

# STATE OF NEBRASKA

OFFICE OF THE GOVERNOR  
P.O. Box 94848  
Lincoln, Nebraska 68509-4848  
Phone: (402) 471-2244  
mjohanns@notes.state.ne.us



August 26, 2004

Mike Johanns  
Governor

The Honorable Ann Veneman  
Secretary of Agriculture  
United States Department of Agriculture  
1400 Independence Ave SW  
Washington, DC 20250

Dear Secretary Veneman:

With this letter, please find the State of Nebraska's proposal for creation of the Platte-Republican Resources Area Conservation Reserve Enhancement Program (CREP). This proposed project was developed by a coalition of federal, state, and local entities who are searching for a way to conserve our state's most valuable natural resource: water.

As you are well aware, western Nebraska is in the throes of a drought. The proposed Platte-Republican CREP project area has been persistently experiencing above normal temperatures and below normal precipitation since 1999. Furthermore, stream flows and reservoir levels, particularly in the Platte River portion of the project area, are heavily influenced by precipitation in Colorado and Wyoming. These states also are suffering drought, further exacerbating Nebraska's situation.

With that as the backdrop, the attached proposal focuses on water quantity as the primary resource of concern. Both surface irrigated and groundwater irrigated acres within the project area are allowed in the proposed program, but the boundaries have been drawn so that only groundwater irrigated acres with the most potential to impact stream flow are included. We are requesting approval for irrigated rental rates for this CREP; this feature of the program will be a necessity to entice producers, who must continue to pay property taxes at the irrigated rate and pay irrigation district assessments through the life of their contracts.

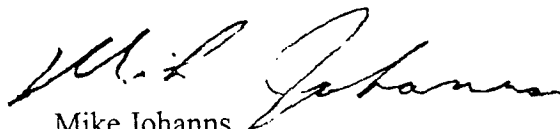
The Platte-Republican CREP addresses several of the goals of the Conservation Reserve Enhancement Program. Water quantity is saved by a reduction in consumptive use on 100,000 crop acres. Practices implemented on these acres will create an additional 85,000 acres of general wildlife habitat, 10,000 acres of filter strips and buffers, and 5,000 acres of wetland habitat. All of these practices also serve to improve water quality.

The Honorable Ann Veneman  
Page Two  
August 25, 2004

The coalition that has developed the Platte-Republican CREP has worked quickly to move the proposal forward, because they recognize the strain this drought is having on our natural resources, our wildlife, our agriculture community, our recreation industry, and the economy. The group's hope is that this program will be available late this fall, as producers are making planting decisions for next season. I know this timeframe is ambitious, but I am hopeful that you'll recognize the multiple benefits to various segments of our state.

Thank you for your consideration of this project. As I said above, it is extremely important to the State of Nebraska, and we will devote all the resources necessary to assist your staff in completing its successful review.

Sincerely,



Mike Johanns  
Governor

Attachment

copies: FSA Administrator Jim Little  
Deputy Administrator for Farm Programs John Johnson

govscoverltr082504.doc

# Nebraska Platte-Republican Resources Area CREP

Prepared by the State of Nebraska

Project Leader: Bobbie Kriz-Wickham  
(Nebraska Department of Agriculture)

Lead Author: Keith Koupal  
(Nebraska Game and Parks Commission)

The 23 Nebraska Counties Included in the Proposed CREP Area are:

Buffalo	Chase	Dawson
Dundy	Franklin	Frontier
Furnas	Garden	Gosper
Harlan	Hayes	Hitchcock
Kearney	Keith	Lincoln
Morrill	Nuckolls	Perkins
Phelps	Red Willow	Scotts Bluff
Sioux	Webster	

## SECTION 1 – ABSTRACT

The proposed area includes portions of 23 counties and 7 Natural Resources Districts (NRD), associated with the Republican River, North Platte River and Platte River. Prior to settlement, the vegetative community consisted primarily of lowland tallgrass prairie along the rivers and streams and mixed loess prairie and shortgrass prairie in the remaining area. The soil under these prairie grasses was found to be fertile and quite productive given adequate moisture. Consequently, landowners capitalized on the agricultural potential by converting over 90% of the land in the proposed project priority area to agricultural production. The result has been the fragmentation and substantial reduction of native vegetative communities and wetland complexes. Many wildlife species have responded negatively to these habitat changes and currently 13 different species in the project priority area receive some form of federal or state designation of concern.

The project priority area has been suffering from extreme drought conditions the past 5 years. The drought has stressed the availability of water supplies and accentuated the fact that a number of interests important to the state are competing for the same finite resources. This situation has been exacerbated further by the fact that farmers have been forced to apply additional water to existing irrigated cropland to offset precipitation shortfall. The Farm Service Agency (FSA) estimates our priority area to contain 1,576,219 acres of cropland of which 72% is irrigated. Corn is the major crop of this area (766,070 acres) and soybeans (178,712 acres), wheat (181,809 acres) and alfalfa (172,273 acres) would be considered secondary crops.

The current drought has already cost this region millions of dollars in agricultural and recreational revenues. Without concentrated efforts, the environment, communities and industries of the proposed project area could be devastated over the next few years. Nebraska proposes to initiate a Conservation Reserve Enhancement Program (CREP) project to reduce irrigation demand on available surface and groundwater supplies. Secondary benefits are also anticipated, such as providing more water for aquatic communities and increased terrestrial habitat by converting cropland to approved conservation practices (CP2, CP4D, CP21, CP22, CP23 and CP25). These benefits would be accomplished by retiring 100,000 acres of cropland in the proposed project priority area for a period of 10-15 years. The program acres would be divided between the Platte and Republican River basins. Landowners participating in this CREP would receive the average irrigated rental rates for their county for any qualified acreage they enrolled. The 10-year cost of the project to place 100,000 acres under contract is estimated at \$158,215,000 to be divided 80% by Federal and 20% by State sources. An additional \$10,000,000 would be needed for seeding program acres that would be split 50% by federal and 50% by State and local sources.

## SECTION 2 – GEOGRAPHIC AND EXISTING CONDITIONS

The proposed conservation priority area for Nebraska under this CREP includes 23 counties and 7 NRD's in south-central and western portions of the state (Figure 1). The area is called the Nebraska Platte-Republican Resources Area due to the inclusion of significant portions of the Platte River and Republican River basins. The designated project area has been experiencing persistent above normal temperatures and below normal precipitation since 1999. This on-going climate pattern has resulted in much of the proposed CREP area being designated in an extreme or exceptional drought by the U. S. Drought Monitor the last few years. The duration and severity of the current climate rivals the conditions reported during the "Dust Bowl" of the 1930's.

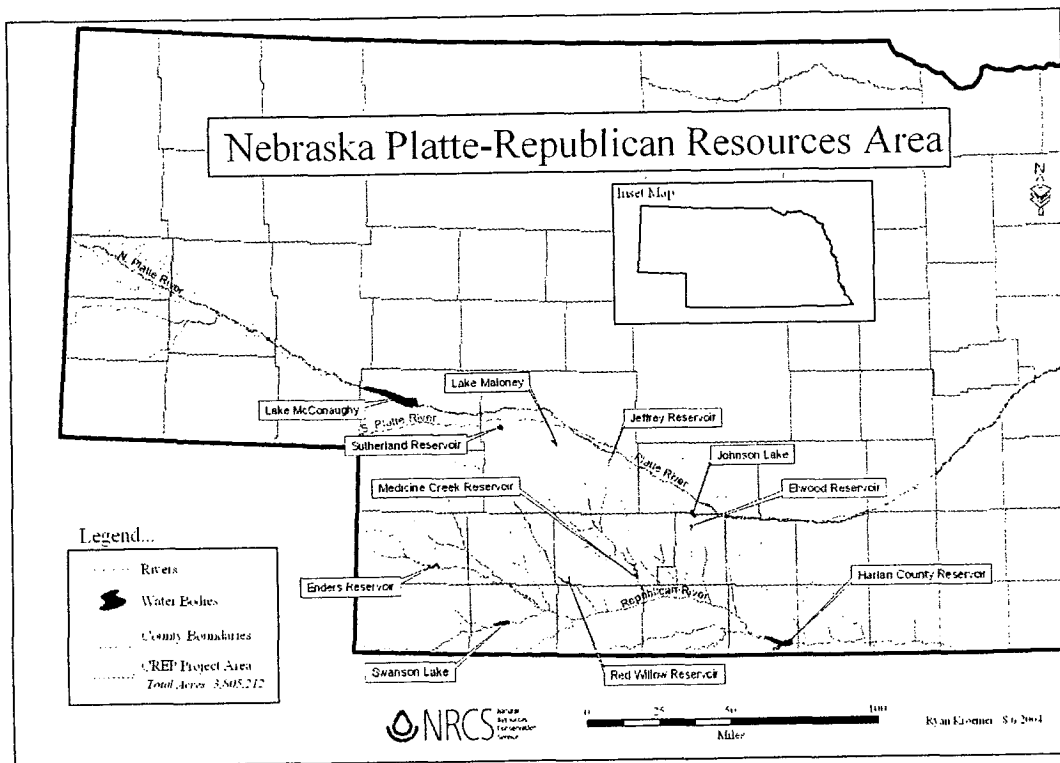


Figure 1 – Project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

The Platte River receives water from snow and rain run-off resulting in periodic high flows associated with precipitous weather. The remaining flow seeps as base flow from hydrologically connected groundwater. The Republican River historically receives extreme high flows from heavy rain events and remaining flows come from hydrologically connected groundwater. Significant portions of the Republican River, Platte River and North Platte River have become dry or reduced in water quantity the past few years, exacerbated by the current drought. Lack of water in these basins has resulted

in numerous negative effects, including fish kills and reduced habitat available for wildlife. With these effects in mind, and the urgency and severity of this drought upon us, the State of Nebraska has decided to pursue a CREP designed to improve water quantity in these basins.

To fully understand the scope of this CREP proposal, a more complete description is needed of the North Platte reservoir system including Lake McConaughy and the reservoirs within the Republican River basin.

The project that would become The Central Nebraska Public Power and Irrigation District began in 1913 with a proposal to divert water from the Platte River during the spring and fall to soak the soil of farms in the area. Final approval for the project was granted in 1935 resulting in a reliable source of surface water, to assist crop production, and hydroelectric power. Construction began in 1936 on Kingsley Dam (which forms Lake McConaughy), the Diversion Dam by North Platte, the Supply Canal with more than 20 small lakes along its 75-mile route, three hydroelectric plants, and other necessary infrastructure. Upon completion of Kingsley Dam in 1941, Lake McConaughy began filling a designated 21 miles in length and up to 4 miles in width. At full pool (3,265 msl elevation), this reservoir covers more than 30,500 surface acres and offers some 105 miles of public shoreline. Figure 2 depicts the intricate water delivery system stemming from stored water in Lake McConaughy, including several of the notable public access lakes within this system.

