

# **Platte River Endangered Species Recovery Program**

## **Social Analysis Appendix**

to the

## **Platte River Final Programmatic Environmental Impact Statement**

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**U.S. Department of the Interior  
Bureau of Reclamation  
Denver, Colorado**

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## INTRODUCTION

### The Program and the Final Environmental Impact Statement

The U.S. Department of the Interior (Interior) has prepared a final Environmental Impact Statement (FEIS) to assess the environmental consequences of a proposed Recovery Implementation Program (Program) to benefit four threatened and endangered species and their habitat in and along the Platte River in Nebraska. This appendix contains detailed information that supports conclusions in the Social Environment section of the FEIS.

In 1997, the States of Nebraska, Wyoming, and Colorado and Interior signed a *Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitats along the Central Platte River, Nebraska* (Cooperative Agreement).<sup>1</sup> In this agreement, the signatories agreed to pursue a Basin-wide, cooperative effort to improve and maintain habitat for four threatened and endangered species using the Platte River in Nebraska.

The Cooperative Agreement established the general, long-term goal of improving and maintaining the target species-associated habitats. The primary goals established for the first, 13-year increment of a Program analyzed in the FEIS, and that are the focus of the action alternatives include:

- ▶ Protecting and restoring 10,000 acres of habitat in the Central Platte area.
- ▶ Improving achievement of U.S. Fish and Wildlife Service (Service) river flow targets in the Habitat Area of the Central Platte River by 130,000 to 150,000 acre-feet per year by changing the amounts and timing of storage and releases in upstream reservoirs on the North and South Platte Rivers.

## SOCIAL ANALYSIS

A social analysis commonly evaluates current and projected changes in such quality of life factors as health and safety, demographics, and other areas of public concern. The National Environmental Policy Act (NEPA) requires that Federal Agencies analyze potential social impacts. Title 1, Section 101(b) states that agencies should implement the Act so that the Nation may, among other points:

- ▶ Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

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<sup>1</sup> Available from the Platte River EIS Office, Denver, Colorado, and at <[www.platteriver.org](http://www.platteriver.org)>.



- ▶ Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- ▶ Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and a variety of individual choice;
- ▶ Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities;

Title 1, Section 102(A) states that agencies shall “utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences...in planning and in decision making which may have an impact on man's environment:”

## STUDY AREA

The Program study area is the Platte River Basin (Basin), shown below in figure SOC-1, along with its sub-basins. For purposes of this analysis, “sub-basins” refers to the Wyoming State portion of the North Platte Basin, the Colorado State portion of the South Platte Basin, and the Nebraska portion of the Central Platte River Basin. The area of effect includes eight counties in the North Platte Basin in Wyoming, 18 counties in the South Platte Basin in Colorado, and 22 counties in the Central Platte Basin in Nebraska. The focus of the analysis is the area of primary effect, the Habitat Area, which is composed of the following nine counties in Nebraska: Dawson, Gosper, Phelps, Buffalo, Kearney, Hall, Adams, Merrick, and Hamilton. The Basin counties are displayed in figure SOC-2, and include the same county-areas analyzed in the FEIS economics analyses.

### Platte River Basin

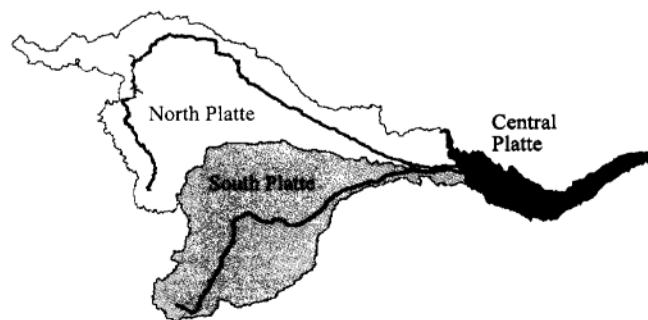


Figure SOC-1. Platte River Basin Program study area divided into the North Platte, South Platte, and Central Platte River sub-basins

## Platte River Basin by Economic Regions and Counties

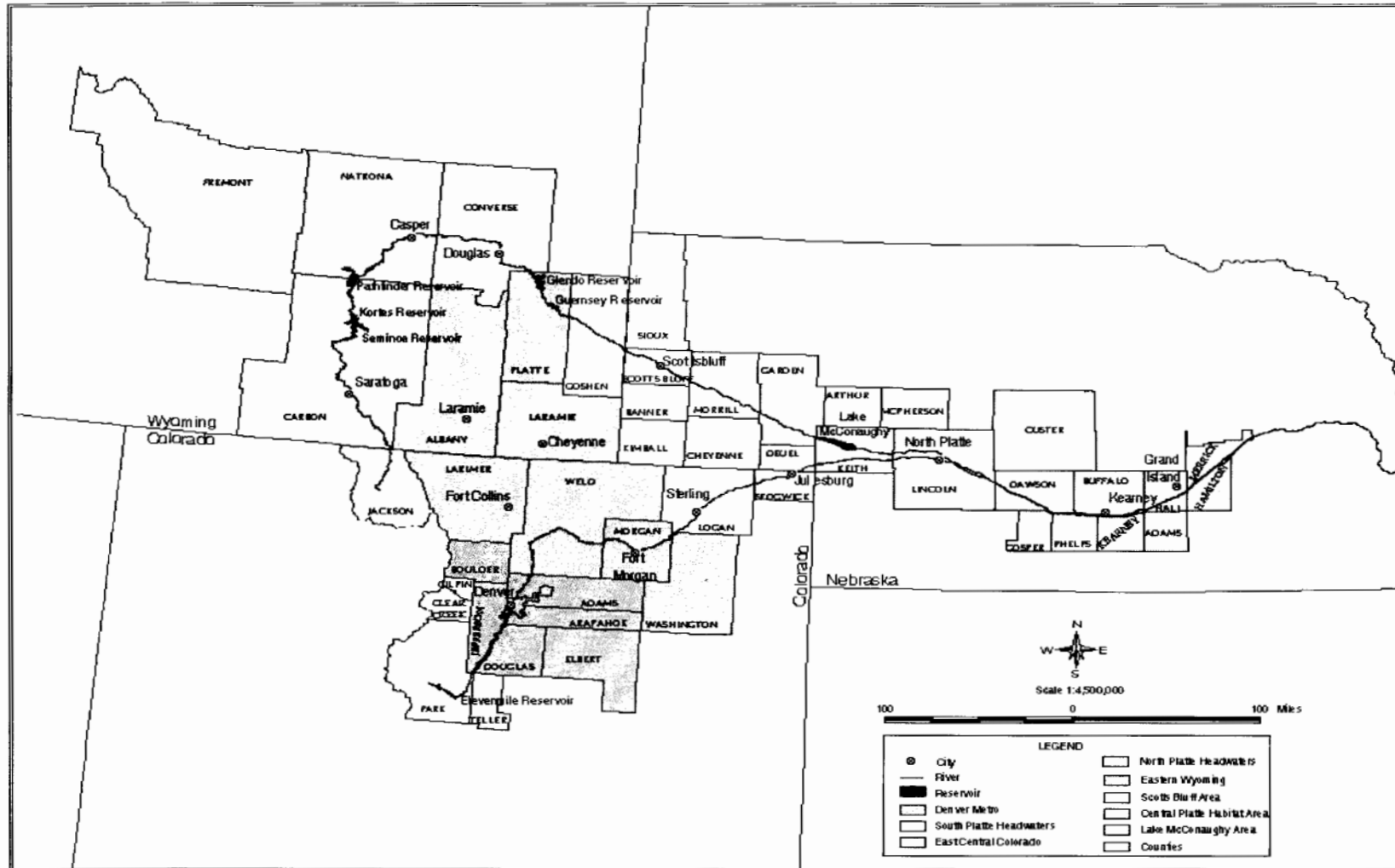


Figure SOC-2. Platte River Basin by Economic Regions, and Counties, and with Major Cities

## **BACKGROUND**

The Platte River serves the people of Wyoming, Colorado and Nebraska in many ways that have shaped the basin socially and economically. The Platte River and project facilities provide municipal and industrial (M&I) water supplies for about 3.5 million people, irrigate millions of acres of farmland, generate millions of dollars of hydroelectric power, support fish and wildlife habitat, and contribute recreation and tourism opportunities. Beginning in the early 1800s, the Platte River has played an instrumental role in the settlement and development of towns, cities, and counties in the Basin.

A key element common among the three states in the Platte River Basin has been the strength of agriculture and its prominence as a lifestyle from the time of settlement. The semi-arid basin required irrigation early in the states' histories to support farming, which in turn supported settlement of towns and industrial development. However, as the description of the social setting and present conditions indicates, employment, income, and the overall economic role of agriculture are reduced today in the Basin compared with other sectors and regional economies.

## **SUMMARY OF IMPACTS**

Social impacts are discussed broadly since the specific locations and impacts of each component of the alternatives, such as water leasing, are unknown at this time. Additionally, site-specific NEPA compliance analysis will be conducted for specific program land and water actions when they are identified to assess local effects, including social effects.

During the scoping and planning processes, the public and interest groups raised social, socioeconomic, or third-party-impact concerns that included potential changes to agriculture, income, taxes, employment, population growth, future development, human health, flooding, and land use. Income and employment are generally considered socioeconomic indicators and, for this reason, are analyzed in this appendix as well as in the economic analysis appendix. Compared with the No Action Alternative, the action alternatives would not significantly affect social factors identified as issues by the public. Land would be acquired by the Program only on a willing seller, willing lessor basis. Program land management would not create the types of habitat conducive to increasing Canadian Goose populations and the types of mosquitos that transmit diseases to humans. The program would result in diminished frequency, extent, and duration of significant out-of-bank flooding. The economic analysis showed that the largest decreases in income would occur in the Habitat Area (without dryland farming), but that the impacts represent less than one-tenth of 1 percent of the total economic activity in the region.

## **INDICATORS**

Indicators of potential impact are measured by the following parameters:

- Population and demographics
- Human health concerns
- Land use trends
- Changes in flooding patterns
- Changes in income and employment

## **METHODOLOGY**

### **Population and Demographics**

Trends discussed in several of Dr. Jenkins' books were used in combination with U.S. Department of Commerce, Bureau of the Census prior census data for showing historical trends and year 2000 census data and state projections for future trends, and more specifically included:

- ▶ Jenkins' The Platte River: An Atlas of the Big Bend Region and The Middle Platte Socioeconomic Baseline which described population, demographic, and economic history and trends.
- ▶ The Bureau of the Census factfinder portion of the website at <http://www.census.gov>, used most frequently for year 1990 and/or 2000 population and median age data.
- ▶ Historical census data from the U.S. Census Bureau Denver Regional Office library documents.
- ▶ State of Wyoming population projections from the Wyoming Department of Administration and Information, Economic Analysis Division at <http://eadiv.state.wy.us>.
- ▶ State of Colorado population projections from the Colorado Department of Local Affairs, Colorado Demography Section at <http://www.dola.state.co.us/demog>.
- ▶ State of Nebraska population projections from the Nebraska Department of Economic Development at <http://info.neeeded.org/databook>.

## **Human Health Concerns**

Research on the risk to human health from avian botulism, avian cholera, and resident goose arbovirus was taken mainly from U.S. Geological Survey (USGS) and Service technical reports and other federal and state web sites. E. coli information was collected primarily from the U.S. Department of Health and Human Services. Sources from the Centers for Disease Control (CDC) were used for researching and analyzing the West Nile Virus. The draft analysis was reviewed by several contaminant specialists in the Service and Bureau of Reclamation (Reclamation).

In 1999 inquiries were made to the Nebraska State Medical Entomologist and other Central Platte local agencies regarding public complaints, concerns, and studies or requested studies regarding public health and waterfowl, including but not limited to disease. The following entities in Nebraska were contacted by the Platte River EIS Office about public complaints or concerns regarding public health and waterfowl diseases:

- City of Lexington, Department of Health (Dawson County)
- City of Kearney, Grand Island-Hall County Health Department
- Public Health Assurance Division, Nebraska Health and Human Services System
- Nebraska State Epidemiologist
- Phelps County Commissioners
- Hamilton County Commissioners
- Merrick County Commissioners
- Hall County Parks
- Buffalo County
- Merrick County
- Hamilton County
- Hall County
- City of Grand Island Parks Manager
- Hall County Airport Manager
- Sandhills District Health Department

As shown in attachment A that notes specific responses, none were aware of any complaints, requests for studies, or cases involving public health risks and waterfowl.

## **Flooding Concerns**

During wet years, parts of the Central Platte River Basin in Nebraska from the town of North Platte east to Grand Island and beyond experience problems with high groundwater levels and flooding, primarily waterlogged farm fields and flooded basements. The overall interrelationships among river flows, topography, geology and soils, climate, irrigation, ground water levels, and river flows in the Central Platte Valley were examined in the *Ground Water*

*and River Flow Analysis* report (Sanders, 2001).

As baseline information for the present condition analysis, Reclamation monitored 28 existing wells daily in four lines across the Platte River (at Overton, Elm Creek, Minden, and Alda), and compared daily readings from the wells with three Platte River gages and precipitation data from March 11 through September 17, 1999. In the spring of 2000, monitors were installed in 16 of the wells to provide supplementary data. Reclamation analyzed statistical relationships among precipitation, river flows, and ground water levels (Sanders, 2001).

Historic and recent flooding trends were analyzed through a comprehensive search of the Nebraska *Kearney Hub* (dating back to the year 1888) daily newspaper for articles describing previous flood events on the Platte River. The USGS gaging records for Overton and Kearney were used to establish the 12 largest annual flood peaks in the Central Platte area. For each of the 12 largest flood peaks, a search was made starting a few days before the flood peak and ending a few days after the flood peak. The purpose was to obtain an understanding of the flooding (flood damage) that resulting from the largest flows recorded on the Platte River. The floods were compiled and analyzed by date in descending order of peak flood discharge.

Impacts were analyzed using the CPR model to determine the potential effect from the Program on existing high ground water levels and seasonal flooding problems. The CPR model analyses included annual peak flows from 1948 to 1994. The maximum 7- and 30-day average increases in ground water elevation were projected using the CPR model, the SEDVEG Gen3 model, and ground water response model.

## **Land Use**

Analysis of lands and land use was conducted using:

- ▶ Nebraska Public Power District (NPPD) (Jenniges, 1999), *Development and Enhancement Plan for Nebraska Public Power District's Cottonwood Ranch Property*.
- ▶ Friesen, et. al (2000), *Central Platte River 1998 Land Cover Use/Mapping Project Nebraska*.
- ▶ Service "Nebraska Partners Home," "Central Platte River," and "Restoring Habitat Along the Central Platte River in Nebraska," internet site accessed 2003, <http://www.r6.fws.gov/pfw/ne/ne2a.html>. Land use trends also were researched using county data.
- ▶ Governance Committee, Platte River Recovery Implementation Program, Draft Land Plan.

## **Income and Employment**

Year 2000 Bureau of the Census median household income figures (1999 dollars) were used to analyze income differences among the States in the Basin (Census 2000), and are discussed in the “Environmental Justice” section of the FEIS.

## **AFFECTED ENVIRONMENT/PRESENT CONDITIONS**

### **Social Setting (Affected Environment)**

The history of people in the Platte River Basin has shaped present social, economic, and cultural conditions. The Central Platte River Basin, the area of primary effect, has been shaped by several major factors in that it was or had a major transportation route, a climate that necessitated irrigation, agriculture as the primary industry, home to a large number of emigrants from various countries, and the presence of the Platte River as a significant water source.

First, the Central Platte’s location made it an early, crucial east-west migrant and settlement route, followed by the development of Interstate 80 (I-80), which has been critical to social and economic existence and development of area towns. Second, the program area enjoys a good growing season and soils, but has a lack of sufficient water for settlement and farming compared with the Eastern U.S., particularly going west along the Platte River the length of the state. Third, agriculture has been the primary industry and lifestyle in the region. Fourth, ethnic groups from Europe brought a variety of cultures into the region which influenced the area’s social setting. Another increasingly significant socioeconomic factor has been “crane tourism” and other recreation in the Central Platte. Annual crane viewing has gained world-class status as the largest concentration of sandhill cranes in the world, including endangered whooping cranes (Jenkins and Konecny, 1996) (Jenkins, 1993). (Recreation conditions and impacts are not discussed here, and are instead covered in the Recreation sections of the FEIS and in the economics appendix to the FEIS).

### **Central Platte Location**

The most influential factors--location and terrain--made the central Platte valley an important national passageway for settlement beginning with the Great Platte River Road (a combination of the Oregon, Mormon, and California Trails) that carried an estimated 360,000 pioneers west between 1841 and 1870. The Pony Express had stops along towns that emerged along the Platte River, as did the Union Pacific railroad some years later starting around 1850. Interstate 80 (I-80), initiated on the East Coast in 1959, was completed through Nebraska by 1974, and to the West Coast by 1986; it remains a major transportation route today (Jenkins, 1993).

## **Agriculture and Irrigation**

Despite the fact that domestic water use is recognized as the top priority in Nebraska law, agricultural use has had the greatest impact on the state's water resources, accounting for roughly 90 percent of the consumptive use. Agriculture began in the Central Platte Basin in the 1850s and 60s in small, scattered land parcels that were usually dry land-farmed with some individual, small-scale irrigation systems. The first major irrigation canal in a series of many was the Kearney Canal in 1880, which was the second water right granted in the state. Legislation passed in 1877 and 1889 led to irrigation enterprises developed in western Nebraska in the 1880s. The importance of irrigation next led to 1895 legislation that created the doctrine of prior appropriation in Nebraska, or "first in time, first in right." Manufacturing that relied on surrounding crops began to develop; a prime example was a cotton mill constructed in Kearney in the late 1800s (Jenkins, 1993).

