PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR IMPLEMENTATION OF THE CONSERVATION RESERVE ENHANCEMENT PROGRAM AGREEMENT FOR NORTH DAKOTA

FINAL

U.S. Department of Agriculture
Farm Service Agency

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EXECUTIVE SUMMARY

This programmatic environmental assessment (PEA) identifies the possible environmental consequences resulting from the proposed implementation of the Conservation Reserve Enhancement Program (CREP) agreement for the State of North Dakota. The PEA process is designed to inform decision makers and the public about the potential environmental effects of the proposed action and to ensure public involvement in the process. The process will help decision makers take into account all environmental factors when making decisions related to the proposed action outlined in the CREP agreement.

This PEA has been prepared by the United States Department of Agriculture (USDA) Farm Service Agency (FSA) in accordance with the requirements of the *National Environmental Policy Act* (NEPA) (42 *United States Code* 55 parts 4321 et seq., 2000), the Council on Environmental Quality implementing regulations (40 *Code of Federal Regulations* [CFR] 30 parts 1500 et seq., 2004), and *Environmental Quality and Related Environmental Concern—Compliance with the National Environmental Policy Act* (7 CFR 7 parts 799 et seq., 2004).

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to implement North Dakota's CREP agreement. Under this agreement, approximately 20,000 acres of eligible farmland in 17 counties within North Dakota would be removed from crop production and enhanced by approved conservation practices to establish long-term, high-quality, wildlife habitat and to contribute to water quality improvement in south-central North Dakota. Conservation practices involved in this agreement include the planting of grasses and trees. Public access would be granted on participating acres, allowing for increased recreational activities within the 17 counties.

The North Dakota CREP agreement is needed to meet the following CREP goals:

- Improve resident wildlife habitat through a systematic approach to its development, care, and maintenance.
- View CoverLocks as long-term core areas around which other wildlife habitat development may occur over the next 30 years.
- Provide for partnerships between Federal, State, and local governments and with private conservation organizations to create mutually beneficial conservation management practices for agriculture and resident wildlife on critical watersheds with initial emphasis on priority watersheds.
- Fairly compensate producers for their contribution to sustaining wildlife resources on private lands.
- Improve public access to wildlife.
- Improve and demonstrate rural community economics by managing for diversity in wildlife populations and public accessibility to them.
- Answer needs of ecotourism by providing accessible sites for wildlife viewing.
- Create breeding and staging habitats for neotropical migrants and other resident wildlife.

- Provide alternative deer wintering areas to lessen depredation impacts.

PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

This PEA documents the analysis of the proposed action and the no action alternative. Under the no action alternative, no lands would be enrolled in CREP. The proposed action would seek to enroll one thousand 20-acre plots into CREP. The 20,000 acres of eligible farm land are located in the following 17 North Dakota counties: Adams, Burleigh, Dickey, Dunn, Emmons, Grant, Hettinger, LaMoure, Logan, McIntosh, Mercer, Morton, Oliver, Ransom, Sargent, Sioux, and Stark. Each 20-acre plot would consist of a 5-acre shelterbelt and 15 acres of herbaceous cover. After 5 years, 5 acres of the herbaceous cover would be converted into wildlife food plots.

The proposed action would provide participants with annual rental payments for the 15-year contract period. The rental rate, based on the three predominant soils, will include a 20-percent incentive on all practice acres and a maintenance amount of $5.50 per acre. Under the proposed action, landowners would be required to enter into a 30-year, land-use easement with the North Dakota Game and Fish Department (NDGF). A public access easement would also be acquired on the adjacent 140 acres. Participants would receive an easement payment from NDGF equal to 95 percent of 15 annual Conservation Reserve Program (CRP) payments. The 20-percent incentive amount would not be included in this calculation.

Under the proposed CREP agreement, participants would be compensated for practice establishment costs by both FSA and NDGF. FSA would pay a cost-share payment of up to 50 percent of the cost to establish the required vegetative cover. FSA would also issue a Practice Incentive Payment equal to 80 percent of the cost-share payment. NDGF would pay the remaining practice establishment costs and the proposed action would include a Signup Incentive Payment from FSA. This payment would be equal to 50 times the number of full years of the CRP contract term.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

It is expected that there would be both positive and temporary minor negative impacts associated with implementation of the proposed action. A summary of the potential impacts is given in Table ES 1.

Table ES 1. Summary of potential impacts from implementation of the proposed action.

Resource	Proposed Action	No Action
Biological Resources	• Increased wildlife species with increased vegetative diversity and habitat • Stronger and healthier wildlife populations • Benefits to threatened and endangered species • Temporary negative impacts due to human disturbance and limited protective cover	• Continued degradation of habitat • Potential long-term decrease in number of wildlife species present

Table ES 1. (continued).

Resource	Proposed Action	No Action
	• Potential influx of predators • Long-term impacts can be mitigated on site	
Cultural Resources	• High potential for encountering recorded and unidentified archeological sites • Actions to be reviewed with the North Dakota State Historic Preservation Office on site-specific basis • Class I literature search to be conducted once sites are determined	• Continuation of farming not expected to impact resource • Potential negative impact to resource only if farming invades previously undisturbed land
Water Resources	• Positive impacts to ground and surface water quality • Reduced erosion and sediment loading • Greater rates of aquifer recharge • Reduce agricultural runoff and nutrient leaching • Minor positive impact to floodplains	• Continued degradation of water quality • No reduction in runoff of agricultural chemicals, animal waste, and sediment
Earth Resources	• Stabilization of soils and topography • Reduced erosion • Reduced sedimentation in riparian areas • Temporary increase in erosion during implementation	• Continuation of current rates of erosion would continue
Air Quality	• Potential long-term positive impacts to air quality • Temporary, negligible negative impacts to air quality during implementation	• No significant change to existing air quality conditions
Recreational Resources	• Increased availability of wildlife game species • Improved water quality and abundance of fish species	• Continuation of current recreational activities, which are minimal, on agricultural lands

Table ES 1. (continued).

Resource	Proposed Action	No Action
	• Increased wildlife viewing opportunities • Temporary displacement of wildlife may occur during implementation	
Socio-economics and Environmental Justice	• Positive net present value for land rentals • Loss of nine farm worker positions (estimated cost of $49,304 per year) • Implementation would create total net present value of $15.8 million over 30 years • Increased recreation opportunities would generate economic activity • No impacts to environmental justice	• Socioeconomic conditions would continue to follow current trends • Minimal number of farmlands placed in conservation easements would not contribute significantly to slowing farmland conversion • No impacts to environmental justice

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ACRONYMS AND ABBREVIATIONS

BEA	Bureau of Economic Analysis
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BMP	best management practice
BP	before present
CCC	Commodity Credit Corporation
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
CP	conservation practice
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
EO	Executive Order
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	*Endangered Species Act*
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
FR	*Federal Register*
FWS	Fish and Wildlife Service
GIS	geographical information system
GLCI	Grazing Lands Conservation Initiative
GRP	Grassland Reserve Program
NAAQS	National Ambient Air Quality Standards
NDCC	*North Dakota Century Code*
NDDH	North Dakota Department of Health

NDGF	North Dakota Game and Fish Department
NDPRD	North Dakota Parks and Recreation Department
NDSFS	North Dakota State Forest Service
NDSHPO	North Dakota State Historic Preservation Office
NDSWC	North Dakota State Water Commission
NEPA	*National Environmental Policy Act*
NPS	National Park Service
NPWRC	Northern Prairie Wildlife Research Center
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSFHWAR	National Survey of Fishing, Hunting, and Wildlife-Associated Recreation
NWR	national wildlife refuge
PEA	programmatic environmental assessment
PM_{10}	particulate matter less than 10 microns in diameter
ROI	region of influence
T&E	threatened and endangered
TCP	traditional cultural property
USACE	U.S. Army Corps of Engineers
USC	*United States Code*
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
WHIP	Wildlife Habitat Incentives Program
WMD	wetland management district
WRP	Wetlands Reserve Program

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Department of Agriculture (USDA) Farm Service Agency (FSA) proposes to implement the Conservation Reserve Enhancement Program (CREP) agreement for the State of North Dakota. This programmatic environmental assessment (PEA) has been prepared to analyze the potential environmental consequences associated with the proposed action and the no action alternative in accordance with the *National Environmental Policy Act* (NEPA) (42 *United States Code* [USC] 55 parts 4321 et seq., 2000), the Council on Environmental Quality (CEQ) implementing regulations (40 *Code of Federal Regulations* [CFR] 30 parts 1500 et seq., 2004), and *Environmental Quality and Related Environmental Concern—Compliance with the National Environmental Policy Act* (7 CFR 7 parts 799 et seq., 2004). This analysis is programmatic in nature and does not address individual site-specific impacts, which will be evaluated for individual CREP contracts prior to approval.

1.2 BACKGROUND

FSA was established during the reorganization of USDA in 1994. The mission of FSA is to:

> "…ensure the well-being of American agriculture and the American public through efficient and equitable administration of agricultural commodity, farm loan, conservation, environmental, emergency assistance, and domestic and international food assistance programs." (FSA 1997)

The Conservation Reserve Program (CRP) was established under Title XII of the *Food Security Act of 1985* (16 USC 58 part 3831, 1996). The purpose of CRP is to cost-effectively assist owners and operators in conserving and improving soil, water, and wildlife resources on their farms and ranches. Highly erodible and other environmentally sensitive acreage, normally devoted to the production of agricultural commodities, is converted to a long-term resource conservation cover. CRP participants enter into contracts for periods of 10 to 15 years in exchange for annual rental payments and cost-share assistance for installing certain conservation practices (CPs).

The initial goal of CRP was to reduce soil erosion on highly erodible cropland. Subsequent amendments to CRP regulations have made certain cropland and pastureland eligible for CRP based on benefits to water quality and wildlife habitat. The *Farm Security and Rural Investment Act of 2002*, commonly known as the 2002 Farm Bill, authorizes CRP through 2007 and raises the overall enrollment cap to 39.2 million acres (16 USC 58 part 3831, 1996). The *Conservation Reserve Program Final Programmatic Environmental Impact Statement* contains a detailed analysis of the impacts of implementing the CRP nationwide, including the CREP component (FSA 2003).

The Secretary of Agriculture initiated CREP in 1997. CREP is authorized pursuant to the *Federal Agriculture Improvement and Reform Act of 1996* and is a subset of CRP (7 USC 100 parts 7201 et seq., 1998). This program is based on the continuous CRP model but differs in four important ways (FSA 2004a):

- CREP is targeted to specific geographic areas and is designed to focus CPs on addressing specific environmental concerns.

- CREP is a partnership between USDA, State and/or tribal governments, other Federal and State agencies, environmental groups, wildlife groups, and other stakeholders who have an interest in addressing particular environmental issues.

- CREP is results-oriented, and requires States to establish measurable objectives and conduct annual monitoring to measure progress toward implementation of those objectives.

- CREP is flexible, within existing legal constraints, and may be adapted to meet local conditions on the ground.

This voluntary program uses financial incentives to encourage farmers and ranchers to enroll in contracts of 10 to 15 years in duration to remove lands from agricultural production. The two primary objectives of CREP are to:

- Coordinate Federal and non-Federal resources to address specific conservation objectives of a State and the nation in a cost-effective manner

- Improve water quality, erosion control, and wildlife habitat related to agricultural use in specific geographic areas.

CRP and CREP are administered by FSA in cooperation with the Natural Resource Conservation Service (NRCS), the Cooperative State Research and Education Extension Service (CSREES), State forestry agencies, and local soil and water conservation districts. FSA is the lead agency in the development of this PEA.

1.2.1 North Dakota Goals

CREP agreements are designed to meet specific regional conservation goals and objectives related to agriculture. CREP helps to re-establish native grasslands, one of the most threatened wildlife habitat ecosystems nationwide (Noss, LaRoe, and Scott 1995). Native grasslands are an important component to wildlife habitat, and remnant tracks of grassland occur in small scattered patches not suitable to most wildlife species (Johnson 2000). CREP lands offer breeding space, nesting areas, protective cover, and areas to feed for wildlife, as well as increase recreational activities for the public.

The proposed agreement recognizes that the future of North Dakota's wildlife depends on private lands and that the costs of sustaining wildlife are not the sole responsibility of the landowner and farmer. The North Dakota Game and Fish Department (NDGF) and USDA propose to offer cash incentives to encourage landowner participation. CREP essentially eliminates the landowner's cost for establishing wildlife and provides an easement payment for 30 years of pubic access on private land.

The proposed CREP agreement would intend on enrolling one thousand 20-acre plots into CRP. The plots are called CoverLocks under the CREP agreement. The CoverLocks are to be located in the following 17 North Dakota counties: Adams, Burleigh, Dickey, Dunn, Emmons, Grant, Hettinger, LaMoure, Logan, McIntosh, Mercer, Morton, Oliver, Ransom, Sargent, Sioux, and Stark (Figure 1) (USDA 2001). Each 20-acre plot will consist of a 5-acre shelterbelt (trees) and 15 acres of herbaceous cover. After 5 years, 5 acres of the herbaceous cover would be converted to a wildlife food plot. The agreement also provides for public access on the CoverLock and adjacent land in each quarter section. This could be up to 160,000 acres of access on private land.

The specific goals and objectives for the North Dakota CREP agreement include establishing:

- High-quality, long-term wildlife habitat that will contribute to the reduction in soil erosion, fecal coliform concentrations, and total phosphorus and nitrate concentrations in accordance with the watershed objectives set forth in Section 319 of the *Clean Water Act* (33 USC 26 part 1329, 2000) (also known as the Environmental Protection Agency [EPA] Program 319, or EPA–319)

- One thousand CoverLocks in 17 counties (Figure 1) in south-central North Dakota as high quality, long-term, wildlife habitat for resident wildlife species on private lands

- Thirty-year land-use easements on each 20-acre CoverLock, for a total of 20,000 eligible practice acres

- Thirty-year public access easements to these private lands wildlife resources on the full quarter section on which the CoverLock is located, for a total of 160,000 acres

- New levels of producer economic incentive in return for publicly beneficial conservation programs.

The intended outcome of the North Dakota CREP agreement is to enhance the ability of producers to enroll certain acreage under CRP where deemed desirable by USDA and the Commodity Credit Corporation (CCC). CCC is a Federal entity within USDA that was created to stabilize, support, and protect agricultural income and prices.

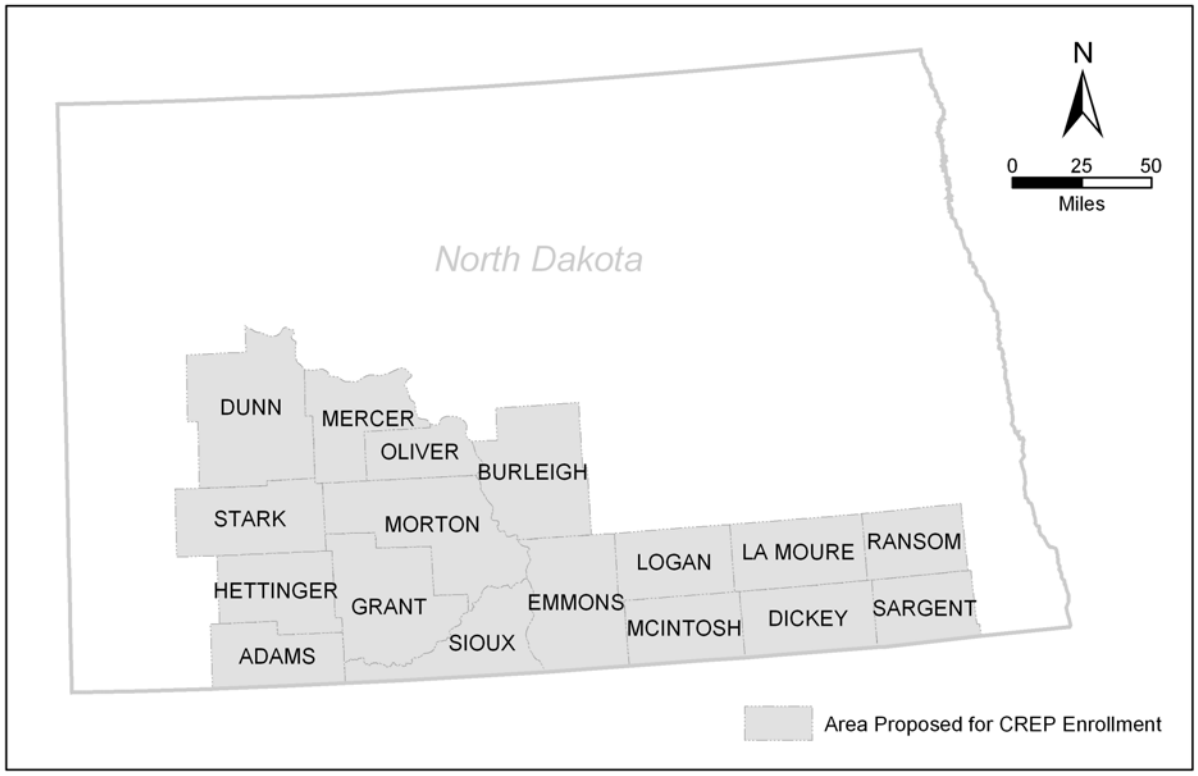

Figure 1. North Dakota counties proposed for CREP enrollment (USDA 2001).

1.3 PURPOSE AND NEED FOR ACTION

The purpose of this action is to implement North Dakota's CREP agreement to establish high-quality, long-term, wildlife habitat, and to contribute to the improvement of water quality in 17 counties in south-central North Dakota. Under this agreement, eligible farm land would be planted in grass and trees. The proposed action would also allow for recreational use by providing for public access on participating acres.

The North Dakota CREP agreement is needed to:

- Improve resident wildlife habitat through a systematic approach to its development, care, and maintenance
- View CoverLocks as long-term core areas around which other wildlife habitat development work can occur over the next 30 years
- Provide for partnerships between Federal, State, and local governments and with private conservation organizations to create mutually beneficial conservation management practices for agriculture and resident wildlife on critical watersheds with initial emphasis on priority EPA–319 watersheds
- Fairly compensate producers for their contribution to sustaining wildlife resources on private lands
- Improve public access to wildlife
- Improve and demonstrate rural community economics by managing for diversity in wildlife populations and public accessibility to them
- Answer needs of ecotourism by providing accessible sites for wildlife viewing
- Create breeding and staging habitats for neotropical migrants and other resident wildlife
- Provide alternative deer wintering areas to lessen depredation impacts.

1.4 REGULATORY COMPLIANCE

This PEA has been completed as part of the NEPA process and is in compliance with its implementing regulations (40 CFR 30 parts 1500 et seq., 2004) and the FSA implementing regulation *Environmental Quality and Related Environmental Concerns—Compliance with the National Environmental Policy Act* (7 CFR 7 parts 799 et seq., 2004). The intent of NEPA is to protect, restore, and enhance the human environment through well-informed Federal decisions. The following non-exclusive list of higher-tier executive orders (EOs), acts, and relevant decision and guidance documents apply to actions undertaken by Federal agencies and form the basis of the analysis presented in this PEA:

- *Clean Air Act* (42 USC 85 parts 7401 et seq., 1999)
- *Clean Water Act* (33 USC 26 parts 1251 et seq., 2000)
- *Endangered Species Act* [ESA] *of 1973*, as amended (16 USC 35 parts 1531 et seq., 1988)

- EO 11514, *Protection and Enhancement of Environmental Quality* (35 *Federal Register* [FR] 4247, 1977)

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 32, 1995)

- *National Historic Preservation Act* (16 USC 1A part 470, 2000).

