest update brings the database into compliance with national standards.

The final phase of this project is to complete the edgematching process with the surrounding states to make sure the lines are consistent across state lines. This was also done as an ongoing step of the previous project as well but some states were not as far along as Nebraska so that part could not be completed. As more surrounding states complete their work, Nebraska may possibly have to modify some of their lines to match up. Completion of this step is dependent on the progress of other states.

#### **7) Nebraska Rainfall Assessment and Information Network**

This program was initiated by the Nebraska Department of Natural Resources in cooperation with the Nebraska Natural Resources Districts (NRDs) in early 2004. It was patterned after the Community Collaborative Rain and Hail Study (CoCoRaHS) developed through Colorado State University and funded in part through a grant from the Nebraska Environmental Trust. However, most of the participating NRDs have added it to their budget so NeRAIN would be maintained into the future. One goal of the project is to have one volunteer in every township in the rural areas of Nebraska and one per every square mile in the urban areas. It is all internet driven with the website housed on the NDNR website at <http://dnrdata.dnr.ne.gov/NeRAIN/index.asp>.

The NeRAIN network of volunteers spans all of Nebraska with about 1000 volunteers and about 500 to over 700 entering data nearly every day while the others enter their data sporadically.

In addition to maintaining the database and website on a daily basis, efforts are now being made to have our Nebraska data incorporated into the CoCoRaHS system in their effort to develop a national map of the volunteer network. That should be completed by the next fiscal year.

### **C. PROJECT AND PROGRAM REVIEW ACTIVITY**

This activity includes both individual reviews and service on a wide variety of review and program

planning committees. It includes both smaller one-time reviews of some projects and programs as well as larger longer-term types of review activity. Some of the major longer-term work activities in this category are:

- Water Policy Task Force Activity
- Nebraska Resources Development Fund Reviews
- Climate Assessment and Response Committee
- Environmental Trust Advisory Committees
- Geographic Information System Steering Committee and Subcommittees
- Other Reviews

### **1) Water Policy Task Force Activity**

In 2002 Nebraska created a Water Policy Task Force to evaluate the effectiveness of and make recommendations on any needed changes to the law governing the integrated management of surface water and hydrologically connected ground water. In December 2003 the Task Force issued a report titled; “Report of the Nebraska Water Policy Task Force to the 2003 Nebraska Legislature”. The report helped result in the introduction of LB 962 which made provision for implementing many of the recommendations of the Task Force. The bill was subsequently passed and enacted into law.

The Water Policy Task Force met three times in FY 06-07 with continued implementation of LB 962, consideration of legislation/proposed legislation, and identification of needed funding mechanisms receiving discussion.

The Task Force has 50 members and NDNR provides it with administrative assistance. In FY08 NDNR staff scheduled and coordinated meetings, developed briefing materials, maintained a task force website, and provided overall administrative support and guidance to the task force. Future Task Force Activity is expected to include: additional suggestions related to funding, water transfers, and instream flows as well as suggestions on implementation activity and further legislative language cleanup as experience is gained in implementation of the new law. The Task Force is also considering how to address water banking; one of the original legislative charges to the group. The Task Force is scheduled to sunset in December 2009.

### **2) Nebraska Resources Development Fund Reviews**

During FY 2008 staff and the Commission further refined the project proposal and application ranking process to help the Commission evaluate future projects due to the Nebraska Resources Development Fund’s (NRDF) continued inability to fund all current requests and the limitations imposed by the NRDF Cap. The Commission also reviewed and evaluated the recreation day value component of the project review process and found the existing valuation methodology in-line with, and producing values between, the high and low averages of surrounding states with similar projects. Two NRDF projects have been delayed by the Corps 404 permitting process. Two NRDF applications were approved, one with zero cost share due to limitations of available funds. The Commission also took action to approve the project proposal for the Nemaha NRD’s

Buck and Duck Creeks Watershed Project and authorized the sponsor to proceed with an application and feasibility study.