Pump irrigation began during the 1930s drought, a condition which made it possible to irrigate lands not yet irrigated. The sprinkler system made it possible to irrigate virtually all other types of land. The early sprinkler systems which were inefficient were followed by the more efficient center pivot in the 1950s and 60s and replaced some of the ditch irrigation. Today, the river water goes through numerous diversions and uses, and returns to the channel; the largest diverter is the Central Nebraska Public Power and Irrigation District (CNPPID)(Jenkins, 1993).

Crop yields increased dramatically with irrigation. In Hall, Buffalo, Dawson, and Lincoln Counties, potatoes and sugar beets were economically important crops in the first half of the 1900s. Farm sizes (and labor), beginning with the 160-acre homestead plot, expanded gradually until the 1930s and 1940s when the sizes began to increase dramatically with the use of tractors and similar machinery. Corn became popular as a crop for the growing cattle and hog industry, and with the use of chemicals in the 1940s and 50s it almost completely dominated crop production by the 1970s. In addition to corn, the most prevalent modern crops are alfalfa, wheat, milo, and soybeans. (Jenkins, 1993).

## **Recent Conditions**

There has been minimal economic diversification until recent times. With technological advances, farm production became larger and required less labor, which resulted in a reduction in farm population. Rural population has declined continuously since the 1930s when the Great Depression occurred, and, during the same period, economic growth in the non-farm sector increased in such larger population centers as Grand Island, Kearney, Hastings, and North Platte. The trend of decreasing rural population and larger farm sizes is expected to continue, based on Census figures and the USDA National Agricultural Statistics Service. The high inflation of the late 70s and early 80s hit hard, resulting in many farm foreclosures and liquidations. By about 1990, roughly 46 percent of Nebraska farm and ranch survey respondents relied on non-farm income, and about 32 percent earned more than half of their income from non-farm employment.



Meanwhile, government support payments increased from about 20 percent in 1979 to 40 percent in 1990 (Jenkins, 1993)(Jenkins and Konecny, 1996). For about the same period, the FEIS Regional Economics Section showed that the top employers in the Basin were services, retail, and government, and that farm and related employment have been decreasing. In Nebraska, agriculture decreased 16 percent from 1960 to 1996, and was mostly replaced by an increase of 14 percent in the services sector.

Based on an assumption, asserted in *The Platte River: An Atlas of the Big Bend Region*, that any county with over 20 percent of its income from farming is an agriculture-based economy, and using 1990 figures, the following counties had farming-based economies: Dawson, Merrick, Hamilton, Phelps, Kearney, and Gosper. The following counties were not considered to be farming-based economies: Hall County, Buffalo, Platte, Lincoln, and Adams (Jenkins, 1993). An important point is that the stability of agriculturally dependent counties varies with the USDA Farm Program subsidies (Jenkins, 1993).

Overall, the larger population centers and counties with diversified economies that depend less on agriculture should continue to expand at a slow rate, economically and in population, while rural economies continue to contract. Since urban centers, to some degree, depend on rural population, the Central Platte region's economy and population as a whole is expected to be fairly static for the foreseeable future.

In terms of ethnicity, Irish, German, Czech and Danish settlers, migrant workers, and others came to the Central Platte region in the late 1800s and early 1900s. In terms of ancestry, roughly 42 percent reported German, 11 percent Irish, 10 percent English, and 6 percent Swedish. The Germans settled Columbus and Grand Island, the Swedes settled Kearney and Gothenburg, the Danes Dannebrog, and most of the others (Norway, Russia, Canada, Czechoslovakia, Netherlands, Ireland, Finland, and Poland) came with the expansion of the railroad. Since the population is rather static, the ethnic diversity of various emigrant groups and rural lifestyle of the area's history that has generally created a climate of skepticism of government is expected to remain, at least to some extent (Jenkins, 1993).

## **Population and Demographics (Affected Environment)**

### **Population**

As shown in table SOC-1, the Platte River Basin has increased at an annual average rate of about 1 percent between 1940 and 2000, with most of the larger gains in Colorado, and most of the population losses in Nebraska. Basin population is expected to expand somewhat more between the years 2000 and 2020 at an annual average rate of 1.6 percent. The Nebraska portion of the Basin is expected to grow slightly more than for the previous 60 years, and Colorado's and Wyoming's shares are anticipated to be less. Overall for each state in the Basin, urban counties have gained population and rural counties have generally remained static or have lost population

# Platte River Basin Population: States and Counties 1940 to Present

Table SOC-1								Average Annual Percent Change				
	1940	1950	1960	1970	1980	1990	2000	1960-70	1970-80	1980-90	1990-00	1940-00
State of Wyoming	250,742	290,529	330,066	332,416	469,557	453,588	493,782	0.1%	3.5%	-0.3%	0.9%	1.1%
Laramie County	33,651	47,662	60,149	56,360	68,649	73,142	81,607	-0.6%	2.0%	0.6%	1.1%	1.5%
Natrona County	23,858	31,437	49,623	51,264	71,856	61,226	66,533	0.3%	3.4%	-1.6%	0.8%	1.7%
Freemont County	16,095	19,580	26,168	28,352	38,992	33,662	35,802	0.8%	3.2%	-1.5%	0.6%	1.3%
Albany County	13,946	19,055	21,290	26,431	29,062	30,797	32,014	2.2%	1.0%	0.6%	0.4%	1.4%
Carbon County	12,644	15,742	14,937	13,354	21,869	16,659	15,639	-1.1%	5.1%	-2.7%	-0.6%	0.4%
Goshen County	12,207	12,634	11,941	10,885	12,040	12,373	12,538	-0.9%	1.0%	0.3%	0.1%	0.0%
Converse County	6,631	5,933	6,366	5,938	14,069	11,128	12,052	-0.7%	9.0%	-2.3%	0.8%	1.0%
Platte County	8,013	7,925	7,195	6,486	11,975	8,145	8,807	-1.0%	6.3%	-3.8%	0.8%	0.2%
<b>Wyoming Portion of the North Platte Basin</b>	<b>127,046</b>	<b>169,968</b>	<b>197,669</b>	<b>199,070</b>	<b>268,612</b>	<b>247,132</b>	<b>264,992</b>	<b>0.1%</b>	<b>3.0%</b>	<b>-0.8%</b>	<b>0.7%</b>	<b>1.2%</b>
State of Colorado	1123296	1325089	1,753,947	2,209,596	2,889,735	3,294,394	4,301,261	2.3%	2.7%	1.3%	2.7%	2.3%
Denver County	322,412	415,786	493,887	514,678	492,686	467,610	554,636	0.4%	-0.4%	-0.5%	1.7%	0.9%
Jefferson County	30,725	55,687	127,520	235,368	371,753	438,430	527,056	6.3%	4.7%	1.7%	1.9%	4.9%
Arapahoe County	32,150	52,125	113,426	162,142	293,300	391,511	487,967	3.6%	6.1%	2.9%	2.2%	4.6%
Adams County	22,481	40,234	120,296	185,789	245,944	265,038	363,857	4.4%	2.8%	0.8%	3.2%	4.7%
Boulder County	37,438	48,296	74,254	131,889	189,625	225,339	291,288	5.9%	3.7%	1.7%	2.6%	3.5%
Larimer County	35,539	43,554	53,343	89,900	149,184	186,136	251,494	5.4%	5.2%	2.2%	3.1%	3.3%
Weld County	63747	67504	72,344	89,297	123,438	131,821	180,936	2.1%	3.3%	0.7%	3.2%	1.8%
Douglas County	3,496	3,507	4,816	8,407	25,153	60,391	175,766	5.7%	11.6%	9.2%	11.3%	6.7%
Morgan County	17214	18074	21,192	20,105	22,513	21,939	27,171	-0.5%	1.1%	-0.3%	2.2%	0.8%
Teller County	6,463	2,754	2,495	3,316	8,034	12,468	20,555	2.9%	9.3%	4.5%	5.1%	1.9%
Logan County	18,370	17,187	20,302	18,852	19,800	17,567	20,504	-0.7%	0.5%	-1.2%	1.6%	0.2%
Elbert County	5,460	4,477	3,708	3,903	6,850	9,646	19,872	0.5%	5.8%	3.5%	7.5%	2.2%
Park County	3272	1870	1,822	2,185	5,333	7,174	14,523	1.8%	9.3%	3.0%	7.3%	2.5%
Clear Creek County	3,784	3,289	2,793	4,819	7,308	7,619	9,322	5.6%	4.3%	0.4%	2.0%	1.5%
Washington County	8336	7520	6,625	5,550	5,304	4,812	4,926	-1.8%	-0.5%	-1.0%	0.2%	-0.9%
Gipin County	1,625	850	685	1,272	2,441	3,070	4,757	6.4%	6.7%	2.3%	4.5%	1.8%
Sedgwick County	5,294	5,095	4,242	3,405	3,266	2,690	2,747	-2.2%	-0.4%	-1.9%	0.2%	-1.1%
Jackson County	1,798	1,976	1,758	1,811	1,863	1,605	1,577	0.3%	0.3%	-1.5%	-0.2%	-0.2%
<b>Colorado - South Platte Basin</b>	<b>619,604</b>	<b>789,786</b>	<b>1,126,608</b>	<b>1,482,688</b>	<b>1,973,796</b>	<b>2,254,866</b>	<b>2,968,964</b>	<b>2.8%</b>	<b>2.9%</b>	<b>1.3%</b>	<b>2.8%</b>	<b>2.6%</b>
State of Nebraska	1,315,834	1,325,510	1,411,330	1,485,333	1,569,825	1,578,385	1,711,263	0.5%	0.6%	0.1%	0.8%	0.4%
Hall County	27,523	32,186	35,757	42,851	47,690	48,925	53,534	1.8%	1.1%	0.3%	0.9%	1.1%
Buffalo County	23,655	25,134	26,236	31,222	34,797	37,447	42,259	1.8%	1.1%	0.7%	1.2%	1.0%
Scotts Bluff County	33,917	33,939	33,809	36,432	38,344	36,025	36,951	0.8%	0.5%	-0.6%	0.3%	0.1%
Lincoln County	25,425	27,380	28,491	29,538	36,455	32,508	34,632	0.4%	2.1%	-1.1%	0.6%	0.5%
Adams County	24,576	28,855	28,944	30,553	30,656	29,625	31,151	0.5%	0.0%	-0.3%	0.5%	0.4%
Dawson County	17,890	19,393	19,405	19,771	22,304	19,940	24,365	0.2%	1.2%	-1.1%	2.0%	0.5%
Custer County	22,591	19,170	16,517	14,092	13,877	12,270	11,793	-1.6%	-0.2%	-1.2%	-0.4%	-1.1%
Cheyenne County	9,505	12,081	14,828	10,778	10,057	9,494	9,830	-3.1%	-0.7%	-0.6%	0.3%	0.1%
Phelps County	8,452	9,048	9,800	9,553	9,769	9,715	9,747	-0.3%	0.2%	-0.1%	0.0%	0.2%
Hamilton County	9,982	8,778	8,714	8,867	9,301	8,862	9,403	0.2%	0.5%	-0.5%	0.6%	-0.1%
Keith County	8,333	7,449	7,958	8,487	9,364	8,584	8,875	0.6%	1.0%	-0.9%	0.3%	0.1%
Merrick County	9,354	8,812	8,363	8,751	8,945	8,042	8,204	0.5%	0.2%	-1.1%	0.2%	-0.2%
Kearney County	6,854	6,409	6,580	6,707	7,053	6,629	6,882	0.2%	0.5%	-0.6%	0.4%	0.0%
Morrill County	9,436	8,263	7,057	5,813	6,085	5,423	5,440	-1.9%	0.5%	-1.1%	0.0%	-0.9%
Kimball County	3,913	4,283	7,975	6,009	4,882	4,108	4,089	-2.8%	-2.1%	-1.7%	-0.0%	0.1%
Garden County	4,680	4,114	3,472	2,929	2,802	2,460	2,292	-1.7%	-0.4%	-1.3%	-0.7%	-1.2%
Gosper County	3,687	2,734	2,489	2,178	2,140	1,928	2,143	-1.3%	-0.2%	-1.0%	1.1%	-0.9%
Deuel County	3,580	3,330	3,125	2,717	2,462	2,237	2,098	-1.4%	-1.0%	-1.0%	-0.6%	-0.9%
Sioux County	4,001	3,124	2,575	2,034	1,845	1,549	1,475	-2.3%	-1.0%	-1.7%	-0.5%	-1.6%
Banner County	1,403	1,325	1,269	1,034	918	852	819	-2.0%	-1.2%	-0.7%	-0.4%	-0.9%
Moperson County	1,175	825	735	623	593	546	533	-1.6%	-0.5%	-0.8%	-0.2%	-1.3%
Arthur County	1,045	803	680	606	513	462	444	-1.1%	-1.7%	-1.0%	-0.4%	-1.4%
<b>Nebraska Portion of Central Platte Basin</b>	<b>260,977</b>	<b>267,436</b>	<b>274,779</b>	<b>281,646</b>	<b>300,862</b>	<b>287,631</b>	<b>306,969</b>	<b>0.2%</b>	<b>0.7%</b>	<b>-0.4%</b>	<b>0.7%</b>	<b>0.3%</b>
<b>Platte River Basin Totals</b>	<b>1,007,626</b>	<b>1,217,188</b>	<b>1,697,966</b>	<b>1,963,303</b>	<b>2,643,169</b>	<b>2,789,629</b>	<b>3,630,906</b>	<b>2.1%</b>	<b>2.6%</b>	<b>0.9%</b>	<b>2.4%</b>	<b>2.1%</b>

Source: U.S. Bureau of the Census, most historical census publications were used in the library of the U.S. Census Bureau, Denver Regional Office, 6900 W. Jefferson Ave., Suite 100, Lakewood, Colorado 80235-2032. Phone: (303) 264-0202 or 1 (800) 852-6159. E-mail is: denver.regional.office@census.gov

## Platte River Basin Population Projections: States and Counties 2000 to 2020

Table SOC-2	Average Annual					
	2000	2005	2010	2015	2020	Percent Change 2000-2010 2000-2020
<b>State of Wyoming</b>	493,782	506,184	519,595	529,352	533,534	0.5% 0.4%
Laramie County	81,607	85,030	86,916	88,380	89,268	0.6% 0.4%
Natrona County	66,533	68,965	70,529	71,685	72,151	0.6% 0.4%
Freemont County	35,802	36,138	36,872	37,251	37,135	0.3% 0.2%
Albany County	32,014	32,051	32,209	32,005	31,401	0.1% -0.1%
Carbon County	15,639	15,047	14,671	14,345	13,965	-0.6% -0.6%
Goshen County	12,538	12,172	12,086	11,893	11,596	-0.4% -0.4%
Converse County	12,052	12,433	12,882	13,226	13,392	0.7% 0.5%
Platte County	8,807	8,642	8,804	8,848	8,760	-0.0% -0.0%
<b>Wyoming Portion of the North Platte Basin</b>	<b>264,992</b>	<b>270,478</b>	<b>274,969</b>	<b>277,633</b>	<b>277,668</b>	<b>0.4% 0.2%</b>
<b>State of Colorado</b>	4,301,261	4,706,754	5,149,140	5,640,005	6,137,456	1.8% 1.8%
Denver County	554,636	573,250	605,203	638,913	673,735	0.9% 1.0%
Jefferson County	527,056	535,285	567,494	601,989	636,470	0.7% 0.9%
Arapahoe County	487,967	530,406	564,180	595,385	624,448	1.5% 1.2%
Adams County	363,857	401,296	454,372	512,723	573,479	2.2% 2.3%
Boulder County	291,288	291,822	313,198	332,653	352,107	0.7% 1.0%
Larimer County	251,494	270,127	294,519	329,028	365,076	1.6% 1.9%
Weid County	180,936	220,125	255,376	299,352	349,937	3.5% 3.4%
Douglas County	175,766	236,733	286,990	339,816	377,580	5.0% 3.9%
Morgan County	27,171	29,141	32,432	36,075	39,916	1.8% 1.9%
Teller County	20,555	22,772	25,239	28,076	30,859	2.1% 2.1%
Logan County	20,504	22,304	24,172	26,565	28,927	1.7% 1.7%
Elbert County	19,872	23,723	28,214	34,588	42,425	3.6% 3.9%
Park County	14,523	17,376	25,232	37,066	50,839	5.7% 6.5%
Clear Creek County	9,322	9,782	10,604	11,658	12,736	1.3% 1.6%
Washington County	4,926	5,118	5,135	5,183	5,241	0.4% 0.3%
Gilpin County	4,757	4,927	5,354	5,846	6,389	1.2% 1.5%
Sedgwick County	2,747	2,777	2,862	2,975	3,075	0.4% 0.6%
Jackson County	1,577	1,623	1,708	1,768	1,852	0.8% 0.8%
<b>Colorado Portion of the South Platte Basin</b>	<b>2,958,954</b>	<b>3,198,587</b>	<b>3,502,284</b>	<b>3,839,659</b>	<b>4,175,091</b>	<b>1.7% 1.7%</b>
<b>State of Nebraska</b>	1,711,263	1,789,942	1,877,214	1,976,842	2,085,210	0.9% 1.0%
Hall County	53,534	56,473	59,658	63,500	68,029	1.1% 1.2%
Buffalo County	42,259	45,006	47,896	50,951	53,978	1.3% 1.2%
Scotts Bluff County	36,951	38,254	39,858	41,842	43,966	0.8% 0.9%
Lincoln County	34,632	36,070	37,736	39,728	41,807	0.9% 0.9%
Adams County	31,151	32,206	33,306	34,441	35,528	0.7% 0.7%
Dawson County	24,365	26,048	28,095	30,214	32,623	1.4% 1.5%
Custer County	11,793	11,402	11,048	10,734	10,435	-0.7% -0.6%
Cheyenne County	9,830	10,043	10,254	10,509	10,744	0.4% 0.4%
Phelps County	9,747	9,715	9,691	9,699	9,709	-0.1% -0.0%
Hamilton County	9,403	9,670	9,968	10,354	10,760	0.6% 0.7%
Keith County	8,875	9,056	9,230	9,374	9,505	0.4% 0.3%
Merrick County	8,204	8,246	8,314	8,435	8,561	0.1% 0.2%
Kearney County	6,882	7,010	7,149	7,323	7,477	0.4% 0.4%
Morrill County	5,440	5,499	5,582	5,674	5,751	0.3% 0.3%
Kimball County	4,089	4,061	4,043	4,027	4,017	-0.1% -0.1%
Garden County	2,292	2,209	2,138	2,075	2,006	-0.7% -0.7%
Gosper County	2,143	2,144	2,155	2,156	2,162	0.1% 0.0%
Deuel County	2,098	2,025	1,966	1,924	1,884	-0.6% -0.5%
Sioux County	1,475	1,424	1,364	1,294	1,215	-0.8% -1.0%
Banner County	819	796	773	753	737	-0.6% -0.5%
Mcpherson County	533	516	504	499	499	-0.6% -0.3%
Arthur County	444	428	414	397	385	-0.7% -0.7%
<b>Nebraska Portion of Central Platte Basin</b>	<b>306,959</b>	<b>318,301</b>	<b>331,142</b>	<b>345,903</b>	<b>361,778</b>	<b>0.4% 0.8%</b>
<b>Platte River Basin Totals</b>	<b>3,530,905</b>	<b>3,787,366</b>	<b>4,108,395</b>	<b>4,463,195</b>	<b>4,814,537</b>	<b>0.8% 1.6%</b>

This table updated from 2004 version

Year 2000 Census figures were not used for Colorado since the Colorado Demography Section used estimates that are close to Census figures instead.