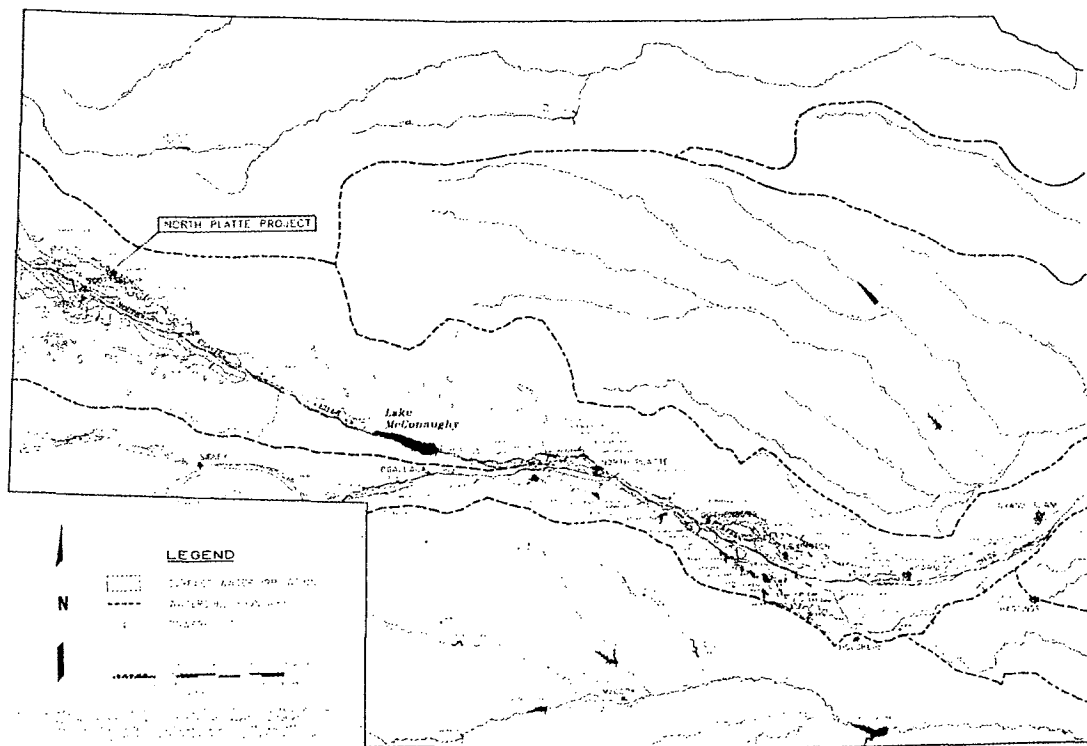


Figure 2 - Delivery system for The Central Nebraska Public Power and Irrigation District

The Republican River has a history of flooding, which hampered settlement and agricultural development of the area. Perhaps most notable was the flood of 1935, reported as a "wall" of water 8 feet high. That flood claimed over 100 lives and prompted the development of a reservoir storage system for the primary benefits of flood control and irrigation. Five separate reservoirs were constructed in the Republican River Basin of Nebraska starting in the early 1940s. Swanson Reservoir and Harlan County Reservoir are main-stem reservoirs and Enders Reservoir, Red Willow Reservoir, Medicine Creek Reservoir were built on major tributaries.

The climate of the area is typical of the Great Plains of North America. Marked seasonal variations in precipitation characterize the region. Mean annual precipitation varies from 15-26 inches on the western to eastern edge of the priority area, respectively. The majority of precipitation (75-80%) falls during the growing season, April through September. Summer precipitation usually arrives in the form of thunderstorms. Mean evaporation rates frequently exceed mean precipitation rates.

Several different soil associations are found in the Republican and Platte River basins. Soils in the eastern priority area are typically very deep, gently sloping to steep, well-drained, silty soils formed in loess and alluvium. The western edge of the priority area has shallower, nearly level to moderately steep, excessively drained; sandy soils formed in eolian sand. Irrigation throughout the area, (Figure 3 & 4) has maximized the fertility and productivity of these soils.

Native or presettlement vegetation in this CREP area was dominated by a variety of grass communities (Figure 5). The Eastern edge of this priority area was composed of mainly mixed grass loess prairie, which shifted to short-grass prairie in Western Nebraska. Lowland tall-grass prairie dominated the rivers and streams throughout much of the CREP area, as well as some riparian woodland. Within the region, all three of these grassland communities have been significantly reduced to the point where only small fragmented remnants remain. The Nebraska Game and Parks Commission (NGPC) estimates that more than 80% of loess mixed-grass and lowland tall-grass communities have been lost within the state. Quantification for loss of short-grass prairie has been hampered by a lack of updated information. However, conservative estimates predict that over half of the native short-grass prairie habitat has been lost to conversion of land to agricultural and municipal development.

Grasslands were not the only natural and unique communities to be impacted by conversion to other uses. Part or all of five wetland complexes lie within the boundaries of the proposed priority area (Figure 6). These wetland complexes are diverse in nature and represent playas, saline/alkaline, and riverine types. Three of these complexes, the Rainwater Basin, Central Platte River, and Lower North Platte River, are of national and international significance because of the habitat they provide for migratory and threatened and endangered species. Appendix A provides detailed information on the profile, loss and threats to functions and values of these three important wetland complexes. The Rainwater Basin and Central Platte River have both lost >70% of

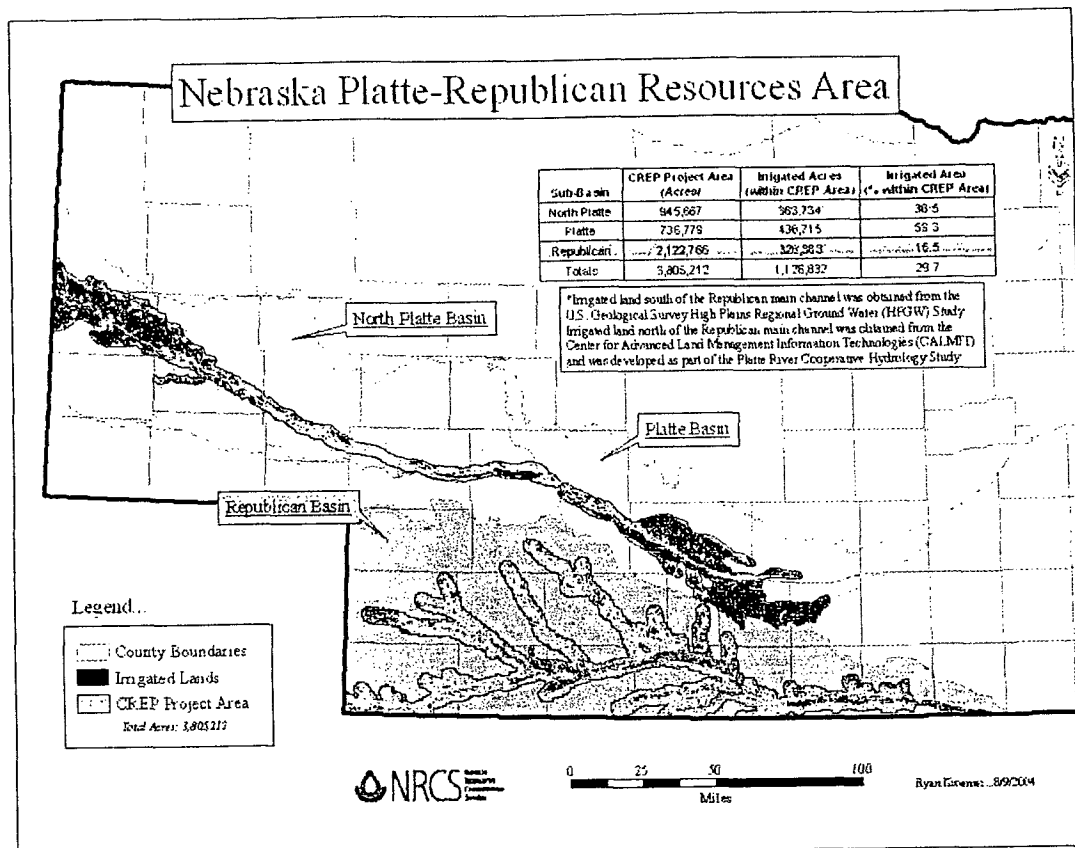


Figure 3 – Depiction of irrigated acres within the project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

wetland acres since settlement. Loss of wetland acres in the remaining complexes has been difficult to quantify, but has accelerated with drought conditions. South-Central and Western Nebraska has also lost 60% of riparian communities to agricultural development. An additional habitat in jeopardy is a natural bur oak community along the lower Republican River.

The project area contains over 6,500 farms, which have 1,576,219 acres of cropland. The average size of these units is 242 acres. We estimate the acreage has been devoted to primary crops as follows: Corn – 766,070 acres; Soybeans – 178,712; Wheat – 181,809; Alfalfa – 172,273. Land use has changed and intensified greatly in the past 40 years, as 72% of the cropland in the project area is irrigated (1,128,832 acres). Corn, soybeans, wheat, and alfalfa crops are raised on approximately 90% of the irrigated acres. The majority of land is privately owned and devoted to agricultural production. Less than 10% of the project area is devoted to urban areas, water, and public lands. Public lands comprise 3% of the area (Figure 7). Counties associated with the proposed CREP project priority area have been active in other federal land reserve programs (Table 1) and taken many other water savings actions, such as moratoriums on the granting of new surfacewater rights, construction of new wells and development of new irrigated acres.