Four projects, Little Sandy Creek, Lower Turkey Creek, Upper Prairie/Silver/Moores Creek, and Winslow Levee requested and received allocation increases during FY08 to cover increased expenses related to fuel and other construction related activities and land acquisition. Six requests for FY09 obligations totaling \$9.4 million were received. The general fund FY09 appropriation of \$3.373 million was insufficient to meet that demand. After project needs review by staff and project sponsor presentations at a Special Commission meeting, the Commission chose to allow one obligation request to go unfunded and awarded four with less than the amounts requested.

### **3) Interrelated Water Management Fund Reviews**

The Interrelated Water Management Plan Program (IWMPP) was created in 2006 with the passage of LB 1226 Section 20. This grant program is intended to facilitate the duties of Natural Resource Districts (NRDs) arising under the Nebraska Ground Water Management and Protection Act, and to help offset costs incurred in performing those duties.

This program fund is administered by the Natural Resources Commission (the Commission) and NDNR upon recommendations of the Commission. Funds appropriated from the program are allocated by the Commission to NRDs based on guidelines adopted by the Commission. Amounts requested and approved must be supported by a minimum local revenue match comprising twenty percent (20%) of the total project cost.

On July 13, 2006, the Commission adopted guidelines for allocating the funds and evaluating applications. Guidelines were revised in November 2006 and again in both July and November 2007. NDNR is responsible for evaluating requests for project funding submitted annually by Natural Resource Districts based on guidelines and limitations established by the Nebraska Resources Commission. Funds approved by the Commission are distributed to NRDs in accordance with the guidelines.

For FY08-09, twenty-two (22) applications totaling more than \$3,767,000 were filed. Of these, twelve were a continuation of projects from last year and ten were requests for new projects. Funds available for grants in FY08-09 include \$2,412,854 from the general fund as of July 1, 2008, plus \$75,122 of unused funds from grants awarded in the first year of the program. Guidelines state that multi-year projects previously funded by the program shall have priority in the allocation of each year's available funds. Therefore, after technical reviews and a scoring process, the Commission awarded grants to the 12 applications requesting continued funding for projects in progress and to one of the ten new projects proposed, totaling \$2,472,947.

### **4) Climate Assessment and Response Committee**

The Climate Assessment and Response Committee (CARC) was active again in FY07-08 as drought conditions continued throughout portions of the state for the ninth year. The Panhandle

region of the state has been hit harder by drought conditions and many of the efforts of the CARC committee have been directed at that problem area. Some portions of the state received sufficient moisture in the spring of 2008 and are no longer considered to be in a drought situation. The Director of the Department of Natural Resources is a CARC member and the committee meets periodically and reports to the Governor. Reports are made as warranted by climatic conditions; including but not limited to problems caused by the lack of moisture; problems caused by excess moisture or flooding conditions; and other related activity like hail, wind storms, tornadoes, and snow storms.

One Planning and Assistance Division staff member also serves as a Co-Chair of two subcommittees of CARC; the Agricultural, Natural Resources, and Wildlife Subcommittee and the Risk Assessment Committee. A second Division staff member also serves on another subcommittee of CARC; the Moisture Availability and Outlook Committee. That subcommittee meets throughout the summer to assess conditions across the state and provide a summary of this information to the Chairman of the Climate Assessment and Response Committee.

#### **5) Environmental Trust Technical Advisory Committee**

The Environmental Trust Board, of which the Director of Natural Resources is a member, has a technical advisory committee to help review grant applications. Nebraska Department of Natural Resources staff provide limited assistance in project application reviews. Activity levels are expected to remain limited in upcoming fiscal years. Time commitments range from no involvement some years to several days effort other years, depending on the projects submitted to the Trust.

#### **6) Geographic Information System Steering Committee and Subcommittees**

The Geographic Information System Steering Committee is now the Nebraska GIS Council under the Nebraska Information Technology Commission. The Council has adopted a number of priority initiatives for GIS application in the State of Nebraska. The Department's GIS coordinator serves on the Committee. The development of LiDAR topographic data, the Nebraska Geospatial Data Center and Clearinghouse, the National Map Initiative and the merger of existing low-resolution PLSS Databases have been identified as top areas of interest for Nebraska.