Sources: Wyoming Department of Administration & Information, Economic Analysis Division. <http://eadiv.state.wy.us/pop/>  
Colorado Department of Local Affairs, Colorado Demography Section. <http://www.dola.state.co.us/demog/Population>  
The Nebraska Department of Economic Development. <http://info.nebraska.org/databook.php?cont=sb&title=Population>

## Year 2000 Median Ages: Basin, Sub-Basin, States, and Counties

Table SOC-3

Colorado Portion of the South Platte Basin			Nebraska Portion of the Central Platte Basin			Wyoming Portion of the North Platte Basin		
Population	Median Age		Population	Median Age		Population	Median Age	
Year 2000	Year 2000		Year 2000	Year 2000		Year 2000	Year 2000	Year 2000
Counties:			Counties:			Counties:		
Denver	554,636	33.1	Hall	53,534	35.6	Laramie	81,607	35.3
Jefferson	527,056	36.8	Buffalo	42,259	30	Natrona	66,533	36.4
Arapahoe	487,967	34.5	Scotts Bluff	36,951	38.4	Fremont	35,802	37.7
Adams	363,857	31.4	Lincoln	34,632	37.8	Albany	32,014	26.7
Boulder	291,288	33.4	Adams	31,151	36.5	Carbon	15,639	38.9
Larimer	251,494	33.2	Dawson	24,365	34.3	Goshen	12,538	40
Weld	180,936	30.9	Custer	11,793	41.3	Converse	12,052	37.5
Douglas	175,766	33.7	Cheyenne	9,830	38.7	Platte	8,807	41.2
Morgan	27,171	33.5	Phelps	9,747	39.4			
Teller	20,555	39.4	Hamilton	9,403	38.1	State of Wyoming	493,782	36.2
Logan	20,504	36.5	Keith	8,875	41.1			
Elbert	19,872	37.2	Merrick	8,204	39.2	Wyoming Portion of the		
Park	14,523	40	Kearney	6,882	38.7	North Platte Basin	264,992	37.6
Clear Creek	9,322	40.2	Morrill	5,440	39.5			
Washington	4,926	40.2	Kimpall	4,089	42.8			
Gilpin	4,757	38.3	Garden	2,292	45.6			
Sedgwick	2,747	43.2	Gosper	2,143	43.4			
Jackson	1,577	40.5	Deuel	2,098	43.5			
			Sioux	1,475	41.5			
State of Colorado	4,301,261	34.3	Banner	819	39.9			
			Mcpherson	533	40.6			
Colorado Portion of the South Platte Basin	2,958,954	36.7	Arthur	444	40.3			
			State of Nebraska	1,711,263	35.3			
			Nebraska Portion of Central Platte Basin	306,959	39.5			
Platte Basin Total	3,530,905	37.6						

Source: U.S. Census Bureau, Census 2000.

and the trend is generally consistent until the year 2020 as shown in table SOC-2.

Of the eight economic regions (figure SOC-2) in the Platte River Basin, the Denver Metro Area in Colorado is the largest population in the Platte River Basin at about 2.5 million in the year 2000 (the entire South Platte River Basin in Colorado has about 2.9 million people), and has grown at an average annual rate of about 2.8 percent each year since 1940. As shown in tables SOC-1 and SOC-2, the Central Platte Basin in Nebraska is the next largest population group in the Platte Basin with about 307,000 people, yet has grown slowly at an average annual rate of 3 tenths of one percent since 1940. Hall County (includes the City of Grand Island) and Buffalo County (includes the City of Kearney) have the largest populations and grew faster than the others at about 1 percent annually. The North Platte Basin in Wyoming has a slightly smaller population than the Central Platte at about 265,000 people, and has expanded at a rate of about 1.2 percent each year since 1940. Laramie County (City of Cheyenne) and Natrona County (City of Casper) have the largest populations and grew slightly faster than the other counties since 1940 at about 1.6 percent annually. The Platte Basin has added population at about 2.1 percent annually driven mainly by the Colorado portion.

According to Jenkins' observations (1993), Census data, and state population projections, of the counties in the Central Platte Habitat Area (figure SOC-2), the ones on the south side of the Platte River generally have lost population or have essentially remained the same between 1940 to the present. Counties on the north side of the Platte River, near I-80 and the railroad, have had more population increases, and the trend is expected to continue. The difference is primarily an indication of the fact that the northern counties are more urban and have increased economic diversification and the southern counties have relied primarily on agriculture.

### **Median Age (Demographics)**

Median age is a generally accepted indicator of a population's age in terms of whether there are more young people or older people overall. For each of the three states' basin areas (figure SOC-1), the general pattern, as shown in table SOC-3, is that the counties with lower populations have the highest median age. Compared to the State of Nebraska, population in the Central Platte Basin in Nebraska, and particularly counties on the south side of the Platte River in the Central Platte Habitat Area, are older than the state.

### **Human Health (Affected Environment)**

Some individuals expressed concern about how the Program alternatives might impact the incidence of human diseases or nuisance problems borne by either mosquitos or waterfowl. This section assesses the current incidence of those diseases in the study area, including:

1. The possibility of greater disease transmission through increased mosquito populations or risk

of transmission of waterfowl diseases to humans,

2. The potential for increases in urban or nuisance resident goose problems, and
3. The risk of more water contamination from an increase in geese and waterfowl droppings.

The primary objective of the Platte River Cooperative Agreement Land Habitat Plan and the corresponding habitat improvements is to increase the number of acres along the Central Platte River where the river channel is wide, shallow and unvegetated, and there are wet meadows adjacent to the river. Depending on the alternative, the program could increase wet meadows by roughly 4,000 to 8,000 acres (4,000 for the preferred alternative). In-channel clearing and widening work primarily focuses on channel habitat for whooping crane roosting and tern and plover nesting habitat.

### **Disease Transmission: Mosquito-borne Disease**

Concerns about possible increases in mosquito-borne human disease seem to focus on several related forms of encephalitis, one of which was found in Colorado, and all three have been reported from Nebraska—WNV, western equine encephalitis, and St. Louis encephalitis. Encephalitis is a disease that attacks the central nervous system and causes swelling of the brain. These viruses occur in the blood of certain kinds of animals, including birds and other domesticated animals. Viruses are transmitted through the bite of an insect that has previously bitten an infected animal. Encephalitis is most frequently carried by the *Culex* family of mosquito species.

#### *Western Equine Encephalitis (WEE)*

Western equine encephalitis most often occurs in horses and birds. In the 1930s, there were major outbreaks in horses with thousands of cases and many deaths in the western US. WEE has a high death rate in horses. In humans, WEE normally exhibits flu-like symptoms, and has been reported to be fatal in 1 percent to 5 percent of the cases. The largest human epidemic of WEE occurred in the western US in 1941 (3000 cases). Human epidemics have also occurred in 1952 in California, and in 1975 in Minnesota, Nebraska, Colorado, and South and North Dakota. In Nebraska, from 1964 to 1997, there were 26 reported cases of WEE in humans (CDC 2001).

The principal vector for WEE is mosquitos, primarily *Culex tarsalis* and *Aedes melanimon* species. *Culex* species are in the “Artificial Container and Tree-Hole Group” and breed primarily in tin cans, buckets, discarded tires, and other artificial containers that hold stagnant water. *Culex* also breeds in irrigation canals, storm drains, catch basins, and septic seepage and other foul water sources above or below ground level. This species is generally considered to be a night-biter, seeking warm-blooded animals after dark (Floore 2002.).

Habitats for the *Aedes* mosquito species vary widely, but larval habitats include temporary pools formed by rains, melting snow, or overflows. Many species of *Aedes* occur in agricultural areas in irrigation canals and standing water associated with irrigation (CDC 2002).

### *St. Louis Encephalitis (SLE)*

The SLE was first recognized during an epidemic in the St. Louis, Missouri area in 1932. Since that time, human cases of SLE have been reported from all of the contiguous states, with the exception of the New England area and South Carolina. The largest number of human cases of SLE for a single year occurred in 1975 when 1,815 cases were reported from 30 states. Human cases typically occur in late summer and fall. In Nebraska, from 1964-1997, there were 14 human cases of SLE reported (CDC 2001).

The SLE is spread primarily through members of the *Culex* species (see WEE above). Data from 1994 and 1995 Nebraska Department of Health and Human Services indicate that most occurrences of WEE and SLE encephalitis were typically associated with mosquitoes breeding in irrigation water on agricultural lands (Kramer, 1999).

### *West Nile Virus (WNV)*

The WNV is believed to have entered the U.S. in the early summer of 1999, perhaps even earlier. Previously, it was found only in Africa, West Asia and the Middle East. In 2002, WNV spread rapidly from the east coast to western states, including Nebraska. More than 100 species of birds have been shown to be capable of being infected with WNV, as well as a number of mammals, including humans, horses, cats, dogs, chipmunks, and raccoons (CDC 2001).

The WNV has been reported in at least 25 types of mosquito and other biting insects, but is believed to be transmitted primarily by the *Culex* species (*Culex pipiens*, *Culex tarsalis*). These mosquitos are common pest mosquitos in urban and suburban settings in the study area. Mosquito breeding takes place when air and water temperatures are warm in the summer. Breeding, egg laying, and larval hatching are temperature-dependent. Cases of WNV generally begin to appear in mid- to late-August and continue through October (CDC, 2001). Table SOC-4 shows the number of confirmed WNV cases by year and state, which have declined significantly since peaking in 2003.

<b>Table SOC-4. Numbers of WNV cases by Years</b>			
<b>Year</b>	<b>Wyoming</b>	<b>Nebraska</b>	<b>Colorado</b>
2002	2 cases 0 deaths	115 cases 5 deaths	14 cases 0 deaths
2003	362 cases 9 deaths	2,366 cases 0 deaths	2,947 cases 63 deaths
2004	10 cases 0 deaths	54 cases 0 deaths	291 cases 4 deaths
2005	none	15 cases 0 deaths	21 cases 0 deaths

Sources: Center for Disease Control (CDC) and State of Wyoming, Nebraska, and Colorado CDC websites

### **Disease Transmission: Waterfowl-borne Disease**

Concerns about the potential for increased public health risks from waterfowl-borne disease seem to focus on avian botulism and avian cholera. These diseases do not often occur in humans. However, in the Central Platte area, the public is aware of major outbreaks of these diseases among waterfowl, primarily in the Rainwater Basin in Central Nebraska.

#### *Avian Botulism*

This disease rarely occurs in humans. Avian botulism is a paralytic disease of waterfowl caused by ingestion of a toxin produced by the bacteria, *Clostridium botulinum*. Outbreaks occur in waterfowl from coast to coast in the United States and Canada, generally from July through September. Thousands of birds may die during a single outbreak. Summer outbreaks typically involve dabbling ducks and shorebirds. Although both migrating and resident Canada geese are susceptible to the toxin, migrating geese are usually not present where botulism occurs during the summer (Jensen and Williams 1964).

Avian botulism was reported in waterfowl in Nebraska before 1932 (Kalmbach and Gunderson 1934), and Nebraska historically ranked seventh among the western states and Canadian provinces in waterfowl losses to this disease (Rosen 1971a). In 1998, over 1,000 waterfowl died of avian botulism at Lake McConaughy (USGS, 2001).

People, dogs, and cats are generally thought to be resistant to the *Clostridium* strain of botulism, but a few cases have been reported in people and dogs. Botulism in people is usually the result of



eating improperly home-canned foods, which contain botulism strains A or B; as opposed to strains C and E which occur in avian species. There are no documented cases of transmissions of avian botulism from birds to humans (USGS, 2001).

### *Avian Cholera*

Concern has been expressed regarding the potential for increased human health risk from Avian cholera (*Pasteurella multocida*). Avian cholera, an infectious disease caused by the bacterium *Pasteurella multocida*, has been reported in a wide variety of domestic and wild birds (Rosen 1971b; Heddleston 1972). Outbreaks in wild birds have most frequently been reported in waterfowl (Rosen 1971b), but avian cholera also has been reported in the bald eagle (Rosen 1972) and other raptors (Rosen and Morse 1959; Hunter 1967; Rosen 1971b). In the United States there are four major focal points for avian cholera in waterfowl: the Central Valley of California, the Tulare Lake and Klamath Basins of northern California and southern Oregon, the Texas Panhandle, and Nebraska's Rainwater Basin. (USFWS, 1987) Avian cholera outbreaks in birds are exacerbated by dense concentrations of migratory water birds resulting from limitations in habitat availability (USGS 1999).

Ten sandhill cranes out of a wintering population of 5,600 died in a 1970-71 avian cholera outbreak in California (Rosen 1972). Individual sandhill cranes have died of avian cholera in Nebraska at the National Audubon Society Lillian Annette Rowe Bird Sanctuary on the Platte River in the spring of 1975, and on a Rainwater Basin wetland in the spring of 1977. Avian cholera has not been diagnosed in whooping cranes, but the wide host range of *P. multocida* in birds indicates that whooping cranes must be presumed to be susceptible to the disease (Zinkl et al. 1977b).

Losses to avian cholera in the Rainwater Basin Area were low in the spring of 1978, but 3,100 birds, primarily coots, died of avian cholera on Lake McConaughy and at the Swanson Reservoir in Hitchcock County (Hurt 1978). Losses were low again in 1979, but in the spring of 1980, avian cholera occurred in the Rainwater Basin Area, with 30,677 dead birds collected. The principal species of waterfowl lost during the avian cholera outbreak in 1980 and numbers found are as follows: mallards, 9,351; pintails, 8,045; white-fronted geese, 6,574; Canada geese, 2,787; American wigeon, 1,121; and redhead, 1,114. In March 1998, an estimated 100,000 snow geese died from avian cholera in the Rainwater Basin Area (USGS, 1999).

Avian cholera is not considered a high risk disease for humans because of differences in susceptibility of humans and birds to different strains of *Pasteurella multocida*, the bacterium which causes avian cholera (USGS 1999). While infections of *P. multocida* can occur in humans, most infections result from an animal bite or scratch, primarily from dogs and cats. Transmission to dogs and cats may be a result of eating infected birds.(USFWS, 1989).

## Urban or Nuisance Resident Goose Problems

Concerns were expressed about the potential for Program land habitat improvements to lead to increase local populations of resident Canada geese, and attendant nuisance issues and health concerns. The issue includes potential effects of waterfowl fecal contamination and increased nitrogen levels in soil and water and E-coli, coliform bacteria, streptococcus bacteria, potassium, and similar forms of contamination (also please see memo, attachment B).

### *Continental U.S.*

“Resident” Canada geese do not migrate to Arctic breeding grounds, preferring instead to remain year-round in continental U.S. urban and suburban neighborhoods. Why migration patterns have been abandoned is not yet clear. Whatever initially prompted Canada geese to remain in one location year-round, the lush green lawns surrounding park ponds, residential subdivisions, corporate centers, and golf courses encouraged them to stay. Unlike species of waterfowl that eat aquatic vegetation or aquatic animals, Canada geese prefer to graze on land. Fast growing grass that is cut frequently stays succulent and makes an ideal forage for them. But because geese are flightless for long periods in summer and must raise flightless goslings for even longer periods, they are dependent on adjacent ponds or lakes that provide a safe refuge from predators. Several urban areas in the U.S. now have large populations of resident geese and have undertaken population control and relocation programs (Grandy and Hadidian, 2002).