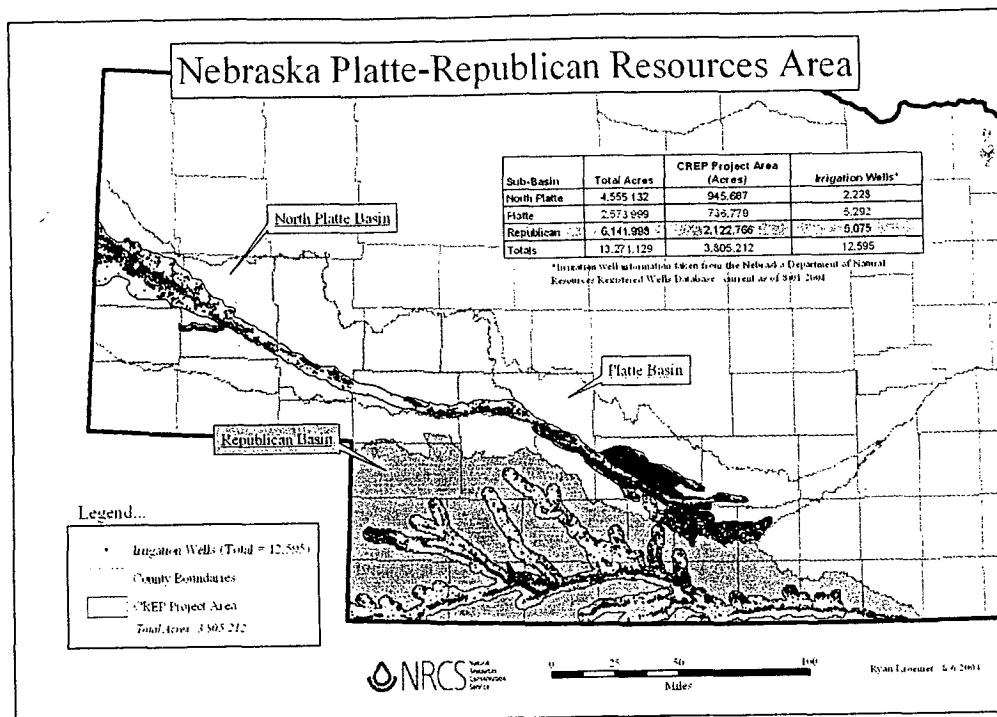


Figure 4 – Representation of irrigation well development within the project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

The rich and diverse wildlife populations of the area have responded to various habitat changes brought about by settlement and agricultural development. Prior to settlement fish were limited to the river systems and their tributaries. Construction of ponds and reservoirs allowed an expansion in both the diversity and abundance of species. However, the continued development of land for agricultural and municipal purposes reduced and degraded plant communities, wetlands and aquatic systems, resulting in lost and fragmented wildlife habitats and declining populations of many species. Wildlife resources of the area include:

- A. Threatened and Endangered Species (Federally listed (F) and State listed (S)).
  1. Whooping Crane (F)
  2. Piping Plover (F)
  3. Interior Least Tern (F)
  4. Bald Eagle (F)
  5. Peregrine Falcon (F)
  6. Sturgeon Chub (S)
  7. River Otter (S)
  8. Finescale Dace (S)
  9. N. Redbelly Dace (S)
  10. Amer. Burying Beetle (S)
  11. Western Prairie Fringed Orchid (F)
  12. Small White Lady's Slipper (S)
  13. Lesser Prairie Chicken (F-historic)
- B. Bird Species
  1. Migratory Species (Federal Management Authority)
    - includes ducks, geese, swans, sandhill cranes, mourning doves, and shorebirds.
  2. Resident Game Birds
    - includes greater prairie chicken, sharptail grouse, northern bobwhite quail, and ring-necked pheasant.

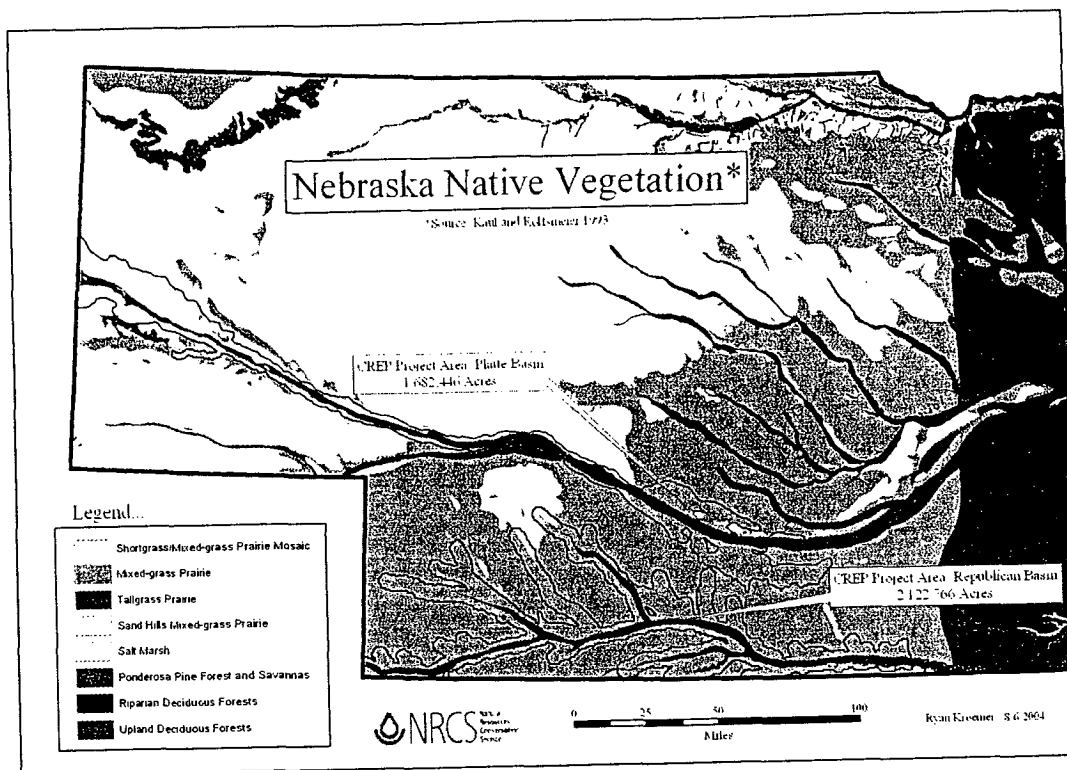


Figure 5 – Map depicting native vegetation communities within the project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

### 3. Non-game Birds

- includes a total of 208 species that breed in the project priority area. These species are diverse, including hawks, owls, jays, vultures, woodpeckers, as well as a variety of grassland and migrant neotropical species.

### C. Mammals

- A diverse mammalian community exists within the project priority area, including 23 families and 64 species. Major sport species, such as white-tail deer, mule deer, and antelope are among the more populous mammals.

### D. Fish and Herptiles

1. Fish - a total of 19 families and 82 species are found in the project priority area including walleye, bluegill, rainbow trout and creek chub. A complete list is provided in Appendix B, because of the direct impact water quantity will have on these species.
2. Herptile – close to 40 different species of frogs, turtles, salamanders, snakes and lizards are present in the project priority area. Included among these species are northern leopard frog, american toad, painted turtle, yellow box turtle, tiger salamander, coachwhip snake, milk snake, prairie rattlesnake, eastern fence lizard and six-lined racerunner.

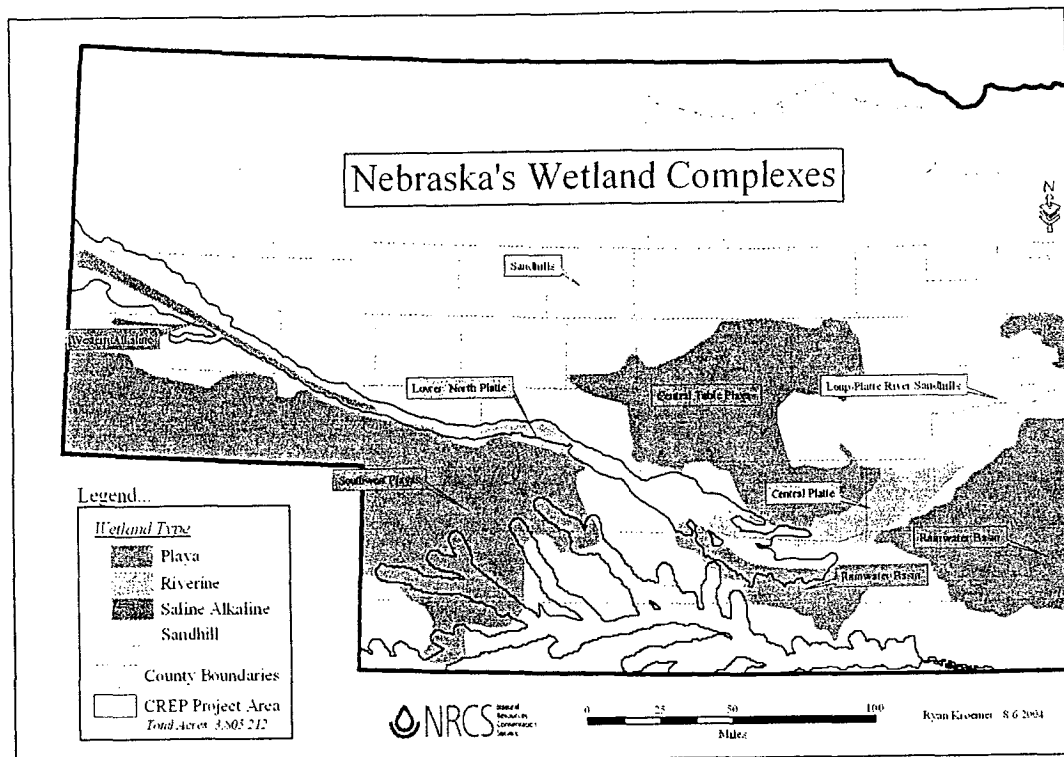


Figure 6 – Map depicting the wetland complexes in the state of Nebraska and their relation to the project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

### SECTION 3 – AGRICULTURE RELATED ENVIRONMENTAL IMPACTS

The primary goal of the Nebraska Platte-Republican Resources Area CREP is the stewardship of our water and wildlife natural resources, as well as maintaining the quality of life. This CREP is designed to address water quantity concerns in a flexible and cost-effective manner by maximizing public returns from government programs such as the CRP. Targeting two major river basins will provide resource and human benefits over a large geographic area. Secondary benefits of increased terrestrial habitat and improved water quality would also be realized with the implementation of this CREP. The drought has highlighted the fact that a number of interests are competing for the same finite resource. Irrigated agriculture is one of those competing interests and the primary out of stream user of water supplies. Thus irrigated agriculture has the unintended consequence of conflicting with the attainment of our goals, which justifies the pursuit of this CREP.