1.5 ORGANIZATION OF THE PEA

This PEA discloses the potential impacts of the proposed action and the no action alternative on affected environmental and economic resources. Chapter 1.0 provides background information relevant to the proposed action and discusses the purpose and need for the proposed action. Chapter 2.0 describes the proposed action and alternatives. Chapter 3.0 describes the baseline conditions (i.e., the conditions against which potential impacts of the proposed action and alternatives are measured) for each of the resource areas. Chapter 4.0 explains the potential environmental impacts to these resources. Chapter 5.0 provides an analysis of cumulative impacts and irreversible resource commitments. Chapter 6.0 describes mitigations to reduce potential impacts of the preferred alternative. Chapter 7.0 is a list of the preparers of this document, and Chapter 8.0 lists those persons and agencies contacted during the preparation of this document. Chapter 9.0 contains references used in the PEA.

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2.0 DESCRIPTION OF THE ALTERNATIVES

This chapter describes the alternatives, which includes the proposed action and the no action alternative. These two alternatives are compared in terms of their environmental impacts and ability to achieve the objectives listed in Section 1.2.

2.1 ALTERNATIVE 1—NO ACTION

Alternative 1, the no action alternative, would involve not implementing the North Dakota CREP. No land would be enrolled in CREP, and the goals for the North Dakota CREP would not be met. This alternative would result in a continuation of the current agricultural practices that have lead to the decline in wildlife habitat, a continued degradation of water quality and soil conditions, and limited long-term recreational opportunities for the public.

2.2 ALTERNATIVE 2—PROPOSED ACTION

This alternative would implement the North Dakota CREP agreement. This agreement would enroll lands in CREP by establishing contracts with owners of eligible lands in 17 North Dakota counties. Each 20-acre plot, called a CoverLock, would consist of a 5-acre shelterbelt (trees) and 15 acres of herbaceous cover. After 5 years, 5 acres of the herbaceous cover would be converted to a wildlife food plot. The CoverLocks for Conservation Program, a component of CREP, provides financial incentives for landowners and allows public access on the 20-acre CoverLocks and adjacent lands in each quarter section (i.e., 0.25 square mile or 160 acres). The CoverLocks for Conservation is a joint effort among CREP, Pheasants Forever, NDGF, and private land owners.

2.2.1 Eligible Land

The proposed North Dakota CREP agreement would enroll one thousand 20-acre plots in CRP. Once the CREP agreement is approved, landowners would enroll eligible lands in the program on a voluntary basis. As such, the exact location of parcels that might be enrolled is not known.

To be eligible, the 20-acre plot must be within one of the 17 counties identified in Table 1. The land must be cropland that was planted or considered planted to a crop in 4 of the 6 years between 1996 and 2001. Also, the land must be physically and legally capable of being used for crop production. If the land is currently enrolled in CRP, that contract must expire before the land is considered eligible for enrollment in CREP. The quarter section offered for public access easement cannot be within one-quarter mile of an occupied residence other than the landowner's. The landowner's residence may be adjacent to, but not on, the easement area.

2.2.2 Established Conservation Practices

The CPs proposed for implementation under the North Dakota CREP agreement include the following:

- CP4D, Permanent Wildlife Habitat
- CP12, Wildlife Food Plot
- CP16A, Shelterbelt Establishment.

Table 1. Total acres, number of farms, and acreage in cropland for the counties proposed for CREP enrollment.

County	Total Acres	Number of Farms	Acres in Cropland
Adams	632,320	108	176,941
Burleigh	1,045,120	180	138,434
Dickey	723,840	176	71,247
Dunn	1,286,400	192	58,576
Emmons	966,400	211	197,636
Grant	1,061,760	166	220,115
Hettinger	724,480	101	*
LaMoure	734,080	183	96,413
Logan	635,520	115	*
McIntosh	624,000	104	92,501
Mercer	668,800	112	43,034
Morton	1,232,640	288	132,688
Oliver	463,360	119	17,272
Ransom	552,320	150	67,689
Sargent	549,760	116	63,891
Sioux	700,160	79	80,217
Stark	728,320	161	92,296

** Information withheld to avoid disclosing data for individual farms.*
Source: USDA 2004

A detailed description of each practice is provided in Appendix A. Preparation of lands for installation of CPs may include removal of existing vegetation or rocks through the use of tilling, burning, or approved agricultural chemicals. Temporary covers may be installed. Earth moving equipment may be used to construct surface dikes, dams, levies, and subsurface piping and structures to regulate water flow. Fire breaks, fencing, and roads may also be installed.

2.2.3 Financial Support to Land Owners

The proposed action would provide the participant with annual rental payments for the 15-year contract period. The rental rate would be based the three predominant soils. The rent will include a 20 percent incentive on all practice acres and a maintenance amount of $5.50 per acre. The method of computing the rental rate is the same as other CRP contracts with the exception that a 20 percent incentive would not normally apply to CP4D and CP12.

Under the proposed action, the landowner would be required to enter into a 30-year land-use easement with NDGF. A public access easement would also be acquired on the adjacent 140 acres. The participant

would receive an easement payment from NDGF equal to 95 percent of 15 annual CRP payments. The 20 percent incentive amount would not be included in this calculation.

Participants would be compensated for practice establishment costs by both FSA and NDGF. FSA would pay a cost-share payment of up to 50 percent of the cost to establish the required cover. FSA would also issue a practice incentive payment equal to 80 percent of the cost-share payment. CP12 would not be included for either the cost-share or practice incentive payment from FSA. NDGF would pay the remaining practice establishment costs.

This alternative would include a signup incentive payment from FSA. This payment would be equal to 50 times the number of full years of the CRP contract term.

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3.0 AFFECTED ENVIRONMENT

This chapter describes relevant existing conditions for the resources potentially affected by the proposed action and the no action alternative. In compliance with guidelines contained in NEPA and CEQ regulations, the description of the affected environment focuses on those aspects potentially subject to impacts.

3.1 BIOLOGICAL RESOURCES

3.1.1 Definition of Resource

Biological resources are plant and animal species and the habitats in which they occur. This analysis divides these resources into vegetation; terrestrial wildlife; aquatic wildlife; and threatened, endangered, and sensitive species and their defined critical habitat.

3.1.2 Region of Influence

The region of influence (ROI) for biological resources includes the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1.

3.1.3 Affected Environment

3.1.3.1 Vegetation

Ecoregions describe areas of general similarity in ecosystems including the type, quality, and quantity of environmental resources. North Dakota is divided into four Level III Ecoregions. From southwest to northeast, these are the Northwestern Great Plains, the Northwestern Glaciated Plains, the Northern Glaciated Plains, and the Lake Agassiz Plain (Omemik 1987). These ecoregions are further subdivided into Level IV Ecoregions (Table 2). The potential natural vegetation of these ecoregions in the proposed CREP area is described in the following paragraphs of this subsection (see Table 3 for scientific names of vegetation).

The Northwestern Great Plains generally exhibits rolling topography with the occasional butte and badlands (Bryce et al. 1998). The Level IV Ecoregions are the Missouri Plateau, the Little Missouri Badlands, the River Breaks, and the Moreau Prairies. The Missouri Plateau contains blue grama, wheatgrass/needlegrass association, little bluestem, and prairie sandreed. Natural vegetation in the Little Missouri Badlands includes western wheatgrass, blue grama, little bluestem, and prairie sandreed in the shortgrass prairies. Rocky Mountain juniper can be found in draws and on north slopes. Riparian areas contain scattered cottonwood. The River Breaks has blue grama, western wheatgrass, buffalograss, and some bluestem. Juniper and deciduous trees are found on northfacing slopes. Cottonwood gallery forests are located on the floodplain. The Moreau Prairies are a mixed prairie of western wheatgrass, green needlegrass, blue grama and buffalograss.

The Northwestern Glaciated Plains marks the westernmost extent of continental glaciation and thus displays significant surface irregularity and high concentrations of pothole wetlands (Bryce et al. 1998). The Level IV Ecoregions include the Missouri Coteau, the Collapsed Glacial Outwash, and the Missouri Coteau Slope. Natural vegetation in the Missouri Coteau includes western wheatgrass, bluestem, needle-and-thread, and green needlegrass. Prairie cordgrass and northern reedgrass are found near wetlands. The Collapsed Glacial Outwash displays needle-and-thread, prairie muhly, prairie junegrass, and blue grama.

Table 2. The Level IV Ecoregions within the counties proposed for CREP enrollment.

County	Level IV Ecoregions
Adams	Missouri Plateau
Burleigh	Missouri Coteau, Collapsed Glacial Outwash, Missouri Coteau Slope, River Breaks
Dickey	Missouri Coteau, Glacial Lake Deltas, Drift Plains
Dunn	Missouri Plateau, Little Missouri Badlands, River Breaks
Emmons	Collapsed Glacial Outwash, Missouri Coteau Slope, River Breaks
Grant	Missouri Plateau
Hettinger	Missouri Plateau
LaMoure	Missouri Coteau, Drift Plains
Logan	Missouri Coteau, Collapsed Glacial Outwash, Missouri Coteau Slope, River Breaks
McIntosh	Missouri Coteau, Collapsed Glacial Outwash, Missouri Coteau Slope
Mercer	Missouri Plateau, River Breaks
Morton	Missouri Plateau, River Breaks
Oliver	Missouri Plateau, River Breaks
Ransom	Tewaukon Dead Ice Moraine, Drift Plains, Glacial Outwash, Glacial Lake Agassiz Basin, Sand Deltas and Beach Ridges
Sargent	Glacial Lake Basins, Glacial Lake Deltas, Tewaukon Dead Ice Moraine, Drift Plains, Glacial Outwash, Glacial Lake Agassiz Basin, Sand Deltas and Beach Ridges
Sioux	Missouri Plateau, River Breaks, Moreau Prairie
Stark	Missouri Plateau
Source: Northern Prairie Wildlife Research Center (NPWRC) 2004	

Table 3. Common and scientific names of potential natural vegetation in the ROI.

Common Name	Scientific Name	Common Name	Scientific Name
Ash	*Fraxinus pennsylvanica*	Northern reedgrass	*Calamagrostis stricta*
Big bluestem	*Andropogon gerardii*	Prairie cordgrass	*Spartina pectinata*
Blue grama	*Bouteloua gracilis*	Prairie junegrass	*Koeleria macrantha*
Buffalo grass	*Buchloe dactyloides*	Prairie muhly	*Muhlenbergia cuspidata*
Burr oak	*Quercus macrocarpa*	Prairie sandreed	*Calamovilfa longifolia*
Cottonwood	*Populus deltoids*	Rocky Mountain juniper	*Juniperus scopulorum*
Elm	*Ulmus americana*	Saltgrass	*Distichlis spicata*
Green needlegrass	*Stipa viridula*	Sand bluestem	*Andropogon hallii*
Indiangrass	*Sorghastrum nutans*	Sideoats grama	*Bouteloua curtipendula*
Little bluestem	*Andropogon scoparius*	Switchgrass	*Panicum virgatum*
Needle-and-thread	*Stipa comata*	Western wheatgrass	*Agropyron smithii*
Source: NPWRC 2004			

Alkaline areas contain saltgrass. The Missouri Coteau Slope has western wheatgrass, needle-and-thread, prairie junegrass, and green needlegrass.

The Northern Glaciated Plains is a flat to rolling landscape composed of glacial drift (Bryce et al. 1998). The grassland is transitional between tall and shortgrass prairie and there are high concentrations of temporary and seasonal wetlands. The Level IV Ecoregions include the Glacial Lake Basins, the Glacial Lake Deltas, the Tewaukon Dead Ice Moraine, the Drift Plains, and the Glacial Outwash. The Glacial Lake Basins has western wheatgrass, needle-and-thread, blue grama, and green needlegrass. Potential natural vegetation of the Glacial Lake Deltas Prairie includes sandreed, little bluestem, indiangrass, switchgrass, and sand bluestem. The Tewaukon Dead Ice Moraine exhibits western wheatgrass, green needlegrass, blue grama, needle-and-thread, and sideoats grama. Western wheatgrass, big and little bluestem, switchgrass, and indiangrass may be found in the Drift Plains. The Glacial Outwash has little bluestem, needle-and-thread, blue grama, and prairie junegrass. Elm, ash, and burr oak may occur in river bottoms.

The Lake Agassiz Plain is extremely flat and has fewer lakes and pothole wetlands than neighboring ecoregions (Bryce et al. 1998). Level IV Ecoregions include the Glacial Lake Agassiz Basin and the Sand Deltas and Beach Ridges. The tallgrass prairie of Glacial Lake Agassiz Basin contains big and little bluestem, switchgrass, and indiangrass. Cottonwood, willow, green ash, burr oak and American elm occur in riparian areas and on the Pembina Delta. The Sand Deltas and Beach Ridges is tallgrass prairie with patches of oak savannah in delta areas.

3.1.3.2 Terrestrial Wildlife

North Dakota provides refuge to approximately 81 species of mammals, 223 species of breeding birds, 15 species of reptiles, 11 species of amphibians, and 95 species of fish. NDGF is responsible for management of these species and has legal authority over all fish and wildlife within the State.

Hunting activity in the ROI centers around white-tailed deer, which occur in every county of North Dakota (Table 4). Approximately 100,000 hunters of ages 14 and older purchase white-tailed deer licenses and harvest approximately 81,000 deer each year. In 2004, NDGF intends to issue 145,250 licenses for white-tailed deer, a record high for North Dakota (Kreil 2004). Historically, white-tailed deer season provides about a 70 percent success rate for hunters.

Other large hunted species in North Dakota include mule deer, pronghorn, bighorn sheep, elk, and moose. The habitat within the ROI provides predominantly secondary range resources for mule deer, secondary range resources for pronghorns, very few resources for bighorn sheep, some primary range for elk, and some primary range for moose. Primary habitat for white-tailed deer occurs throughout North Dakota (NDGF 2004).

Upland and smaller species hunted include wild turkey, sharp-tailed grouse, prairie chickens, Hungarian partridge, pheasants, ruffed grouse, mourning doves, cottontails, and tree squirrels. Of these, pheasants seem to encourage the most hunters. Six counties within the ROI are ranked as counties with over 5 percent of the statewide pheasant harvest. These counties are Hettinger (12.6 percent), Stark (10.4 percent), Burleigh (8.3 percent), Mercer (6.7 percent), Sargent (6.1 percent), and Emmons (5.6 percent). Hettinger County is ranked as the highest in pheasant production of all counties in North Dakota, with Burleigh County ranked as third and Mercer County as fifth (Kohn 2004).

Hunted migratory birds include snipe, coots, cranes, mergansers, woodcocks, geese, ducks, and swans. NDGF estimates that statewide there are 60.96 breeding ducks per square mile, with a mean

Table 4. Common and scientific names of game species in the ROI.

Common Name	Scientific Name	Common Name	Scientific Name
Big horn sheep	*Ovis canadensis*	Pronghorn	*Antilocapra americana*
Coots	*Fulica atra*	Ring-neck pheasant	*Phasianus colchius*
Cottontail rabbit	*Sylvilagus floridanus*	Sandhill crane	*Grus canadensis*
Elk	*Cervus elaphus*	Sharp-tailed grouse	*Tympanuchus phasianellus*
Hungarian partridge	*Perdix perdix*	Snipe	*Gallinago gallinago*
Moose	*Alces alces*	Tree squirrels	*Sciuridae*
Mourning doves	*Zenaida macroura*	White-tailed deer	*Odocoileus virginianus*
Mule deer	*Odocoileus hemionus*	Wild Turkey	*Meleagris gallopavo*
Greater prairie chicken	*Tympanuchus cupido*	Woodcock	*Scolopax rusticola*
Source: NPWRC 2004			

average of 31.85 breeding ducks per square mile. Of the top ten counties where ducks are hunted, Sargent, Burleigh, and Lamoure counties ranked fifth, sixth, and tenth, respectively. For geese hunting, Ramsey, Burleigh, Sargent, and Mercer counties ranked fourth, fifth, seventh, and eighth of the top ten counties. For general waterfowl hunting, Burleigh, Sargent, and Lamoure counties ranked fifth, sixth, and ninth of the top ten counties (Kohn 2004). The counties within the ROI are important upland game and waterfowl production and hunting areas.

Neotropical migrant birds (i.e., species that summer in North America and winter in South or Central America) are declining in population throughout a number of States. Most neotropical migrants in North Dakota, including bobolinks, lark buntings, grasshopper sparrows, and dickcissels, prefer to inhabit CRP fields rather than agricultural fields (Kantrud et al. 1993). Returning croplands to grassland cover is very important in maintaining habitat for grassland breeding birds, such as sedge wrens, red-winged blackbirds, grasshopper sparrows, savannah sparrows, common yellow throats, lark buntings, and Baird's sparrows (Johnson and Igl 1995). The CRP practice of converting cropland into herbaceous cover has already benefited numerous wildlife species, particularly breeding birds (Johnson and Schwartz 1993).

The eastern portion of the ROI, including Burleigh, Emmons, Logan, McIntosh, Lamoure, Dickey, Ransom, and Sargent counties, contains numerous wetlands that are crucial to breeding waterfowl. Many of these wetlands contain up to 100 pairs of ducks per square mile during the breeding season (Towner 2004) (Appendix B).

3.1.3.3 Aquatic Wildlife

Historically, 103 fish species have been documented in North Dakota at one time. Of the 96 species of fish currently found in the State, 14 have been introduced. Seven of these 14 introductions have been naturalized to North Dakota (Power and Ryckman 1998). Fish popular with North Dakota anglers include walleye, perch, paddlefish, Chinook salmon, catfish, northern pike, bass, bluegill, crappie, muskellunge, sauger, and trout.

There are 13 species of aquatic mussels, 9 species of clams, and 22 species of snails that inhabit North Dakota. All 13 species of mussels, as well as 8 species of clams, and 17 species of snails, are present within the ROI (Cvancara 1983).

3.1.3.4 Threatened, Endangered, and Sensitive Species and Their Defined Critical Habitat

North Dakota does not have its own endangered species act. According to *North Dakota Century Code* (NDCC) (20.1 NDCC 2 part 05, 2003), the NDGF Director may:

> "Exercise authority to establish programs and rules and administer state and federal funds provided to the state for the preservation and management of resident species determined by the director to be threatened or endangered species of wildlife. The authority exercised must be in compliance with the *Endangered Species Act of 1973*, Public Law 93–205. Any person who violates rules established under this subsection is guilty of a class B misdemeanor."

In North Dakota, there are five federally-listed endangered species, two federally-listed threatened species, and one species considered as a candidate for federal listing. All eight of these species are found within the ROI, including two endangered birds, two threatened birds, two endangered mammals, one endangered fish, and one invertebrate, which is a candidate species for listing (Table 5). There is one threatened plant species that occurs in the ROI, the western prairie fringed orchid, and it only occurs in Ransom County (Table 5).

There are several species identified by NDGF as species of high-level concern. Those that occur primarily within the ROI include American white pelicans, ferruginous hawks, willets, and marbled godwits (Dyke, Hagen, and Isakson 2004).

Table 5. North Dakota threatened, endangered, and candidate species.

Species	Federal Status[1]	Counties in Which Species Occurs
Whooping crane (*Grus americana*)	E, XN	Adams, Burleigh, Dickey, Dunn, Emmons, Grant, Hettinger, Lamoure, Logan, McIntosh, Mercer Morton, Oliver, Sioux, Stark
Least tern, interior population (*Sterna antillarum*)	E	Burleigh, Dunn, Emmons, Mercer, Morton, Oliver, Sioux
Bald eagle (*Haliaeetus leucocephalus*)	T	Present in all 17 counties
Piping plover (*Charadrius melodus)*	E, T	Burleigh, Dunn, Emmons, Logan, McIntosh, Mercer, Morton, Oliver, Sioux
Gray wolf (*Canis lupus*)	E, XN, T	Dickey, Dunn, McIntosh, Mercer, Morton, Oliver, Sioux
Black-footed ferret (*Mustela nigripes*)	E	Adams, Dunn, Grant, Hettinger, Mercer, Morton, Oliver, Sioux, Stark
Pallid sturgeon (*Scaphirhynchus albus*)	E	Burleigh, Dunn, Emmons, Mercer, Morton, Oliver, Sioux
Western prairie fringed orchid (*Platanthera praeclara*)	T	Ransom
Dakota skipper *(Hesperia dacotae)*	C	Ransom, Sargent

[1]Status Codes: E = Endangered; T = Threatened; C = Candidate, XN = Experimental, Non-essential (i.e., introduced and/or designated population whose loss would not appreciably reduce the likelihood of the survival of the species in the wild)
Source: Fish and Wildlife Service(FWS) 2004a

Critical Habitat

North Dakota boasts more national wildlife refuges (NWRs) than any other state. North Dakota contains 63 NWRs covering over 290,000 acres managed by the U.S. Fish and Wildlife Service (FWS). There also are 11 wetland management districts (WMDs) totaling 254,000 acres statewide. Within the ROI, there are 15 NWRs and 5 WMDs (FWS 2004b).