### *Central Platte Valley*

Generally, only four species of waterfowl, the mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), Canada goose (*Branta canadensis*), and wood duck (*Aix sponsa*), consistently nest in Nebraska. Except for the wood duck, nesting habitat for these waterfowl includes lowland grasslands adjacent to shallow water or marshes. Wood ducks are cavity nesters in large trees of lowland forests.

Although some waterfowl nesting does occur in the central Platte River valley, the vast majority occurs in areas with more favorable nesting habitat such as the Rainwater Basins located in south-central Nebraska, and Sandhills meadows, ponds, and lakes. These areas are typically nutrient-rich waters that favor the production of abundant invertebrates needed by developing broods and nesting hens. Additionally, such areas have still waters, thereby reducing the energy demand placed on developing broods and nesting hens when foraging.

The Platte River Basin is used briefly, usually between mid-February and mid-March, by large numbers of migratory geese and other waterfowl on their way to Northern U.S. and Canada where they breed. A peak of about 750,000 waterfowl stopover in the Central Platte valley mid-February on their way to breeding grounds in the northern U.S. Previous research indicated that a complete turnover of migrant Canada geese can occur in 1 week; therefore, far fewer than the

750,000 stopover total inhabit the Central Platte at once. The Service issues permits for the take of migratory birds and provides states with the means to lengthen hunting seasons whenever there may be a threat to human health and safety, or if property damage is at issue. The Service has recently completed an EIS to address human conflicts with resident Canada geese which may allow additional means of take. The program will not create habitat in the Central Platte Valley that would produce increases in either the resident or migratory population of waterfowl.

To distinguish resident Canada geese from migratory geese, the Service identifies "resident Canada geese" as those that nest within the lower 48 States in the months of March, April, May, or June, and that reside within the lower 48 States in the months of May, June, July, and August. Canada geese normally return to the same breeding areas and no evidence presently exists documenting inter-breeding between Canada geese nesting within the lower 48 States and those subspecies nesting in northern Canada and Alaska (USFWS, 2002)

Both migrant and resident nest within 50 meters of a water body, most often on raised areas that afford good visibility from the nest site (Bellrose, 1980). Common nest sites include islands, hummocks, pond banks, and muskrat houses, but a variety of sites are used including cliffs and trees. Resident geese readily use man-made nesting structures (e.g. elevated tubs and platforms). Canada geese often use the same nest site year after year (Brakhage, 1965).

Resident geese remain in areas associated with human activity and longer growing seasons all year. Their residency there reflects a consistently available source of food (actively growing crops, pasture, and lawn vegetation, as well as waste grains and natural wetland vegetation). The human practice of mowing grasses (e.g., lawns, parks, cemeteries, golf courses) stimulates the tender new grass growth preferred by geese. Migrant geese undergo longer periods of restricted food availability and consume a diet less subsidized by agricultural and horticultural practices than do resident geese.

Some resident Canada geese nest on the Platte River, but the majority of nesting occurs at municipal areas (e.g., golf courses, parks, sports fields, municipal lakes) where the lack of predation and a readily available food source have resulted in a substantial increase in suitable nesting and foraging habitat for Canada geese.

The Service has created a special Canada goose permit that gives state wildlife agencies the opportunity to design their own management programs and to take actions to control specific resident goose populations (Federal Register, 1999). The State of Nebraska has not identified a problem in the central Platte Valley with resident Canada geese nor has the state requested a special Canada goose permit.

## *Water Contamination*

Public concerns expressed about resident geese generally focused on fecal contamination of surface waters and increased risk of *E. coli* and similar pathogen contamination. Where resident goose populations are sizeable (greater than 100 birds), the continuous influx of nutrients contained in Canada goose feces can contribute to the eutrophication of small water bodies, especially those that have restricted circulation and flow-through, which in turn may stimulate algae and weed growth. Bacteria and particulate matter contained in goose feces, when present in sufficient quantity, may lead to the need for special treatment of drinking water drawn from surface ponds or reservoirs where geese congregate. Additionally, beaches and other public areas littered with accumulated goose feces have been closed due to the contamination or the threat of personal injury resulting from falls as people lose footing on the slippery material (French and Parkhurst, 2001). As of early 2000, The State of Nebraska had not requested special permits from the Service to haze geese, destroy nesting sites, and similar actions to reduce urban resident goose populations.

EPA guidelines concerning waterfowl fecal contamination are for commercial duck operations, and apply specifically to agricultural operations where ducks are sedentary and concentrated in small areas, usually for consumptive purposes. It would be inappropriate to compare regulations from a concentrated agricultural operation to free-ranging wild birds that settle across the landscape, effectively dissipating the concentration of feces. Concerning nitrogen, studies have shown that fecal input from geese was of little importance to nutrient dynamics of soils; in some instances, fecal matter appear to have no influence, whereas in others it seemed to stimulate plant growth. Also, research generally has found that droppings from free-ranging migratory birds do not greatly affect nutrient levels in water. Streams and other moving water such as the Platte River are less likely to have increased nutrient loads than isolated wetlands because of constant water flow. Nutrient levels are more likely to increase as birds become highly concentrated on small water bodies for extended periods of time, such as occurs in small urban ponds with abundant resident geese. In contrast, most birds using burrow pits along the Platte River are migratory and leave the area by mid-March (Attachment B).

### *Escherichia coli (E. coli)*

*E. coli* (O157:H7) was first recognized as a cause of illness in 1982. Although most strains of *E. coli* are harmless and live in the intestines of healthy humans and animals, *E. coli* O157:H7 produces a powerful toxin and can cause severe illness. Outbreaks of *E. coli* O157:H7 in humans are most often associated with undercooked, contaminated ground beef, and to a lesser extent with unpasteurized milk and fruit juice. Waterfowl are not typically vectors for the strain of *E. coli* identified in human disease outbreaks throughout the United States (CDC 2003).

## **Flooding (Affected Environment)**

The public expressed concerns about both out-of-riverbank flooding, and shallow, or rising groundwater levels. During wet years, parts of the Central Platte River Basin in Nebraska from the town of North Platte east to Grand Island and beyond experience problems with high

groundwater levels and flooding, primarily waterlogged farm fields and flooded basements. Many reports of existing flooding problems were received at public meetings, and the concern was that enhancement of river flows may intensify the problem.

Out-of-bank flooding is caused by three primary factors:

- ▶ Local snow melt and ice jams that cause the river to rise between January and March,
- ▶ Heavy snow melt from the upstream Rocky Mountains in spring and early summer that causes the river to rise downstream in the Central Platte River, and, recently,
- ▶ Recently, diminished channel or river capacity that increasingly causes out-of-bank river flows from flows that previously would have been contained in the river.

Shallow or rising ground water levels are primarily a result of large amounts of precipitation in recent decades, local changes in ground water pumping or importation of surface waters, or, near the river, changes in river stage (Sanders, 2002).

### **Flooding Background, History, and Trends**

The magnitude and timing of floods in the Central Platte have been modified since the late 1800s as dams and reservoirs were constructed upstream for various beneficial purposes. Average annual flood peaks have declined with time as reservoirs were constructed. The United States Geological Survey stream gage at Overton, Nebraska shows the historical changes. In the 1920s (with a few years missing from the data base), every annual peak discharge was more than 9,000 cubic feet per second. In the 10 years ending in 1994, not one annual peak discharge was more than 9,000 cubic feet per second.<sup>2</sup> While large spring floods still occasionally occur in the Central Platte, as in the years 1983 and 1984, the frequency of significant floods is now significantly reduced.

A comprehensive search was made in the Kearney newspaper for articles describing previous flood events on the Platte River.<sup>3</sup> Geological Survey (USGS) gaging records for Overton and Kearney were used to establish the 12 largest annual flood peaks in the Central Platte area. For each of the 12 largest flood peaks, a search was made starting a few days before the flood peak and ending a few days after the flood peak. The purpose was to obtain an understanding of the flooding (flood damage) that resulting from the largest of flows that have been recorded on the Platte River. The following sections describe flooding in the Kearney area, and research

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<sup>2</sup> For the North Platte River near the town of North Platte, in September 2002, the National Weather Service (NWS) revised the flood stage down from 6 (about 3,804 cfs) to 5.7 feet (approximately 1,980 cfs). The reason given by the NWS was the trend during the past eight years of a significant narrowing and filling of the river channel in the North Platte area (NOAA, NWS September 9, 2002 memo).

<sup>3</sup> The Kearney paper has been published since 1888 and is published as a daily paper. Early in this century it was the "The Kearney Daily Hub," then the "Kearney Daily Hub" and it is now called the "Kearney Hub."

conducted compiled and analyzed floods by date in descending order of peak flood discharge.

## **Surface Flooding**

### *Winter and Early Spring Snow Melt and Ice Jams*

Between January and March, local snow melt, rain, and ice jams often cause the river to rise in the Kearney area (which may result in out-of-bank flooding). In fact, a few of the highest recorded flood stages in the vicinity of Kearney have resulted from localized ice jams, usually occurring from December through March. For example, on February 24, 1994 a stage of 8.62 was recorded at the Kearney gage. This stage was about 1.2 feet higher than the peak stage reached in 1983. The next instance was in mid January 1985, when a peak stage of 7.4 feet was recorded at the Kearney gage. On January 16th the Kearney Daily Hub included a photograph with a caption stating that:

"Water continues to seep into lowland areas. The river reportedly is frozen from this, the Kearney bridge, to the Odessa bridge. As yet, the rising water in that area does not pose any serious threats."

Another high stage occurred on February 22, 1993 when a peak stage of 6.62 feet was recorded. The Kearney Daily Hub ran no articles on or about this date describing flooding.

### *Spring and Early Summer Heavy Snow Melt*

High mountain snow melt runoff is the primary cause of natural, out-of-bank river flooding in spring and early summer. Historically, this type of flooding is characterized by large floods that occur at about the same time and magnitude each year. Flooding occurs over a period of days or weeks, and the largest recorded flood discharges were between mid-May and the end of June. In fact, most of the 12 largest recorded flood stages occurred during the period from mid-May to the end of June. From news article reports, it appeared that this type of flooding resulted in the most pronounced inconvenience and damage.

### *Summer Heavy Local Precipitation*

Heavy thunderstorms often cause localized flooding in summer months, and do not necessarily cause the river to rise. As an example, the National Weather Service's publication *Storm Data* provided the following information regarding a flash flood that occurred on June 24, 1989:

"A band of average 4.5 to 6 inch rains fell from around Palisade in Hayes County northeast to just west of Grand Island in Hall County. Pockets of 9 inch rainfalls were reported at Kearney and just west of Elwood. Throughout the band, roads were flooded, and in some areas roads, bridges and culverts were washed out. Severe erosion occurred on farmland and crops were heavily damaged. There were reports of fences and some

small dams washed out. Small creeks were pushed out of banks, although the Platte River stage was not markedly higher. In Kearney where an unofficial 9.08 inches of rain was reported, homes and businesses were flooded, sewer manhole covers were blown off and vehicles were reported floating in city streets. One hundred and fifty basements were listed as flooded with a number having collapsed basement walls."

Beginning in the 1930s, precipitation dropped below normal and did not return to above normal until the early 1980s, and has been elevated since then. High precipitation has also produced generally higher river flows in the last seven out of ten years which had annual flows higher than the 1935-99 median flows. Between 1980 and 1999, precipitation averaged 42 inches above normal. In 1999, for example, rainfall totals ran almost 7 inches above normal. Irrigation was delayed well past the normal start of the irrigation season and irrigation managers reported that they had "a high water table problem all over." The only pumps running were those draining basements and flooded fields (*Kearney Hub*, "June rain surplus puts irrigation pumps on hold," July 1, 1999). In terms of precipitation effects on groundwater levels, water table elevations rise in years with above-normal rainfall, and fall in years with below-normal rainfall (Sanders, 2001).

In terms of persistent, localized flooding problems, diminished river channel capacity for irrigation deliveries from Lake McConaughy during irrigation season from May to September has caused out-of-bank river flows in and around the town of North Platte in recent years. River flows are limited to the release capacity of about 5,000 cfs at Lake McConaughy, which would not cause flooding if the channel capacity at North Platte had not become increasingly restricted.

### **Elevated Ground Water**

In the Central Platte area, groundwater is fairly shallow, often less than 5 feet below the surface. High groundwater tables and standing water in fields and basements farther than 1/4 mile from the river are due primarily to high rainfall and is usually independent of river stage, which can raise the level of the groundwater only fairly close to the river.

High groundwater was particularly problematic in the Central Platte between 1980 and 1999, when precipitation was a total of 42 inches above average. In 1999, for example, rainfall totals ran almost 7 inches above normal. Irrigation was delayed well past the normal start of the irrigation season and irrigation managers reported that they had "a high water table problem all over," (*Kearney Hub*, July 1, 1999). The only pumps running were those draining basements and flooded fields (*Kearney Hub*, "June Rain Surplus Puts Irrigation Pumps on Hold," July 1, 1999). In the years since 1999 when rainfall has been average or below-average, elevated groundwater problems have been minimal.

In general, water table elevations rise in years with above normal rainfall, and fall in years with below normal rainfall. Beginning in the 1930s, precipitation dropped below normal and did not return to above normal until the early 1980s, and has been elevated since then. High precipitation has also produced generally higher river flows in the last few years, as 7 out of the last 10 years have seen annual flows higher than the 1935-99 median flows.

Acreage irrigated from groundwater in the Central Platte Natural Resource District has increased each year since 1950 at an average of 1 percent a year for the last 10 years in most areas in the Central Platte Valley. Above-average rains and conservation measures have countered the groundwater overdraft conditions that lowered the water table during the 1960s and 1970s. In the 1990s, the water table in and around Grand Island rebounded from earlier irrigation pumping depletions, likely as a result of urbanization, reduced groundwater pumping, and several years of above-normal precipitation (Sanders, 2002). However, the drought of 2002 and 2003 drew down groundwater levels again, in some places to critical levels.

Much of Kearney, Phelps, and Gosper Counties is in an area of accretion where a groundwater mound has developed under lands irrigated by water supplied by the Central Nebraska Public Power and Irrigation District. Groundwater supplies under large parts of Dawson, Buffalo, Hall, and Adams Counties were depleted by 10 to 20 feet during the 1950 to 1970 decades. A large part of Adams County and a 40-thousand-acre area near the middle of Buffalo County have not recovered, although readings since 1990 generally show an upward trend. Most of Hall, Dawson, and Buffalo Counties began recovery in about 1980 and have reached or exceeded pre-development levels. The primary flood plain generally has ground water levels that are from 1 to 3 feet above the water level in the river, and the flood plain varies in width from a few feet to as much as 2 miles on either side of the river.

## **Land Use (Affected Environment)**

During the first increment (10 - 13 years), the Program will protect, maintain, and, where appropriate, restore at least 10,000 acres of habitat in the Central Platte River area between Lexington and Chapman, Nebraska, also known as the Habitat Protection Area, or Central Platte Habitat Area. Except for two parcels (Cottonwood Ranch and Wyoming Property) that would comprise 30 to 40 percent of the approximately 7,000 to 10,000 acres, the exact locations of land to be acquired are not known.

## **Overall Current Habitat Land Area Size and Use**

The Habitat Area in Nebraska covers approximately 678 square miles and covers nine primarily agrarian counties: Adams, Buffalo, Dawson, Gosper, Hall, Hamilton, Kearney, Merrick, and Phelps. Of the total habitat area, approximately 1,708 acres, (0.4 percent) in 1998 was occupied by urban development (commercial, barren surface, power line, and sand/gravel). Rural farmsteads and housing tracts with more than one dwelling were approximately 8,601 acres, (2 percent) of the Central Platte Habitat Area. Generally, habitats not in crop production include the river valley riparian areas and major tributary drainages (some native grasses are used for hay production), and sand hills. The total area covered by agricultural land was approximately 264,652 acres, or 61 percent of the Central Platte Habitat Area (Friesen, et.al., 2000).

Public use of, and access to the Habitat Area lands, constitute some of the highest in the state of Nebraska, totaling approximately 3,500 annual use days of hunting and trapping, 12,800 use days of fishing, and 11,300 use days of non-consumptive use such as hiking and wildlife viewing. In



fact, funds used in the management of these areas depend solely on the sale of hunting and fishing equipment. As a result, management focuses on multiple use with hunting/fishing-based recreation receiving primary consideration, followed by other wildlife-based recreation such as wildlife viewing. Recent resource management efforts have included increasing available habitat for least tern, piping plover, and whooping cranes by increasing open channel habitat through tree removal on river islands and banks. The Nebraska Game and Parks Commission (NGPC) provides technical and financial assistance to private landowners willing to restore habitat along the Platte River (NGPC, February 16, 2002).

The amount of bankline owned or protected is a useful general indicator of suitable habitat. Currently, of the 180 miles of riverbank of the primary channel in the 90-mile-long study area between Lexington and Chapman, about 33.5 miles (18.6 percent) are presently managed for controlled access for crane habitat conservation. This includes about 9 miles of channel having both banks controlled through either fee-title or conservation easement, and about 16 miles with a single managed bank. About 40 miles of riverbank (12 percent) of the Platte River system (North Platte River and Platte River) from Hershey to Chapman are owned by organizations that manage for crane habitat (FEIS, chapter 4, "Whooping Crane" Section).