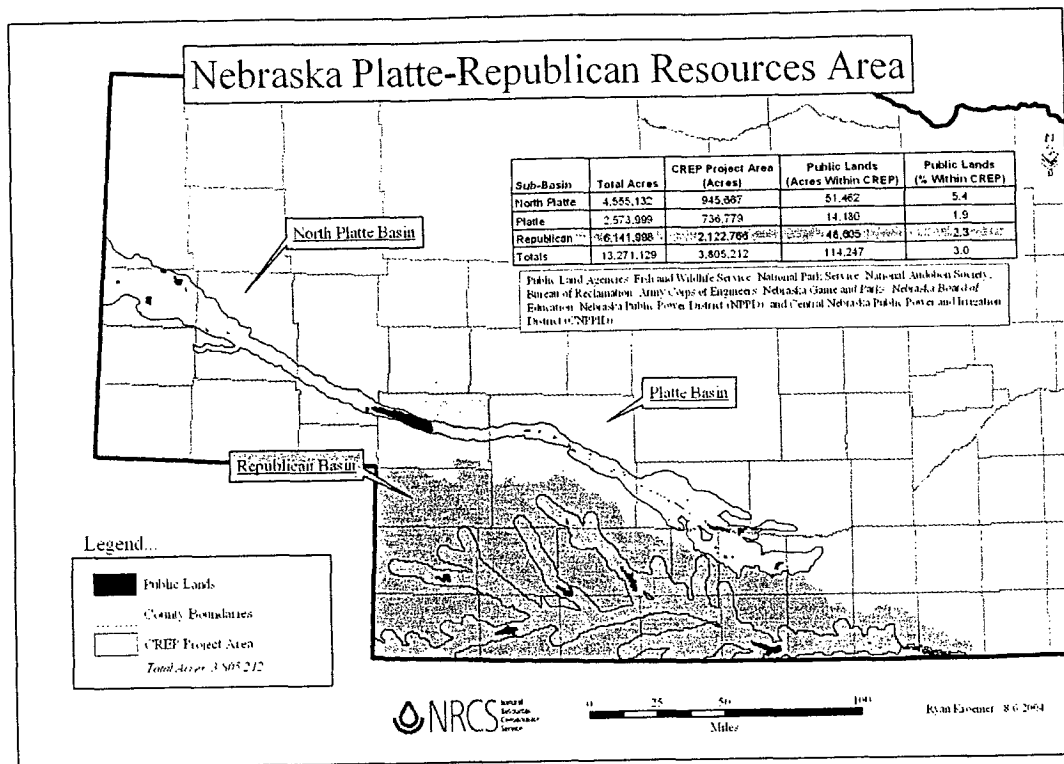


Figure 7 – Map depicting location of public lands within the project priority area for the proposed Nebraska Platte-Republican Resources Area CREP

The inter-relationship between agricultural impacts and the natural and human environments must be clearly defined. The resource basis of concern includes water, wildlife, and human well-being. Water resources can be assessed in terms of the quantity and quality available from groundwater, reservoirs and rivers. Wildlife resources are determined by the availability of preferred aquatic and terrestrial habitat. Human well-being refers to physical, emotional, and economic well-being that, in this case, stems from adequate water and wildlife-related resources. Thus the primary impacts of agriculture on the environment of the area include:

- The effects of the drought have reduced reservoir storage the past 5 years. The amount of water in reservoirs directly correlates to available aquatic habitat and is important to human well-being.
- Pumping of water to irrigate land reduces the amount of water available for stream flow, alters natural flow patterns, and in some cases, degrades water quality, impacting wildlife habitat and public water systems.
- The conversion of native grassland, wetland, and riparian plant communities to agricultural production has resulted in:

- a loss to community diversity and wildlife habitats;
- a long term decline in wildlife populations;
- a decline in recreational opportunity and participation.

Table 1. Total current enrollment in major federal land programs for counties that have land within the proposed CREP priority area.

County	CRP Acres	WRP Acres	EQIP Acres	Total Acres
Buffalo	6,968.4	544.0	23,116.0	30,628.4
Chase	9,647.2	0	64,151.0	73,798.2
Dawson	1,673.9	51.0	46,227.0	47,951.9
Dundy	10,938.6	0	69,087.0	80,025.6
Franklin	5,797.4	82.0	6,044.0	11,923.4
Frontier	1,142.5	0	27,082.0	28,224.5
Furnas	15,094.2	0	36,089.0	51,183.2
Garden	10,712.8	0	135,827.0	146,539.8
Gosper	2,125.5	0	26,282.0	28,407.5
Harlan	2,888.3	0	8,667.0	11,555.3
Hayes	14,686.2	0	17,004.0	31,690.2
Hitchcock	6,081.9	0	25,681.0	31,762.9
Kearney	1,071.7	226.0	7,574.0	8,871.7
Keith	14,118.7	0	83,885.0	98,003.7
Lincoln	10,120.7	0	65,347.0	75,467.7
Morrill	23,450.2	1,485.0	51,520.0	76,455.2
Nuckolls	2,593.4	0	15,195.0	17,788.4
Perkins	39,205.6	84.0	26,010.0	65,299.6
Phelps	726.9	1,149.0	6,147.0	8,022.9
Red Willow	2,978.1	0	17,475.0	20,453.1
Scotts Bluff	22,937.5	731.0	37,843.0	61,511.5
Sioux	4,189.6	160.0	0	4,349.6
Webster	15,810.1	0	32,628.0	48,438.1
Total in CREP Project Area Counties	224,959.4	4,512.0	828,881.0	1,058,357.4

An expanded review of the impacts of agriculture on the environment is necessary to understand the scope and complexity of the problems. These problems do not lend themselves to compartmentalized analysis.

1) Quantity of surface water stored in reservoirs

A) Loss of water storage

The amount of water stored within these systems has drastically declined during the current drought. Several factors have contributed to the depletion of stored water, which will be discussed in later sections; here we will quantify the magnitude of this loss. Lake McConaughy provides the majority of surface water

storage for irrigation and hydropower in the Platte River system. Upon the completion of the 2003 water-year, storage in this reservoir was less than 30% of totals from 1998. This loss of stored water correlated to a 54-foot drop in surface water elevation. Lake McConaughy is projected to be completely dry by the fall of 2005 if current precipitation patterns continue and full irrigation withdrawals are allocated. The downstream reservoirs dependent on Lake McConaughy water now store about 40% of the water compared to 5 years previous. Water storage in Republican River reservoirs has decreased more than 50% during the same time period and occupies less than 1/3 of the available capacity. Republican River reservoir operators have strictly allocated water delivery to irrigation districts the past few years as irrigation storage has been depleted.

B) Less water equals fewer fish

Reservoirs are impacted in several ways by the loss of water. First and foremost, aquatic systems have a finite capability to support life. A major factor in determining the biotic limitations of an aquatic system is the amount of water available. Aquatic life and fisheries concerns stemming from reductions in the quantity of water include:

- increased eutrophication rate
- increased susceptibility to water quality limits (water temperature; dissolved oxygen)
- increased susceptibility to chemical pollution
- increased opportunity for fish to escape with released water
- decreased survival of young fish (fewer bays and coves means less protection from predators and reduced invertebrate production)
- decreased production of all fish (less spawning habitat available)

C) Value of fish

Using population indices from NGPC standardized surveys conducted on Lake McConaughy and valuation standards established by the American Fisheries Society, the value of adult walleyes in 2002 exceeded \$12 million. Declining water levels in 2003 reduced available habitat and only \$7.1 million worth of adult walleye remained in Lake McConaughy. The trend of less walleye was also evident in other project priority reservoirs. On average, 39% and 62% less walleye were caught from 5 years and 8 years previous, respectively.

The production experienced by fish populations on an annual basis allows anglers to harvest fish. Harvested fish also have value that can be measured by replacement costs. In 2001, anglers harvested nearly 85,000 walleye from Lake McConaughy, which held a value of nearly \$1.7 million.

Lake Ogallala has an established cold-water fishery that is dependent on cold hypolimnetic water releases from Lake McConaughy to maintain cooler water temperatures. This trout fishery is in immediate danger of being lost because of the elevated temperature of incoming water. The NGPC estimates the standing

population of trout in Lake Ogallala to be valued at \$117,000 and the annual angler harvest of stocked trout to be worth an additional \$180,000.

Other species of fish in Lake McConaughy, Lake Ogallala and the other public waters in the project priority area also have value, which is not currently documented. However, the general trends are anticipated to be the same and the net result would be tens of millions of dollars of fish lost to these systems due to the reduction in available water.

D) Value of angling and hunting

The loss of water and reduction in fish populations decreases angler participation.

The reasons anglers stop participating include:

- lack of boat access
- muddy shorelines
- established fishing access points are out of water
- fewer coves and bays that are out of wind and have shade trees
- encounter higher numbers of other anglers
- average size of harvested fish becomes smaller

The loss of angler days has become evident. Again using Lake McConaughy as an example, angler days have decreased over 33% since 2001. However, the average catch rate per hour of walleye (the most popular species) has increased 35% during this time. So despite better fishing, fewer anglers are showing up.

Only three fisheries within the priority area have regular creel surveys conducted to track the number of anglers and their success. The creel surveys are designed to count the number of daytime anglers between mid-April through October when the bulk of participation occurs. Therefore angler day estimates are extremely conservative to the total number of angler days on a fishery. These creel surveys estimate angler participation for years with above average water to be 70,000 trips at Lake McConaughy, 40,000 trips at Lake Ogallala (and canals below the lake), and 50,000 trips at Harlan County Reservoir.

A reduction in angler days is a major economic impact on local communities. The U. S. Fish and Wildlife Service (USFWS) estimates that each angler spends \$19.00 on trip-related expenses per fishing trip. Using those estimates, anglers expend a minimum of \$3 million annually at Lake McConaughy, Lake Ogallala, and Harlan County Reservoir. Thus, a 33% loss in angler days due to reduced water levels equates to an annual economic loss of over \$1 million to this region. The loss of economic expenditures would be greater if full year creel surveys and the other fisheries in the priority area were included.

Every reservoir in the Republican River basin has associated lands that are accessible for public hunting. The largest area is the Corps of Engineers (COE) land upstream of Harlan County Reservoir that extends for approximately 15 miles. Many of the reservoirs in the Platte River basin also have associated lands

for public hunting including Lake McConaughy, Sutherland Reservoir, Jeffrey Reservoir and Elwood Reservoir. Clear Creek Wildlife Management Area (WMA) (upstream of Lake McConaughy) contains more than 6,000 acres where hunters can pursue a variety of waterfowl, upland game birds, small game and big game species. These wildlife species require water for survival, and are dependent upon the nearby reservoir for maintaining adequate habitat to support their current population numbers.

Estimates of hunter participation have been conducted for a few of these areas. The most detailed records are from Clear Creek WMA, which has found from 1,200-3,400 hunter use days annually over the past 30 years. Using USFWS estimates of nearly \$42.00 in trip-related expenditures per day of hunting, the hunting activity at Clear Creek WMA results in at least \$50,000 in hunting trip-related expenditures each year. Almost 5,000 hunter use days were recorded at Swanson Reservoir, Enders Reservoir, Red Willow Reservoir, and Medicine Creek Reservoir during a survey in 1994. Other wildlife management areas in the project priority area have not conducted hunter user surveys. A conservative estimate would project hunting trip-related expenditures to exceed \$300,000 annually.

E) Value of parks

Participation and use

The value of public parks and property has been far-reaching and difficult to quantify, but by all accounts a great investment for government entities. The NGPC administers the recreational and wildlife resources of Lake McConaughy, Sutherland Reservoir, Lake Maloney, and Johnson Lake, which are all dependent on water from North Platte River flows via Lake McConaughy. While efforts to quantify the value of Lake McConaughy and associated waters have not been conducted, the de-watering of this lake would clearly be a drastic loss to the community, region and state. An obvious economic impact would be the loss of direct expenditures from many of the 900,000 annual visitors to Lake McConaughy and Clear Creek Wildlife Management Area, as well as 300,000 visitors at the associated downstream properties. Of great importance to Nebraska is the high percentage of non-residents, which have composed more than 70% of summer holiday weekend visitors at Lake McConaughy. The money spent from out-of-state travelers represents net new direct expenditures in Nebraska.

Public parks in the Republican River Basin have also been impacted by lower water levels, and again, while difficult to quantify, the effects would be noticeable. State parks within this basin had almost 225,000 visitors in 1999 when water levels were at higher (normal) levels. Total visitors in state parks decreased by almost 25% in 2003 when water levels were lower. Federal facilities surrounding Harlan County Reservoir see over 500,000 visitors annually and COE staff believe a direct correlation exists between number of visitors and water level.