Piping plover, federally listed as a threatened species, has designated critical habitat in nine of the proposed CREP counties. Critical habitat for piping plovers includes alkali lakes and wetlands with the following characteristics: (1) sallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet above the high-water mark of the alkali lake or wetland (Towner 2004). Critical habitat for the piping plover is located in Burleigh, Dunn, Emmons, Logan, McIntosh, Mercer, Morton, Oliver, and Sioux counties. Critical habitat areas include some lands along the Missouri River, Lake Sakakawea in Dunn and Mercer counties, and Lake Oahe in Emmons, Morton, and Sioux counties. Critical habitat areas for the piping plover in Burleigh, Logan, and McIntosh counties are privately owned (Appendix B). There is no other critical habitat for threatened and endangered (T&E) species in the proposed CREP area.

3.2 CULTURAL RESOURCES

3.2.1 Definition of Resource

Cultural or heritage resources are defined as those sites, structures, landscapes, districts, objects, records, and lifeway skills that are of importance to a culture or community for historic, scientific, traditional, or religious reasons. Cultural resources are tied to places, persons, events, or practices of social custom and traditional skills and are recognized for their heritage, social, educational, and scientific value through the passage of State and Federal laws for their protection.

Archeological resources are locations and objects from past human activities. Architectural resources are standing structures that are usually over 50 years of age and of significant historic or aesthetic value. Traditional cultural properties (TCPs) hold importance to American Indians or other ethnic groups for the continuing practice of traditional culture. Any of these properties may meet the criteria for inclusion in the National Register of Historic Places (NRHP) and this determination of eligibility (36 CFR 8 parts 800.3–800.13, 2004) is a requirement of the Federal and State environmental assessment process before the initiation of ground disturbance or alteration of a landscape or structure.

State and Federal regulations require Federal agencies to protect and manage the physical and visual integrity of heritage resources. This project will require compliance with Federal and State historic preservation statutes and regulations including, but not limited to:

- *American Indian Religious Freedom Act of 1978,* as amended (42 USC 21 part 1996, 1994)
- *Antiquities Act of 1906,* as amended (16 USC 1 parts 431–433, 2003)
- *Archaeological Resources Protection Act of 1979,* as amended (16 USC 1B parts 470aa–470mm, 2002)
- *Historic Sites, Buildings, and Antiquities Act* (16 USC 1 parts 461–467, 1935)
- *National Historic Preservation Act of 1966,* as amended (16 USC 1A part 470, 2000)

- *Native American Graves Protection and Repatriation Act* (25 USC 32 parts 3001 et seq., 1990).

3.2.2 Region of Influence

The ROI for cultural resources includes the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1.

3.2.3 Affected Environment

The ROI is rich in cultural history tied to features such as the Missouri River and its tributaries, marshlands, native prairie and grasslands, and natural landmarks. State and Federal parks and reserves protect and interpret heritage features including:

- Prehistoric sites
- American Indian ethnographic and traditional use areas
- Early Euroamerican exploration, military activities, and pioneering
- The Lewis and Clark Trail along the Missouri River
- Nineteenth and twentieth century settlement
- Resource-based activities such as transportation, ranching, logging, and mining.

This rich cultural history within the ROI is illustrated by systematic cultural resource inventories conducted on the 5,571-acre West Mine Area in northwest Mercer County, northwest of Beulah and south of Lake Sakakawea on the Missouri River, which recorded 1,732 prehistoric features, 1 TCP, and 50 historic period sites (Bureau of Land Management [BLM] 2004). TCPs for both American Indians and Euroamerican groups would be expected in the ROI. Tables 6 and 7 list prehistoric and historic sites within the ROI including properties listed in the NRHP and local, State, and Federal parks and reserves set aside to preserve cultural heritage in North Dakota. Site types include trails, structures, buildings, archaeological and historic sites, structures, districts, and landmarks.

3.2.3.1 Prehistoric Periods (12,000 years before present [BP]–A.D. 1,600)

More than a century of paleoecological, archaeological, ethnographic, and historic work on the Great Plains and surrounding areas have resulted in a general understanding of the past 12,000 years of human occupation in the region and the cultures of American Indians living in North Dakota today. It is useful to organize this information into cultural-historical periods based on time, diagnostic artifacts or artifact assemblages from the archaeological record, and the environmental conditions that affected human adaptation to the landscape. The following is a generalized summary of the highlights of American Indian cultures of the northern Great Plains and the Missouri River region (DeMaillie 2001, BLM 2004).

PaleoIndian Period (12,000–8,000 years BP)

Peoples of this period were highly mobile hunters of large mammals, including species now extinct. Archaeological cultures include Clovis, Folsom, Agate Basin, Hell Gap, Cody, and Scottsbluff, among others, defined on the basis of signature stone spear points and tool assemblages.

Table 6. Properties within the ROI listed in the NRHP.

County	Number of Properties	NRHP Property and Location
Adams	3	Haynes: Cedar Creek Bridge Hettinger: Adams County Courthouse, U.S. Post Office
Burleigh	21	Bismarck: Bismarck Cathedral Area Historic District, Bismarck Civic Auditorium, Bismarck Tribune Building, Brandt House, Burleigh County Courthouse, Camp Hancock Site, Chief Looking's Village Site (32BL3), Double Ditch Earth Lodge Village Site (32BL8; Mandan earthlodge village, 1675–1780), Downtown Bismarck Historic District, Former North Dakota Executive Mansion, Liberty Memorial Bridge, Northern Pacific Railway Depot, Patterson Hotel, E.G. Patterson Building, Soo Hotel, Towne-Williams House, U.S. Post Office and Courthouse, Van Horn Hotel, Webb Brothers Block, Yegen House and Pioneer Grocery Menoken: Menoken Indian Village Site
Dickey	7	Ellendale: Dickey County Courthouse, Ellendale Opera House Block Fullerton: Carroll House Hotel Oakes: Klein and Sutmar Block, Noonan House, Oakes National Bank Block, U.S. Post Office
Dunn	3	New Hradec: Saints Peter and Paul Church Manning: Dunn County Courthouse, Hutmacker Farm
Emmons	18	Hague: Old St. Mary's Cemetery/Wrought-Iron Cross site, St Aloysius Cemetery/Wrought-Iron Cross Site (two sites), St. Mary's Cemetery's Cemetery/Wrought-Iron Cross Site (three sites), St. Mary's Church Historic District Linton: Emmons County Courthouse, Goldade House, Sacred Heart Cemetery/Wrought-Iron Cross Site, Willows Hotel Strasburg: Holy Trinity Cemetery/Wrought-Iron Cross Site (four sites), Sts. Peter and Paul Catholic Church Complex, Tirsbol Cemetery/Wrought-Iron Cross Site, Welk Homestead
Grant	3	Carson: Carson Roller Mill Elgin: Hope Lutheran Church Heil: Medicine Rock State Historic Site
Hettinger	3	Mott: Hettinger County Courthouse New England: Riverside Regent: Hill Drug Store
LaMoure	0	—
Logan	2	Burnstad: Abell Round Barn Napoleon: Logan County Courthouse
McIntosh	6	Ashley: McIntosh County Courthouse Zeeland: St. Andrew's Evangelical German Lutheran Church, St. John's Cemetery/Wrought-Iron Cross Site (four sites)

Table 6. (continued).

County	Number of Properties	NRHP Property and Location
Mercer	9	Beulah: Beulah School Stanton: Big Hidatsa Village Site, Fort Clark Archeological District, Knife River Bridge, Knife River Indian Villages National Historic Site Archeological District Hazen: Krause House, Boeckel/Renner Site (32ME799, burial mound complex, stone features), Bee's Nest Site (32ME175, Raven Chief Burial, Mandan) Riverdale: High Butte Effigy and Village Site (32ME13)
Morton	1	Huff Indian Village, Mandan, 1480, on Missouri River, National Historic Landmark
Oliver	1	Hensler: Cross Ranch Archeological District
Ransom	8	Lisbon: Biesterfeldt Site (32RM1), Bradford Hotel, Colton's Crossing Bridge, Lisbone Bridge, Lisbon Opera House, Ransom County Courthouse, U.S. Post Office Fort Ransom: Walker Historic District
Sargent	1	Forman: Sargent County Courthouse
Sioux	1	Fort Yates: Former Sioux County Courthouse
Stark	4	Dickinson: Dickinson State Normal School Campus District, Stark County Courthouse, U.S. Post Office Gladstone: Gerhardt Octagonal Pig House
Source: National Park Service [NPS] 2004		

Table 7. State historic sites within the ROI.

County	Historic Site and Location
ROI	The Lewis and Clark National Historic Trail (1804–1806) follows the Missouri River north-south through the center of the ROI
Burleigh	Menoken Historic Site: located east of Bismarck Chaska (Camp Banks): Sibley expedition camp (1863), Chaska burial site, located in east-central portion of county
Dickey	Whitestone Battlefield: General Sully versus Yanktonai Sioux (1863), located in western portion of county Hudson Townsite: 1883, located in southeastern portion of county
Dunn	Fort Berthold Three Affiliated Tribes Reservation: located in northern portions of Dunn and Mercer counties Killdeer Mountain Battlefield: General Sully versus Sioux (1864), located in northwest portion of county
Grant	Cannonball State Station: Fifth station stop from Bismarck on the Black Hills Trail (1877–1880), located in south-central portion of county Medicine Rock: Pictographs, on Cannonball River in southwest potion of county

Table 7. (continued).

County	Historic Site and Location
Mercer	Fort Berthold Three Affiliated Tribes Reservation: located in northern portions of Dunn and Mercer counties Crowley Flint Quarry: Knife River Flint source, located in southwestern portion of county Turtle Effigy: petroform, located in northwestern portion of county
Morton	Fort Rice: military post (1864), located on Missouri River in southeastern portion of county Fort Abraham Lincoln: infantry and cavalry post, base for Colonel Custer, located southwest of Bismark on the Missouri River On-A-Slant Indian Village: Mandan village (1575–1781), reconstructed earthlodges, located southwest of Bismark on the Missouri River Bismarck-Deadwood Stage Trail: located in southwestern portion of county
Oliver	Knife River Indian Village National Historic Site: interprets the prehistoric and early historic lifeways of tribes along the Missouri River Fort Clark: Mandan earthlodge village (1822) and American Fur Company (1830–1831), on the west bank of the Missouri River between Mandan and Lake Skakawea in northeastern portion of county Molander Indian Village: Mandan/Hidatsa earthlodge village (1780–1845), located on Missouri River in eastern portion of county
Ransom	Fort Ransom: military post (1867) and homesteading heritage, located on Sheyenne River in northwestern portion of county Standing Rock: sacred to the Sioux, burial mounds (0–1400 A.D.), located on the Sheyenne River in northwest portion of county
Sargent	Camp Buell: Sibley expedition campsite (1863), located in northeastern portion of county
Sioux	Standing Rock Sioux Reservation: encompasses all of Sioux County, includes the Sitting Bull (Hunkpapa Sioux, 1890) Burial Site and Fort Yates (town and original fort on Missouri River)
Stark	Sully's Heart River Corral: base camp for General Alfred Sully (1864 campaign), located in east-central portion of county
Source: NPS 2004	

Archaic Period (8,000 BP–2,000 BP)

Nomadic hunting and gathering continued during this time, along with the development of distinctive stone projectile points replacing the atlatl and dart, and there is evidence in the archaeological record of adaptation to warming climatic conditions and increased dependence on plant foods. Stone rings dating to this period indicate the first use of tipis.

Late Prehistoric (2,000 BP–A.D. 1600)

This period is marked by the appearance of stone arrow points and the use of the bow, ceramics, incipient domesticated crops (e.g., corn, squash, and beans), seasonal villages and earthlodges, and communal hunts, particularly for bison.

From about A.D. 1000–1750, permanent villages, a horticultural economy, occasional intertribal conflict and changing alliances, tribal immigration and emigration, and cultural exchange mark the archaeological and early historic record for the Plains and Missouri River region.

3.2.3.2 Protohistoric Period (A.D. 1600–A.D. 1720)

The Protohistoric period is marked by the first appearance of European trade goods and, importantly, horses in the American Indian archaeologic and ethnographic record, followed by direct contact with Euroamericans.

The Mandan, Arikara, and Hidatsa (now allied to form the Three Affiliated Tribes) have a deep history of occupation within the CREP area, and the archeological record reflects the entry of the Yanktonai Sioux and other nomadic groups into the Missouri River region in the 1700s. With their semi-sedentary, agricultural village culture, the Mandan, Hidatsa, and Arikara lived along the Missouri River and its tributaries well before the time of Lewis and Clark with, generally, the Yankton-Yanktonai Sioux to the east, the Assiniboine and Cree to the north, and Crow and Arapahoe to the west (DeMaillie 2001).

3.2.3.3 Historic Period (A.D. 1720–Present)

The historical period of North Dakota is defined by the entry of Euroamericans into the Dakota region and the beginning of written records and observations, in the early 1700s. Following the period of transient Euroamerican presence and more formal exploration, military engagements (1800–1850) and subsequent transition in American Indian cultures, the immigration focus was on homesteading (1880s through World War I); roads, railroads and river transportation (1850s); agriculture and settled communities; and resource-based industry led by coal mining. Many of the new immigrants were of Scandinavian, German, and Russian heritage, and came directly from these countries or from interim residence in the eastern and midwestern U.S. This heritage can be seen in the long standing traditions and customs, agriculture-based economy, religious practices, construction skills, and building styles that persist in North Dakota today (Wilkins and Wilkins 1977, BLM 2004).

3.3 WATER RESOURCES

3.3.1 Definition of Resource

The *Clean Water Act* (33 USC 26 parts 1251 et seq., 2000) was created to protect the nation's lakes, rivers, aquifers, wetlands, and coastal areas. For the purposes of this analysis, water resources include surface water, groundwater, wetlands, and floodplains. Surface waters are rivers, streams, and lakes. This analysis also addresses impaired surface waters, defined by the EPA as those with levels of pollutants that exceed State water quality standards.

Groundwater refers to subsurface hydrologic resources such as aquifers that are used for domestic, agricultural, and industrial purposes. For this analysis, groundwater includes sole source aquifers. Wetlands are defined by the U.S. Army Corps of Engineers (USACE) as areas that are characterized by a prevalence of vegetation adapted to saturated soil conditions. Wetlands can be associated with surface water or groundwater and are identified based on specific soil, hydrology, and vegetation criteria defined by USACE. For the purposes of this analysis, floodplains are defined as 100-year floodplains, designated by the Federal Emergency Management Agency (FEMA) as those low-lying areas that are subject to inundation by a 100-year flood (i.e., a flood that has a 1 percent chance of being equaled or exceeded in any given year).

3.3.2 Region of Influence

The ROI for water resources includes the surface water, groundwater, wetlands, and floodplains within the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1.

3.3.3 Affected Environment

3.3.3.1 Surface Water

Major river systems of North Dakota include the Missouri, Heart, Knife, Cannonball, Cedar, James, Little Missouri, Red, Sheyenne, and Souris rivers. Other than the Red and Souris rivers, all of these are located within the ROI.

North Dakota can be divided into five basins. These are the Red River, Souris River, Upper Missouri River, Lower Missouri River, and James River basins (North Dakota Department of Health [NDDH] 2004a). The Red River and Souris River basins are in the northeastern portion of the State and are drained by the Red River of the North, which flows to Hudson Bay. The Upper Missouri River, Lower Missouri River, and James River basins are in the southwestern portion of the State. These three basins are drained by the Missouri River, a tributary of the Mississippi River.

The basins that are partially within the ROI include the Red River, Upper Missouri River, Lower Missouri River, and James River basins (NDDH and NRCS 1998). The Red River Basin includes portions of Ransom, Sargent, and Dickey counties. Major tributaries of the Red River of the North that flow within these counties are the Sheyenne and Wild Rice rivers. There are 12 designated impaired waters in the Red River Basin portion of the CREP area (Appendix C). Eight of these waters are impaired as a result of fecal coliform bacteria (NDDH 2004a). The primary sources of this type of contamination are animal feeding operations and riparian area grazing. Other less frequently reported impairments result from excessive sedimentation/siltation, high levels of nutrients or eutrification, low dissolved oxygen, and biological indicators (NDDH 2004a).

The Upper Missouri River Basin, also known as the Lake Sakakawea River Basin, includes portions of Dunn and Mercer counties. Lake Sakakawea, the Missouri River, and the Knife River are partially within these counties. There are four designated impaired waters in the Upper Missouri River Basin (Appendix C). Three are designated impaired from fecal coliform bacteria, and the fourth, Lake Sakakawea, is impaired because of low dissolved oxygen, temperature, and methyl mercury (NDDH 2004a).

The Lower Missouri River Basin is also known as the Lake Oahe River Basin. It encompasses the counties of Stark, Hettinger, Adams, Sioux, Grant, Morton, Oliver, and Emmons. It also includes portions of Dunn, Mercer, Burleigh, Logan, and McIntosh counties. Lake Oahe and a portion of the Missouri River are within these counties. Tributaries of the Missouri River that flow within these counties include Cedar Creek, Elk Creek, Green River, Heart River, Knife River, North Fork Cannonball River, Cannonball River, Antelope Creek, and Beaver Creek. There are 48 designated impaired waters in the Lower Missouri River Basin portion of the CREP area (Appendix C). The most frequently reported impairment is fecal coliform bacteria (NDDH 2004a). Other impairments result from sedimentation/siltation, high levels of nutrients or eutrification, low dissolved oxygen, and biological indicators (NDDH 2004a).

The James River Basin includes all of LaMoure County and portions of Logan, McIntosh, Dickey, Ransom, and Sargent counties. Tributaries of the Missouri River that flow within these counties include the James, Maple, and Sheyenne rivers. There are 16 designated impaired waters in the James River Basin portion of the CREP area (Appendix C). The primary impairments are fecal coliform bacteria and

sedimentation/siltation (NDDH 2004a). Pheasant Lake is impaired from sedimentation/siltation, high levels of nutrients or eutrification, and low dissolved oxygen (NDDH 2004a).

3.3.3.2 Groundwater

Glacial sediment deposits contain the groundwater reservoirs within the proposed CREP area. These major glacial-drift aquifers are considered to have the greatest potential for yielding significant quantities of water for domestic, agricultural, and industrial purposes. Statewide, the aquifers underlie an area of about 8,900 square miles and store an estimated 66 million acre-feet of water (North Dakota State Water Commission [NDSWC] 2004). There are no sole source aquifers within the ROI (EPA 2004).

3.3.3.3 Wetlands

The 1987 USACE Wetland Delineation Manual (USACE 1987) provides guidelines to identify and delineate wetlands. For regulatory purposes under the *Clean Water Act*, wetlands are defined as:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." (33 CFR 3 part 328.3, 2004)

Eastern North Dakota lies in what is known as the Prairie Pothole Region. This region contains abundant small depressional wetlands, called "potholes," created by retreating glaciers approximately 10,000 years ago. Stewart and Kantrud (1973) estimated that 93 percent of the Prairie Pothole Region of North Dakota and 94 percent of the number of wetlands within that region were composed of natural basin wetlands, whereas the remainder were mostly streams, oxbows, and anthropogenic features (e.g., reservoirs and drainage channels). Wetland acreage in counties within the Prairie Pothole Region and the proposed CREP are listed in Table 8.