The Partners for Wildlife Program is one example of the many existing and developing habitat improvement land uses and programs in the Habitat Area. Through the Partners Program, the Service provides technical and financial assistance to help farmers and ranchers make their land a better place for fish and wildlife while sustaining profitable farming and ranching. The priorities for the Nebraska Partners Program are developed in coordination with land owners, the NGPC, the Nature Conservancy, Rainwater Basin Joint Venture, Sandhills Task Force, and others. A total of 22 projects were completed in fiscal year 2002. The projects contributed to the quality and quantity of habitat available to several endangered and threatened species. Approximately 1.5 miles of degraded riverine wetland habitat were restored as a result of the projects. As a specific example, at a river reach near Gibbon, Nebraska, undesirable woody vegetation was removed and silt and invasive vegetation were excavated using bulldozers (Service, retrieved July 30, 2003).

### **Cottonwood Ranch Property**

The two land parcels presently known to be included as part of the 10,000-acre Program objective would be Cottonwood Ranch, 2,611 acres, and the Wyoming property, 438 acres. Cottonwood Ranch is located on both sides of the river between the J-2 Return Channel near Overton and Elm Creek, Nebraska, and is owned and managed by NPPD. Present Cottonwood Ranch land use consists primarily of farming and cattle grazing leases. As of 1999, there were about 240 acres of cultivated row crops and roughly 50 acres of alfalfa. Grazing involves using an 80-acre pasture as a calving area from approximately March to May for 150 cows that can access most of the remaining non-agricultural areas from May until about October when they are removed (NPPD, 1999).

## **Wyoming Property**

The Wyoming Property, located about 3.5 miles directly southeast of Kearney, Nebraska, is currently owned by the State of Wyoming, managed by the Service, and is used primarily for grazing and haying (Service, personal communication, Dave Carlson, 2003).

## **Sand and Gravel Mining Operations**

The most common industrial use of the central Platte River channel is for extraction of sand and gravel, primarily to supply material for road construction. The concern has been expressed that Program efforts to restore and protect habitat in this area could compete with this industry by limiting lands available for new operations. In the Habitat Area, most of the gravel mines are along the main channel, although a significant number are on old channels to the north and south.

Since 1982, the number of sand and gravel establishments and employment in Nebraska have decreased dramatically. Establishments have fallen about 50 percent since that time and employment dropped about 65 percent, according to the U.S. Department of Commerce, Bureau of the Census. The sand and gravel industry produced an average of 14.7 million short tons (2,000 pounds) in the 1970s, 11 million short tons in the 1980s and 12.8 million short tons in the 1990s. This may be attributed to a substantial increase in highway construction in the 1970s followed by the recession in the 1980s when highway construction fell. Construction resumed somewhat in the 1990s, but not quite at the original pace.

Based on the EIS GIS land use database, in 1982, there were approximately 2,000 acres in the central Platte River habitat area used by sand and gravel operations (Friesen, et al, 2000). In 1998, there were approximately 1,620 acres. This 19 percent decrease in land acres can be correlated with the decrease in demand and production in those same years. In 1998, the Platte River Basin accounted for somewhat less than 10 percent of the total establishments in Nebraska. Gravel mines in the eastern portions of the State accounted for roughly 28 percent of total sand and gravel operations in Nebraska.

## **Income and Employment (Affected Environment)**

Median household income (and poverty) Bureau of the Census data are displayed in the FEIS, chapter 4, "Environmental Justice" section (and in the "Environmental Justice Appendix to the FEIS") for the Colorado, Nebraska, and Wyoming portions of the Basin study area, and a summary is included here. The Platte River Basin has a wide range of median incomes and poverty levels, and since median household income levels generally trend with poverty levels (although there are some exceptions), they are both discussed.

The entire Platte River Basin had about 9 percent of residents in poverty and an overall median income of roughly \$38,607 compared to the nation's 12.4 percent and \$41,994. Nebraska and Wyoming each had around \$34,000 (1999 dollars) as median household income, and Colorado was at about \$47,500. In the Wyoming portion of the Basin, the State had the highest percentage

of people at or below the poverty level. Of the Wyoming counties, the five with the highest poverty levels, in order, were: Albany, Fremont, Goshen, Carbon, and Natrona counties. The top five poverty-level counties in the Colorado portion of the Basin were: Denver, Jackson, Weld, Morgan, and Logan counties. Nebraska's top five in the Basin included: McPherson, Sioux, Garden, Morrill, and Scotts Bluff. In Nebraska, the top eight poverty-percentage counties are all located in the Scotts Bluff and Lake McConaughy regional economic areas, shown in figure SOC-2. Additional information about macro-level income and employment conditions and impacts can be found in the "Regional Economics" section of the FEIS and in the economics appendix to the FEIS.

## **ENVIRONMENTAL IMPACTS/CONSEQUENCES**

### **Summary of Impacts**

During the scoping and planning processes, the public and interest groups raised social, socioeconomic, or third party impact concerns that related mainly to changes in population and demographics, agriculture, income, human health, flooding, land use, and employment. Agriculture, income, and employment are generally considered socioeconomic indicators and for this reason are either not analyzed here, or are analyzed briefly and are dealt with in more depth in the FEIS chapters 4 and 5, "Regional Economics" sections, and in the economic appendix to the FEIS.

Compared to the No Action Alternative, the action alternatives would not significantly affect population and demographics, health risk factors, flooding, land use, or income and employment. Consequently, the impact analysis is brief and focused on the Central Platte Basin Habitat Area in Nebraska--the area where the largest proportion of program element impacts would occur.

Social impacts are discussed broadly since the specific locations and impacts of each component of the alternatives, such as water leasing, are unknown at this time. Additional site-specific NEPA compliance will be conducted for specific program land and water actions when they are identified to assess local effects, including social effects.

### **Population and Demographics (Environmental Impacts)**

In terms of population projections from year 2000 to the year 2020, table SOC-5 (and SOC-2, attached) shows that there is estimated to have been about 3.5 million people living in the Platte River Basin in the year 2000 which is expected to grow to about 4.8 million by the year 2020. The Program would not influence population change in the Basin, and is expected to have negligible effects on new or additional water supply uses. For a more detailed discussion about the Program and future water supplies and demands, see "Water Uses" section in chapter 4 of the FEIS.

<b>Table SOC-5  Population Projections</b>	<b>Years</b>					<b>Annual Average Percent Change 2000 - 2020</b>
	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	
Wyoming Portion of the North Platte Basin	264,992	270,478	274,969	277,633	277,668	0.2
Colorado Portion of the South Platte Basin	2,958,954	3,198,587	3,502,284	3,839,659	4,175,091	1.7
Nebraska Portion of the Central Platte Basin	306,959	318,301	331,142	345,903	361,778	0.8
Platte River Basin Total	3,530,905	3,787,366	4,108,395	4,463,195	4,814,537	1.6

Sources: U.S. Bureau of the Census, Wyoming Department of Administration & Information, Economic Analysis Division, Colorado Department of Local Affairs, Colorado Demography Section, and The Nebraska Department of Economic Development

Although about 1.3 million more people are expected to be in the Basin by 2020; that growth rate is generally about the same or slower for the North and South Platte Basins than in the past, and slightly higher (a difference of five tenths of one percent) for the Central Platte Basin on an average annual basis. The South Platte Basin is expected to grow about half the rate (1.7 percent) that it did between 1940 and 2000, the Central Platte Basin will grow slightly faster than in the past 60 year period at 0.8 percent, and the North Platte Basin may slow to almost no growth at 2 tenths of one percent. The slower projected growth of the Denver Metropolitan Area is the primary reason for a slower Basin-wide forecast of 1.6 percent annually. Despite slower growth expected in the South Platte Basin and North Platte Basin, the top six highest population counties in the Central Platte Basin--Hall, Buffalo, Scotts Bluff, Lincoln, Adams, and Dawson--are expected to grow slightly faster than they did in the past 60 years (roughly half percent), at approximately 1 percent annually between the year 2000 and 2020.

## **Human Health (Environmental Impacts)**

Based on the analysis of land use changes, the action alternatives are not likely to create new habitat that would promote increases in mosquito populations that could, in turn, carry human disease or create habitat that would encourage increases in resident goose and waterfowl (e.g. geese and ducks) populations. Thus, no increases are expected in health risks from mosquito-

borne disease, waterfowl diseases, or waterfowl contamination of surface waters.

### **Disease Transmission: Mosquito populations**

Concerns about possible increases in mosquito-borne disease focused on several related forms of encephalitis, three forms of which have been reported from Nebraska: Western equine encephalitis, St. Louis encephalitis, and West Nile Virus.

Program alternatives would restore wet meadows (also referred to as lowland grasslands) for the target species in the Central Platte Habitat Area. Increases in wet meadows in the Program area are estimated to be 7 to 19 percent over the amount now found on the Central Platte Habitat Area. Wet meadows include areas of heavy vegetation with soil that is damp most of the year due to shallow groundwater levels, but that seldom have standing water.

Mosquitos which are known to carry encephalitis viruses are found in a variety of still and standing water habitats. These habitats include tin cans, buckets, discarded tires, and other artificial containers that hold stagnant water, as well as irrigation canals, storm drains, catch basins, and septic seepage and other foul water sources above or below ground level.

Part of the recovery effort for the target species of the Program depends on restoration of wet meadows. The area of wet meadows between Lexington and Grand Island has declined as much as 45 percent since 1938 due to human activities (Sidle and others, 1989). Wet meadows are sub-irrigated wetlands dominated by grasses, sedges, and forbs. They have waterlogged soils much of the year and are a critical part of migratory-bird habitat in the Central Platte valley.

An earlier study examined three existing wet meadows in the Program Habitat Area: Elm Creek, Rowe Sanctuary, and Crane Meadows (Henszey and Wesche, 1993). Mosquito breeding season is in mid- to late-summer. Only 1 percent of the Elm Creek wet meadow had standing surface water during two brief periods at the highest groundwater levels in spring and early summer. For the same periods, 4 percent of the Rowe Sanctuary and 46 percent of the Crane Meadows were covered briefly by standing water. Median summer water measurements were zero for surface water at all of the sites. In addition, the Lake McConaughy Environmental Account (EA) may be used to augment summer low flows in the river. Through EA releases, the Proposed Program may seek to reduce periods when late summer river flows are very slow or nonexistent, which may reduce ponding and standing water favorable for mosquito breeding.

Based on groundwater research in wet meadows in the Central Platte Valley, median groundwater levels peak by March, and then declined through September. Only 1 percent of three areas studied had surface water during any time of the year, and that was only at the highest groundwater levels in spring and early summer. The median springtime groundwater depth was between 3 to 5 feet below the surface in the areas studied (Wesche, et.al.,1994).

There is little supporting evidence that indicates wet meadows provide habitat for the *Culex* mosquito. Little standing water is known to occur in these meadows, especially during the mid-to-late summer mosquito breeding season. Therefore, creation of additional seasonal wet

meadows in the Central Platte Valley should not create additional breeding for mosquitos.

### **Disease Transmission: Waterfowl-borne Diseases and Water Contamination**

Because it will not increase habitat for geese and other waterfowl, Program alternatives are not expected to produce increases in either migratory or non-migratory populations of these species. Therefore, no increase in risk of water contamination is expected.

### **Urban or nuisance resident goose problems**

The Program would not create nesting habitat in the Central Platte River valley that would produce increases in either the resident or the migratory population of waterfowl. Generally, areas in and along the Platte River and, to some extent, rural agricultural lands are used briefly in spring (usually mid-February to mid-March) by migratory geese and other waterfowl on their way to the Northern U.S. and Canada where they breed. Research indicates that droppings from free-ranging migratory birds do not greatly affect nutrient levels in water, as Mr. Matt Hogan, Acting Director, Service, explained in an October 5, 2004 memorandum in response to Sheldon Farms and Construction (Service, 2004, memo). The small increase in roosting waterfowl habitat in and along the Platte River would serve to spread migratory goose (and other waterfowl) populations throughout more area, which reduces likelihood of waterfowl diseases. On the other hand, urban landscapes encourage geese to become year-round residents, which can become a problem in cases of urban water bodies that have high concentrations of sedentary Canada geese. The Program will not affect urban areas.

A peak of about 750,000 waterfowl stop over in the Central Platte River Valley in mid-February on their way to breeding grounds in the Northern U.S. and Canada, usually leaving by the time 400,000 cranes arrive in mid-March. Previous research indicated that a complete turnover of migrant Canada geese can occur in 1 week. Therefore, at any one time, far fewer than the 750,000 stopover total inhabit the Central Platte River valley and nearby areas combined at one time.

Increases in wet meadows in the project area are estimated to be 7 to 19 percent over present wetlands now found on the Central Platte. The types of habitat restoration associated with the Program along the Central Platte River are not preferred by resident geese. These wet meadow habitats would not receive the protection from predators and do not have the abundant food sources associated with urban parks and golf course or waste grain from agricultural lands.

Research regarding the effects of waterfowl feces on agricultural landscapes is limited, but effects likely vary with species and densities of birds, foods they consume, and time of year. Studies have shown that fecal input from geese was of little importance to nutrient dynamics of soils; in some instances, fecal matter appeared to have no influence, whereas in others, it seemed to stimulate plant growth. Also, research generally has found that droppings from free-ranging migratory birds do not greatly affect nutrient levels in water. The risk of contamination is likely influenced by the factors mentioned above as well as the dilution capacity of the wetland.

Streams are less likely to have increased nutrient loads than isolated wetlands because of constant water flow (i.e., inputs are more effectively diluted). This is likely what occurs for birds using the Platte River. Nutrient levels are more likely to increase as birds become highly concentrated on small water bodies for extended periods of time, such as occurs in small urban ponds with abundant resident geese. In contrast, most birds using borrow pits along the Platte River are migratory and leave the area by mid-March (Service, 2004, memo).

Similarly, the impact of waterfowl feces on human health (water contact activities) likely varies by the species present and other environmental variables. Although some water bodies, primarily in highly urbanized areas, have been closed due to high counts of coliform bacteria linked to Canada geese, the FEIS Team is not aware of any such instances occurring in the more rural landscapes of Nebraska. The Program also does not increase habitat suitable for waterfowl nesting or breeding. Therefore, Program land restoration is not expected to increase numbers of resident Canada geese, migrant Canada geese, or other waterfowl. As a consequence, there would be no increased risk of water contamination or nuisance problems due to the Program.

## **Flooding Concerns (Environmental Impacts)**

The Program would decrease large, out-of-bank flood events in the Platte River from below Lake McConaughy down to Grand Island, Nebraska. On the other hand, a slight increase in groundwater levels close to the river (0.1 to 0.25 feet) will occur during the springtime (years when river flows are low to moderate) when Program peak flows are released.

### **Surface Water Flooding**

All alternatives provide additional flood control in the Platte River below Lake McConaughy, as lake elevations are reduced and flood storage space is increased, thus diminishing the frequency, extent and duration of significant out-of-bank flooding. There are presently 9 years of the 48 years modeled with flows above flood flow (10,800 cfs) at Overton. This is reduced to 7 years for all of the action alternatives.

The number of occurrences of out-of-bank flooding at Grand Island, Nebraska, in the 48-year period of record, is shown in the following table (SOC-6) for present conditions and by alternative. Years with flows greater than 10,000 cfs are expected to be slightly fewer with the action alternatives. Flood flow amounts would be from about 200 to 5,800 cfs lower than present conditions, depending on the alternative.

<b>Table SOC-6. Out of Bank Flooding Summary by Alternative</b>					
<b>Flows Greater than 10,000 cfs at Grand Island</b>	<b>Present Condition</b>	<b>Governance Committee</b>	<b>Water Leasing</b>	<b>Wet Meadow</b>	<b>Water Emphasis</b>
Years with flows greater than 10,000 cfs at Grand Island, Nebraska	13 years	11 years	12 years	10 years	12 years
Maximum flood flows (greater than 10,000 cfs) at Grand Island, Nebraska	28,172 cfs	24,547 cfs or a change of - 3,625 cfs	27,974 cfs or a change of 198 fewer cfs	22,379 cfs or a change of 5,793 fewer cfs	23,651 cfs or a change of 4,521 fewer cfs

cfs = cubic feet per second

### **Groundwater Levels**

At present, during wet years when surface flows are at the highest levels, groundwater levels also rise within roughly 500 to 1,000 feet from the river. Program alternatives reduce the highest peak surface flows through the Habitat Area reach of the Central Platte River. As a result, surface flows are not as high under the action alternatives, and groundwater levels near the river (1,000 feet or less away) are also reduced by up to 3 inches for the wettest years and the highest flood periods.

During normal or dry years when surface flows are at average or low levels, the Program alternatives would augment surface flows in the spring for periods of 3 to 30 days. As a result, Program alternatives would raise groundwater levels about 3 inches for periods of 3 to 30 days during years when surface and groundwater levels are normal or low.

### **Land Use Changes (Environmental Impacts)**

The action alternatives illustrate a range of amounts and degrees of potential land use changes in the Habitat Area, which described briefly, but not analyzed in depth because any social impacts are expected to be insignificant due to Program policies. Any land use impacts due to construction of new facilities would be analyzed in future, site-specific NEPA compliance.

### **The Alternatives and Land Use Changes**

Analysis of the alternatives includes illustrative examples of the numbers of acres of managed lands in each of the 13 bridge segments and types of land cover changes in chapter 3 of the FEIS. Since no significant social impacts are expected from the alternatives' land use changes, only summary information about Program land uses by alternative are included here, and more detail



can be found in the FEIS, Chapter 3.