In total, state and federal recreation areas expect almost 2 million visitors annually in the project priority area. Many of these visitor days, and their economic impact on the region, are in jeopardy if something is not done to keep water in these reservoirs.

#### Extending impacts to local economies

Loss of these economic inputs would financially cripple this region of the state. For example, the COE estimates that Harlan County Reservoir produces \$8.8 million in total sales annually, which supports 228 jobs. Within the proposed CREP area, state parks employs an additional 100+ people annually. Specific economic studies have not been conducted for all the project area facilities, but sales expenditures are in the tens of millions of dollars.

Additional losses to the area would be felt by the lack of financial investment for recreational improvements. For the Platte River Basin alone, the NGPC has invested more than \$7.5 million in capital recreational improvements during the past 8 years. An additional \$1.2 million has been re-directed in the past 3 years to low water boat access projects. Currently in jeopardy are habitat improvement projects scheduled for Enders Reservoir and Harlan County Reservoir over the next few years that could exceed \$5 million in expenditures.

Economic impacts can also be felt beyond the direct expenditures by the state for employees and projects. Studies have shown that properties next to public parks and natural areas can be worth up to 23% more than properties as little as a block away. With the loss of water from Lake McConaughy and the lowered surface elevation in other priority area reservoirs, the houses would be farther away from the resource (water) that gives them value.

#### F) Quality of life

Water-based recreation at reservoirs in the project priority area generates benefits that may be less apparent and perhaps even more important than direct expenditures. These benefits are typically identified as “quality of life” improvements and include personal, social, community, educational, environmental, and non-direct economic gains.

#### Personal benefits

Participation in outdoor recreation activities associated with reservoirs and natural areas has been linked to a multitude of benefits including:

- increased level of physical fitness
- increased participation in activities
- decreased obesity
- youth who are less shy and introverted
- greater optimism
- increased self-esteem
- reduced heart disease
- reduced stress

The overall result is a happier, healthier and more optimistic community.

### Social/community benefits

Because outdoor recreationists are more active, they build relationships between family, people and organizations, thus promoting community unity. Also, participation in outdoor recreation activities has been documented to reduce delinquency by providing youth and adult with options for activities and increased community ethics. Evidence of this can be found in the U.S. F.B.I. Crime Reporting Program Data, which shows that the Nebraska counties with the 3 largest reservoirs report, on average, half the rate of total crime per capita as compared to the state average. Preserving, protecting and providing aquatic resources and open space in communities enhances the desirability of an area, as well as contributes to the safety and enjoyment of its inhabitants.

### Educational/environmental benefits

While enjoying the outdoors through recreation, people often enhance their ethnic and cultural understanding, natural resource knowledge, and ecological awareness. This increased knowledge provides a basis for individuals to make better decisions about how their actions may affect the environment. Historically more knowledgeable participants have demonstrated a willingness to preserve valuable sites, contribute to management, and collaborate with outdoor recreation groups that promote conservation and preservation. Individuals on the path to becoming environmental stewards are instrumental in creating awareness and protecting the quality and integrity of these unique natural resources.

### Non-direct economic returns

Various businesses and individuals with money are attracted to relocate in areas with a high quality of life that includes recreation, reduced crime rates, healthier inhabitants, and a community that expresses a high environmental ethic. The jobs created by these transplants are not just poor-paying service jobs, but rather include the types of jobs that keep young people from moving out of the area, e.g. technology jobs. In fact, Keith County, home to the state's largest reservoir, Lake McConaughy, beat out Nebraska's urban counties for the percentage of new housing units developed over the past two years. With more stable water levels, Lake McConaughy and other project priority area reservoirs could serve as an "economic engine" by continuing to attract housing starts, escalating real estate values and recruiting young intelligent professionals to the local community.

#### G) Summary of impacts surrounding reduced water storage

The project priority area has lost almost 70% of the water stored in existing reservoirs during the past 5 years. This loss of water has negatively impacted the amount of habitat available for biotic communities and reduced population numbers. Less acres of standing water and fewer fish has resulted in reduced visits from anglers and park patrons. The loss of visitors to this project priority area jeopardizes the economic well-being of surrounding communities. Furthermore, the potential impact of losing one or all of these reservoirs will have a much greater impact on the "quality of life" for local inhabitants.

2) Surface and groundwater irrigation pumping leads to reduced flows, altered flow patterns, and in some cases, degraded water quality

A) Reduced flow in river basins

The amount of water flowing through rivers in the project priority area has decreased greatly during the recent drought. This past year saw major sections and tributaries to both the Republican and Platte River basins go dry. Inflows to Lake McConaughy for the last five years are only 75% of the previous 25-year record and the inflows for 2002 and 2003 were the lowest since records began in 1942. Inflows to Swanson and Harlan County Reservoirs on the Republican River in the last five years were only 37% and 54% of the last 25-year average. Inflows to Swanson Reservoir for each of the last six years were the lowest flows on record since records began in 1951. The inflows to Harlan County Reservoir for the last two years were record low flows since records began in 1948.

Where has all the water gone? Recent changes in land management practices, including the development of watershed projects, construction of farm ponds and terraces, and improved ecofallow and conservation tillage techniques, all have produced positive benefits to the basin but decreased the runoff to streams. The intensification of groundwater pumping has also had a major impact. There are currently 12,595 groundwater wells in the priority area (Figure 5). Unfortunately, the drought has caused the pumping of these wells to increase with a concomitant increase in depletions to stream flows from these wells. The best offset to this increased depletion would be to retire the uses of some of these wells.

Reduced flows and periodic de-watering of channels has an adverse impact on fish and herptile communities. No water is obviously detrimental to thousands of individual fish that are unable to find adequate water. However, the impact of lower flows can also have a long-lasting effect on the aquatic communities that do persist. Some of the impacts include:

- less depth/cover available
- reduced ability to move in stream
- greater risk of oxygen deprivation
- increased vulnerability of prey
- eutrophication
- reduced access to spawning habitat
- increased water temperature
- greater risk of chemical imbalance
- increased vegetative growth
- reduced food available

The combination of all these changes is anticipated to greatly reduce the abundance and diversity of stream communities. Species that are less tolerant or occupy specific niches will be extirpated and replaced by generalist species that can adapt to lower flows.

B) Changes in flow patterns

The changes in the intensity and timing of flows can impact aquatic communities in a variety of ways. First, biotic organisms are dependent on peak flows to reach specific habitat required for spawning and foraging activities. Secondly, the eggs

of many fish require adequate flows to float downstream until they hatch or keep eggs clean and oxygenated. A shift of timing on flows could result in a much lower recruitment rate for several species. Additionally, diversion and pumping from rivers occurs during July and August, which deprives fish of cooling water in the hottest months of the year. On the other hand, the release of storage water from reservoirs and return flows from imported surface water provide increased flows to the river during the late summer when stream flows are normally low.

The USFWS has recognized habitat provided by traditional flows as important to all four of the listed threatened and endangered species in the Central Platte. This includes open channel habitat for nesting and foraging of piping plover and least interior tern, as well as whooping crane roosting. Peak flows also need to reach adjacent wetlands and grasslands to produce forage for whooping cranes and forage fish for the interior least tern.

C) Water quality concerns

The integrity of water quality is dependent on reducing point source pollution that is generated from various agricultural, domestic, industrial and natural processes. Standard farming practices in South-Central and Western Nebraska apply Atrazine, Nitrate-Nitrogen and Phosphorous ( $P_2O_5$ ). Application rates of these chemicals vary depending on the crop planted, soil type and individual preference, but we will present average annual application in pounds/acre as estimated by University of Nebraska-Lincoln crop specialists for this region. These chemicals are necessary for production but additive to water quality concerns of the surface and groundwater.

Atrazine and other triazine herbicides are very important to Nebraska corn and sorghum producers. They are effective, easy to use and relatively inexpensive. Other available alternatives cost from 5 to 10 times as much per acre. Use of these compounds has a positive impact on the farmer's net income and state's economy. Unfortunately, the triazines do raise health concerns. These chemicals and compounds move from the point of application in solution or suspension or attached to sediments. The National Water Quality Assessment Program Database reports the highest category of atrazine concentrations from samples collected within the proposed CREP area. In the priority area, atrazine is applied at 1.3 pounds/acre meaning that at full capacity this CREP would prevent the application of 130,000 pounds of atrazine annually.

The triazine herbicides are "Restricted Use" pesticides that require applicator certification and contain label restrictions on where they can be mixed, loaded or used. Even despite these strict application guidelines, concentrations of these herbicides have been increasing. At risk is the potential disruption of the aquatic food chain as these compounds are toxic to aquatic invertebrates. Resident species of fish and amphibians would be impacted by the localized absence of these invertebrates. Additionally, millions of migratory waterfowl and shorebirds use these wetlands for extended periods each spring to build body reserves for the

stresses of continued migration and nesting. Aquatic invertebrates are essential components in building these reserves.

Application of Nitrogen and Phosphorous is essential to crop production in the project priority area. While this region is renowned for producing 200+ bushel/acre corn at harvest, this production requires soil fertility augmentation. On average, 200 pounds/acre of Nitrogen and 20 pounds/acre of Phosphorous are applied in the priority area. Nitrogen as nitrate is highly water soluble and susceptible to leaching into ground and surface waters. Nitrates in drinking water can be hazardous to human health. High nitrate levels in public water supplies have been problematic in both the Platte and Republican basins. Almost 1/3 of the municipalities with excessive nitrate levels in Nebraska in 2002 lie within the proposed CREP area. This nitrate loading has required the periodic or permanent shut down of wells and drilling of new wells for public water. Nitrogen and Phosphorous are also harmful to lakes and reservoirs. These compounds stimulate excessive growth of algae and emergent vegetation. Aquatic habitat is lost through over crowding and loss of open water. Death and decay of the excess vegetation stresses the oxygen balance and can lead to fish kills. The result is a loss of aesthetic value, loss of open water and declining fisheries.

This CREP project has the potential to reduce application within the priority area of Nitrogen by 20 million pounds/year and Phosphorous by 2 million pounds/year. An estimated 50-60 pounds/acre annually leaches from these applications into the surface and groundwater, which is used for domestic and industrial purposes. Reduced application of chemicals and fertilizers in the area will help prevent the degradation of water supplies and reduce concentration levels that may impact aquatic systems and pose human health risks.

#### D) Summary

The current drought has imposed a major adverse impact on fish and wildlife habitat along the Platte and Republican Rivers. Not only has the drought decreased inflows to the area, but it has also increased the need to pump water for irrigation. By reducing the number of irrigated acres in the area, CREP will reduce the consumptive use of water and thereby conserve more of the available water for fish and wildlife.