In contrast, the wetlands in western North Dakota are far less abundant. Many of the ponded wetlands are anthropogenic and as such, can appear and disappear much more readily than their natural counterparts (Reynolds 2004, McLeod 2004).

Table 8. Acres of wetland in counties within the ROI and Prairie Pothole Region. Acres include temporary, seasonal, and semi-permanent wetlands (rivers and lakes are not included).

County	Acres of Wetland
Burleigh	61,866
Dickey	70,939
Emmons	34,701
LaMoure	75,704
Logan	62,806
McIntosh	50,785
Ransom	53,884
Sargent	68,551
	Total = 479,236

Source: Reynolds, Cohan, and Loesch 1997

3.3.3.4 Floodplains

In general, a floodplain can be defined as a flat area, located adjacent to a stream channel, which provides natural storage for water overflow during or after a storm event. EO 11988, *Floodplain Management* (42 FR 26951, 1979), requires that Federal agencies:

> "…take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains..."

FEMA maintains maps of 100-year floodplains within North Dakota. Site-specific evaluations would be conducted prior to enrolling a site into CREP to determine if the site is within, or would impact, a 100-year floodplain.

3.4 EARTH RESOURCES

3.4.1 Definition of Resource

For the purposes of this analysis, earth resources include topography, soils, and paleontological resources.

3.4.2 Region of Influence

The ROI for earth resources includes the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1.

3.4.3 Affected Environment

3.4.3.1 Topography

There are two major physiographic provinces in North Dakota (Figure 2). The Central Lowland Province, located in the southern and western portions of the State, is characterized by a glacially-smoothed landscape that gradually rises west toward the Rocky Mountains. The Great Plains Province, located in the northern and eastern portions of the State, contains both glaciated and non-glaciated landforms. These two provinces are divided by the Missouri Escarpment, which is a glacial moraine that runs roughly parallel to the Missouri River. As described by Bluemle and Biek (2004), the Central Lowland and Great Plains provinces can be further divided into regions that display similar landform characteristics.

Central Lowland Province

The Central Lowland Province is composed of two distinct regions, the Red River Valley and the Glaciated Plains. The Red River Valley runs parallel to the eastern border of North Dakota. It is a flat plain that resulted from sedimentation of the prehistoric glacial Lake Agassiz. The eastern portions of Ransom and Sargent counties are within this region.

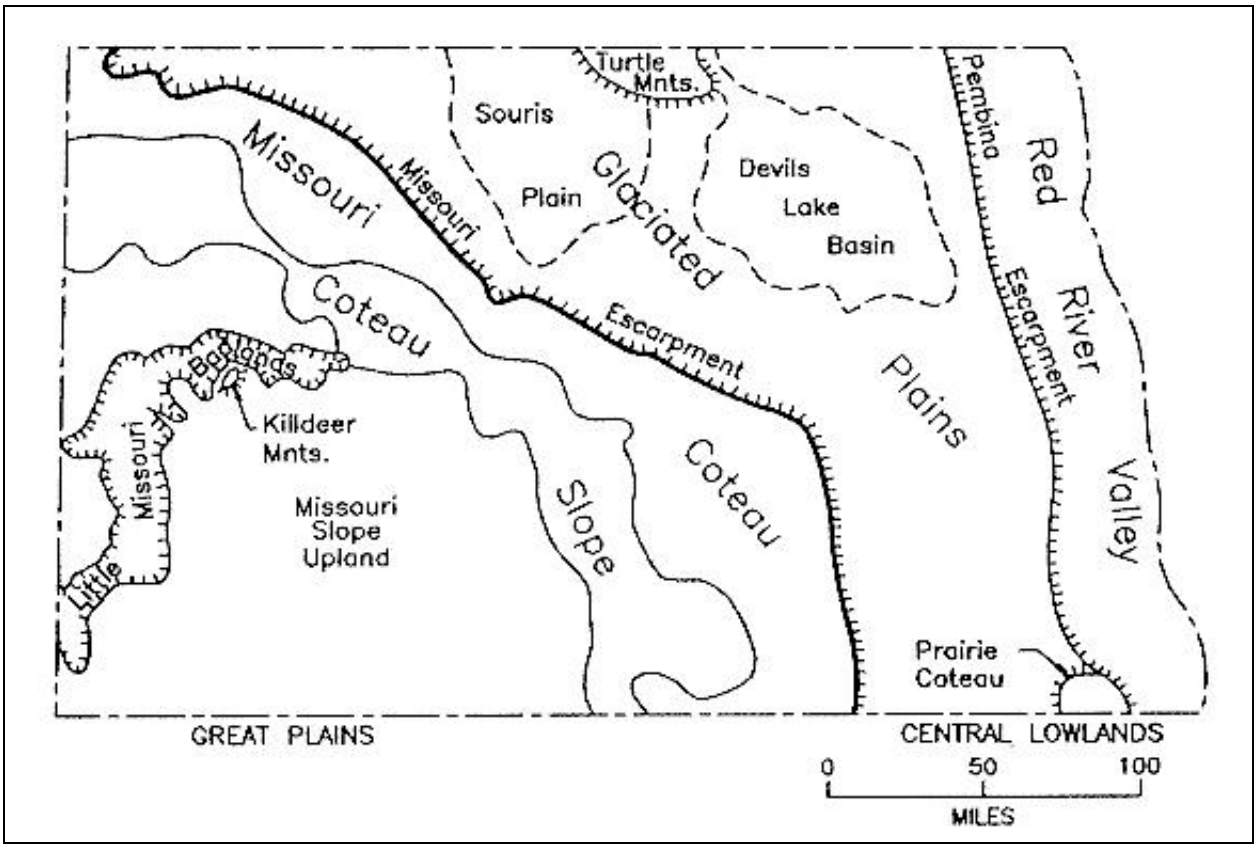

Figure 2. Physiographic provinces of North Dakota, from Bluemle and Biek (2004).

The Glaciated Plains are separated from the Red River Valley by the Pembina Escarpment, which is a glacial moraine. The Glaciated Plains generally exhibit a gentle, rolling landscape. Exceptions to this mild topography occur in the Turtle Mountains, located at the northern boundary of the State, and in the Prairie Coteau at the southeastern portion of the State. The Souris Plain and the Devils Lake Basin are also located within the Glaciated Plains. LaMoure and Dickey counties are within this region, as well as the western portions of Ransom and Sargent counties.

Great Plains Province

The Great Plains Province is divided into four regions including the Missouri Coteau, the Coteau Slope, the Missouri Plateau (also known as the Missouri Slope Upland), and the Little Missouri Badlands. The Missouri Coteau is characterized by a hummocky landscape and numerous potholes (i.e., small lakes where glacial ice persisted longest to prevent the depressions from becoming filled with sediment). Portions of Logan, McIntosh, Burleigh, and Emmons counties are within this region.

The Coteau Slope has rolling to hilly plains and contains both erosional and glacial landforms. Portions of Logan, McIntosh, Burleigh, and Emmons counties are within this region. The Missouri Plateau contains broad valleys, hills, and buttes produced by erosion. Mercer, Oliver, Morton, Sioux, Grant, Stark, Hettinger, and Adams counties fall within this region, as does a portion of Dunn County. The Little Missouri Badlands is a ruggedly eroded region along the Little Missouri River. The northeastern portion of Dunn County is in this region.

3.4.3.2 Soil

For this analysis, soils are described by Level IV Ecoregion (Bryce et al. 1998, University of Idaho 2004) (Table 9). Soils in the ROI are predominantly mollisols, which are the typical soils of grassland ecosystems. Mollisols are characterized by a thick, dark surface horizon. They are rich in organic materials and thus very productive agriculturally. Level IV Ecoregions comprised entirely of mollisols includes the Missouri Coteau, Collapsed Glacial Outwash, Missouri Coteau Slope, Glacial Lake Basins, Glacial Lake Deltas, Tewaukon Dead Ice Moraine, Drift Plains, and the Glacial Lake Agassiz Basin. The soils of these ecoregions are underlain by glacial sediments (e.g., till, outwash, drift), sandstone, and shale.

Entisols are another type of soil found within the ROI. These soils are very diverse and are developed in unconsolidated parent material. They usually lack genetic horizons except an A horizon. Ecoregions that contain both entisols and mollisols are the Glacial Outwash, Sand Deltas and Beach Ridges, Missouri Plateau, and the Little Missouri Badlands. These ecoregions are underlain by glacial sediments, lacustrine sediments, or deltaic deposits.

Minor soils found within the ROI are aridisols, alfisols, vertisols, and inceptisols. Aridisols are found in more arid regions and contain calcium carbonate. They are generally not used for agriculture unless

Table 9. Common soils in the Level IV Ecoregions of the ROI.

Level IV Ecoregion	Common Soil Series
Collapsed Glacial Outwash	Ruso, Bowdle, Lehr, Wabek, Telfer, Lihen, Sioux, Parshall, Arvilla, Southam, Divide, Harriet
Drift Plains	Barnes, Svea, Buse, Hamerly, Cresbard, Parnell
Glacial Lake Basins	Hegne, Fargo, Bearden, Overly, Embden, Gardena, Glyndon, Great Bend, Aberdeen
Glacial Lake Deltas	Hecla, Ulen, Arvilla, Sioux, Serden, Rosewood, Lohnes, Bantry, Hamar
Glacial Lake Agassiz Basin	Bearden, Hegne, Glyndon, Ulen, Fargo, Gardena, Embden, Ryan
Glacial Outwash	Brantford, Claire, Totten, Renshaw, Arvilla, Fordville, Sioux
Little Missouri Badlands	Cabbart, Fleak, Zeona, Boxwell, Dogtooth Maltese, Patent, Havre, Glendive, Wolfpoint
Missouri Coteau	Barnes, Buse, Parnell, Svea Williams, Bowbells, Zahl
Missouri Coteau Slope	Williams, Max, Zahl, Bowbells, Parnell
Missouri Plateau	Vebar, Chama, Amor, Williams, Rhoades, Belfield, Cabba, Flasher, Reeder, Regent, Parshall, Golva, Zahl
Moreau Prairie	Bullock, Parchin, Absher, Rhoades, Sorum, Reeder, Amor, Ekalaka, Janesburg, Moreau, Twilight
River Breaks	Sansarc, Opal, Bullock, Cabba, Amor, Flasher, Vebar, Temvik, Mandan, Cherry, Chama, Zahl, Lallie, McKeen
Sand Deltas and Beach Ridges	Embden, Inkster, Hamar, Wyndmere, Arvilla, Hecla, Searden, Renshaw, Vang, Arveson, Bantry
Tewaukon Dead Ice Moraine	Forman, Aastad, Buse, Parnell
Source: NPWRC 2004	

irrigation water is available. Alfisols are relatively fertile and tend to be very productive for both agriculture and silviculture. Vertisols are clay-rich soils that shrink and swell with changes in moisture content, and thus tend to lack distinct, well-developed horizons. Inceptisols exhibit minimal horizon development and can occur in a wide range of ecological settings. Ecoregions with these soil types are the River Breaks and the Moreau Prairie. Both of these two ecoregions are underlain by sandstone and shale.

3.4.3.3 Paleontological Resources

Paleontological resources are tied closely to a geologic setting—sedimentary strata, landforms, areas of erosion into older rocks. The geological setting can be used to predict the occurrence of fossils, their type, abundance, and quality of preservation. North Dakota has geologic strata yielding plant, invertebrate, and vertebrate fossils from the relatively recent Pleistocene Epoch (10,000 years to 1.6 million years ago) back through the Cretaceous Period (66–91 million years ago). Fossils are protected on state land through the North Dakota Geological Survey under the *North Dakota Paleontological Resource Protection Act* (54 NDCC 17.3 parts 03–04, 2003).

3.5 AIR QUALITY

3.5.1 Definition of Resource

Although the *Clean Air Act* (42 USC 85 parts 7401 et seq., 1999) is a Federal law, States are generally responsible for implementing the Act. Each State is required by the EPA to develop a State Implementation Plan that contains strategies to achieve and maintain the National Ambient Air Quality Standards (NAAQS). NAAQS establish limits for six criteria pollutants including ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and respirable particulates (PM_{10}, or particulate matter less than 10 microns in diameter). Areas that violate air quality standards are designated as non-attainment areas for the relevant pollutants. Areas that comply with air quality standards are designated as attainment areas for relevant pollutants.

3.5.2 Region of Influence

The ROI for this air quality analysis is the North Dakota Air Quality Control Region (40 CFR 16 part 81.335, 2004), which encompasses the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1.

3.5.3 Affected Environment

NDDH has the primary responsibility to ensure that the ambient air quality in North Dakota is better than the levels required by Federal and State standards. To evaluate compliance with air quality standards, NDDH operates seven ambient and two special purpose air quality monitoring sites. In addition, there are two ambient sites in North Dakota operated by the Transboundary Monitoring Network, eight industry-operated and source-specific air quality monitoring sites, and two ambient monitors operated by the Three Affiliated Tribes on the Fort Berthold Indian Reservation.

The State of North Dakota has relatively clean air and meets all State ambient air quality standards (NDDH 2004b). North Dakota is one of only 14 States that are in attainment for all criteria pollutants. There are no non-attainment areas within the ROI.

3.6 RECREATIONAL RESOURCES

3.6.1 Definition of Resource

Recreational resources are those activities or settings either natural or anthropogenic that are designated or available for recreational use by the public. In this analysis, recreational resources include lands and waters used by the public for hunting, fishing, wildlife watching, hiking, canoeing, and other water-related activities.

3.6.2 Region of Influence

The ROI for recreational resources includes the lands within the 17 counties proposed for enrollment in CREP, including adjacent lands and water bodies.

3.6.3 Affected Environment

Because the land that could be enrolled in CREP is privately held, access to this land for recreational activities is presently controlled by landowners. However, there is public land available for recreation in the proposed CREP area. For example, there are three national grasslands in the proposed CREP area (North Dakota State Forest Service [NDSFS] 2004) (Figure 3). Cedar River National Grasslands lies entirely in Grant County and contains 6,717 acres. The 68,915 westernmost acres of the Sheyenne National Grasslands are within Ransom County. Dunn County contains approximately 12,577 acres of the Little Missouri National Grasslands. National grasslands within North Dakota are administered by the U.S. Forest Service (USFS) Dakota Prairie Grasslands Supervisor's Office in Bismarck, excluding 60,000 scattered acres of grassland managed by the BLM in the western portion of the State (NDGF 1999). In addition, there are 15 NWRs, 1 State forest, and 7 State parks in the proposed CREP area (FWS 2004b, NDSFS 2004, North Dakota Parks and Recreation Department [NDPRD] 2004) (Figure 3). There are no national parks, national monuments, wilderness areas, or wild and scenic rivers within the proposed CREP area.

Public land provides recreational activities such as hunting, hiking, camping, fishing, biking, and backpacking. Hunting and fishing require State-issued licenses for both public and private land. A discussion of the economics associated with hunting, fishing, and other recreational activities is provided in Sections 3.7 and 4.7.

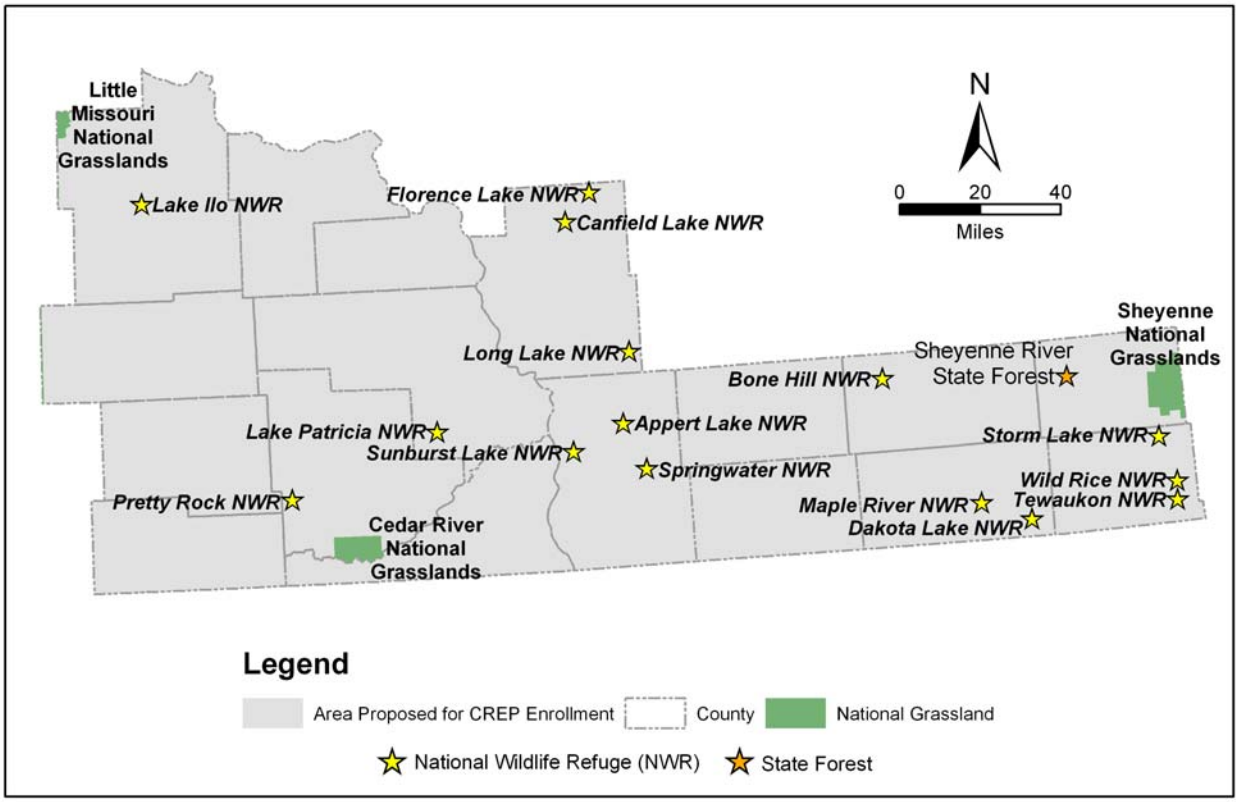

Figure 3. National grasslands, NWRs, and State park within the ROI.

3.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.7.1 Definition of Resource

Socioeconomic analyses generally include investigations of population, income, employment, and housing conditions of a specific area. Socioeconomic issues that are significant and considered in detail in this analysis are farm and non-farm employment and income, farm production expenses and returns, agricultural land use, and recreation spending in the ROI.

In addition to these characteristics, populations of special concern are identified and analyzed for environmental justice impacts. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 32, 1995), requires that Federal agencies:

> "…make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations...."

Race and ethnicity are two distinct categories of minority populations. A minority population can be described by either category, or by a combination of the two. Race as defined by the U.S. Census Bureau (USCB) includes White, Black or African American, American Indian or Alaskan Native, Asian, and Native Hawaiian or Other Pacific Islander (USCB 2001). Ethnicity is defined as either being of Hispanic or Latino origin and any race, or not of Hispanic or Latino origin and any race (USCB 2001). Hispanic or Latino origin is further defined as "a person of Cuban, Mexican, Puerto Rican, South or Central

American, or other Spanish culture or origin regardless of race" (USCB 2001). A minority population can be described as being composed of a minority group and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (CEQ 1997a).

National poverty thresholds are measured in terms of household income and are dependent upon the number of persons within the household. Individuals falling below the poverty threshold are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as poverty areas. When the percentage of residents considered poor is greater than 40 percent, the census tract is considered an "extreme poverty area" (USCB 1995).

3.7.2 Region of Influence

The ROI for analysis of socioeconomics and environmental justice is the 17 counties proposed for enrollment in the North Dakota CREP agreement.