As illustrated in table SOC-7, the Water Emphasis Alternative represents one end of a range of possible outcomes and the Wet Meadow Alternative is the upper range of likely outcomes and environmental impacts in terms of the extent of land restoration. The primary methods for restoration include removal of woody and herbaceous vegetation and regrading some areas to restore swales and sloughs. Under the Water Emphasis Alternative, relatively more water and less land would be managed under the Program than for the other three alternatives.

<b>Table SOC-7. Summary of Land Acquisition and Changes by Alternative (acres)</b>				
<b>Lands Restored to:</b>	<b>Governance Committee Alternative</b>	<b>Full Water Leasing Alternative</b>	<b>Wet Meadow Alternative</b>	<b>Water Emphasis Alternative</b>
Lowland grasses	4,277		8,212	2,986
Wetted channel	355		355	260
Bare sand	0		7	0
<b>Total Restored Lands</b>	<b>4,632</b>		<b>8,574</b>	<b>3,246</b>
<b>Total Unmodified Lands</b>	<b>4,568</b>		<b>7,679</b>	<b>3,428</b>
<b>Total Non-Complex Lands</b>	<b>800</b>		<b>800</b>	<b>800</b>
<b>Total Program Lands</b>	<b>10,000</b>		<b>17,053</b>	<b>7,474</b>

### **Land-Related Social Impacts Summary**

Potential social impacts from the first increment land acquisition component of the action alternatives are expected to be minimal for the following reasons (primarily included in the Governance Committee 2003 Draft Land Plan):

- ▶ The 10,000 acres of the Program's First Increment represents about 2.3 percent of the entire Central Platte Habitat Area.
- ▶ It is Program policy that all lands acquired for the Program will be on a willing seller/willing lessor basis; there will be no land condemnation.
- ▶ On the 10,000 acres managed by the Program, it is expected that many of the existing lands uses (for example, grazing, hunting, and most other uses) would be allowed to continue.

- ▶ It is Program policy that any tax burden associated with the Program will not be shifted to landowners.
- ▶ If there are adverse effects, the Program will have local representatives readily accessible so that the nature and cause of any problem can be quickly determined and corrective actions can be taken in a timely manner.
- ▶ The Program will require its contractors to carry appropriate insurance to cover documented damage claims directly resulting from their actions.

### **Amount of Program Land**

After accounting for Cottonwood Ranch and the Wyoming Property, the Program first increment of between about 7,000 to 17,000 acres, depending on the alternative, represents an average of about 1.5 percent of the Habitat Area. As discussed in the present conditions section, present land use already includes a great deal of land managed for wildlife purposes, and the Partners for Wildlife Program is one example.

### **Willing Seller/Lessor Land Acquisition**

According to the Land Plan (Governance Committee, December 2003), parcels will generally be considered for Program acquisition in one of two ways: 1) Based on location, existing habitat, land uses and/or potential for restoration, and may approach landowners through public meetings or on a one-to-one basis. 2) Landowners seeking to market or dedicate their property to the Program may contact Program representatives.

### **Land Use**

The primary goal of restoration for non-channel habitat in complexes is to improve lands for whooping crane foraging. This principally involves restoration of wetted channel and bare sand for foraging cranes. Typical actions for restoring the river channel include:

- ▶ Vegetation clearing and disking on banks and islands to improve sight distance across and along the river and to create roosting and nesting opportunities.
- ▶ Lowering elevation of vegetated islands to improve sight distance and create sandbars.
- ▶ Other actions to create sandbars in the river channel.

Typical actions for non-channel habitat restoration could include:

- ▶ Removal of trees and shrubs to recreate wet meadow areas.
- ▶ Restoration of swales and sloughs and other measures to improve hydrologic conditions.
- ▶ Haying, grazing, prescribed burning.
- ▶ Conversion of cropland to grassland.

- ▶ Seeding with native plant species.
- ▶ Restrictions on land use activities during migration periods to reduce disturbance.
- ▶ Other actions to reduce disturbance, such as screening of roads, relocation of structures and access points, etc.

The Program may provide public access to fee title Program lands for recreation and educational purposes, when and where it is consistent with Program objectives and land use, and where consistent with the Program's property interests. On Program lands where other property interest continue to be privately held, landowners may be requested to provide similar public access. The Program may encourage agencies and organizations to provide non-Program incentives to landowners for providing such public access to Program lands protected through leases or easements. Specific guidelines for public access will be established in the management plans for each land parcel regarding appropriate conditions, times of the year, and uses that are consistent with the goals of the Program. Any public access to Program lands that are privately owned will be closely coordinated and permitted only with the landowner's prior permission (Governance Committee, 2003).

Land plans must include a description of land uses and management to assure that non-Program and Program uses of the land are compatible. The Draft Land Plan contains broad descriptions of the types of provisions that the Program might negotiate to assure compatible use of Program land. Not all types of provisions will be needed on all parcels. Due to variability in land uses, physical characteristics of a parcel of property may be negotiated on a case-by-case basis and may include a description of any conditions that limit Program activities and conditions of public access, if applicable (Governance Committee, 2003).

### **Sand and Gravel Mining Operations**

A concern has been expressed that the Program land component would negatively impact the sand and gravel mining industry by acquiring lands for habitat that might be needed for sand and gravel extraction. It is difficult to project future growth or decline in demand for sand and gravel. Ninety percent of the sand and gravel mined in Nebraska is used in asphalt and concrete for highway construction (Nebraska State Geological Survey, 2001).

If it is assumed that demand for highway construction and sand and gravel increases slightly within the next 50 years, it can also be assumed that the need for acres of land in sand and gravel production will also increase slightly. Due to the high cost of transport, it is difficult for gravel operations to economically supply construction at significant distances from the mines. This fact is reflected in the fact that sand and gravel operations occur in 78 out of 94 counties in Nebraska.

For the Program's First Increment, the Program seeks to acquire 10,000 acres of land for habitat. Already acquired are 2,650 acres of Cottonwood Ranch and the Wyoming Property at 470 acres, leaving roughly 6,880 acres to be acquired. Within a 3.5 mile corridor of the Platte River, where the Program seeks to acquire land for habitat (approximately 395,000 acres of wetland-type habitat and agriculture), the Program would acquire less than 2 percent of the available acreage in that area from willing sellers. In addition to acquiring such a small percentage of land in that

area, the Program will focus on restoring habitat away from bridges and roads where mining activities are located to reduce the cost pit development and transport of material.

It is notable that several existing sand and gravel operations have become involved in providing nesting habitat for terns and plovers on unused areas of the mines employing various methods to control predation and disturbance of nests. There appears to be opportunity for the Program to collaborate with sand and gravel operators to develop and protect channel habitat.

### **Taxes and Local Involvement to Manage Impacts: The Good Neighbor Policy**

The Program will pay taxes or their equivalent on program lands, to avoid reducing tax revenues to local entities or shifting tax burdens to others. Concerning the good neighbor policy, all activities of the Program are expected to be carried out such that the Program would be viewed as a good neighbor by the residents in the Program area. The Program will comply with applicable local, state, and federal laws expects to be responsible for its actions. The Program will emphasize prevention, as opposed to correction of actions, and if concerns are raised about impacts, local representatives would be available to quickly determine needed corrective actions. The Program will require its contractors to carry appropriate insurance to cover documented damage claims resulting from their actions. The Program will make provisions to cover damage claims resulting from unintended consequences of the Program (Governance Committee, 2003).

### **Income and Employment (Environmental Impacts)**

Findings in the economic analysis showed that the largest average annual decreases in regional employment would occur in the Central Habitat Area region under the Full Water Leasing Alternative (loss of 33 jobs with dryland farming or 103 without), and Water Emphasis Alternative (loss of 4 jobs with dryland farming and 38 without), each with a loss of 103 or fewer jobs. The economic analysis also showed the largest decreases in income would occur in the Central Platte Habitat Area (without dryland farming). Under the Full Water Leasing Alternative, income would decrease roughly \$2.1 million from current levels, on an average annual basis, and nearly \$740,000 for the Water Emphasis Alternative (without dryland farming). The impacts (positive and negative) represent less than one-tenth of 1 percent of the total economic activity in the region (for additional information by alternative, see the FEIS, Chapter 5, "Regional Economics" Section). Impacts of this magnitude will be very difficult to detect.

## SUMMARY

The more urban counties of the Central Platte Basin Habitat Area generally rely less on small-farm agriculture at present than in earlier years, and in more rural counties, the population has decreased in size and aged. About 9 percent of the Basin population lives below the poverty level, compared to the Nation's 12.4 percent.

The Habitat Area comprises approximately 678 acres in nine mostly agrarian counties: Adams, Buffalo, Dawson, Gosper, Hall, Hamilton, Kearney, Merrick, and Phelps. A number of existing and developing environmental habitat land uses, programs, and recreation occur in the Habitat Area.

Public issues and concerns Basin-wide include population growth as it relates to water demand and use and how it may affect future municipal growth and economic development. The Program would not impact the existing or projected population growth in the Basin. Other issues most relevant to the Central Platte Habitat Area included the following:

- *Human health*—Habitat conducive to increasing the types of mosquito populations that could transmit diseases to humans would not be increased. Similarly, the type of habitat that would encourage increases in resident goose and duck populations with accompanying avian diseases, water contamination, or nuisance problems would not be created.
- *Flooding*—The Program would result in diminished frequency, extent, and duration of significant out-of-bank flooding. Program flows would cause groundwater levels near the Platte River to be roughly 3 inches lower in wettest years, and about 3 inches higher in normal or low-water years.
- *Land use*—No significant change is expected, in part because it is Program policy that there will be no land condemnation, most existing uses will continue, and any tax burden will not be shifted to landowners. There appear to be opportunities for the Program to collaborate with sand and gravel operators in the development and protection of channel habitat.
- *Income and employment*—The economic analysis showed the largest decreases in income would occur in the Habitat Area (without dryland farming). Under the Water Emphasis and Water Leasing Alternatives, income would decrease roughly \$1.2 to \$1.3 million from current levels, on an average annual basis. The impacts represent less than one-tenth of 1 percent of the total economic activity in the region.

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# **ATTACHMENTS**

## **Attachment A**

Telephone canvassing notes for potential health problems related to waterfowl feces

**From:** Joy Nelson  
**To:** Jim Lutey  
**Date:** Thu, Oct 7, 1999 11:46 AM  
**Subject:** Birds and the public!!

Telephone Canvassing for Waterfowl Feces Effects on Public Health in the Central Platte - October, 5-7, 1999

#### Background

I concentrated on the Hall, Adams, Buffalo, Dawson, Gosper, Phelps, and Kearney counties and associated cities. From the Nebraska State Health and Human Services System and the Nebraska State toll-free system advocate, the same 4 contacts were given for those areas. I also checked the internet Nebraska State Government Directory for public health agencies in all the cities and counties in the area of concern and found only the same 4 contacts. There doesn't seem to be many public health agencies in that area.

For introduction, I stated I was calling from DOI, our office is doing a recovery program for endangered species on the Platte and I was looking for information on any complaints, concerns, studies, or requested studies regarding public health and waterfowl including but not limited to disease.

#### City/County Contacts

City of Lexington, Department of Health (Dawson County) 308-324-6633. Alvin Simmermun's name was given as the contact, but after leaving several messages without a response I asked for anyone else that might help. I was given the name of Dave Stenberg, Extension Educator, at the extension center for Dawson County, 308-324-5501. He has never heard of any complaints, studies, etc., regarding public health and waterfowl. He added that he has known of cases of diseased birds but none of the cases affected the public.

City of Kearney, Department of Health, 308-233-5255, no longer exists. After many transfers, I spoke with Captain Winquest (Police Department) who stated that Kearney does not have a department of health or an agency that he is aware of that takes this type of request/complaint. He doesn't know of any public health concerns regarding waterfowl.

Grand Island-Hall County Health Department, 308-385-5175. Spoke with Ryan King, Environmental Health Specialist for the department. He stated he is unaware of any complaints, requests for studies, or cases involving public health risks and waterfowl. He also said he would be the only one who would receive such complaints in Hall County.

Sandhills District Health Department, 308-284-6054, Mary Genter, Director. Mary stated they have not had any concerns/complaints/nuisance calls related to migratory birds/waterfowl including diseases and water contamination.

#### Nebraska State Organizations

Bob Leopold, Director, Public Health Assurance Division, Nebraska Health and Human Services System, 402-471-2541. He is not aware of any problems with public health concerns regarding waterfowl and would not expect any. He transferred me to:

Dr. Tom Safranek, Nebraska State Epidemiologist, 402-471-0550, who repeated several times that he has not seen any cases involving waterfowl or heard of anything related to waterfowl and negative effects on public health in Nebraska.

**From:** <Diane\_Katzenberger@fws.gov>  
**To:** <Ralph\_Morgenweck@fws.gov>, <Bob\_McCue@fws.gov>, <...>  
**Date:** Wed, Jan 12, 2000 12:30 PM  
**Subject:** Nebraska County Commissioner Contacts

Platte Outreach, et al:  
(Jim Cook - please forward to Jerry V. - I don't have his e-mail)

Re: The CPOW Resolution signed by 5 Nebraska counties demanding that the FWS control/remedy goose populations and declare a moratorium on the Cooperative Agreement:

I've contacted representatives from all five Nebraska counties that signed the CPOW resolution (except Buffalo - I've left 2 messages for Chairman Lowenstein but haven't received a call back). Following is a quick summary - if you want all the details, see my attached notes. All counties will receive a follow-up letter reiterating the key points of our conversation and any other information I promised.

Kearney County: Contact: Charles Tomsen  
No problems with resident or migratory waterfowl. Are concerned that semi-resident geese could become a future problem. Main concern is that land acquired for the Program will be removed from tax rolls. I explained the difference between federal acquisition and Program acquisition. Will also send info re Refuge Revenue Sharing Act. Also discussed remedies for potential goose problems. No health or safety issues in Kearney County.  
Bottomline: Mr. Tomsen said Kearney County Commissioners support the CA.

Phelps County: Contact: Dean Cruise, Chairman  
No current geese problems - have concerns about future potential problems.  
Mr. Cruise stated the board was hasty in signing the Resolution - didn't have enough information - wouldn't sign it if brought to them today. Credited Gene Mack from the Rainwater Basin WMD as the reason the board supports the CA. Gene was even successful in acquiring land that will cost the county \$2K/year in tax revenues.  
Number one concern: Land would be removed from tax rolls.  
Discussed tax issue and mig bird issues - will send followup letter.

Hamilton County: Contact Paul Kemling  
Only concern is that lands will be removed from tax rolls.  
No other problems with CA  
Same discussion as above - will send followup letter.

Merrick County: Contact Rex Weller, Chairman  
Addressed board via conference call during commission meeting on Jan 11. Commissioner Robert Hussman did most of the talking - His concerns are semi-resident geese problems in Grand Island (located in Hall County - which did not sign Resolution) and geese problems at Grand Is. airport. Mr. Hussman is basically unhappy about any federal or state initiatives. I contacted Grand Island county parks manager - county has no resident or mig. waterfowl problems in county parks. No health or safety

problems.

Also contacted City of Grand Island parks manager - no mig. waterfowl problems in city parks/ponds/ or golf courses. No health or safety problems.

Contacted Hall County airport manager - no incidents with geese - no safety issues. Discussed permit procedure if future problems occur.

Buffalo county - waiting for a return phone call.

(See attached file: cty\_com2.doc)(See attached file: cty\_com)

Diane

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Diane Katzenberger  
U.S. Fish and Wildlife Service  
Office of External Affairs  
Denver, Colorado  
(303) 236-7917 ext 408  
email: diane\_katzenberger@fws.gov

CC: <Terry\_Sexson@fws.gov>, <Larry\_Shanks@fws.gov>, <G...

dk: 1/11/00 - Note to the file

## **Nebraska County Commissioner Contacts Regarding CPOW Resolution**

**Buffalo County** - 308-236-1225;

Contact: Tim Lowenstein, chairman

- left two messages for Mr. Lowenstein to call me regarding waterfowl/CA issues

**Kearney County** - 308-832-2723

- Contact: Charles Tomsen
- Two concerns:
  1. Wintering Canada geese problems in Buffalo County could become a potential problem in Kearney County. Semi-resident geese - November/December through March
  2. Land acquired for Program will be removed from tax rolls.
- Action Item:

Write letter to commissioners reiterating conversations points: lands acquired for the proposed Program will remain on tax rolls; taxes or equivalent amounts will be paid; program will be subject to same requirements as any other landowner; county assessor will determine classification of lands; easements & leases - taxes will be paid by current landowner. Difference between federal acquisition and Program acquisition.

Get information regarding Refuge Revenue Share Act - how they can engage their congressional districts, etc.
- Bottomline: Kearney County supports the CA, but is concerned about lands being removed from tax rolls. Acknowledged that migratory bird issues are separate from the CA. There are no current resident migratory bird problems - no human health issues or nuisance issues.