#### 3) The intensification of converting native grasslands, wetlands, and riparian plant communities to agricultural production has resulted in:

##### A) Loss of community diversity and wildlife habitats

Loss of grasslands, wetlands and riparian communities from conversion to cropland has reduced the community diversity and available wildlife habitat within the priority area. The native habitats within the priority area have been particularly impacted by various changes. Over 80% of the native mixed grass loess prairie and lowland tallgrass prairie have been lost within the state. Conservative estimates for the loss of shortgrass prairie are in excess of 50%.

The remaining acres of prairie habitat are generally in poor shape, a problem that has been exacerbated by the drought.

Wetland complexes within the priority area have also been greatly impacted by agricultural and urbanization activities. Overall 35% of the wetland complexes in the state have been estimated to be lost, however wetlands within the priority area have suffered the greatest share. The Rainwater Basin has lost over 90% of wetland acres since settlement, while the Central Platte has lost over 70%. The other wetland complexes within the proposed priority area are actively cropped on a regular basis, including over 90% of the Southwest Playas. In addition to the loss of wetland complexes, loss of riparian communities to agricultural development in South-Central and Western Nebraska has been estimated at 60%.

Wet meadows represent another critical habitat type in the project priority area, especially for whooping cranes. Wet meadows require high water tables and high spring flows. Wet meadows include a mosaic of grassland habitats within a small geography, including lower wet areas and upland prairie is present on higher humps and dunes within the meadows. This diverse habitat also is an important area for producing invertebrates and amphibians.

These habitats are extremely important to the stability of wildlife populations in the priority area. Grasslands provide nesting sites, cover and food production for a multitude of native species. Wetlands provide water, forage habitat, breeding habitat, relief from summer and winter extremes, as well as enhance water quality, sediment control, groundwater recharge and flood storage. Riparian areas can easily be distinguished from surrounding upland areas by the abundance of vegetation that is associated with water. Reports indicate that wildlife use riparian areas disproportionately more than other types of habitat. Also, native cottonwood-willow stands in this priority area provide important cover, foraging, and breeding habitat for over 80% of the riparian bird species present.

In addition to the open water habitat created by reservoirs within the priority area, these resources also provide much of the available specialized habitat for wildlife. In the Republican River Basin alone, there are almost 50,000 acres of upland grass prairie, riparian zones, and wetlands surrounding the 5 established reservoirs. As surface acreage and groundwater levels decrease, portions of these habitats surrounding reservoirs become stressed and depleted.

#### B) Loss of wildlife populations

Measuring the impact of agriculture on wildlife populations is difficult because two major factors, weather and habitat determine annual population changes. Either one of these factors can mask the influence of the other. Grassland habitat is particularly important to ground nesting species such as the ring-necked pheasant, bobwhite quail, greater prairie chicken and ground-nesting songbirds. Long-term population trend data is not readily available for the grassland songbirds. The best long-term data on avian population trends in Nebraska is for

the ring-necked pheasant, which is believed to be the best indicator species for all grassland nesting birds. The Spring Rural Mail Carriers survey indicates pheasant populations within the area have declined by about 54% from 1969 through 1997 and about 95% from 1951. Numbers would be expected to be much lower without the addition of CRP grassland habitat on the perimeter of this area.

The population of greater prairie chickens has greatly declined from their levels in the 1940s as the amount of native grasslands dropped below the threshold required by this species. These birds have recolonized some areas of the state since the addition of grassland through the CRP. The lesser prairie chicken is thought to be extinct within the state, but small populations exist across the border in Colorado and Kansas. Some CRP acres are available for lesser prairie chicken habitat in the upper end of the Republican River basin, but the addition of more acres would be helpful for the re-establishment of this species.

Whooping cranes are a federally listed species with less than 200 individuals remaining in the population. These birds use wet meadows along the Platte River during their migration between Canada and Texas. Whooping cranes depend on the invertebrate and amphibian production of these wet meadows to provide them valuable protein and maintain their energy and fat levels during these migrations.

The loss of 70 to 90% of the different wetland complexes has impacted both resident and migratory species. Historically, these wetland complexes provided significant recruitment to the nation's duck supply, similar to the production of the Prairie Pothole Region. The loss of wetland and grassland habitat has reduced the waterfowl production value of the area to a minor status. However, the area wetlands are a critical spring staging area in the ecology of ducks, geese and other migratory species. Each spring, millions of birds crowd into remnant wetlands in the region. This crowding provides nearly ideal conditions for the spread of disease, and avian cholera outbreaks have been a recurrent event since 1975. Major outbreaks of the disease kill more birds in some years than legal harvest.

C) Decline in recreational opportunity and participation

Thousands of hunter use days occurring annually on lands surrounding reservoirs within the priority area are only a small part of the importance of this area to hunting participation. The areas of the Republican, Platte and North Platte River basin included within this project are extremely important to hunting participation in this state. State wildlife biologists estimate that within these regions over 60% of the hunter use days occur within 2 miles of the river basins. The total number of hunter use days for the state of Nebraska exceeds 2.2 million according to the USFWS 2001 National Survey and the expenditures linked to this participation was almost \$200 million. Considering the majority of the hunter use days within the priority area occur around the rivers and reservoirs, a major economic impact will be felt if wildlife populations continue to decline.

The presence of diverse and abundant wildlife populations is important to more than the hunting community. Wildlife watching has become a popular activity, and the flocks of waterfowl and cranes migrating through Nebraska have brought many residential and non-residential visitors to the reservoirs and public use areas in the project priority area. The USFWS 2001 National Survey estimated 2.2 million days of wildlife watching activity annually in Nebraska. These wildlife watchers spent over \$125 million dollars on their trips, much of which went to rural Nebraska businesses.

#### D) Summary

The loss and degradation of the native prairie grasslands, wetlands, riparian communities and wet meadows in the project priority area have greatly reduced available wildlife habitat. The result has been decreased abundance of many resident wildlife species, including our best indicator species the ring-necked pheasant. Additionally, migrating birds using the project priority area encounter greater stress due to reduced food and overcrowding on the remaining habitat. Among the migrating birds are whooping cranes, which have fewer than 200 individuals remaining. The resulting decrease in wildlife populations will lead to less hunter use days and wildlife watching days for this area. The regional communities and businesses depend heavily upon their share of the over \$325 million spent annually in Nebraska by these recreationists. Converting additional land within this area from agricultural use to native habitat would improve wildlife populations, assist migrating species and provide more acreage for hunting and wildlife watching activities.

### SECTION 4 – PROJECT OBJECTIVES

It is important to characterize the purpose of the Nebraska Platte-Republican Resources Area CREP project. Currently, the priority area suffers from drought conditions, which has strained the wildlife populations, agricultural industry and recreational industry in this region. The intent of this CREP therefore is to reduce the quantity of water being used for irrigated agriculture, thus sustaining the existence of wildlife populations and protecting the agricultural and recreational industries vital to this region. If reservoirs or rivers become dry for any extended period of time the wildlife and communities surrounding this habitat will be devastated. Consequently the success of some aspects related to this CREP may not be directly measurable, as it hopes to allow animals to persist and rural stores to stay open. Therefore, evaluation of project objectives will be in terms of quantity of water conserved, not as a percent increase in storage or flow.

- 1) Reduce application of water for irrigation in the priority area by 125,000 acre-feet (over 40 billion gallons) annually. If implemented the project will meet this objective by retiring 8.3% (100,000 acres) of the irrigated cropland from production. Average application of irrigation water on crops in the priority area is approximately 15 inches/acre or 1.25 feet/acre.



- 2) Conserve 100,000 acre-feet of water annually within priority area reservoirs. Water that is not delivered becomes available for storage in reservoirs.
- 3) Increase flows in priority area rivers by 50,000 acre-feet annually. This water will be available to augment seasonal flows.
- 4) This project will provide 85,000 additional acres of native grassland habitat for wildlife in the priority area. This will increase the populations of pheasants and other ground nesting birds by 25% in the area. The NGPC will employ supplementary habitat development at Harlan County Reservoir. The added emphasis on habitat management is expected to provide a 50% increase in pheasants and ground nesting birds in this localized area.
- 5) Reduce the application of triazine products by 8.3% (130,000 pounds) annually in the priority area. This goal will be accomplished by retiring 8.3% of the irrigated cropland in the priority area. Additional reduction of triazine products in agriculture run-off will be accomplished with the use of 10,000 Acres of filter strips and an educational campaign to share appropriate use of these products.
- 6) Reduce the application of Nitrogen and Phosphorous by 8.3% (20 million pounds and 2 million pounds, respectively) annually in the priority area. This goal will be accomplished by retiring 8.3% of the irrigated cropland in the priority area. Additional reduction in leaching of Nitrate and Phosphate is anticipated through educational efforts to improve the efficiency of water and chemical use in the project area.
- 7) Assist communities whose public water supplies are affected by Nitrogen and Phosphorous contamination issues.
- 8) Provide educational assistance to project priority area irrigators to develop a more efficient use of applied water, nutrients, and herbicides.
- 9) Monitor the aquatic communities and associated habitat parameters in project priority area reservoirs and rivers to determine biological relationships.

## SECTION 5 – PROJECT DESCRIPTION

The Nebraska Platte-Republican Resources Area CREP proposal is designed to create and enhance federal, state and local partnerships to address natural resource problems in a coordinated cost effective manner. The pooling of personnel and financial resources results in a targeted approach to conserve natural resources and more effectively install land management.

The project priority boundaries selected to maximize water quantity savings are irrigated Nebraska cropland that is:

- designated as quick response acres in the Republican River above the Guide

### Rock Diversion

- within 2 miles of the North Platte River and Platte River from the Wyoming border down to the Kearney Canal diversion
- within 1-mile of the Pumpkin Creek tributary through the Morrill County line
- receiving surface irrigation water from these defined rivers.

Several criteria must be met for land parcels to qualify for this program including:

- land must have been irrigated 4 of the 6 years (1996-2001)
- land must have been cropped 4 of the 6 years (1996-2001)
- over half of each land parcel enrolled must fall within the project boundaries
- to qualify as surface irrigated land, the water delivered to the land must exceed half the amount needed to augment growth of the crop on that land for 4 of the 6 years (1996-2001)
- surface irrigated acres that are supplemented by groundwater pumps do qualify
- all retired land must currently be legally and capably irrigated

The following conservation practices will be used in the Platte-Republican CREP:

- |                                |                                   |
|--------------------------------|-----------------------------------|
| CP2 - Native Grass             | CP4D - Wildlife Habitat           |
| CP21 - Filter Strips           | CP22 - Riparian Buffer            |
| CP23/23A - Wetland Restoration | CP25 - Rare and Declining Habitat |

In order to maximize benefits throughout the entire project area available acreage will be split between the Republican and Platte River basins (50,000 acres each). Enrolled land in the Republican River Basin will be ranked for potential water savings (Appendix C). Acres in the Platte River Basin will be available with general sign-up, but a ranking system will be developed as more detailed hydrological information becomes available.

Goals for specific conservation practices are; 85,000 acres of native grass-CP2, wildlife habitat-CP4D, and rare and declining habitat-CP25; 10,000 acres of filter strips-CP21 and riparian buffers-CP22; 5,000 acres of wetland restoration-CP23, CP23A.