3.7.3 Affected Environment

3.7.3.1 Demographic Profile

The total population within the ROI was 174,600 people in 2000, which was a 2.4 percent decrease from the population of 1990 (USCB 1993a, 2003a). Approximately 54 percent of the total population was located in urban areas or urban clusters, and 45 percent of the population was located within rural areas (USCB 2003b). This was a decrease of approximately 3 percent from the 1990 urban population (USCB 1993b).

As reported by the USCB (2003a), demographics for the non-Hispanic ROI population was 94.26 percent White, 0.18 percent Black or African American, 4.19 percent American Indian or Alaska Native, 0.30 percent Asian, 0.04 percent Native Hawaiian or Pacific Islander, and 1.03 percent all other races or combination of races. Hispanic or Latino of any race accounts for 0.75 percent of the population. Overall the ROI is not a location of a concentrated minority population; however, it is important to note that there are three Indian reservations within the ROI that do have concentrated minority populations (Figure 4). The Fort Berthold Reservation covers portions of Dunn and Mercer counties. The Lake Traverse Reservation is in Sargent County, and the Standing Rock Reservation encompasses Sioux County. Tribal lands are eligible for participation in CREP; however, tribes are likely to be hesitant to agree to the public access requirements of the agreement.

In 2002, American Indians operated 82 farms within the ROI, Hispanics operated 77 farms, Asians operated 3 farms, and 10 farms were operated by other races (USDA 2004). The ROI accounts for 36.6 percent of all minority-operated farms within the State of North Dakota, while these 172 farms account for 1.8 percent of the total number of farms within the ROI (USDA 2004).

3.7.3.2 Non-Farm Employment and Income

Between 1993 and 2002, the non-farm labor force within the ROI ranged from 89,936 in 1993 to 97,538 in 1997 (Bureau of Labor Statistics [BLS] 2003). Non-farm employment also ranged during this period from a low of 85,924 positions in 1993 to a high of 95,022 positions in 1997 (BLS 2003). The unemployment rate within the ROI varied from a high of 4.59 percent in 1993 to a low of 2.75 percent in 1997 (BLS 2003). Within the ROI, Sioux County has experienced the highest average non-farm unemployment rate for the period (7.67 percent), with the highest rate occurring in 1993 (18.4 percent) (BLS 2003).

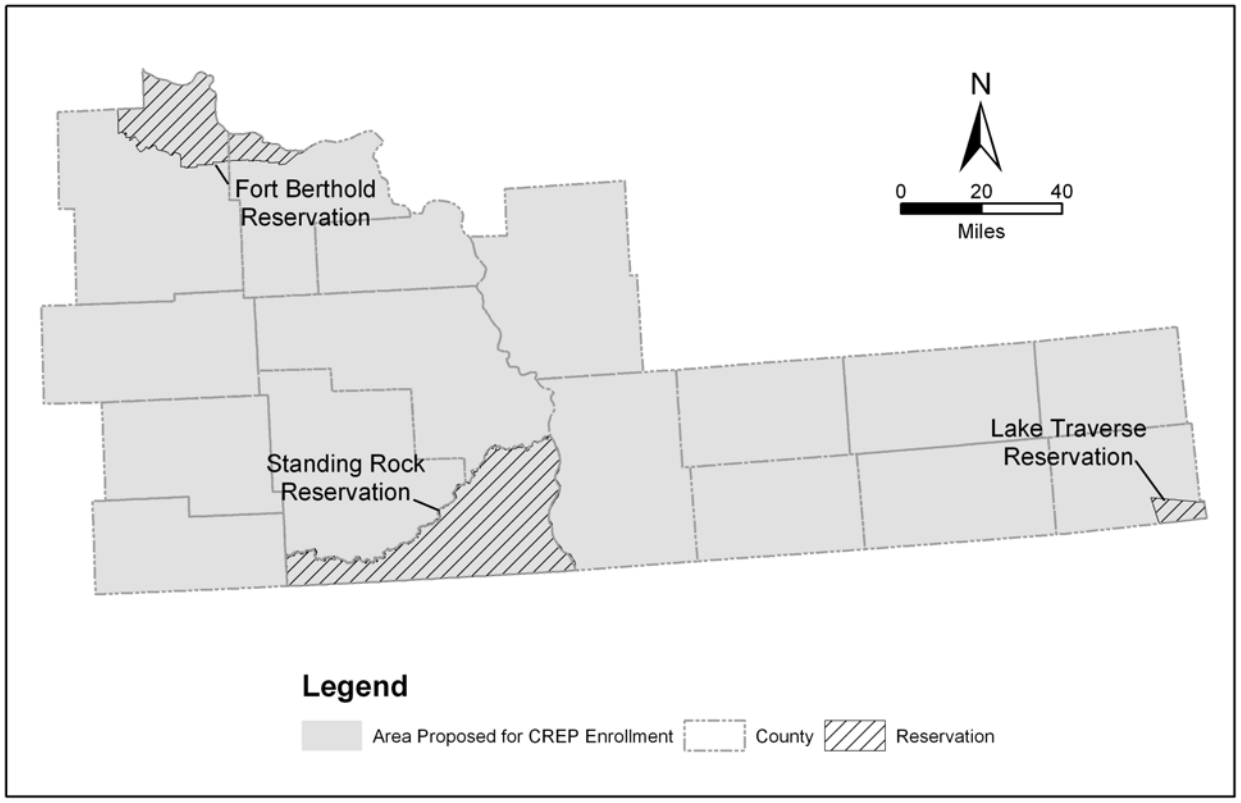

Figure 4. Reservations within the ROI.

Median household income in 1999 ranged significantly within the ROI. The highest median household income in the ROI was $42,269 in Mercer County, and the lowest median household income was $22,483 in Sioux County (USCB 2003a). The average poverty rate for the ROI in 1999 was 14.8 percent and varied from a high of 39.2 percent in Sioux County to a low of 7.5 percent in Mercer County (USCB 2003a). The ROI would not be considered a poverty area.

3.7.3.3 Farm Employment and Income

As reported by the 2002 Census of Agriculture (USDA 2004), there were 5,677 farm workers on 2,561of the 9,351 farms within the ROI in 2002, accounting for a payroll of $31.1 million. Table 10 lists the hired farm and contract labor costs per county within the ROI and labor costs as a percentage of total production costs. In 1997, the total hired farm and contract labor costs were $31.8 million, which was 5.1 percent of total production costs. In 2002, the total hired farm and contract labor costs were $33.9 million, which was 5.0 percent of total production costs.

There has been a down turn in farm income in North Dakota since 1993 primarily due to the economics of spring wheat, barely, and beef cow calf operations (Swenson 1999). Despite record high yields in 1998, net farm income would have been $0 without government farm program payments. The Bureau of Economic Analysis (BEA) (2004) reported a realized net farm income in excess of $73 million in 2002. This was a decrease of 61 percent as compared to the 1992 net farm income. BEA (2004) also reported that total government payments to farms within the ROI exceeded $87.4 million in 2002, a decrease of 67.5 percent from 1992. Farm wages and perquisites in 2002 were approximately $32.2 million, which was an increase of 73 percent over those of 1992. These costs were a significant contributor to the 83 percent reduction in net farm proprietors' income within the ROI from 1992.

Table 10. Hired farm and contract labor as a percentage of total production expenses for 1997 and 2002.

Area	2002				1997			
	Hired Farm Labor ($1000)	Contract Labor ($1000)	Total Production Expenses ($1000)	Labor as a Percent of Total Production Expenses	Hired Farm Labor ($1000)[a]	Contract Labor ($1000)[a]	Total Production Expenses ($1000)[a]	Labor as a Percent of Total Production Expenses
North Dakota	140,999	11,704	2,706,081	5.6	135,732	14,836	2,745,661	5.5
Adams	935	65	26,564	3.8	1,527	244.2	28,680	6.2
Burleigh	2,134	95	35,592	6.3	2,349	269.5	34,515	7.6
Dickey	2,708	194	56,403	5.1	2,669	613.8	57,730	5.7
Dunn	1,371	240	38,556	4.2	1,293	116.6	37,346	3.8
Emmons	1,549	41	50,987	3.1	1,201	166.1	42,925	3.2
Grant	1,936	108	41,089	5.0	1023	146.3	33,602	3.5
Hettinger	1,067	278	33,336	4.0	1,298	467.5	36,097	4.9
LaMoure	3,341	204	64,890	5.5	2,842	218.9	68,239	4.5
Logan	1,135	103	34,974	3.5	828.3	133.1	30,741	3.1
McIntosh	1,224	459	34,555	4.9	1,165	103.4	34,604	3.7
Mercer	566	91	19,356	3.4	1,113	330	24,712	5.8
Morton	2,611	326	60,250	4.9	3,265	314.6	58,534	6.1
Oliver	1,138	51	19,109	6.2	916.3	64.9	16,853	5.8
Ransom	3,825	122	47,929	8.2	3,750	118.8	58,197	6.6
Sargent	3,754	117	56,314	6.9	3,673	132	61,392	6.2
Sioux	656	144	15,375	5.2	596.2	56.1	12,833	5.1
Stark	1,151	141	39,069	3.3	1,823	178.2	44,711	4.5

[a]Value in 2002 dollars.
Source: USDA 2004

3.7.3.4 Farm Production Expenses and Returns

In 2002, farm production expenses exceeded $911 million within the ROI. This is a slight decrease over the 1992 figure of $919 million (adjusted to 2002 dollars) (USDA 2004, BEA 2004). Using the 2002 acreage in active farm production (12,275,790 acres), the average cost per acre within the ROI in 2002 was $74.28 (USDA 2004). Using 2002 cropland, the cost per acre of agricultural chemicals inputs, including fertilizers and lime, was $8.76 (USDA 2004). Average net cash return per farm within the ROI was $23,611 in 2002 (USDA 2004). The average net cash receipts per acre within the ROI in 2002 were $20 (USDA 2004). Table 11 lists the average farm production expenses and return per dollar of expenditure in 2002 within each county in the ROI. Table 12 lists the average value of land and buildings and the average value of machinery and equipment per farm in 2002 within each county in the ROI.

Table 11. Average farm production expenses and return per dollar of expenditure in 2002.

Area	Average Size of Farm (acres)	Average Total Farm Production Expense ($)	Average Cost per Acre ($)	Average Net Cash Return per Farm ($)	Average Net Cash Return per Acre ($)	Average Return per $ Expenditure ($)
North Dakota	1,283	88,492	69	32,972	26	0.37
Adams	1,535	67,939	44	13,703	9	0.20
Burleigh	915	37,584	41	16,598	18	0.44
Dickey	1,125	105,822	94	49,306	44	0.47
Dunn	1,900	65,795	35	20,043	11	0.30
Emmons	1,199	72,631	61	15,312	13	0.21
Grant	1,928	75,393	39	15,644	8	0.21
Hettinger	1,392	68,172	49	21,469	15	0.31
LaMoure	1,090	104,661	96	41,389	38	0.40
Logan	1,298	78,770	61	12,646	10	0.16
McIntosh	1,081	66,070	61	21,414	20	0.32
Mercer	1,176	42,448	36	14,078	12	0.33
Morton	1,493	70,716	47	17,558	12	0.25
Oliver	1,315	62,042	47	22,370	17	0.36
Ransom	948	90,947	96	35,435	37	0.39
Sargent	1,077	120,845	112	67,448	63	0.56
Sioux	3,925	87,358	22	-3,274	-1	-0.04
Stark	1,004	50,282	50	20,252	20	0.40

Source: USDA 2004

3.7.3.5 Current Agricultural Land Use Conditions

In 2002, there were 12.3 million acres of land within the ROI actively used for agricultural purposes including cropland, hay land, and pastureland. This was less than a 1 percent decrease from 1997 (USDA 2004). Table 13 lists the acreage for different agricultural land uses in 1992 and 1997 and the percent change during that period. In 1997, there were 812,362 acres within the ROI enrolled in either CRP or the Wetlands Reserve Program (WRP). In 2002, this enrollment increased to 864,998 acres. As of October 2005, another 119,494 acres will be enrolled in CRP for a total of 984,492 acres within the ROI (FSA 2004b). The average value of farm land in 2004 was estimated at $455 per acre (North Dakota Agriculture Statistics Service 2004).

Table 12. Average value of land, buildings, machinery, and equipment per farm in 2002.

Area	Average Size of Farm (acres)	Average Value of Land and Buildings per Farm ($)	Average Value of Machinery and Equipment per Farm ($)
North Dakota	1,283	517,448	124,298
Adams	1,535	407,212	103,691
Burleigh	915	313,366	57,910
Dickey	1,125	538,341	143,154
Dunn	1,900	482,200	84,372
Emmons	1,199	341,322	85,405
Grant	1,928	587,279	87,384
Hettinger	1,392	480,579	118,004
LaMoure	1,090	617,472	140,669
Logan	1,298	323,440	94,051
McIntosh	1,081	273,772	87,743
Mercer	1,176	294,727	72,357
Morton	1,493	415,736	99,831
Oliver	1,315	347,968	100,976
Ransom	948	465,373	127,299
Sargent	1,077	573,977	154,636
Sioux	3,925	817,686	97,940
Stark	1,004	330,265	85,883

Source: USDA 2004

Table 13. Agricultural land uses in 1997 to 2002 and the percent change experienced during that period.

Land Use	Acres in 1997	Acres in 2002	Percent Change
Cropland[1,2]	1,067,265	1,328,835	19.7
Hay land[3,4]	4,477,466	4,152,739	-7.3
Pastureland[5]	4,830,600	4,950,509	2.4
Woodland[6, 7]	19,595	12,569	-35.9
House lots, ponds, roads, wasteland, etc.[8]	416,962	371,398	-10.9
CRP and WRP[9]	812,362	864,998	6.1
Active Agriculture[10]	10,375,331	10,432,083	0.5
Total Land in Farms[11]	10,811,888	10,816,050	<0.1

[1] Cropland excludes all harvested hay land and cropland used for pasture or grazing

[2] Acreage from Grant, Hettinger, and Logan counties withheld to avoid disclosing data for individual farms

[3] Hay land includes all harvested and cropland used for pasture or grazing

[4] Grant, Hettinger, Logan, and Sioux counties not included

[5] Pastureland includes all pasture and rangeland, other than cropland and woodland pastured

[6] Woodland excludes all wooded pasture lands

[7] Acreage from Dunn, Grant, Hettinger, Logan, and Sioux counties withheld to avoid disclosing data for individual farms

[8] Acreage from Sioux County withheld to avoid disclosing data for individual farms

[9] Operations with land enrolled in CRP or WRP are counted as farms if they received $1,000 or more in government payments.

[10] Active agricultural lands include the sum of cropland, hay land, and pastureland (does not include data from Dunn, Grant, Hettinger, Logan, and Sioux counties)

[11] Total land in farms includes the sum of cropland, hay land, pastureland, woodland, and house lots, etc. (does not include data from Dunn, Grant, Hettinger, Logan, and Sioux counties)

Source: USDA 2004

3.7.3.6 Recreational Values

According to the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (NSFHWAR), 259,000 State residents of ages 16 and older hunted or fished in North Dakota in 2001. This survey also revealed that in the same year, 190,000 residents participated in some form of wildlife watching (e.g., observing, photographing, or feeding wildlife) (FWS and USCB 2001).

North Dakota lured 179,000 anglers to State waters in 2001. Of that total, 119,000 (67 percent) were residents of North Dakota, while the remaining 59,000 (33 percent) were non-residents. Fishing-related expenditures for 2001 were in the range of $159 million from residents and non-residents. The NSFHWAR established that approximately $58 million went to trip-related expenses, such as lodging, food and transportation, while $96 million went to related equipment. Other related costs such as licensing, permits, stamps, and membership dues associated with fishing amounted to approximately $5 million. In-state angling has increased in North Dakota. The 2001 survey indicated an 83 percent increase in resident anglers from the 1996 survey data. The survey also indicated that the most popular species among anglers were Northern pike, pickerel, muskie, and muskie hybrids (FWS and USCB 2001).

Non-resident and resident hunters totaled 139,000 individuals in the 2001 survey. Non-residents accounted for 37 percent (52,000 non-residents) of that total, and residents accounted for 63 percent (87,000 residents). Hunting-related expenditures amounted to $103 million of revenue for the State of North Dakota. Of this amount, $54 million went to trip-related expenses, $34 million to equipment, and

$16 million to other hunting expenses such as membership dues, licenses, and permits. The number of active hunters increased from the 1996 survey to the 2001 survey and continues to increase. In 1996, there were 88,000 individuals who claimed to have hunted in North Dakota, and this number increased to 139,000 in 2001. In 2001, there were 139,000 hunters surveyed to determine the preference of species hunted. Of those surveyed, 74,000 hunted large mammals, 69,000 hunted smaller mammals, 61,000 hunted migratory birds, and 20,000 hunted other animals (some individuals hunted in more than one category) (FWS and USCB 2001).

According to the 2001 survey, wildlife-watching activities in North Dakota were enjoyed by 190,000 individuals. Wildlife-watching activities include photographing, observing, or feeding wildlife (non-consumptive activities). Such activities created revenue of $27 million in North Dakota. Trip-related expenses including food, lodging, and transportation amounted to roughly $9 million. Equipment, such as binoculars, film, and special clothing, amounted to $15 million. Other related expenses, including memberships, donations, and contributions, amounted to $3 million. An increasing number of North Dakota residents are enjoying wildlife watching away from their homes. Total expenditures by State residents increased from $23,727 in 1996 to $25,215 in 2001. In 1996, approximately 40,000 State residents participated in wildlife-watching activities away from their home, compared to 48,000 in 2001. The 2001 survey indicates that the majority of wildlife-watchers who left their home environments to observe wildlife went most often to brush covered areas, lakes, and streamsides (FWS and USCB 2001).

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter discloses the potential environmental consequences or impacts to resources described in Chapter 3 that may result from implementing the proposed action or the no action alternative. As this analysis is programmatic and not site-specific, resource impacts may not always be quantifiable. In compliance with guidelines contained in NEPA and CEQ regulations, each individual CREP agreement will require a site-specific environmental evaluation to be completed by FSA.

4.1 BIOLOGICAL RESOURCES

4.1.1 Alternative 1—No Action

Under Alternative 1, the no action alternative, the proposed action would not be implemented. Lands that would have been eligible for enrollment in CREP would remain in agricultural production. The continued use of land for agriculture or the conversion of land to another type of agricultural production would continue to negatively alter and deplete wildlife habitat. The runoff of agricultural chemicals, animal wastes, and sediment would continue to degrade water quality, thereby degrading habitat for native plants and animals.

4.1.2 Alternative 2—Proposed Action

Implementation of Alternative 2 would result in beneficial impacts to biological resources in the proposed CREP area and the waters downstream from the area. The agricultural land eligible for enrollment in the proposed CREP area consists of previously disturbed and extensively managed landscapes. Vegetation and wildlife, including threatened, endangered, and sensitive species and their critical habitats, have been displaced from years of crop production on these lands.

4.1.2.1 Vegetation

The CPs proposed for implementation under the North Dakota CREP would benefit vegetation resources in the 17 counties proposed for CREP enrollment by establishing native plant communities. In particular, establishment of shelterbelts (CP16A), permanent wildlife habitat (CP4D), and wildlife food plots (CP12) would increase biodiversity, help to reduce occurrences of exotic plant species, and provide habitat for wildlife.

Adverse impacts to vegetation may be incurred in the form of temporary roads and the exposure of bare soil during implementation; however, these impacts would be negligible and temporary.

4.1.2.2 Wildlife

Implementation of the proposed CREP enrollment would increase species diversity by increasing wildlife habitat, thereby creating larger, stronger, and healthier wildlife populations.

A major goal of the North Dakota CREP agreement is to establish high-quality habitat for resident wildlife species. Permanent wildlife habitat enhancement (CP4D) would provide food and cover, as well as promote health and viable populations of resident wildlife species. Permanent wildlife habitat would include planting grasses, legumes, forbs, shrubs, and trees. Specific species of vegetation and combinations of species would be determined on a site-specific basis; however, a minimum of four different vegetative species would be used in each initial 15 acres of herbaceous cover. Herbaceous cover would be planted in blocks or strips, depending upon which practice best benefits wildlife in the action area.