### **D. PROVIDE THE STATE WITH THE CAPACITY TO PLAN AND DESIGN WATER PROJECTS**

Although the activity has not been implemented, the State has participated in project planning activities through the Nebraska Resources Development Fund.

**TABLE 1 – INTERRELATED WATER MANAGEMENT RESEARCH DATA COLLECTION COMMITMENTS COMPLETION DATES  
(DOES NOT INCLUDE BUDGETED BUT UNCOMMITTED RESEARCH)**

WORK ITEMS	Contracted Amt or Final Expenditure Fys 05-06, 06-07 and 07-08 Combined and FY08-09 Projected (If Contracted)	Due Date
<b>UNL</b>  Platte Land Use Mapping (Non 962 Funds) Land Use Mapping- Rest of State Hydraulic Conductivity Research Box Butte County - Niobrara Hydrologic - Groundwater-Flow Model Aquifer-Stream Interaction Study - Upper Niobrara Basin Geologic Atlases / Hydraulic Conductivity/ Specific Yield and Transmissivity Mapping Consumptive Use Research for Use in Annual Evaluation of Availability of Hydrologically Connected Water Supplies Estimation of Evapotranspiration from Riparian and Invasive Species in Republican Basin	NA \$282,652 \$69,921 \$66,189 \$18,383 \$116,314 \$8,000 \$209,440	Complete Complete Complete Complete Complete Complete Complete Ongoing
<b>COHYST (Platte River Cooperative Hydrology Study) (Dollar Amounts are Estimates)</b> Future COHYST Model Maintenance Future DNR COHYST Study	  \$103,775	 NA NA
<b>USGS</b> Eastern Nebraska Heliborne geophysical mapping to examine glacial areas and help determine extent of hydrologic connection to SW Loup-Elkhorn Groundwater Model to examine effects of GW withdrawal on availability of SW and long term effects on GW resource <b>JOINT EFFORTS WITH BUREAU OF RECLAMATION</b> Blue Basin Augmentation Study to examine opportunities for providing compact flows to Kansas and allowing additional Nebraska Use Frenchman Valley Appraisal Study to examine water use options related to Enders Reservoir & Frenchman Valley &H&RW Irrig Dists	\$251,000 \$349,000  0 0	Complete 9/30/2008   
<b>OTHER</b> Conjunctive Use Contract - CNPPID/NPPD to Assist in management planning in Central Platte Basin Hydraulic conductivity mapping assistance in Central Platte area Contract for Senior Modeler to assist in examining Tri-County groundwater mound and provide outside comment on modeling efforts Environmental Trust In-Kind for Three Projects Niobrara Model Consultant Streambed Conductance Research in Elkhorn Basin to assist in quantifying water exchange between rivers and aquifers Conservation Study Platte Water Action Plans Automated Weather Data Network Support	Partially Contracted \$2,585 \$100,000 \$25,000 Not yet contracted \$42,000 Not yet contracted Not yet contracted \$50,000	2 <sup>nd</sup> Phase About to Beg Complete 8/31/2008 6/30/2011 NA 6/30/2009 NA NA 6/30/2009
<b>INTERNAL PROJECTS (not included)</b>		
<b>TOTAL</b>	\$1,694,259	

**TABLE 2 - PLANNING & REVIEW PROCESS EXPENDITURES FY 08  
AND BUDGET FYs 2009-2013 - Does Not Include Aid to Local Governments**

	FY2008 (est) *	FY2009	FY2010	FY 2011	FY 2012	FY 2013
Lower Platte River Alliance	\$5,417	0	0	0	0	0
LB 962 Only- Operating Expense/Travel*	\$74,038	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
Contract LB 962 Studies, Data, Assistance and Uncommitted ***	\$600,559	\$977,000	\$710,000	\$710,000	\$710,000	\$710,000
Computer Equipment, Software	\$25,638	\$35,000	\$30,000	\$30,000	\$30,000	\$30,000
Staff/Other	\$1,005,000	\$1,131,000	\$1,131,000	\$1,131,000	\$1,131,000	1,131,000
<b>TOTAL</b>	<b>\$1,710,652</b>	<b>\$2,233,000</b>	<b>\$1,961,000</b>	<b>\$1,961,000</b>	<b>\$1,961,000</b>	<b>\$1,961,000</b>