Native grass, wildlife habitat, and rare and declining conservation practices are emphasized in this CREP to encourage enrollment of large pieces of land. A benefit to this approach is the efficiency of retiring entire irrigated fields. The efficiency of surface water delivery to fields is often less than 50%, and at times partial delivery suffers the entire loss, therefore retiring the entire field would maximize program benefits. Additionally, larger habitat sanctuaries that are more apt to act as a population source can be created with the retirement of entire fields. Using at least 40 point seeding mixes of CP2, CP4D, and CP25 on retired fields will maximize wildlife benefits.

The 10,000 acres designated towards filter strips and riparian buffers will be effective at removing nutrients and water-borne pesticides. Advantages to these vegetative practices are that specific acres are removed from irrigation, as well as herbicide and nutrient applications. Also, the strips of land actively filter out herbicide and nutrient applications made on cropland above them. This common sense approach will maximize the benefits for this CREP.

The 5,000 acres of wetland restoration will help address the need for functional wetlands that are lacking throughout the project area. Wetlands provide benefits in terms of water quality (sediment and nutrient filtering and cycling), floodwater storage, and wildlife habitat. These wetlands are essential components of wildlife habitat, and serve as a primary staging source for millions of migrating birds. These wetlands also provide value for wildlife associated recreation (hunting and wildlife viewing) which bring substantial funds into the local and state economies.

## SECTION 6 – COST ANALYSIS

- A) Total Estimated Costs = \$158,215,000 over 10 years, 80% federal and 20% state (Appendix D). An additional \$10,000,000 for program cost share is needed with initial sign-up and would be split 50% federal and 50% state and local.
- B) A table listing practices and applicable incentives:

Use	Practice	Incentive
Natural Resource Area	CP2, CP4D, CP25	EI of $\geq 8$ not required for enrollment Irrigated rental rates on enrolled cropland Up to 25% of cost-share
Filter Strips	CP21	Irrigated rental rates on enrolled cropland
Riparian Buffer Strips	CP22	Irrigated rental rates on enrolled cropland
Wetland Restoration	CP23, CP23A	Up to 25% of cost-share ( $\leq \$100/\text{Acre}$ ) 6:1 maximum ratio of associated:wetlands acres Eligible on farmed wetlands and prior converted acres

Federal land use rental payments would be based on irrigated rental rates. The focus of this CREP is to retire irrigated lands from crop production for 10-15 years, during which those lands will be planted to high value cover for water, soil, and wildlife conservation. The anticipated cost to crop production based from 3-year harvest average is 50,000 Acres of corn (150 bushels/Acre); 17,000 Acres of soybeans (49 bushels/Acre); 17,000 Acres of wheat (42 bushels/Acre); and 16,000 Acres of alfalfa (5 tons/Acre). The opportunity costs foregone will be negligible, since this land is currently farmed and in regions with ample land available for commercial and agricultural development.

## SECTION 7 – MONITORING PROGRAM

- A) The Nebraska Department of Natural Resources (NDNR) and participating NRD's and irrigation districts will monitor water savings. These entities will undertake additional efforts to improve water use efficiency. The total savings in consumptive use will be delineated by river basin and include a separate assessment of surface and groundwater conserved.

The NGPC and participating NRD's and irrigation districts will monitor aquatic and terrestrial populations for select species, as well as recreational participation associated with the project area.

The NGPC and participating NRD's and irrigation districts will monitor and address problems associated with low water conditions. Additional efforts will be undertaken to improve aquatic habitat, control invasive plant species (especially salt cedar which uses large amounts of water), and sustain recreational access.

The Nebraska Department of Environmental Quality (NDEQ) will collect water quality data at selected project area points. The USGS and University of Nebraska-Lincoln will collect supplemental data. The NDEQ and NGPC will monitor watersheds associated with reservoirs targeted for aquatic habitat improvement. All water quality monitoring will be done using standard methods.

- B) The NDNR and NGPC will cooperatively compile and submit an annual report to the FSA by the first of April each year.
- C) The program will be evaluated each year to ensure that project objectives are being met. If the results of the evaluation indicate that a substantial difference exists between the objectives and the results, practices and the program will be modified, with FSA concurrence, to ensure that they are reached.

#### SECTION 8 – PUBLIC OUTREACH AND SUPPORT

- A) Support for this project is broad based and includes state, county and local government agencies, NRD's, producer and commodity groups, conservation groups and environmental groups (see Appendix E).
- B) A multi-media public outreach campaign will be initiated using all of the public relations resources available to the partners in the proposal. Specific emphasis will be placed on an educational campaign that will promote water conservation and resource utilization within the project area. All supporting agencies and entities will assist with the public outreach and educational campaign by applying their full resources. Additional funding will be sought through grants.

#### SECTION 9 – DEVELOPMENT OF PROCEDURE

Specific procedures for implementing this CREP will be developed upon acceptance of this proposal.

#### SECTION 10 – TRAINING OF STAFF

A team of federal and state staff will coordinate the necessary training sessions to reach persons involved with the sign-up, promotion, maintenance, and monitoring of the

accepted CREP. Specific details and procedures will be shared during this training, as well as contact information for future support.

## SECTION 11 – COMMUNICATION PLAN

A detailed communication plan will be developed upon acceptance of the CREP plan. The communication plan will share project goals, objectives, criteria, and most recent updates on project accomplishments. All available resources will be used to disseminate information including organizational newsletters, brochures, displays, magazine articles, agency internet pages, and TV/radio spots if funds are available. Sign-up will be monitored annually and barriers to enrollment identified via a non-user survey.

(Appendix A)

The Rainwater Basins and  
(profiles, loss and threats, and functions and values)  
(text condensed from "Guide to Nebraska's Wetlands by Ted LeGrange)

Rainwater basin

**Profile**

The Rainwater Basin region occupies a 4,200 mi.<sup>2</sup> area in 17 south-central Nebraska counties. It was named for the abundant natural marshes that formed where clay-bottomed depressions catch and hold rain and runoff water. The region is characterized by flat to gently rolling loess plains formed by deep deposits of silt-loam soil. These wetlands tend to have a northwest to southeast orientation and there frequently is a hill located immediately south or southeast of the basin where the windblown loess was deposited. Wetlands range in size from less than one to over one thousand acres.

**Loss and Threats**

Original soil survey maps from the early 1900's indicate that approximately 4,000 major wetlands totaling nearly 100,000 acres were present at the time of settlement. The Nebraska Game and Parks Commission (1984), estimated that less than 10% (374) of the original major wetlands and 22% (20,942), of the original wetland acres identified on early soil surveys remained in 1982. This trend study did not attempt to estimate the quantity and quality of smaller wetlands that were not identified on early soil surveys. However, it is likely that the proportion of loss documented by the Commission's major wetland trend analysis has occurred for all Rainwater wetlands.

Rainwater Basin wetlands were identified by the US Fish and Wildlife Service as one of nine areas in the U.S. of critical concern for wetland losses (Tiner 1984). These resources were given a priority 1 ranking in the *Nebraska Wetlands Priority Plan* due to extensive past losses (Gersib 1991). The remaining wetland resources of the Rainwater Basin complex continue to face numerous threats, mostly related to conversion to cropland. Rainwater Basin wetlands face the direct threat of elimination by drainage and/or filling. The construction of concentration pits (also called dugouts or reuse pits) is common and threatens the functions of wetlands by converting the shallow, vegetated portion into a deep and less productive water pit. Water pollution, especially sediment, can seriously reduce the function of Rainwater Basin wetlands.

The spread of purple loosestrife (*Lythrum salicaria*) is an additional threat. Purple loosestrife is an introduced plant of little value to wildlife that out-competes desirable native plants. No information is available on the extent of purple loosestrife abundance or distribution throughout the Rainwater Basin area, however it has been observed.

### **Functions and Values**

Rainwater Basin wetlands are most noted for their importance to waterfowl, especially during the spring migration (Gersib et al. 1992, Gersib et al. 1990 (a), US Fish and Wildlife Service and Canadian Wildlife Service 1986). They host 5-7 million spring migrating ducks and geese annually, providing the nutrient reserves necessary for migration and reproduction further to the north. Approximately 90% of the mid-continent population of greater white-fronted geese, 50% of the mid-continent population of mallards and 30% of the continent population of northern pintails use the Basins during the spring migration. Recent surveys have identified that a minimum of 200,000-300,000 shorebirds represented by over 30 different species migrate through the basins during the spring (Adrian Farmer, Pers. Comm.). In some years, the Basins also produce substantial number of ducks (Evans and Wolfe 1967). Basin wetlands are regularly used by the federally endangered whooping crane, peregrine falcon, and the threatened bald eagle. Forty-two percent of confirmed whooping crane observations in Nebraska have been at Rainwater Basin wetlands. These wetlands have provided more whooping crane use-days during fall migration than any other known migration habitat in the United States' portion of the Central Flyway (C.A. Faanes, unpubl. data).

Rainwater Basin wetlands provide water quality functions in the form of flood storage, nutrient retention, sediment trapping and shoreline anchoring (Gersib et al. 1990 (c)). Because of the impermeable clay pan characteristic of Rainwater Basins and water table elevations that lie more than 50 feet below the wetlands extends beyond the clay lens associated with wetland soils (Keech and Dreeszen 1959).

Nearly all Rainwater Basin wetlands provide for recreation activities, particularly hunting and fur harvest. The public is showing increased interest in using Rainwater Basins for other recreation such as bird watching and nature photography.

### Central Platte River

#### **Profile**

The Central Platte River (also called the Big Bend Reach) extends approximately 90 miles from Lexington to Chapman. Historically the Platte was a broad open prairie river with a braided channel and numerous saturated wet meadows adjacent to the river. However, the diversion of approximately 70% of the historic annual flows has changed the Central Platte into a narrower river with a dense band of mature deciduous woodland encroaching on the wet meadows. Numerous islands which at one time were open sandbars have since been overgrown with woody vegetation due to a reduction in high-water scouring flows.

#### **Loss and Threats**

The Platte River Valley epitomizes the struggle between agricultural and development interests, and wildlife, fish recreation, and other values associated with wetlands. American Rivers, a river conservation organization, has listed the Platte as one of the most endangered waterways in the United States.

Since 1860, the Central Platte River has lost up to 73% of active channel areas (Sidle et al. 1989). Upstream from the Central Platte, active channel losses on the river have reached 85%. In many areas, channel width has been reduced to 10-20% of its historic size (U.S. Fish and Wildlife Service 1981). From 1988 through 1994, open-channel areas declined by 4 to 41% due to relatively low summer flows and reduced scouring flows, allowing the establishment of undesirable woody vegetation (Currier 1995). Since settlement, wet meadow acreage in the Central Platte has declined 73% (Currier et al. 1985). Wet meadow acreage declined up to 45% between 1938-1982 (Sidle et al. 1989). An increase of shrub and forested wetland types has occurred at the expense of riverine, emergent wetlands, and wet meadows as a response to decreased scouring flows. The increase in the shrub and forested wetlands has been detrimental to fish and wildlife resources that historically used the river valley (Currier et al. 1985; U.S. Fish and Wildlife Service 1981). Wetlands along the Central Platte were given a priority 1 ranking in the *Nebraska Wetlands Priority Plan* due to extensive losses in the past (Gersib 1991).