When possible, grasslands included in herbaceous cover would connect to existing grasslands to reduce fragmentation and maximize habitat size (Johnson and Igl 1995). Habitat size is important for species selection. Research indicates that grassland habitat patches of roughly 10 acres in size have a 35 percent likelihood of attracting bird species that are moderately habitat-area sensitive and a 15 percent likelihood of attracting bird species that are highly sensitive to habitat size (Herkert et al. 1993). Some species, such as lark buntings and mourning doves, have been found to have no sensitivity to habitat patch size (Johnson and Igl 1995).

Grassland species have declined significantly with the loss of grassland habitat and grassland birds, such as the lark bunting, Baird's sparrow, and grasshopper sparrow, are considered species of concern by NDGF. The loss of suitable breeding and nesting habitat has contributed to the decline of these species (Dyke, Hagen, and Isakson 2004). However, the populations of grasshopper sparrows and lark buntings have increased significantly since the practice of returning agricultural lands to grasslands was started by CRP in North Dakota (Reynolds et al. 1994).

Establishing shelterbelts (CP16A) would provide nesting habitat for neotropical migratory birds (Swanson 1996) and winter habitat and foraging habitat for resident species such as white-tailed deer, pheasants, quail, grouse, rabbits, mourning doves, and squirrels (Johnson, Beck, and Brandle 2004). Shelterbelts would be 5 acres in size and prepared in accordance with NRCS standard practices. Whenever possible, shelterbelts would be planted to connect with existing woodlots to create travel corridors and connectivity for wildlife (NRCS 2003). To be most effective, shelterbelts would be established in block formation to create more forest interior and less forest edge.

Increased edge (i.e., that area where one vegetation type abuts another, such as forest land and crop field) has been connected to increased predation on neotropical migrants by species such as raccoons, crows, and domestic cats. Increased brood parasitism by brown-headed cowbirds is also linked to increased edge and to the decline of several species (Swanson 1996). However, loss of grassland and forest habitat is the highest contributing factor to most neotropical migrant species decline (Swanson 1996). Several neotropical migrant species are sensitive to habitat patch size and, although the size may not encourage permanent habitat selection, the quality would promote stopovers during migration (Swanson 1996). Shelterbelts, regardless of size, would offer more habitat than current croplands, which provide no habitat for neotropical migrant bird species. Shelterbelts may create perch sites for avian predators and travel corridors for mammalian predators.

Research indicates that predation and brood parasitism on neotropical migrants can be reduced by increasing the distance between grassland habitat and forest edge. Winter, Johnson, and Faaborg (2000) deduced from their study that grassland nests located less than 50 meters from forest edge were more susceptible to predation than nests farther away from edge. Burger, Burger, Jr., and Faaborg (1994) indicated in their study that nests located less than 60 meters from forest edge were less successful than those located more than 60 meters from the edge. Gates and Gysel (1978) concluded that increased predation occurred within less than 46 meters from forest edge. By establishing a buffer of cropland of approximately 60–70 meters between shelterbelts and herbaceous cover, parasitism and predation on neotropical migrants, grassland songbirds, and upland species would be reduced, while still providing maximum habitat.

Research has concluded that the best habitat for ring-neck pheasants is cultivated farmland with interspersed patches of brush or woodlots (USFS 2004). Ring-neck pheasants use areas of dense, woody, and herbaceous cover in the winter as foraging habitat. Shelterbelts, particularly those with rows of conifers in the interior, offer areas for foraging as well as escape routes for hens and young broods (NPWRC 1992). Although an increase in forested areas in croplands may increase the amount of predation that occurs within the area, research conducted in Minnesota involving predation on pheasants

concluded that implementing predator control did not compensate for habitat loss and that pheasant numbers declined more resulting from habitat loss than predation (NPWRC 1992). The only method of increasing pheasant populations is to improve their habitat. In North Dakota, pheasants require dense shelterbelts as part of their habitat, particularly for cover from snow and cold temperatures (USFS 2004). Trees within the shelterbelt alone would not create prime habitat for pheasants, but when combined with shrubby understory, herbaceous cover, and grasslands included in the CoverLocks program, pheasant habitat would be greatly enhanced. As noted by Gates and Hale (1975), pheasants have a home range of roughly 0.5 mile, which would be fully encompassed by the shelterbelts. Therefore, the habitat requirements of pheasants would be satisfied via the CoverLocks program within their home range.

Shelterbelts would reduce fragmentation by creating more connectivity and travel corridors for forest species such as white-tailed deer. Connectivity allows larger animals to move from one habitat to the other without risk of exposure to predation. Smaller wildlife, such as pheasants, quail, songbirds, rabbits and squirrels, use shelterbelts to travel to different habitats and for escape or dispersal (Johnson, Beck, and Brandle 2004). These species will also use shelterbelts for thermal cover during winter foraging.

The conversion of herbaceous cover to food plots (CP12) after a period of 5 years would benefit nearly all resident wildlife species for a time. However, food plots can potentially have negative effects. The expansion of wildlife populations from increased habitat could cause some populations to increase above the carrying capacity of the area, leading to starvation and increased disease. The concentration of wildlife at food plot locations may instigate the spread of disease at a faster rate. In addition, hunting pressure around food plots may be detrimental to some wildlife species. Harvest of game species in these areas would have to be monitored carefully to ensure that populations maintain levels suitable to the carrying capacity of the habitat.

Once planted vegetation matures, travel corridors become established, and grasslands develop, increases in wildlife populations would boost hunting and wildlife-watching on previous agricultural lands. Lands currently enrolled in CRP are thought to be largely responsible for the increasing upland game and waterfowl populations. These lands are scheduled to come out of the CRP program in 2007, causing concern over detrimental effects to waterfowl and pheasant numbers (Kohn 2004). By enrolling land into CREP, quality resident and migrant wildlife habitat would be established.

Adverse impacts associated with the proposed action would include an increase in human disturbance during implementation and maintenance. However, using best management practices (BMPs) would help ensure these impacts would be minor and temporary.

4.1.2.3 Threatened, Endangered, and Sensitive Species and Their Defined Critical Habitat

Enrolling an additional 20,000 acres of land into the CRP agreement is expected to have a positive impact on T&E species. The majority of T&E species within the ROI rely heavily upon rivers, beaches, islands, and floodplains. Land adjacent to these habitats should be short-grass prairies to allow for cover and protection from predators. The establishment of herbaceous cover (CP4D) would be beneficial to T&E species by providing such protection. The reduced agricultural runoff in these areas would increase water quality, which in turn would positively impact pallid sturgeon recovery efforts within the counties that border the Missouri River system. Because T&E species are already low in population size, the benefits of the proposed action would only be evident over the long term.

The proposed action would only have a negative impact on T&E species if CREP implementation occurred during the breeding season of these species. Human disturbances such as hunting pressure may suspend breeding of some species.

As with any habitat enhancement project, the establishment of trees within the shelterbelts could potentially increase the amount of avian and mammalian predators. Trees may invite an influx of avian predators, such as brown-headed cowbirds and raptors. Mammalian predators may also increase with increased wildlife species in the proposed action area, but this is not expected to have a measurable effect on T&E species populations. However, predation upon T&E species would have to be monitored within the proposed action area after the action is implemented to ensure no excess loss of these species is occurring. Shelterbelts located adjacent to T&E species or their habitat should contain herbaceous cover and grasslands rather than trees.

Adverse impacts associated with the proposed action would include an increase in human disturbance during implementation and maintenance. However, using BMPs would help ensure these impacts would be negligible and temporary. To comply with the requirements of Section 7 of the ESA (16 USC 35 parts 1531 et seq., 1988), FSA will ensure that all conservation plans consider whether T&E species or critical habitat is present within each specific site. FSA must also consult with the appropriate FWS T&E staff on a programmatic level to determine what level of site-specific review may be necessary.

4.2 CULTURAL RESOURCES

4.2.1 Alternative 1—No Action

Under the no action alternative, farming practices in the 17 counties proposed for CREP enrollment would continue. Though the continuation of farming in previously disturbed areas is not expected to impact cultural resources, a change in farming practices that would disturb previously undisturbed areas could result in impacts to known or unknown archaeological, architectural, or traditional cultural resources.

4.2.2 Alternative 2—Proposed Action

As this PEA does not address specific locales and settings at this time, detailed cultural resource information is not offered in this PEA and all actions should be reviewed with the North Dakota State Historic Preservation Office (NDSHPO) during the planning and implementation phases. NDSHPO recommends that when the CoverLocks are identified by legal description and actions are proposed, a Class I literature search be conducted to determine whether or not any previous cultural resource inventories have been conducted on these properties and if any further investigations or mitigation are warranted (Appendix D).

Potential may be great for recorded and unidentified archaeological sites to exist on CREP properties, especially those near water sources (rivers and streams, springs, marshes), land forms and other topographic features, stone sources, and prehistoric and historic trails.

The following assumptions were considered during the cultural resources analysis for the CREP PEA:

- Actions in this PEA may have potential direct, indirect, and cumulative effects on cultural resources.

- All project planning and work initiated under this PEA will meet required Federal and State historic preservation statutes, regulations, and guidelines. Any permitting or ground-disturbing actions will be preceded by consultation with NDSHPO and tribal representatives, and followed by archival and field investigations as warranted. NDSHPO has published a statewide historic

preservation plan that serves as a guide to preservation methods, goals, and research designs based on the cultural geography of the State (NDSHPO 2003).

- Expected and cumulative adverse effects on identified cultural resources, including physical and visual impacts, will be determined and mitigation plans developed by lead agencies for heritage resource protection and for the treatment of TCPs and unanticipated discoveries.

- Enhancement projects will be conducted on a mosaic of Federal, State, and private lands and different ecologies. Some environmental settings will carry the potential for more cultural and paleontological resources. Each project will require participation by and consultation with several public and private agencies, some of which will have oversight and permitting roles.

4.3 WATER RESOURCES

4.3.1 Alternative 1—No Action

Under the no action alternative, the CPs described in Section 2.2 would not be implemented. The use of land for agriculture or conversion of lands to other types of agricultural production could result in the continued degradation of water quality from runoff of agricultural chemicals, animal waste, and sediment.

4.3.2 Alternative 2—Proposed Action

4.3.2.1 Surface Water

Implementation of the proposed CREP would have long-term positive effects on surface water quality. The CPs listed in Section 2.2 are designed to improve water quality by establishing native vegetation communities. These communities would stabilize soils and reduce soil erosion and sediment loading of surface waters, as well as decrease the runoff of nutrients and chemicals associated with agriculture. In addition, CREP implementation is expected to cause a decrease in agricultural acreage that would result in reduced runoff from agricultural pesticides and other chemicals.

Activities such as vegetation clearing and soil disturbance may occur during the installation of CPs. These activities may result in temporary negative impacts to surface water quality resulting from runoff associated with these activities; however, the use of filter fencing or similar practices would reduce these impacts.

4.3.2.2 Groundwater

Implementation of the proposed CREP agreement would result in positive effects on groundwater. The proposed CPs would establish permanent vegetative cover where none currently exists. Such vegetation would slow the rate of rainwater flow over the land, allowing for greater rates of aquifer recharge. The improvement in surface water quality previously discussed would result in improved quality of groundwater recharged by these surface waters. In addition, a reduction of agricultural acreage would decrease the amount of nutrients leaching into the groundwater.

4.3.2.3 Wetlands

Implementation of the proposed action would not directly affect natural basin wetlands. CPs would not be constructed in wetlands, as these areas are not agricultural land. The removal of some land from agricultural use may affect the number and size of wetlands formed by anthropogenic features associated with agricultural activities such as reservoirs and drainage channels; however, this effect is expected to be minor. A potential indirect benefit of implementing the proposed action would be the reduction of agricultural nutrient and chemical runoff into wetlands.

4.3.2.4 Floodplains

CPs may potentially be constructed on floodplains, and minor improvements to floodplains in the ROI are expected to occur as a result of the implementation of the proposed CPs. The establishment of vegetation is expected to decrease erosion in these areas and improve the function of floodplains. Implementation of the proposed CPs should not adversely alter the drainage, flow, or holding capacity of floodplains.

4.4 EARTH RESOURCES

4.4.1 Alternative 1—No Action

Under Alternative 1, the no action alternative, the CPs described in Section 2.2 would not be implemented. The current rates of erosion and the changes in topography resulting from erosion would be expected to continue. There would be negligible effects to paleontological resources.

4.4.2 Alternative 2—Proposed Action

Long-term positive impacts to topography and soils are expected to occur under Alternative 2. Implementation of the proposed CPs would result in localized stabilization of soils and topography as a result of decreased erosion and runoff. In pasturelands, exclusion of cattle from streams and riparian areas bordering streams would reduce stream bank destabilization, resulting in reduced rates of sedimentation and subsequent improvements to water quality. Establishing permanent vegetation on former croplands would reduce erosion by wind and water. Short-term disturbances to soils during implementation of CPs may include tilling or installation of various structures such as fences, breakwaters, and roads. These activities may result in temporary increases in soil erosion. Managed haying and grazing will not be conducted on enrolled CREP lands. There would be negligible effects to paleontological resources.

4.5 AIR QUALITY

Impacts to air quality in attainment areas would be considered significant if:

- Pollutant emissions associated with the proposed action caused or contributed to a violation of any national, State, or local ambient air quality standard
- The proposed action exposed sensitive receptors (e.g., residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, parks, and outdoor restaurants) to substantially increased pollutant concentrations
- Pollutant emissions associated with the proposed action exceeded any significance criteria established by the State Implementation Plan.

4.5.1 Alternative 1—No Action

Implementation of Alternative 1 would not change existing air quality conditions. The CPs described in Section 2.2.2 would not be implemented.

4.5.2 Alternative 2—Proposed Action

Implementation of Alternative 2 would result in establishment of CPs as described in Section 2.2 within 20,000 acres of farmland in 17 counties in North Dakota. Implementing the proposed CPs would reduce

the amount of exposed soil, which would have long-term positive impacts to the local air quality. It is not expected that any of the CPs would result in significant impacts to air quality.

Preparing the lands for CPs may include activities such as tilling, burning, and installation of various structures. These activities would have localized and temporary impacts to air quality. Tilling would temporarily increase PM_{10} concentrations in the immediate area; however, this increase is not expected to be significant. Watering exposed soil during and after tilling would reduce the amount of PM_{10} released into the air.

The amount of prescribed open burning that would take place is not known, but it is not expected to have a significant impact on the local air quality. Prescribed open burning would release toxic pollutants into the environment such as particulates, partially consumed fuel, liquid droplets, carbon monoxide, hydrocarbons, and nitrogen oxides. Over 90 percent of particulate emissions from prescribed burning is PM_{10}, which poses particular health concerns (EPA 1992). The quantity and distribution of these pollutants would depend on the type of vegetation that is being burned, the configuration of the burned material (material heaped or organized in rows), and the weather at the time of burning. The method of burning the vegetation material would also determine how much of the pollutants are released to the environment. One method for reducing emissions would be the use of an air curtain incinerator, which consists of a burn pit and a device to blow air across and into the pit; thus, decreasing the amount of time required to burn the material (Eastern Research Group 2001).

Installing various structures such as roads, firebreaks, and fences may require the temporary use of heavy-duty diesel construction vehicles. Primary emissions from construction vehicles include carbon monoxide and PM_{10}. Best management practices would be used during construction activities to reduce the amount of emissions.

4.6 RECREATIONAL RESOURCES

4.6.1 Alternative 1—No Action

Under Alternative 1, CREP would not be implemented. CPs would not be used to improve lands and waters used by the public for hunting, fishing, hiking, birding, canoeing, and other water-related activities.

4.6.2 Alternative 2—Proposed Action

Implementation of Alternative 2 would have a positive and long-term impact on recreational resources within the CREP area. Establishing the proposed CPs would increase the availability and quality of habitat for bird and mammal species and, in turn, would increase the abundance of these species. By improving water quality in the CREP area, the CPs would have beneficial impacts in the CREP area as well as downstream. Improved water quality would be able to support an increase in fish populations and provide for additional fishing opportunities. The increase in game and fish populations may increase funds spent on hunting and fishing licenses and improve socioeconomic conditions in the area (see Section 4.7, *Socioeconomics and Environmental Justice*). In addition to hunting and fishing impacts, the proposed CPs would increase the desirability of land to be used for hiking, swimming, boating, or camping by improving the aesthetics. Construction activities and displacement of hunted species may occur during installation of the proposed CPs; however, these negative impacts would be temporary.

4.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.7.1 Alternative 1—No Action

Under Alternative 1, CREP would not be implemented and socioeconomic conditions would continue to follow the trends associated with the ROI, North Dakota, and midwest region of the U.S. Unique and prime farmland areas would continue to be targeted for the purchase of conservation easements; however, the small percentage of farmland placed in conservation easements (7.05 percent of 2002 totals) would not contribute significantly to slowing farmland conversion.

Because the ROI would not be considered an area of concentrated minority population or a poverty area, there would be no impacts to environmental justice as a result of selecting the no action alternative.

4.7.2 Alternative 2—Preferred Action

The implementation of Alternative 2 would result in a maximum of 20,000 acres being conserved for a 15-year period, with CoverLock maintenance required for an additional 15 years. This would result in a positive net present value for the land rentals.

This action would result in a maximum loss of 20,000 acres of farm land. In 2002, there were 5,677 farm workers on the 12,275,790 acres of farms within the ROI, accounting for a payroll of $31.1 million (USDA 2004). The implementation of Alternative 2 would potentially decrease the land in farms to 12,255,790 acres and cause the loss of approximately nine farm worker positions at an estimated cost of $49,304 per year. The loss of these positions would account for less than 1 percent of the farm worker positions available in 2002. The loss of production on 20,000 acres would reduce the amount of total farm production expenditures for items including seed, agricultural chemicals, and petroleum products by $1.04 million per year, or less than 1 percent of the total 2002 farm production expenditures (USDA 2004).

Based on average North Dakota rental rates, CREP enrollment is estimated at an average of $25 per acre for the 20,000 acres proposed (Jost 2004). In addition, a 20 percent incentive fee and a $5.50 per acre CoverLock maintenance fee is provided to participants for an estimated average of $35.50 per acre. Participants would receive a signing incentive fee of $750. An easement fee consisting of a one-time payment of 95 percent of the sum of the rental fee and the maintenance fee would also be provided. On average, this is anticipated to be $8,257. The total net present value is $15.8 million over the 30 years (Appendix E).

Hines, Sommer, and Petrulis (1991) noted that enrolling lands into CRP negatively affected agricultural-based industries such as transportation and processing. The replacement of expenditures that would have supported local agriculture-related industries with CRP payments is often spent on other commodities within the local community. This impact is greater where the farm sector is the dominant economic activity.

Feather, Hellerstein, and Hansen (1999) reported non-market benefits associated with the implementation of CRP. For annual consumer surplus in North Dakota, these would include an estimated $3.01 per acre for wildlife viewing, $3.00 per acre for pheasant hunting, and $0.28 per acre for freshwater recreation activities for a total consumer surplus per acre from CRP of $6.29. Total consumer surplus per acre for the U.S. equated to $13.45 or about twice that of the consumer surplus generated by CRP activities in the Northern Plains Region, which includes North Dakota. It is expected that enrollment in CREP would improve wildlife habitat for hunted species (e.g., white-tailed deer, mourning doves, and ring-necked

pheasants) and non-hunted species (e.g., sedge wrens, lark buntings, and grasshopper sparrows) (Johnson and Igl 1995). This may increase wildlife-related recreation opportunities and thus generate associated economic activity within the ROI.

Because the ROI would not be considered an area of concentrated minority population or a poverty area, there would be no impacts to environmental justice as a result of selecting the preferred alternative.