\* Budgetary figures are based upon a roughly estimated combination of costs from a variety of NDNR divisions that work on state water planning and review process activities. In FY 2008 this included about 12 full time equivalent positions for part of the NDNR Planning and Assistance Division and Research and Technical Studies Division and about 1.75 full time equivalent positions from other divisions of NDNR. These rough estimates include only the NDNR planning related budget and are based upon totals in multiple NDNR budget programs. Related items not included in the Planning and Review Process budget include LB 962 monies to be used for upgrading the water administration database, Information Technology Division Expenses, and LB 962 Incentive and Implementation monies provided to outside entities (i.e. aid to local governments). Also not included are Interrelated Water Management Funds of \$2,412,854 each in FY 07-08 and FY 08-09. Those funds are direct pass through to natural resources districts for research related to implementation of interrelated water management activities.

Funds for the Republican River Settlement implementation, the North Platte Decree implementation, and the Platte River Recovery Implementation Program are not included in this budget; although funding for two of the staff positions engaged in these efforts is included. The LB 962 Only Operating Expense category reflects expenditure of operating funds provided for Interrelated Water Management and does not reflect all operating expenses of personnel involved in planning effort. That figure is not included in the table and if apportioned by staff member would add a significant sum.

\*\*\* The FY 08 expenditures for contract studies are only for amounts billed and paid during the year. The amount of work completed under existing contracts during the fiscal year and that will ultimately be charged may be higher than the amount noted. This category includes pay for interns and a State Office Services Assistant as well as some funding for stream gages. Uncommitted funds in future years are also included in this category.



## VI. GLOSSARY

**Fully Appropriated** – Defined in Nebraska Revised Statutes Section 46-713 “(3) A river basin, subbasin, or reach shall be deemed fully appropriated if the department determines that then-current uses of hydrologically connected surface water and ground water in the river basin, subbasin, or reach cause or will in the reasonably foreseeable future cause (a) the surface water supply to be insufficient to sustain over the long term the beneficial or useful purposes for which existing natural flow or storage appropriations were granted and the beneficial or useful purposes for which, at the time of approval, any existing instream appropriation was granted, (b) the streamflow to be insufficient to sustain over the long term the beneficial uses from wells constructed in aquifers dependent on recharge from the river or stream involved, or (c) reduction in the flow of a river or stream sufficient to cause noncompliance by Nebraska with an interstate compact or decree, other formal state contract or agreement, or applicable state or federal laws”

**Geographic Information System** – Simply put, a GIS combines layers of information about a place to give you a better understanding of that place. What layers of information you combine depends on your purpose—finding the best location for a new store, analyzing environmental damage, viewing similar crimes in a city to detect a pattern, and so on.

**National Hydrography Dataset** – The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order

**Overappropriated** – Defined in Nebraska Revised Statutes Section 46-713 “(4)(a) A river basin, subbasin, or reach shall be deemed overappropriated if, on the operative date of this section, the river basin, subbasin, or reach is subject to an interstate cooperative agreement among three or more states and if, prior to such date, the department has declared a moratorium on the issuance of new surface water appropriations in such river basin, subbasin, or reach and has requested each natural resources district with jurisdiction in the affected area in such river basin, subbasin, or reach either (i) to close or to continue in effect a previously adopted closure of all or part of such river basin, subbasin, or reach to the issuance of additional water well permits in accordance with subdivision (1)(k) of section 46-656.25 as such section existed prior to the operative date of this section or (ii) to temporarily suspend or to continue in effect a temporary suspension, previously adopted pursuant to section 46-656.28 as such section existed prior to the operative date of this section, on the drilling of new water wells in all or part of such river basin, subbasin, or reach.”

**SSURGO Soil Surveys** - The Soil Survey Geographic Database (SSURGO) is a national dataset that puts all county soil surveys into an electronic format. This allows soils information to be layered in conjunction with other electronic datasets as well as allow electronic access to county soil map information. The national SSURGO compilation process has been coordinated through the USDA Natural Resources Conservation Service.