Agriculture (drainage and conversion to grain crops), and sand and gravel mining operations pose the biggest immediate threats to wet meadows adjacent to the Platte River. Loss of instream flows, ground water depletions, and degradation of the riverbed continue to pose a long-term threat to the remaining wet meadow's source of water. The spread of purple loosestrife is an additional threat. Purple loosestrife is an introduced plant of little value to wildlife that out-competes desirable native plants. Purple loosestrife was only reported west of Kearney in the late 1980's (Gersib 1991), but has since become established throughout the Central Platte.

### Lower North Platte River

#### **Profile**

The lower reach of the North Platte River extends approximately 20 river miles. This wetland complex consists of riverine and marsh-like wetlands lying within the historically active floodplain and channel of the Platte and North Platte rivers. Temporarily and seasonally flooded vegetated wetlands comprise an estimated 80% of all wetlands in this reach.

#### **Loss and Threats**

Sidle et al. (1988) reported that the active river channel width between North Platte and Lake McConaughy has declined 85% since 1860. Since 1938, the active channel width between North Platte and Sutherland has declined by 65% (U.S. Fish and Wildlife Service, unpubl. data). Agricultural conversion, ground water depletions, and sand and gravel mining pose the greatest short-term threats to wet meadows adjacent to the North Platte River. Wet meadow acreage losses along the North Platte River were estimated to be 23-33% since 1938, though much of the farmable meadows already were converted and under gravity irrigation prior to 1938 (Sidle et al. 1989). Lower North Platte River wetlands were given a priority 2 ranking in the *Nebraska Wetlands Priority Plan* due to extensive losses in the past (Gersib 1991).



**Functions and Values**

During the spring, about 100,000 migrating sandhill cranes spend up to 6 weeks feeding and resting on the Lower North Platte River and adjacent wet meadows. Sandhill cranes roost in the river and wet meadows at night and forage in wet meadows, grassland, and cropland during the day. Threatened bald eagles winter along the river and also use it during migration. Endangered whooping cranes occasionally use this stretch of river during both spring and fall migrations. Migrating and wintering waterfowl use the river and associated wet meadows. The North Platte River provides habitat for a variety of other migratory and resident wildlife species (U.S. Fish and Wildlife Service 1981) including 77% of the bird species on the National Audubon Society's Blue List of which all but three nest in the area (Currier et al. 1985).

Waterfowl hunting and fishing occur on the Lower North Platte River (Anderson et al. 1989). A recent survey by the University of Nebraska indicated that Nebraskans as a whole have a keen interest in a variety of recreation activities available on the Lower North Platte River and support further efforts to provide these recreational opportunities (Bureau of Sociological Research 1988).

(Appendix B)

Alphabetical listing of fish species (common name) present in proposed priority area

Alewife	Bigmouth Buffalo	Bigmouth Shiner
Black Bullhead	Black Crappie	Blacknose Dace
Blue Catfish	Bluegill	Brassy Minnow
Brook Silverside	Brook Stickleback	Brook Trout
Brown Trout	Carp	Channel Catfish
Common Shiner	Creek Chub	Emerald Shiner
Fathead Minnow	Finescale Dace	Flathead Catfish
Flathead Chub	Freshwater Drum	Gizzard Shad
Goldfish	Golden Shiner	Goldeye
Grass Carp	Green Sunfish	Green Sunfish X Bluegill
Johnny Darter	Kentucky Spotted Bass	Largemouth Bass
Longnose Dace	Longnose Gar	Longnose Sucker
Mosquitofish	Muskellunge	Northern Pike
Orangespotted Sunfish	Orangethroat Darter	Paddlefish
Plains Killifish	Plains Minnow	Plains Topminnow
Pumpkinseed	Quillback	Rainbow Smelt
Rainbow Trout	Redbelly Dace (Northern)	Redbelly X Finescale Dace
Red Shiner	Redear Sunfish	River Carpsucker
River Shiner	Rock Bass	Rudd
Sand Shiner	Sauger	Saugeye
Shortnose Gar	Shorthead Redhorse	Shovelnose Sturgeon
Silver Chub	Silvery Minnow (Western)	Smallmouth Bass
Smallmouth Buffalo	Speckled Chub	Stonecat
Stoneroller	Sturgeon Chub	Suckermouth Minnow
Tadpole Madtom	Tiger Muskie	Walleye
White Bass	White Crappie	White Sucker
Wiper	Yellow Bullhead	Yellow Perch

Appendix C  
Ranking System for Republican River Basin

**Republican Basin – Threshold Ranking for Natural Resource Areas**

Several criteria must be met for land parcels to qualify for this program (using language from Section 5 – Project Description):

1. Offered area must have been cropped 4 of the 6 years (1996 – 2001) *(FSA Records)*
2. Offered area must have been irrigated 4 of the 6 years (1996 – 2001) *(FSA Records)*
3. Over half of offered acres must fall within project boundaries
4. Offered acres must be legally and are capable of being irrigated (acres certified with the NRD (GW) or DNR (SW)) *(NRD or DNR/ID Records)*
5. To qualify as surface irrigated land, the land must have adequate water supply *(see chart below)*
6. Surface irrigated lands, water delivered to the land must exceed half the amount needed to augment growth of the crop on that land for 4 of the 6 years (1996-2001) *DNR or ID records*

Offered acres are irrigated by a “Quick Response Well” alluvial well or a surface water appropriation – 1 points <i>(map provided by DNR)</i>	<input style="width: 40px; height: 20px;" type="text"/>
--	---

Offered acres result in one or more wells or a surface water appropriation not being used for the term of the CRP Contract – 2 point <i>(NRD or DNR)</i>	<input style="width: 40px; height: 20px;" type="text"/>
---	---

Offer consists of 40 or more contiguous acres– 1 point <i>(applicant)</i>	<input style="width: 40px; height: 20px;" type="text"/>
--	---

Offered acres will result in additional water that can enter or be saved in a Nebraska reservoir – 1 point <i>(map provided by NGPC)</i>	<input style="width: 40px; height: 20px;" type="text"/>
---	---

<p><b>Available water – 1 to 3 points according to table below based on:</b>  <i>*to qualify as surface water irrigated lands, adequate water must be delivered.</i>  <i>** if acres irrigated by both a well and surface water – score both well and surface water allocation and enter total – not to exceed 3</i></p> <table style="width: 100%; border: none;"> <tr> <td colspan="2">For ground water wells - GPM from well registration / certified acres for the well <i>(info from DNR registered well database)</i></td> </tr> <tr> <td style="padding-left: 20px;">5 gpm/ac or less</td> <td style="padding-left: 100px;">1 point</td> </tr> <tr> <td style="padding-left: 20px;">5.1 to 10 gpm/ac</td> <td style="padding-left: 100px;">2 points</td> </tr> <tr> <td style="padding-left: 20px;">greater than 10gpm/ac</td> <td style="padding-left: 100px;">3 points</td> </tr> <tr> <td colspan="2">For surface water – Surface water allocation - average of 1996-2001 allocation <i>(DNR or Surface Water District)</i></td> </tr> <tr> <td style="padding-left: 20px;">6.1 to 8 inches</td> <td style="padding-left: 100px;">1 points</td> </tr> <tr> <td style="padding-left: 20px;">greater than 8 inches</td> <td style="padding-left: 100px;">2 points</td> </tr> </table>	For ground water wells - GPM from well registration / certified acres for the well <i>(info from DNR registered well database)</i>		5 gpm/ac or less	1 point	5.1 to 10 gpm/ac	2 points	greater than 10gpm/ac	3 points	For surface water – Surface water allocation - average of 1996-2001 allocation <i>(DNR or Surface Water District)</i>		6.1 to 8 inches	1 points	greater than 8 inches	2 points	<input style="width: 40px; height: 20px;" type="text"/>
For ground water wells - GPM from well registration / certified acres for the well <i>(info from DNR registered well database)</i>															
5 gpm/ac or less	1 point														
5.1 to 10 gpm/ac	2 points														
greater than 10gpm/ac	3 points														
For surface water – Surface water allocation - average of 1996-2001 allocation <i>(DNR or Surface Water District)</i>															
6.1 to 8 inches	1 points														
greater than 8 inches	2 points														

Total	<input style="width: 40px; height: 20px;" type="text"/>
Recommended threshold for automatic acceptance of enrolled area – 4 points	<input style="width: 40px; height: 20px;" type="text"/>

Appendix D  
List of In-kind Match Available from Participating Organizations

The following list indicates the projected level of state and local in-kind services that will be designated towards matching project costs. Other entities are currently unable to project future in-kind match due to budget uncertainties, but do expect to participate and provide some level of support for this CREP project. There are also some other key entities that we have yet to contact but believe will provide project support. Match information will be gathered from these organizations, as it becomes available.

Entity	Project Annual Match
Bostwick Irrigation District	\$494,473
Central Platte Natural Resource District	\$345,460
Middle Republican Natural Resource District	\$151,116
Nebraska Department of Agriculture	\$13,500
Nebraska Department of Natural Resources	\$887,000
Nebraska Game and Parks Commission	\$130,000
Nebraska Public Power District	\$143,120
North Platte Natural Resource District	\$100,000
Pathfinder Irrigation District	\$190,500
Tri-Basin Natural Resource District	\$217,250
Twin Platte Natural Resource District	\$32,000
Upper Republican Natural Resource District	\$100,000
Lower Republican Natural Resource District	\$366,000
<b>Total:</b>	<b>\$3,170,419</b>

\*Additional grant monies are currently being pursued that would provide funds to support a grant coordinator to oversee the project and initiate an educational and awareness campaign in the project area. Funds for this position would also serve as match for this CREP.

Appendix E  
List of Project Supporters and Participants

The following organizations have participated in the development of this project. Most of these organizations will also be integral to post-proposal implementation of this project.

USDA Nebraska Natural Resources Conservation Service  
USDA Nebraska Farm Service Agency  
Nebraska Game and Parks Commission  
Nebraska Department of Natural Resources  
Nebraska Department of Environmental Quality  
Nebraska Department of Agriculture  
Nebraska Association of Resources Districts  
Central Platte Natural Resource District  
North Platte Natural Resource District  
Tri-Basin Natural Resource District  
Upper Republican Natural Resource District  
Middle Republican Natural Resource District  
Lower Republican Natural Resource District  
The Central Nebraska Public Power and Irrigation District  
State FSA Committee

\*\* In addition, two outreach meetings were held to receive input on the proposal. Groups represented in those meetings included several surface water irrigation districts, a general agriculture organization, three agriculture commodity groups, a wildlife organization and an organization representing environmental interests.