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5.0 CUMULATIVE IMPACTS AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE IMPACTS

5.1.1 Definition of Cumulative Impacts

As defined by CEQ regulations:

> "Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency ('Federal or non-Federal') or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 30 part 1508.7, 2004)

CEQ guidance suggests that the first steps in assessing cumulative impacts involve defining the scope of the proposed action and other actions, and evaluating the nature of potential interactions between the actions (CEQ 1997b). Scope must consider geographic and temporal relationships between the proposed action and other actions. Actions overlapping with or in proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide even partially in time would tend to offer a higher potential for cumulative effects.

For the purposes of this analysis, the ROI is the 17 counties proposed for enrollment in CREP and listed in Section 1.2.1. The primary sources of information used to identify reasonably foreseeable future actions are public documents prepared by Federal, State, and local government agencies.

5.1.2 Past, Present, and Reasonably Foreseeable Future Actions

The North Dakota NRCS manages the implementation of several programs that are focused on conserving and enhancing natural resources within the State. These programs are summarized in the following subsections to demonstrate the types of past, present, and reasonably foreseeable future actions that may occur in the ROI.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) provides technical, financial, and educational assistance for farmers and ranchers to address natural resources concerns on their private working lands. EQIP promotes agricultural production and environmental quality as compatible national goals and provides up to 75 percent cost-share assistance of certain CPs. NRCS provided $13,140,000 in EQIP assistance to North Dakota farmers and ranchers in 2003 (NRCS 2004a).

Farm and Ranch Lands Protection Program

The Farm and Ranch Lands Protection Program, formerly known as the Farmland Protection Program, protects working agricultural land from conversion to non-agricultural uses. The program provides funding to State, tribal, and local governments and non-governmental organizations to acquire conservation easements from landowners. Participating landowners agree not to convert their land to non-agricultural uses and to develop and implement a conservation plan for any highly erodible land. In 2003, NRCS assisted in the acquisition of conservation easements on 113 acres of farmland in North Dakota (NRCS 2004b).

Grassland Reserve Program

The Grassland Reserve Program (GRP) is a voluntary program for landowners to protect and restore grassland, including rangeland, pastureland, shrubland, and certain other lands, while maintaining these areas as grazing lands. The program emphasizes support for grazing operations, plant and animal biodiversity, and grasslands most vulnerable to conversion to cropland, urban development, or other uses (NRCS 2004c). North Dakota was allocated $698,000 in GRP funds in 2003, and $1,119,200 in 2004 (NRCS 2004d, NRCS 2004e).

Grazing Lands Conservation Initiative

The Grazing Lands Conservation Initiative (GLCI) is a nationwide collaborative process of individuals and organizations working to maintain and improve the management, productivity, and health of privately-owned grazing lands. The GLCI provides policy for States to develop strategies to increase technical assistance and public awareness activities that maintain or enhance grazing land resources.

Wetlands Reserve Program

WRP is a voluntary land retirement program. It is designed to assist landowners in restoring and protecting wetlands by entering into 30-year easements (State law does not allow permanent wetland easements) or cost-share agreements. As of September 2002, there were a total of 77 contracts, 55 easements, and 22 agreements, covering 13,294 acres in North Dakota (NRCS 2002a).

Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP) offers opportunities to landowners to develop and improve wildlife habitat on private lands. Through the program, NRCS provides technical and financial assistance to landowners to develop upland, wetland, riparian, and aquatic habitat areas on their property. The program in North Dakota places special emphasis on wildlife and fisheries habitats of national and State significance, habitats of fish and wildlife species experiencing declining or significantly reduced populations (including rare, threatened, and endangered species), and practices beneficial to fish and wildlife that may not otherwise be funded (NRCS 2004f). In 2002, NRCS obligated $220,000 in WHIP financial assistance to 50 contracts covering 8,000 acres in North Dakota (NRCS 2002f).

5.1.3 Analysis of Cumulative Impacts

When considered in combination with other past, present, and reasonably foreseeable future actions, the incremental impact of the proposed action is expected to result in net positive impacts to biological, water, earth, and recreational resources in the 17 counties proposed for CREP enrollment and in waters downstream. No negative cumulative impacts to any other resource discussed in Chapter 3.0 are expected.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

As required by NEPA, any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented must be identified in environmental analyses. Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effect that this use may have on future generations. Irreversible commitments are those that consume a specific resource that is renewable only over a long time period. Irretrievable commitments are those that consume a specific resource that is neither renewable nor recoverable for use by future generations. No irreversible or irretrievable resource commitments are expected from implementation of the proposed action.

6.0 MITIGATIONS

This chapter presents mitigation measures that would be used to avoid or lessen impacts to biological, cultural, and earth resources. Each measure must be addressed on an individual contract basis through the conservation plan and associated environmental evaluation.

6.1 BIOLOGICAL RESOURCES

- If tracts of land considered for enrollment are adjacent to or contain large areas of native grasslands, shelterbelts (CP16A) containing trees should not be implemented. Establishing trees in areas of native grassland may cause increased predation and brood parasitism on grassland nesting birds, as well as increased habitat fragmentation (Burger et al. 1994). Nesting success and decreased predation on some grassland birds is directly correlated with distance to woody vegetation. The benefits of shelterbelts in these native grassland areas to forest birds and other resident wildlife often do not offset the negative impacts on grassland birds (Naddra and Nyberg 2001). Large tracts of native grasslands should be left intact and considered for other CRP practices such as establishing additional tracts of perennial native grasses (CP2).

- If tracts of land considered for enrollment are adjacent to or contain a large number of wetlands, shelterbelts (CP16A) should not be established or should be established using low native shrubs rather than tall growing trees. Large trees located around wetlands reduce habitat selection by many prairie wetland birds (Naugle, Higgins, and Nusser 1999) and by some duck species that select large tracts of grassy or mud flats (Bakker 2004). Studies by Naugle, Higgins, and Nusser (1999) in South Dakota indicate that bird species that use tall woody vegetation around wetlands were generalist species, which often do not require management or specific habitats. As a mitigation practice, areas where woody vegetation does not already occur could still be enhanced by shelterbelts; however, species within the shelterbelt would consist of high shrubs. This would minimize predation corridors and perch sites while still providing permanent resident wildlife cover (Johnson, Beck, and Brandle 2004). Shelterbelt specifics must be addressed through individual contracts via the conservation plan and associated site-specific environmental evaluation.

- A one mile buffer around piping plover critical habitat that is privately owned in Burleigh, Logan, and McIntosh counties should be established if adjacent land is enrolled in the CREP agreement. Piping plovers are federally listed as threatened by FWS, and select areas with little to no vegetation approximately one square mile in size to lay and incubate their eggs (FWS 1981). Because piping plovers nest on bare ground, creating woody vegetation around or near nesting habitat may increase predation by mammalian predators such as foxes, raccoons, and skunks as well as avian predators such as owls and raptors. Creating woody vegetation in these areas may also decrease the selection and use of these critical habitat areas by piping plovers.

- Landscape layout should be considered before project implementation. By establishing a buffer of cropland of approximately 60–70 meters between shelterbelts and herbaceous cover, parasitism and predation on neotropical migrants, grassland songbirds, and upland game would be reduced, while still providing maximum habitat (Winter et al. 2000, Burger et al. 1994 and Gates and Gysel 1978). Shelterbelts established in a square or circle formation would minimize forest edge and increase forest interior, possibly reducing brood parasitism (Swanson 1996).

6.2 CULTURAL RESOURCES

- Consultation with State and Federal agencies and tribes will be required during planning and implementation of projects under CREP.

- Historic preservation planning should be coordinated through Paul Picha, Chief Archeologist, and Duane Klinner, Review and Compliance Facilitator, Historic Preservation Division, State Historical Society of North Dakota (701-328-3574, ppicha@state.nd.us, dklinner@state.nd.us).

- FSA and SHPO offices will communicate with participating tribes during planning phases to integrate cultural resource protection and mitigation of adverse impacts, as well as soliciting input on the identification and protection of any TCPs.

6.3 EARTH RESOURCES

- Inquiries about North Dakota paleontological resources, or review of project plans and details and their potential impact on these resources, should be made to John Hoganson, Fossil Resource Management Program, North Dakota Geological Survey (701-328-2006, jhoganso@state.nd.us).

7.0 LIST OF PREPARERS

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8.0 PERSONS AND AGENCIES CONTACTED

Table 14 shows the federal, state, and local agencies; American Indian tribes; and interest groups contacted for the CREP PEA.

Table 14. CREP PEA consultation.

Name	Title	Agency
Bicknell, Bill	Fish and Wildlife Biologist	U.S. Fish and Wildlife Service, North Dakota Field Office
Carlson, Robert L.	President	North Dakota Farmers Union
Dockter, Rod	President	Dakota Pheasants Forever
Ell, Michael		North Dakota Department of Health, Division of Water Quality
Hall, Tex G.	Chairman	Mandan, Hidatsa, and Arikara Nation
Harmon, Dan	Manager of Air Quality Monitoring	North Dakota Department of Health, Division of Air Quality
Hildebrand, Dean C.	Director	North Dakota Game and Fish
Johnson, Roger	Agriculture Commissioner	North Dakota Department of Agriculture
Jost, Jim	Conservation Specialist	Farm Service Agency, North Dakota State Office
Kopp, John	Director	North Dakota Wildlife Federation
McLeod, Scott	Regional Biologist	Ducks Unlimited
Missling, Jeffrey	Interim Executive Vice President	U.S. Department of Agriculture, Farm Service Agency
Murphy, Charles	Chairman	Standing Rock Sioux Tribe Tribal Council
Nelson, Jeffrey W.	Director of Operations	Ducks Unlimited
O'Clare, Terry	Air Quality Program Director	North Dakota Department of Health, Division of Air Quality
Paaverud, Merlan E., Jr.	State Historic Preservation Officer	State Historical Preservation Office
Reynolds, Ron	Habitat Specialist	U.S. Fish and Wildlife Service, North Dakota Field Office
Schafer, Wayde	Conservation Coordinator	Sierra Club
Trechock, Mark	Staff Director	Dakota Resource Council
Towner, Jeffrey K.	Field Supervisor	U.S. Fish and Wildlife Service, North Dakota Field Office
Winters, James L.	North Dakota State Program Manager	U.S. Army Corps of Engineers

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APPENDIX A
SUMMARY OF RELEVANT CONSERVATION PRACTICES

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APPENDIX A—SUMMARY OF RELEVANT CONSERVATION PRACTICES

Following this paragraph is a summary listing of conservation practices (CPs) for the proposed North Dakota Conservation Resource Enhancement Program (CREP).

Natural Resource Conservation Service (NRCS) CP: Permanent Wildlife Habitat
Farm Service Agency (FSA) Conservation Reserve Program (CRP) CPs for proposed North Dakota CREP

- CP4D—Permanent Wildlife Habitat

Purposes:

- Provide food for the desired kinds of upland wildlife species
- Provide cover types for the desired kinds of upland wildlife species
- Manage the wildlife habitat to achieve a viable wildlife population within the species home range.

Maintenance Standards:

- Control annual weeds and other vegetative competition during the first year of establishment in a timely manner
- Prevent disturbance to planted cover during the primary nesting season in North Dakota
- Control noxious weeds by chemical treatments or spot mowing after August 1st to protect wildlife nesting
- Protect acreage from heavy grazing with fencing if necessary
- Replace dead trees and shrubs, and control undesired species through chemical application or mulching
- Control rodent infestations that affect ground cover.

NRCS CP: Permanent Wildlife Habitat
FSA CRP CPs for proposed North Dakota CREP

- CP12—Wildlife Food Plot.

Purposes:

- Provide winter food to a variety of wildlife species
- Add plant diversity, food, and cover to landscape.

Maintenance Standards:

- Control all noxious weeds by chemical application or adequate seedbed preparation.

NRCS CP: Permanent Wildlife Habitat

FSA CRP CPs for proposed North Dakota CREP

- CP16A—Shelterbelt Establishment.

Purposes:

- Enhance wildlife habitat
- Save energy
- Protect farmstead and livestock areas.

Maintenance Standards:

- Prevent animal damage and browse by rodents, mice, deer, gophers, and other wildlife affecting woody cover
- Prevent disturbance of cover during primary nesting season
- Control noxious weeds by spot mowing or chemical application in a timely manner
- Protect areas from haying and grazing with fences if needed
- Replace dead trees and shrubs, and control undesired species through chemical application or mulching
- Control insects and diseases damaging woody vegetation
- Prune trees as necessary to remove dead or damaged limbs.

APPENDIX B
MAPS

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APPENDIX B—MAPS

Figures B–1 through B–3 in this appendix display designated critical habitat for piping plover along the Missouri River and reservoirs, and within Burleigh, Logan, and McIntosh counties. Figure B–4 shows breeding duck pair distribution and density in the eastern portion of the region of influence of the proposed North Dakota Conservation Resource Enhancement Program, which includes Burleigh, Emmons, Logan, McIntosh, Lamoure, Dickey, Ransom, and Sargent counties.

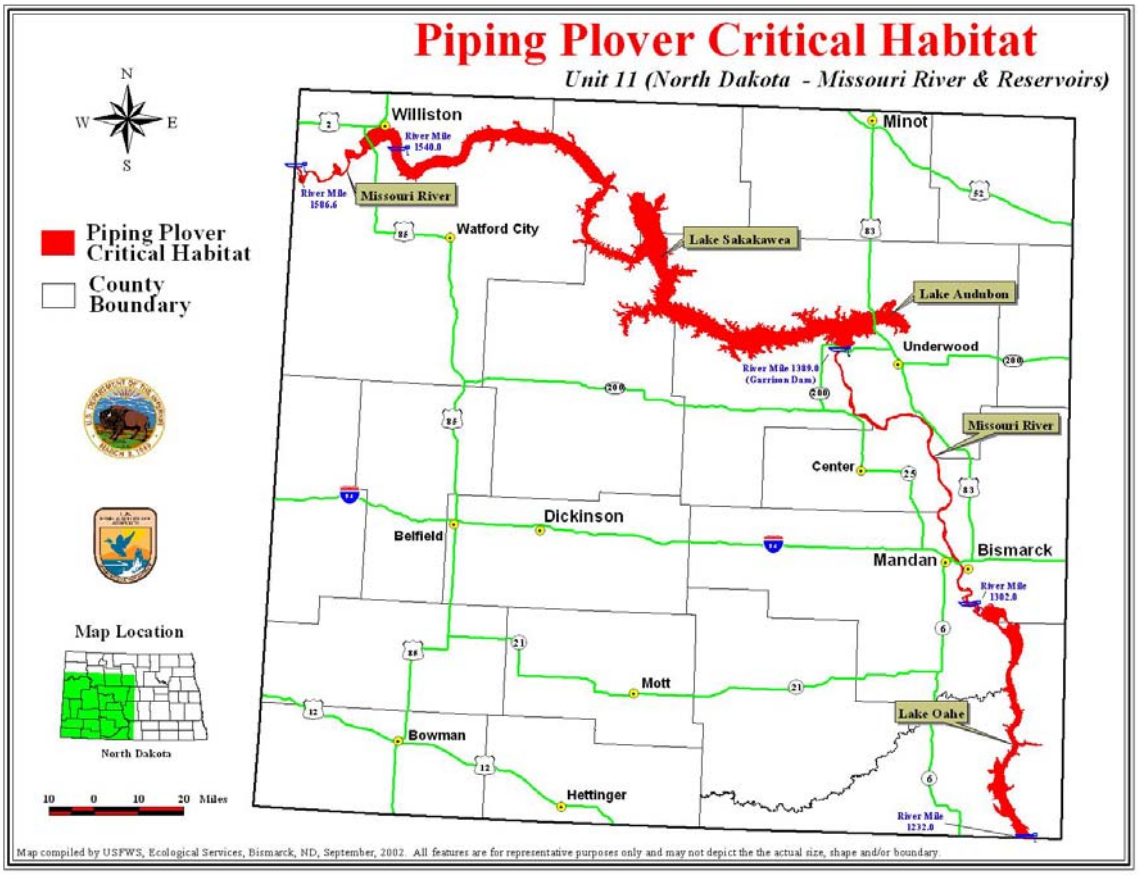

Figure B–1. Piping plover critical habitat along the Missouri River (U.S. Fish and Wildlife Service [FWS] 2002).

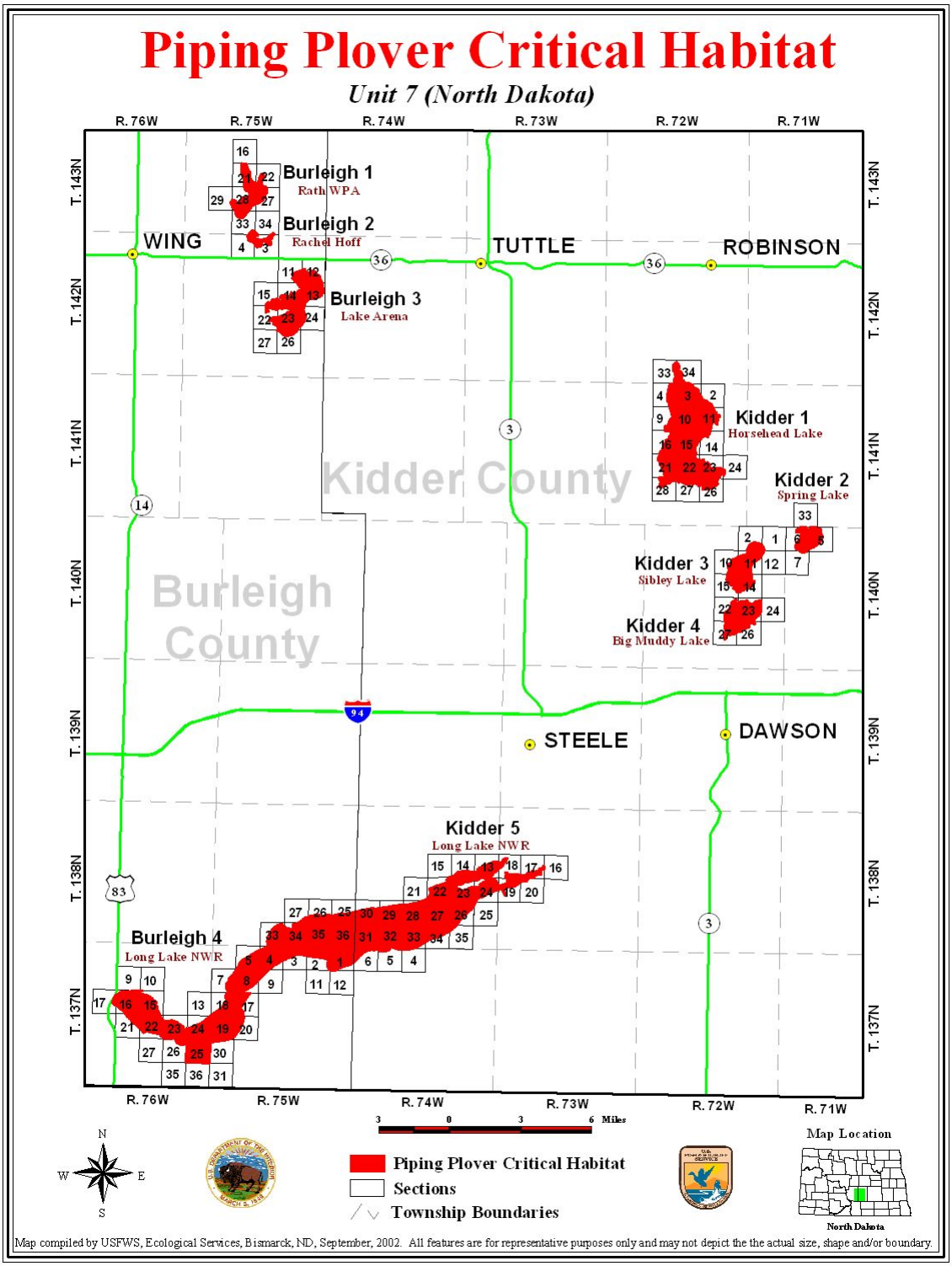

Figure B–2. Piping plover critical habitat in Burleigh County (FWS 2002).