**Phelps County** - 308-995-4469

Contact: Dean Cruise, chairman

---

- No current problems with geese; although they have concerns about future potential problems.
- Mr. Cruise stated that the board was hasty in signing the resolution – that they needed to be better informed before making the decision. If resolution was brought to them today, they wouldn't have signed it.
- They have no problems with the Cooperative Agreement. Mr. Cruise praised Gene Mack from the Rainwater Basin WMD. Mr. Cruise credits Gene's cooperative approach as the major reason this board supports the CA. (I called Gene to relay this message – According to Gene, the reason his reception was so congenial is because his office has demonstrated that FWS does good things with the land we acquire (like noxious weed control - but also because Gene is a competent and effective goodwill ambassador). Through his office's good work, the FWS has been established as an agency who cares about the people and their concerns. He asked the board if they would be willing to sell FWS a certain piece of property – even though it would mean the county would lose \$2K in tax revenues - and the board answered a resounding yes. (Per Harvey Wittmier: That transaction just took place - FWS acquired the Brooks tract.)
- Action Item: Send letter outlining procedure to remedy nuisance geese problems - if they should occur in the future. Also re-emphasize that lands will not be removed from county tax rolls.

#### **Hamilton County - 402-694-3443**

Contact: Paul Kemling

- Only concern is that lands will be removed from county tax rolls.
- Action Item: Send same information letter.

#### **Merrick County - 308-946-2881**

Contact: Rex Weller, chairman

- Addressed board via conference call during commission meeting on Jan 11.
  - Commissioner Robert Hussman did most of the talking.
-

- Concerns:
- Semi-resident geese in Grand Island - and safety hazards at the airport.
- Too much water currently in the Platte River - water table too high.
- Chairman Weller stated that the board understands the CA, but didn't offer support. (It's easier to deal with commissioners one-on-one. This board seemed reluctant to voice support because Mr. Hussman was so negative.)

Action Item: I addressed his concerns during the meeting, but Mr. Hussman seemed to already have his mind made up. He only wanted to complain about his concerns, but was reluctant to specifically identify them so we could work out solutions. (He's also unhappy about the state pallid sturgeon initiative and some long-ago problem with crows.) I will send a letter to the chairman outlining procedure s for handling semi-resident goose problems. Address water flow issues and tax issues.

Sidebar:

**Parks:**

1/12/00: Contacted Charles Kaufman, Hall County Parks Director (Grand Island) – he stated Hall county has no problems with resident or migratory geese in county parks.

Contacted Steve Paustian, City Parks Manager for Grand Island (308-385-5444) - He acknowledged that there can be weather-driven Canada goose population explosions in the fall (late Nov to mid-Feb). Also, there are about 200 resident geese now in Grand Island that could become potential problem - so far they haven't discovered the golf courses - probably too much waste corn available elsewhere.

He said sportsmen would raise a ruckus if the city controlled C. goose populations. Sportsmen (himself included) love the waterfowl - and consider the sand pit behind Grandpa's as a sportsman's heaven.

Pier Lake has had some fish die-offs due to excessive goose poop (algae blooms) but he's working the Nebr Game and Parks to control the problem.

Bottomline: Grand Island (parks & recreation) has no nuisance, health, or safety issues associated with goose populations.



Mr. Paustian would like someone from FWS to call him to discuss migratory/resident goose issues - from an informational standpoint.

**Airport:**

Spoke with Bill Stovall, Hall County airport manager (Grand Island) 308-385-5170.

There have be no incidents concerning waterfowl and airport safety. I gave him Law Enforcement's phone number and outlined the permit procedure - in case he has any problems in the future.

# Goose Poop Telephone Canvassing Protocol - ~~HEALTH DEPARTMENTS~~


DATE	HEALTH DEPT.	CONTACT (Name, phone)
<p>1. Has your agency received any reports of illnesses associated with human contacts with waterfowl or their waters? Copy of reports</p>		
<p>2. Does your agency have concerns regarding risk to human health associated with contact with waterfowl or their waters? What are concerns? Based on what?</p>		
<p>3. Does your agency have recent reports or concerns regarding mosquito-borne encephalitis (New York outbreak)</p>		

# Goose Poop Telephone Canvassing Protocol - STATE GAME & PARKS

DATE	DIVISION	CONTACT (Name, phone)
<p>1. Has your agency received any reports of nuisance waterfowl (especially Canada geese) in urban or rural areas?</p>		
<p>If YES:      When:</p>		
<p>Where:</p>		
<p>Who:</p>		
<p>Was there a resolution? If so, what?</p>		
<p>2. Does your agency have a plan to deal with nuisance waterfowl? What is that plan?</p>		

# Administrative Divisions

- Wildlife
- Fishing
- Hunting
- Parks & Rec
- Boating
- Nebraskaland
- News & New
- Forum
- ▶ Outdoor Ed
- Search Site
- Comments

What are we... Our Purpose  
Staff & Board Directory  
Career & Employment Opportunities  
Law Enforcement **Rules & Regulations**  
Database of Land We Manage  
Nebraska Environmental Trust  
Outdoor Education Programs  
Commission Regulations   
Other Fish and Wildlife Agencies

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Yesterday's Visitors and Statistics



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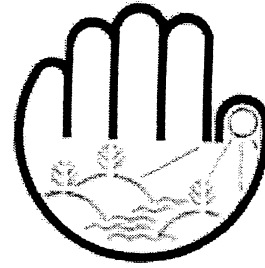
Nebraska Game and Parks Commission  
2200 North 33rd Street  
Lincoln, Ne. 68503  
402.471.0641



NE



# Water Quality Division



---

## **Ground Water**

Ground Water Management Areas  
Hydrogeologic Studies and Reviews  
Septic Tank  
Chemigation  
Underground Injection Control (UIC)  
Source Water Assessment Program  
Wellhead Protection  
Agricultural Chemical Secondary Containment  
Agricultural Chemical Spill and Complaint Response

## **LUST/ER**

Leaking Underground Storage Tanks  
Emergency Response  
Title 200

## **Permits & Compliance**


NPDES  
Pretreatment Program  
Livestock Waste Control

## **Surface Water Section**

Basin Management Approach  
Monitor and Assessment  
Nonpoint Source Management  
Section 401 Water Quality Certification  
1998 Nebraska Section 303(d) List of Impaired Waters

## **Wastewater Facilities**

Clean Water State Revolving Loan Fund  
Small Community Matching Grants  
EPA Hardship Grants Program  
EPA Construction Grants Program  
Municipal Community Outreach  
Special Grants  
Drinking Water State Revolving Fund  
Wastewater Engineering Management  
On-Site Assistance Program  
Wastewater Treatment Facility Operator Training and Certification Program  
Municipal Pollution Prevention Activities



## Home Page

For more information, contact  
[Pubinfo@mail.deq.state.ne.us](mailto:Pubinfo@mail.deq.state.ne.us)

**Nebraska Department of Environmental Quality**  
1200 "N" Street, Suite 400  
PO Box 98922  
Lincoln, Nebraska 68509  
(402) 471-2186 FAX (402) 471-2909

# Goose Poop Telephone Canvassing Protocol - HEALTH DEPARTMENTS

DATE	HEALTH DEPT.	CONTACT (Name, phone)
<p>1. Has your agency received any reports of illnesses associated with human contacts with waterfowl or their waters? Copy of reports</p>		
<p>2. Does your agency have concerns regarding risk to human health associated with contact with waterfowl or their waters? What are concerns? Based on what?</p>		
<p>3. Does your agency have recent reports or concerns regarding mosquito-borne encephalitis (New York outbreak)</p>		

## Nebraska Partnership of Local Health Directors

Sheila Bjerrum, Chair  
Director - Polk Co. Health Department  
PO Box 428  
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402/747-1410  
Fax/747-1427  
e-mail - pchd.sb@navix.net

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Grand Island/Hall Co. Health Dept  
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fax/385-5181  
e-mail - bdart@hamilton.net

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Merrick County Health Department  
County Courthouse, Third Floor  
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Fax/444-6267  
e-mail - jwiley@co.douglas.ne.us

Bill Wineman, Director  
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County Administration Building  
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308/436-6636  
fax/436-6675

Pat Lopez, Supervisor  
Lincoln/Lancaster Co. Health Dept.  
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402/441-8057  
Fax/441-8323  
e-mail - plopez@ci.lincoln.ne.us

Rita Parris, Training Coordinator  
NePLHD  
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Lincoln, NE 68510  
402/483-1039  
Fax/483-0570  
e-mail - rparris@compuserve.com



# Goose Poop Telephone Canvassing Protocol - COUNTY COMMISSIONERS

DATE	COUNTY	CONTACT (Name, phone)
<p>1. Has your county passed or been approached to pass a resolution concerning waterfowl and human health risks? - Copy of resolution</p>		
<p>If YES:      a)      What information was presented to the commissioners to support passing the resolution? - Copy of information</p>		
<p>b)      Is this the first time that a problem associated with waterfowl and human health risks has been brought to the attention of the commissioners? If not, copy of any previously reported problems</p>		
<p>If NO:      a)      Has the county received any reports of concerns or instances of risks to human health associated with contacts with waterfowl or their waters? - Copy of reports</p>		

# Goose Poop Telephone Canvassing Protocol - CENTER FOR DISEASE CONTROL

DATE	CONTACT (Name, phone)
<p>1. Has the CDC issued any warnings regarding risks to human health associated with contact with waterfowl or their waters?</p>	
<p>If YES:    When?</p>	
<p>Where?</p>	
<p>Why?</p>	
<p>2. Does the CDC have any information regarding risks to human health associated with contact with waterfowl or their waters? Copy of information.</p>	

## Backgrounder

September 23, 1999  
Contact: CDC, Media Relations  
(404) 639-3286

### West Nile-like Virus in the United States

CDC, in collaboration with the New York City and New York State departments of health, has isolated and identified a West Nile-like virus from birds that died in New York City and were submitted for testing by the Bronx Zoo.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans. Both viruses are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

Since late August, New York City has been experiencing an outbreak of arboviral (mosquito-borne) encephalitis. Previously, diagnostic tests on serum from human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. At present, the relationship between this isolation of West Nile-like virus from birds in New York City and the outbreak of encephalitis among persons in New York City remains uncertain and further laboratory testing is underway. The CDC is testing these and additional human specimens for the possibility of West Nile-like virus infection.

CDC and city and state health departments emphasize that current mosquito control efforts by individuals and communities are appropriate because the same mosquito species transmit both viruses. Individuals should continue to do the following to reduce their contact with mosquitoes:

- When outdoors, wear clothing that covers the skin such as long sleeve shirts and pants; spray clothing and exposed skin with insect repellent.
- Curb outside activity at dawn, dusk and during the evening.

Communities should continue to do the following:

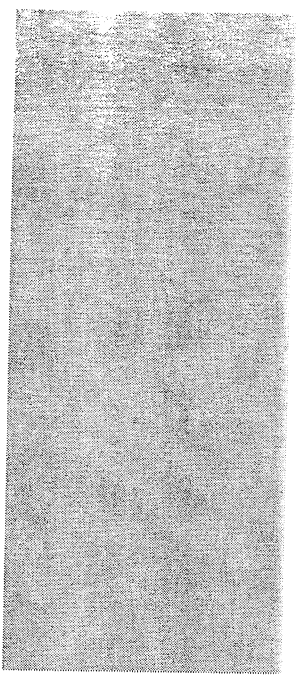
- Raise public awareness about the outbreak, control

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- 
- measures, and personal protection.
  - Continue current efforts of mosquito control.

CDC further recommends that communities in the area should consider mosquito spraying if they have not yet done so.

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This page last reviewed Fri Sep 24 14:41:00 GMT-0700  
(Pacific Daylight Time) 1999

URL:

<http://www.cdc.gov/od/oc/media/pressrel/r990924.htm>

Centers for Disease Control and Prevention  
Office of Communication



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Mountain-Prairie Region

IN REPLY REFER TO:

MAILING ADDRESS:  
Post Office Box 25486  
Denver Federal Center

STREET LOCATION:  
134 Union Blvd.  
Lakewood, Colorado 80228-1807

Mr. Donald D. Adams, Jr. Denver, Colorado 80225-0486  
Nebraskans First  
Cornhusker Plaza #401  
301 South Thirteenth Street  
Lincoln, Nebraska 68508

AUG 2 1999

Dear Mr. Adams:

This is in response to your July 15 letter to Ms. Lisa McDonald regarding the Third Party Impacts study being prepared for the Platte River Cooperative Agreement. Because the issues you have raised fall outside of the scope of work that was developed for Ms. McDonald by the Land Committee, I will address your concerns and hope the information provided will satisfy your request.

The heart of your concerns appear to concentrate on the potential for disease transmission and contamination by sandhill cranes and waterfowl during spring migration within the central Platte River Valley. We are unaware of any occurrences of disease transmission to humans due to bird use in this region. Waterfowl die-offs associated with avian cholera have been documented in the Rainwater Basins of southcentral Nebraska. However, avian cholera is not considered a high risk disease for humans because of differences in susceptibility to different strains of *Pasteurella multocida*, the bacterium which causes avian cholera (USFWS 1987). While infections of *P. multocida* can occur in humans, most infections result from an animal bite or scratch, primarily from dogs and cats. Avian cholera outbreaks in birds are exacerbated by the gregarious nature of waterfowl species and by dense concentrations of migratory water birds that result from habitat limitations (USFWS 1987).

Habitat improvements are a useful tool in combating avian cholera outbreaks. Historically, bird use in the central Platte River Valley and the Rainwater Basins was spread over a much larger area than is realized today. Deterioration of suitable habitat for migrating waterfowl is one of the primary reasons for birds crowding into urban areas. This phenomenon is not restricted to the central Platte River Valley, but occurs in many locations throughout the United States. Due in part to birds crowding into available habitat, one of the goals of the Proposed Program is to provide additional suitable habitat to distribute bird use over the larger area of their former range, rather than concentrating birds into smaller areas.

Your letter also referenced groundwater contamination caused by waterfowl fecal material. We assume the basis for this concern is related to fecal coliform bacteria and nitrates. We are unaware of any aquifer or groundwater well being impacted by fecal contamination due to bird

Mr. Donald D. Adams, Jr.

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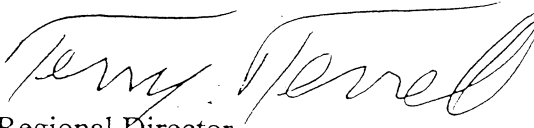
use. Most instances of fecal contamination of groundwater are caused by the presence of septic tanks near an adjacent groundwater well or from improperly designed groundwater wells (G. Mader, City of Grand Island Utilities Director, pers. comm.). While groundwater wells can become contaminated due to a number of reasons, there has been little cause to suspect waterfowl as a significant vector for fecal coliform contamination of groundwater wells (G. Mader, pers. comm.).

As you are aware, the central Platte River Valley includes extensive areas of irrigated corn, permeable soils, and shallow groundwater. These are all characteristics that increase the vulnerability of groundwater to contaminants. The Central Platte Natural Resources District (CPNRD) has established fertilizer-management areas in portions of the central Platte River Valley based on corn acreage and nitrate concentrations. The CPNRD initiated stringent guidelines on the timing and application rate of fertilizer in this area. Median groundwater nitrate concentrations, in areas that were assigned the most stringent guidelines, increased from about 8 mg/L in 1974 to about 18 mg/L in 1986. After implementation of the fertilizer-management strategy, the median nitrate concentrations in domestic wells decreased from 18 mg/L in 1986 to less than 2 mg/L in 1994 (USGS 1998). The extensive efforts of CPNRD indicate that fertilizer management on agricultural lands best determine resultant nitrate concentrations in groundwater wells.

Lastly, your letter referenced potential health problems associated with mosquitoes produced by wetlands. We assume this concern is centered on the potential for increased cases of encephalitis. Species of mosquitoes that are associated with wetland habitat are generally not vectors for encephalitis. Further, statewide encephalitis surveys were conducted by the Nebraska Department of Health and Human Services during 1994 and 1995. Data from these surveys indicate that western Nebraska had the most occurrences of encephalitis and these were typically associated with mosquitoes from irrigation water on agricultural lands (Dr. W. Kramer, State Medical Entomologist, pers. comm.).

We hope this information has been helpful to you. Technical questions regarding your concerns may be directed to Mr. Brent Esmoil in our Nebraska Field Office at (308) 382-6468, extension 14.

Sincerely,

  
Regional Director

cc: Senator Chuck Hagel  
Senator Bob Kerrey  
Congressman Bill Barrett  
Governor Mike Johanns  
Governance Committee

### Literature Cited

U.S. Fish and Wildlife Service. 1987. Field guide to wildlife diseases: general field procedures and diseases of migratory birds. United States Department of the Interior. Resource Publication 167. 225 pp.

U.S. Geological Survey. 1998. Water quality in the central Nebraska basins, Nebraska, 1992-1995. U.S. Geological Survey Circular 1163. 33 pp.

INFO COPY

RD  
C/GAROS  
J. Lutey

# NEBRASKANS FIRST

Concerned Farmers for Nebraska's Groundwater



July 15, 1999

Ms. Lisa McDonald  
Hazen and Sawyer, P.C.  
4000 Hollywood Boulevard  
Seventh Floor, North Tower  
Hollywood, FL 33021

Dear Ms. McDonald,

The Habitat Component of the Platte River Recovery Program calls for the protection of 29,000 acres of habitat between Lexington and Chapman. This ninety mile stretch of the Platte River Basin incorporates thriving communities which were built and are now sustained by irrigated agriculture, not bird watching and tourism.

Birds carry and transmit diseases. Excessive and concentrated numbers of birds threaten the health of humans who live near the overpopulated bird environs. We are very concerned that the transformation of improved well-husbanded productive agricultural land into desolate bird habitat will exacerbate and spawn more community health related problems. Increasing bird habitat will irrefutably increase the number of birds and associated problems. Accordingly, the Third Party Impacts Study must conduct a thorough community health assessment of existing health risks being caused by the millions of ducks, geese and sandhill cranes which annually visit the area. This community health assessment must be conducted by a qualified public health expert so the local communities in or near the critical habitat corridor can properly assess their future public health prospects.

We have learned over the past year or so that the counties situated in the targeted critical habitat corridor have been grossly ill-informed about the Cooperative Agreement program by those seeking its adoption. These legitimate health concerns are of paramount importance to these counties and must be addressed before any habitat related proposals under the program are considered further.

Specific problems now being caused by waterfowl which will only worsen if more habitat is created:

- Contamination of groundwater caused by such massive droppings
- Mosquito infestation and associated health problems caused by dirty, stagnant and malodorous water

## DIRECTORS

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Kevin Ziegenbein  
Ashland

Don Adams, Jr.  
Executive Director  
Lincoln



Ms. Lisa McDonald

Page 2

July 15, 1999

- Ever-growing waterfowl numbers in urban public areas, such as parks, lakes, and ponds in parks
- Destruction of park lawns and golf courses by waterfowl
- Contamination of park benches, sidewalks and picnic facilities caused by bird droppings

Right now, geese are destroying summer feeding areas in Canada and need to be thinned out by 2 to 3 million say experts. Increasing habitat here in the their flyway will certainly exacerbate this problem. There are also economic harms currently being inflicted upon farmers in the targeted critical habitat corridor. Specifically, crops being destroyed by noxious weeds, and shattercane from waterfowl droppings on cultivated, crop-producing farm land.

From an economic perspective, if not 1 cent of our tax dollars was spent by the government on the Cooperative Agreement program there would be no change in tourism dollars generated by bird watchers. The tourism dollars are paid by those who come to look at the hundreds of thousands of sandhill cranes, geese and ducks that already stop and layover in the area. The odds of anyone seeing a whooping crane in the so called critical habitat area are about the same as winning the powerball.

Your response to this formal request would be appreciated.

Sincerely,



Donald D. Adams  
Executive Director

DDA:ct

cc: Governor Mike Johanns  
Senator Chuck Hagel  
Senator Bob Kerrey  
Congressman Bill Barrett  
Governance Committee

# Hamilton County Board of Commissioners

## Resolution # 656

Whereas, birds and waterfowl carry and transmit diseases; and

Whereas, excessive and concentrated numbers of birds and waterfowl currently have created serious nuisance and sanitary problems for many cities along the front range of the Rocky Mountains, which are but not limited to: such cities as Fort. Collins, Loveland, Longmont, Boulder, Pueblo, Denver, and Colorado Springs, Colorado, and

Whereas, Kearney, Nebraska currently has serious problems with excessive birds and waterfowl and,

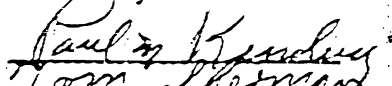
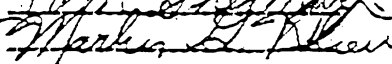

Whereas, the Habitat Component of the Platte River Recovery Program (Co-operative Agreement) seeks to create an additional 29,000 acres of habitat for waterfowl and birds between Lexington and Chapman, Nebraska, and

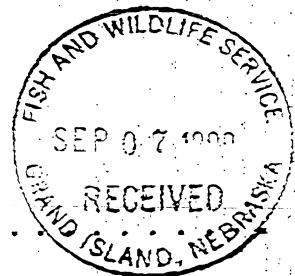
Whereas, the Health and Welfare of our human residents must be top priority,

Now, therefore, be it resolved that the Hamilton County Board of Commissioners demand that the U.S. Fish and Wildlife Service firstly solve the myriad problems caused by the waterfowl and birds in the aforementioned cities and that the conformation of the problems resolutions be made by the U. S. Fish and Wildlife Service before any additional action involving habitat creation in Nebraska proceeds

Attest:   
Hamilton County Clerk

Hamilton County Board of Commissioners



The Hamilton County Board of Commissioners met Monday, August 30, 1999. At 9:00 a.m. with all members and the County Clerk present. Motions were made, seconded and carried to approve the agenda and minutes as read with all members voting aye. Correspondence was read from the TERC Board, Boone County, and the Liquor Commission. Reports were reviewed from the Hamilton Manor, Central Platte NRD, Dept of Roads and the Assessor.

Sheriff Handrup met with the Board to discuss personnel. Motion by Kliever, second by Sherman to go into executive session at 9:08 a.m. to discuss personnel. All voting aye. Motion by Sherman, second by Kliever to go out of executive session at 9:13 a.m. All voting aye. No action was taken. Carrol Sheldon met with the Board to discuss a waterfowl habitat resolution. He presented information to the Board regarding problems with the goose population in large Colorado towns and the probability of the situation developing in our area if the 29,000 acre habitat is developed as proposed between Lexington and Chapman. Motion by Sherman, second by Kliever to adopt a resolution calling for the Wildlife Service to address and fix these problems before developing more habitat area. Roll call vote: Sherman-yes, Kliever-yes, Kemling-yes.

#### Resolution # 656

Whereas, birds and waterfowl carry and transmit diseases; and

Whereas, excessive and concentrated numbers of birds and waterfowl currently have created serious nuisance and sanitary problems for many cities along the front range of the Rocky Mountains, which are but not limited to: such cities as Fort. Collins, Loveland, Longmont, Boulder, Pueblo, Denver, and Colorado Springs, Colorado, and

Whereas, Kearney, Nebraska currently has serious problems with excessive birds and waterfowl; and,

Whereas, the Habitat Component of the Platte River Recovery Program (Co-operative Agreement) seeks to create an additional 29,000 acres of habitat for waterfowl and birds between Lexington and Chapman, Nebraska, and

Whereas, the Health and Welfare of our human residents must be top priority,

Now, therefore, be it resolved that the Hamilton County Board of Commissioners demand that the U.S. Fish and Wildlife Service firstly solve the myriad problems caused by the waterfowl and birds in the aforementioned cities and that the conformation of the problems resolutions be made by the U. S. Fish and Wildlife Service before any additional action involving habitat creation in Nebraska proceeds

Attest: /s/ Becky A. Richter  
Hamilton County Clerk

Hamilton County Board of Commissioners  
/s/ Paul M. Kemling  
/s/ Tom Sherman  
/s/ Martin Kliever

At 10:00 a.m. the Board opened the Budget Hearing. Andy Christiansen was present to speak in favor of the Board's proposal. The hearing was held open for 75 minutes. Motion by Kliever to close the Budget hearing and adopt the resolution approving the Budget figures published in the paper. Roll call vote: Kliever-yes, Sherman-yes, Kemling-yes.

#### Resolution #657

County Budget Document Resolution of Adoption and Appropriations

Whereas, a proposed county budget for the fiscal year July 1, 1999 to June 30, 2000, prepared by the budget making authority, was transmitted to the County Board on the 2nd day of August, 1999, and a budget hearing was held on August 30, 1999, by the County Board

Now, Therefore, Be It Resolved by the Board of Commissioners of Hamilton County, Nebraska, as follows:

Section 1. That the budget for the fiscal year July 1, 1999 to June 30, 2000, as categorically evidence by the budget document be, and the same hereby is adopted as the budget of Hamilton County for said fiscal year.

Section 2. That the offices, departments, activities and institutions herein named are hereby authorized to expend the amounts herein appropriated to them during the fiscal year beginning July 1, 1999 and ending June 30, 2000.

Section 3. That the income necessary to finance the appropriations made and expenditures authorized shall be provided out of the unencumbered cash balance in each fund, revenues other than taxation to be collected during the fiscal year in each fund, and tax levy requirements for each fund.

Dated and passed this 30<sup>th</sup> day of August, 1999

Attest: /s/ Becky A. Richter  
Hamilton County Clerk

Hamilton County Board of Commissioners  
/s/ Paul M. Kemling  
/s/ Tom Sherman  
/s/ Martin Kliever

Motion by Kliever, second by Sherman to appoint Rollen Roehrs and Walter Jacobs as the 2 additional members to the County Hospital Authority. Roll call vote: Kliever-yes, Sherman-yes, Kemling-yes. Motion by Kliever, second by Sherman to set the terms of office for the Hospital Authority to expire in January for the members listed in the year designated as follows: Wayne Shaneyfelt and Walter Jacobs 2001; Douglas M. Anderson and Shane Thorell 2003; and Laura Jobman, Rollen Roehrs and Lonnie Wells 2005. Roll call vote: Kliever-yes, Sherman-yes, Kemling-yes. Becky Shaw met with the County Board to discuss personnel. Motion by Kliever, second by

## **Attachment B**

Memo to Mr. Carroll Sheldon, Chairman Sheldon Farms and Construction from Matt Hogan,  
Acting Director, Service, Washington D.C.



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Washington, D.C. 20240



In Reply Refer To:  
FWS/AMB/018427

OCT 05 2004

cy: John C.  
Jim B.  
✓ MBSP file

Mr. Carroll Sheldon  
Chairman  
Sheldon Farms & Construction  
610 E. 46<sup>th</sup> Street  
Kearney, Nebraska 68847

Dear Mr. Sheldon:

Thank you for your letter to Representative Tom Osborne with questions about the effects of waterfowl on nitrogen levels in soil and water. We hope that the following information, derived from research literature and conversations with natural resource professionals who monitor waterfowl abundance and its effects on the environment (including humans), is helpful.

You included an article written by Mr. James Beers. We would like to clarify a few specifics regarding that article. Initially, the article discusses the Environmental Protection Agency's (EPA) regulations regarding duck operations and implies that the U.S. Fish and Wildlife Service (Service) should use those guidelines in the management of wild, free-flying waterfowl populations. The EPA guidelines are for commercial duck operations (called Concentrated Animal Feeding Operations, or CAFO) and apply specifically to agricultural operations where ducks are sedentary and concentrated in small areas, usually for consumptive purposes (e.g., eventually processed and marketed as human food). Further, there are different abundances allowed at CAFO, depending on how manure from the birds is handled. The 5,000-bird figure is for large operations that have liquid manure handling systems where there is the potential to discharge wastes directly to surface waters of the United States. Where operations use dry manure handling systems (i.e., wastes are not flushed directly to surface waters), a producer is allowed 30,000 birds before a permit is required from the EPA. Regardless, we believe it is inappropriate to compare regulations from a concentrated agricultural operation, which is a potential point-source of water contamination, to free-ranging wild birds that settle across the landscape, effectively dissipating the concentration of their feces.

Recent survey information suggests that approximately 7–10 million waterfowl and cranes pass through Nebraska each year in spring on their way to breeding grounds further north. This figure is consistent with the 8 million figure quoted by Mr. Beers. However, this number includes not only birds in the Central Platte River Valley (CPRV), but also the Rainwater Basin area to the south. The information you provided suggests that your concerns are primarily in the CPRV. Surveys suggest a peak abundance of about 750,000 waterfowl in this area in mid-February, and these birds usually leave the area for northern nesting regions by the time 400,000 cranes arrive in mid-March. There is considerable turnover of birds during the period of spring migration in Nebraska; some migrants continue to move farther north, while others arrive from the south.

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Previous research indicated that a complete turnover of migrant Canada geese can occur in one week, and that the turnover of ducks was continuous over the 6-week migratory period.

Therefore, at any one time, far fewer than 8 million birds inhabit the CPRV and nearby Rainwater Basins combined, and far fewer than 750,000 typically are in the CPRV.

Research regarding the effects of waterfowl feces on agricultural landscapes is limited, but effects likely vary with species and densities of birds, foods they consume, and time of year. Studies have shown that fecal input from geese was of little importance to nutrient dynamics of soils; in some instances, fecal matter appeared to have no influence, whereas in others, it seemed to stimulate plant growth. Also, research generally has found that droppings from free-ranging migratory birds do not greatly affect nutrient levels in water. The risk of contamination is likely influenced by the factors mentioned above as well as the dilution capacity of the wetland. Streams are less likely to have increased nutrient loads than isolated wetlands because of constant water flow (i.e., inputs are more effectively diluted). This is likely what occurs for birds using the Platte River. Nutrient levels are more likely to increase as birds become highly concentrated on small water bodies for extended periods of time, such as occurs in small urban ponds with abundant resident geese. In contrast, most birds using borrow pits along the Platte River are migratory and leave the area by mid-March.

Similarly, the impact of waterfowl feces on human health likely varies by the species present and other environmental variables. Although some water bodies, primarily in highly urbanized areas, have been closed due to high counts of coliform bacteria linked to Canada geese, we are not aware of any such instances occurring in the more rural landscapes of Nebraska. We also note that neither Mr. Beers nor you provided specific instances of documented problems in the CPRV of Nebraska.

To summarize, available research indicates that feces from free-ranging waterfowl largely do not contribute to nutrient loads in the landscape or pose an increased risk to human health. However, in some cases isolated water bodies in urban areas that have high concentrations of sedentary Canada geese have reported water quality problems.

The number of waterfowl inhabiting Nebraska during spring has increased in recent years. We believe our agency has been very responsive to increasing bird numbers and the conflicts with humans that can result, as follows:

1. The Service can and has issued permits for the take of migratory birds whenever there is a threat to human health and safety, or if damage is being committed or about to be committed by migratory birds. The Service will not hesitate to act whenever human health or safety is at risk (e.g., possible bird-aircraft strikes) and will expeditiously process permits to remove birds and alleviate the risk.
2. As resident Canada goose populations have grown, more bird-human conflicts have occurred in urban areas. In response, the Service has issued Special Canada Goose Permits to States, which allow the States to remove offending geese without having to first consult with the Service. The Nebraska Game and Parks Commission has such a permit.

Additionally, the Service allows several Central Flyway States to conduct special early- and late-September hunting seasons, which specifically target resident Canada geese in an effort to reduce their abundance. This year, Nebraska hunters will be able to hunt Canada geese beginning September 11. Finally, the Service is in the process of finalizing an Environmental Impact Statement to address human conflicts with resident Canada geese, which could allow additional means of take in order to decrease their numbers.

3. Most of the increase in waterfowl abundance in Nebraska during spring on the Platte River and in the Rainwater Basin Area is the result of range-wide increases in the number of light (snow and Ross's) geese and some migrant (not resident) populations of Canada geese. Since the early 1990s, the Service has progressively increased season lengths and/or bag and possession limits of light geese during sport-hunting seasons; since 1999 it has also allowed the take of these birds during spring (when sport-hunting seasons are closed) in an additional effort to reduce their numbers. We also have liberalized bag and possession limits for some groups of migrant Canada geese that are above population goals.
4. We acknowledge that high concentrations of birds can be a nuisance in urban settings and can increase the possibility of waterfowl disease outbreaks such as avian cholera. However, the primary reason waterfowl and cranes congregate in central Nebraska in spring is not the wetlands, but rather the availability of grain from agricultural operations (primarily corn), which provides nutrition critical for the successful reproduction of these birds during summer. Because 90 percent of the wetlands in the Rainwater Basin region have been modified or drained, and because flows and channel width in the Platte River have decreased due to increased human demands for water, the birds have become more concentrated on remaining wetlands. The Service has long recognized this issue, and in 1991 partnered with Nebraska and various other conservation organizations to create the Rainwater Basin Joint Venture. One of the primary objectives of the Joint Venture is to restore wetland and upland habitats for migratory birds to reduce these large concentrations of waterfowl. The Platte River Recovery Implementation Program to which you refer in would result in more available wet meadow habitat. These restored habitats would allow existing numbers of birds to spread out over a larger area, which would benefit agricultural producers, the general public, and the birds themselves.

Waterfowl and cranes are an international resource, managed cooperatively by signatory countries to migratory bird treaties. These birds represent not only an important biological resource, but also an important economic resource. In 2001 (the most recent year for which data are available), U.S. hunters spent \$1.4 billion on hunting trips and equipment, with 47 percent of that amount spent on trip-related expenses (e.g., lodging, food, and gasoline). In addition, 46 million U.S. residents spent \$32 billion in pursuit of watching birds, resulting in \$85 billion of economic output and creating 863,000 jobs. Seventy-eight percent of the birdwatchers observed waterfowl, making them the most watched type of bird. A recent report states that these economic impacts can be the life-blood of a local economy and cites the Platte River of Nebraska as an example. Migratory bird hunters and wildlife watchers collectively spent about \$140 million in Nebraska alone during 2001.

Mr. Carroll Sheldon

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To conclude, we are unaware of any significant negative impacts to soils and waters of Nebraska associated with droppings of migratory waterfowl or cranes, and available research suggests manure from free-flying waterfowl usually does not degrade landscapes. The Service has taken steps to address the issues of increasing numbers of geese in Nebraska and elsewhere. Various habitat initiatives involving the Service and its partners are under way to restore migratory bird habitat. Habitats restored by these initiatives will allow birds to disperse over a larger area and reduce large concentrations. Migratory birds are valuable biologically, socially, and economically. The Service will continue to work with the States to address human conflicts with migratory birds.

If you have any further questions regarding this issue, please contact Paul Schmidt, Assistant Director for Migratory Birds, at (202) 208-1050.

Sincerely,

**Matt Hogan**

**Acting** DIRECTOR

cc: Honorable Tom Osborne  
(Attn: Ms. Christina Muedeking)  
507 Cannon House Office Building  
Washington, D.C. 20515

cc: 7229-MIB-ES  
6242-MIB-OCL  
3238 MIB-FWS/AMB  
3038 MIB-FWS/CLA  
3238 MIB-FWS/CCU  
3238-MIB-Directorate Reading  
Region 6

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