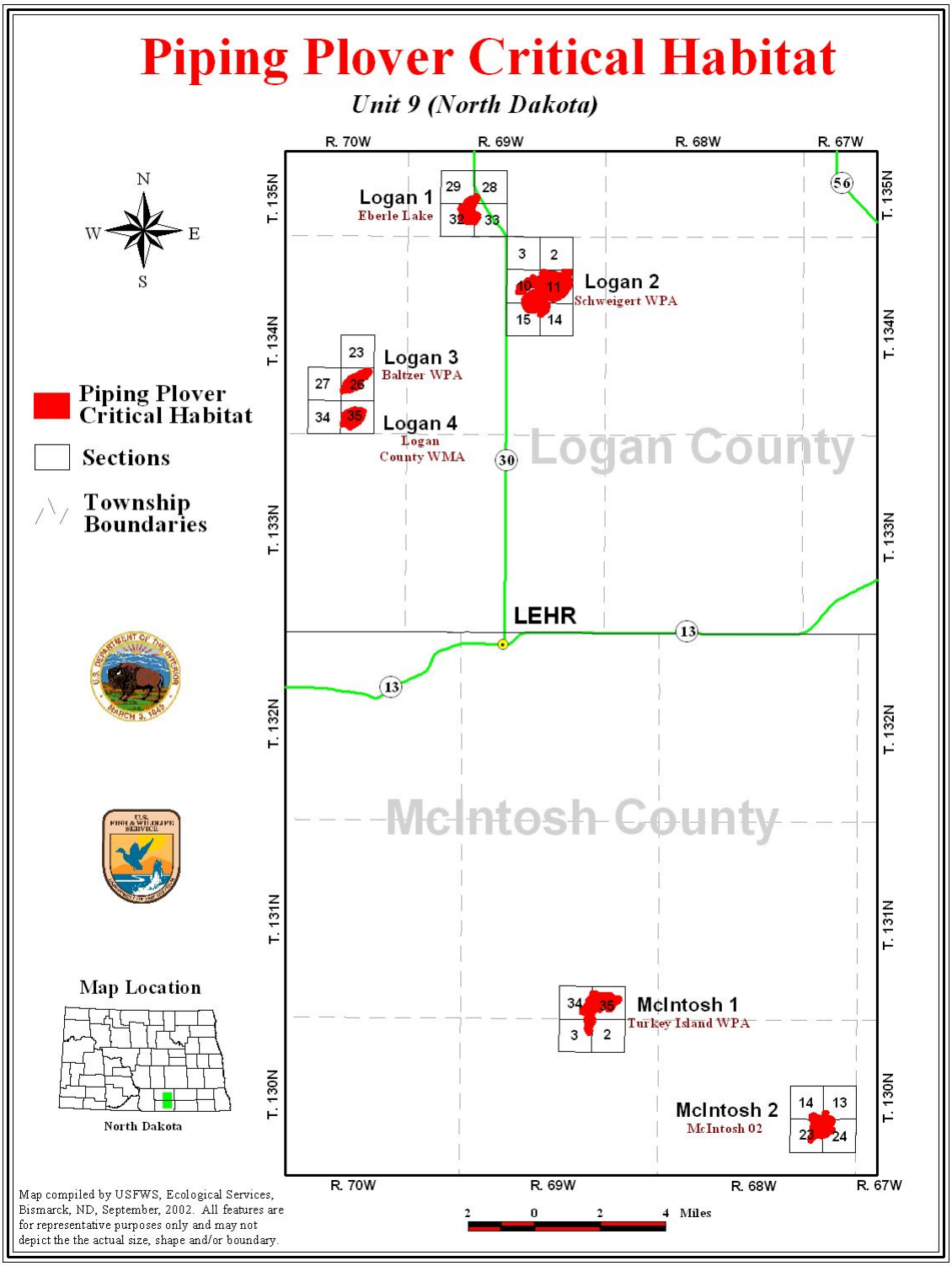

Figure B–3. Piping plover critical habitat in Logan and McIntosh counties (FWS 2002).

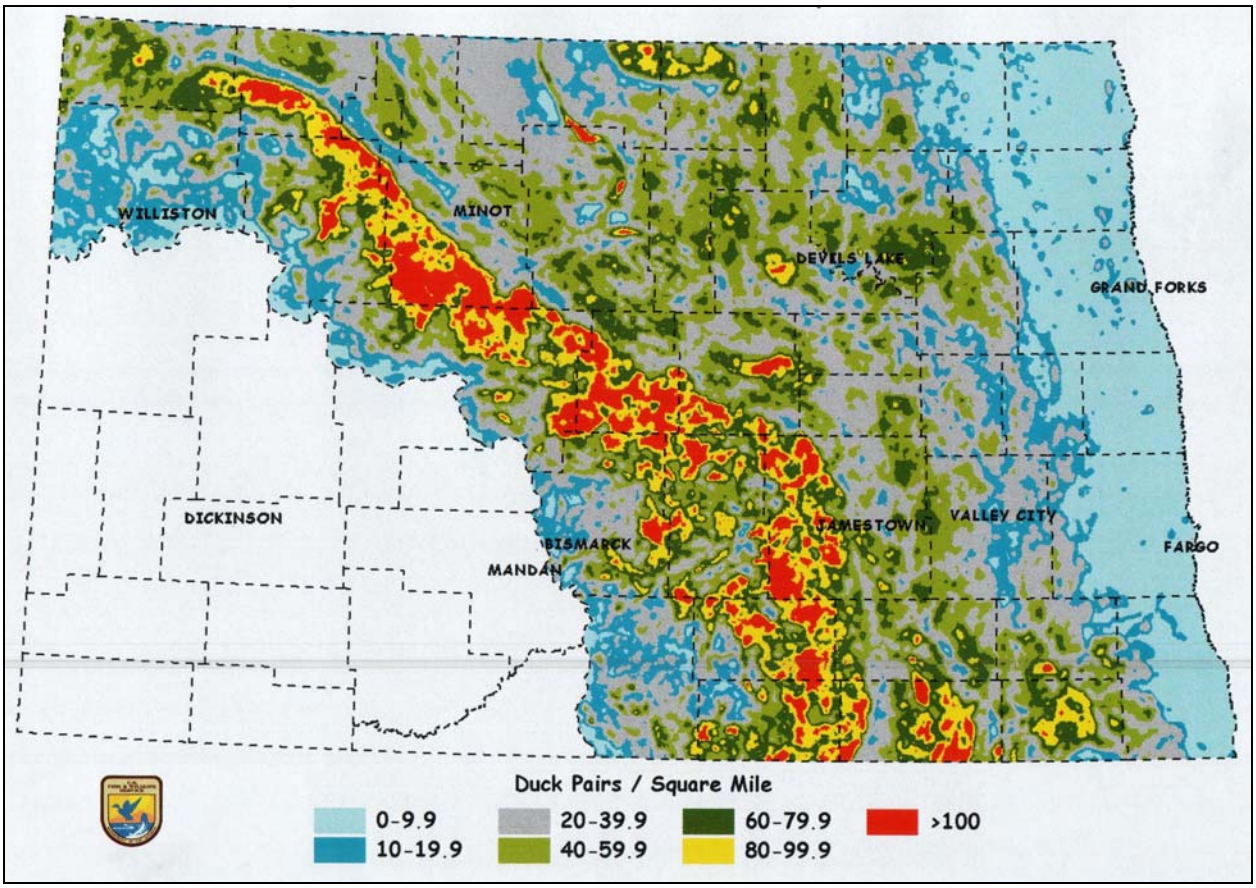

Figure B–4. Breeding duck pair distribution and density in North Dakota (Towner 2004).

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APPENDIX C
IMPAIRED SURFACE WATERS

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APPENDIX C—IMPAIRED SURFACE WATERS

Table C–1 lists impaired surface waters of the four river basins located within the region of influence (ROI) of the proposed North Dakota Conservation Resource Enhancement Program. Surface waters are designated as impaired by the North Dakota Department of Health (NDDH) and listed in the *North Dakota 2004 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing Total Maximum Daily Loads* (NDDH 2004).

Table C–1. Impaired surface waters within the ROI.

Unit Identification Number	Name	Location	Impairment[1]
Red River Basin:			
ND-09020204-005-L_00	Dead Colt Creek Dam	"Dead Colt Creek 124 acre flood control and recreational structure on a tributary to the Sheyenne River in Ransom County	OE, NE, DO, SS
ND-09020204-017-S_00	Sheyenne River	Sheyenne River from unnamed tributary (ND-09020204-018-S) downstream to unnamed tributary watershed (ND-09020204-016-S)	SS
ND-09020204-022-S_00	Sheyenne River	Sheyenne River from tributary near Lisbon (ND-09020204-0024-S) downstream to its confluence with Dead Colt Creek (ND-09020204-021-S)	TFC
ND-09020204-027-S_00	Sheyenne River	Sheyenne River from its confluence with a tributary watershed below Valley City (ND-09020204-028-S) downstream to its confluence with a tributary near Highway 46 (ND-09020204-026-S)	SS
ND-09020105-016-S_00	Shortfoot Creek Watershed	Shortfoot Creek, including tributaries, from its confluence with the Wild Rice River upstream to the ND-SD border	TFC
ND-09020204-023-S_00	Tiber Coulee Watershed	Tiber Coulee, including tributaries	TFC
ND-09020105-017-S_00	Tributaries to the Wild Rice River	Unnamed tributaries to the Wild Rice River, including Crooked Creek	TFC
ND-09020105-020-S_00	Wild Rice River Watershed	Wild Rice Creek, including tributaries, from its confluence with Wild Rice River upstream to the ND-SD border	TFC

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
ND-09020105-012-S_00	Wild Rice River	Wild Rice River from its confluence with Shortfoot Creek downstream to its confluence with Elk Creek	SS
ND-09020105-018-S_00	Wild Rice River	Wild Rice River from its confluence with the Silver Lake Diversion downstream to Lake Tewaukon	TFC
ND-09020105-022-S_00	Wild Rice River	Wild Rice River from its confluence with Wild Rice Creek downstream to its confluence with the Silver Lake Diversion	TFC
ND-09020105-019-S_00	Wild Rice River Watershed (Upper)	Wild Rice River, including tributaries, upstream from its confluence with Wild Rice Creek	TFC
Upper Missouri River Basin:			
ND-10110101-021-L_00	Lake Sakakawea		DO, T, MM
ND-10110205-033-S_00	Little Missouri River	Little Missouri River from Highway 85 downstream to its confluence with Cherry Creek	TFC
ND-10130201-016-S_00	East Branch Antelope Creek Watershed	East branch Antelope Creek, including tributaries, upstream from Antelope Creek	TFC
ND-10130201-017-S_00	Antelope Creek	Antelope Creek mainstem downstream to its confluence with the east branch of Antelope Creek Watershed (ND-10130201-016-S)	TFC
Lower Missouri River Basin:			
ND-10110203-001-S_00	Little Missouri River	Little Missouri River from its confluence with Little Beaver Creek downstream to its confluence with Deep Creek	TFC
ND-10130101-002-S_00	Square Butte Creek	Square Butte Creek from it confluence with Otter Creek downstream to its confluence with the Missouri River	SS, TFC
ND-10130101-006-S_00	Tributaries to Square Butte Creek	Unnamed tributaries to Square Butte Creek (ND-10130101-005-S)	TFC
ND-10130101-009-S_00	Square Butte Creek	Square Butte Creek from Nelson Lake downstream to its confluence with Otter Creek	SS, TFC
ND-10130103-003-L_00	Braddock Lake	Emmons County	NE, DO, SS
ND-10130103-007-S_00	Hay Creek	Hay Creek downstream to its confluence with Apple Creek	SS

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
ND-10130103-014-L_00	McDowell Dam	See attached document on Assessment dialog	DO, NE
ND-10130104-001-L_00	Beaver Lake	Natural lake on Beaver Creek in Logan County	NE, DO, SS
ND-10130104-001-S_00	Beaver Creek	Beaver Creek from its confluence with Sand Creek downstream to Lake Oahe	TFC
ND-10130104-003-S_00	Beaver Creek	Beaver Creek from its confluence with Spring Creek downstream to its confluence with Sand Creek	TFC
ND-10130104-004-S_00	Sand Creek Watershed	Sand Creek, including tributaries	TFC
ND-10130104-005-S_00	Spring Creek Watershed	Sand Creek, including tributaries	TFC
ND-10130104-007-S_00	Beaver Creek	Beaver Creek from its confluence with the south branch of Beaver Creek downstream to its confluence with Spring Creek	TFC
ND-10130104-008-S_00	Clear Creek Watershed	Clear Creek, including tributaries	TFC
ND-10130104-010-S_00	Beaver Creek	Beaver Creek from Beaver Lake downstream to its confluence with the south branch of Beaver Creek	TFC
ND-10130104-012-S_00	Tributary Watershed to Beaver Lake (South)	Unnamed tributary at the south end of Beaver lake	TFC
ND-10130104-014-S_00	South Branch Beaver Creek	South branch of Beaver Creek from its confluence with the south branch of Beaver Creek Watershed (ND-10130104-015-S) downstream to its confluence with Beaver Creek	TFC
ND-10130106-002-L_00	Green Lake	Natural waterbody in McIntosh County	NE, DO
ND-10130106-003-L_00	Lake Hoskins	Natural lake in McIntosh County	NE, DO
ND-10130201-002-S_00	Knife River	Knife River from its confluence with Antelope Creek downstream to its confluence with the Missouri River	TFC
ND-10130201-003-S_00	Knife River	Knife River from its confluence with Spring Creek downstream to its confluence with Antelope Creek	TFC

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
ND-10130201-010-S_00	Otter Creek	Otter Creek from its confluence with a tributary watershed (ND-10130201-012-S) downstream to its confluence with the Knife River	TFC
ND-10130201-013-S_00	Otter Creek Watershed (Upper)	Otter Creek, including tributaries, upstream from its confluence with a tributary watershed (ND-10130201-012-S)	TFC
ND-10130201-014-S_00	Antelope Creek	Antelope Creek from its confluence with the east branch of Antelope Creek Watershed (ND-10130201-016-S) downstream to its confluence with the Knife River	TFC
ND-10130201-015-S_00	Tributaries to Antelope Creek	Unnamed tributaries to Antelope Creek (ND-10130201-014-S)	TFC
ND-10130201-016-S_00	East Branch Antelope Creek Watershed	East branch of Antelope Creek, including tributaries, upstream from Antelope Creek	TFC
ND-10130201-017-S_00	Antelope Creek	Antelope Creek mainstem downstream to its confluence with the east branch of Antelope Creek Watershed (ND-10130201-016-S)	TFC
ND-10130201-035-S_00	Knife River	Knife River from its confluence with Coyote Creek downstream to its confluence with Spring Creek	TFC
ND-10130201-042-S_00	Knife River	Knife River from its confluence with branch Knife River downstream to its confluence with Coyote Creek	TFC
ND-10130202-001-L_00	Lake Tschida	See attached document on Assessment dialog	NE
ND-10130202-050-S_00	Heart River	Heart River from Patterson Lake downstream to its confluence with the Green River	BI
ND-10130203-002-L_00	Crown Butte Dam	Impoundment on a tributary to Heart River in Morton County	NE, DO, SS
ND-10130203-007-L_00	Danzig Dam	Impoundment on Hailstone Creek in Morton County	NE, DO, SS
ND-10130204-001-L_00	Sheep Creek Dam	Impoundment on Sheep Creek in Grant County	NE

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
ND-10130204-001-S_00	Cannonball River	Cannonball River from its confluence with Snake Creek downstream to its confluence with Cedar Creek	TFC
ND-10130204-014-S_00	Thirtymile Creek	Thirtymile Creek from its confluence with Spring Creek downstream to its confluence with the Cannonball River	BI, TFC
ND-10130204-017-S_00	Thirtymile Creek	Thirtymile Creek from tributary watershed (ND-10130204-019-S)	TFC
ND-10130204-044-S_00	Dead Horse Creek Watershed	Dead Horse Creek, including tributaries	TFC
ND-10130205-001-S_00	Cedar Creek	Cedar Creek from its confluence with Hay Creek downstream to its confluence with the Cannonball River	TFC
ND-10130205-006-S_00	Crooked Creek Watershed	Crooked Creek, including tributaries	TFC
ND-10130205-012-S_00	Brushy Creek Watershed	Brushy Creek, including tributaries	TFC
ND-10130205-017-S_00	Timber Creek	Timber Creek from its confluence with Sheep Creek downstream to its confluence with Cedar Creek	TFC
ND-10130205-021-S_00	Plum Creek Watershed	Plum Creek, including tributaries	TFC
ND-10130205-024-S_00	Cedar Creek	Cedar Creek from its confluence with Chanta Peta Creek downstream to its confluence with Duck Creek	TFC
ND-10130205-033-S_00	Cedar Creek	Cedar Creek from Cedar Lake downstream to its confluence with Chanta Peta Creek	BI, TFC
ND-10130206-001-S_00	Cannonball River	Cannonball River from its confluence with Dogtooth Creek downstream to Lake Oahe	TFC
ND-10130206-007-S_00	Cannonball River	Cannonball River from its confluence with a tributary watershed near Shields (ND-10130206-028-S) downstream to its confluence with Dogtooth Creek	TFC
ND-10130206-027-S_00	Cannonball River	Cannonball River from Cedar Creek downstream to a tributary watershed near Shields	TFC

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
James River Basin:			
ND-10160003-025-S_00	Bone Hill Creek	Bone Hill Creek downstream to its confluence with the James River	TFC
ND-10160003-029-S_00	James River	James River from its confluence with Bone Hill Creek downstream to its confluence with Cottonwood Creek	TFC
ND-10160003-032-S_00	Bear Creek	Bear Creek from tributary watershed (ND-10160003-035-S) downstream to its confluence with the James River	TFC
ND-10160003-035-S_00	Tributary Watershed to Bear Creek	Unnamed tributary watershed to Bear Creek	TFC
ND-10160004-002-S_00	Maple River	Maple River from its confluence with the south fork of Maple River downstream to the ND-SD border	TFC, SS
ND-10160004-003-S_00	Weber Gulch Watershed	Weber Gulch, including tributaries	TFC
ND-10160004-005-L_00	Pheasant Lake	See attached document on Assessment dialog	NE, DO, SS
ND-10160004-005-S_00	Elm River	Elm River downstream to Pheasant Lake	SS
ND-10160004-006-S_00	Elm River Watershed (Upper)	Upper Elm River, including tributaries	SS
ND-10160004-007-S_00	Bristol Gulch Watershed	Bristol Gulch, including tributaries	SS
ND-10160004-008-S_00	Tributaries to the Elm River	Unnamed tributaries to Elm River (ND-10160004-005-S)	SS
ND-10160004-009-S_00	Tributary to Pheasant Lake	Unnamed tributary to Pheasant Lake	SS
ND-10160004-013-S_00	Maple River	Maple River from its confluence with Maple Creek downstream to its confluence with the south fork of the Maple River	SS
ND-10160004-015-S_00	South Fork Maple River	South fork of the Maple River from its confluence with three tributaries downstream to its confluence with the Maple River	SS, TFC
ND-10160004-022-S_00	Maple Creek	Maple Creek downstream to its confluence with the Maple River	SS, TFC

Table C-1. (continued).

Unit Identification Number	Name	Location	Impairment[1]
ND-10160004-026-S_00	Maple River	Maple River from Schlect-Thom Dam downstream to its confluence with Maple Creek	SS

[1]OE = Organic Enrichment, NE = Nutrients/Eutrophication, DO = Dissolved Oxygen, SS = Sedimentation/Siltation, TFC = Total Fecal Coliform, T = Temperature, MM = Methyl-Mercury
Source: NDDH 2004

REFERENCE

NDDH. 2004. *North Dakota 2004 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing Total Maximum Daily Loads.* Division of Water Quality, North Dakota Department of Health. Available via http://www.health.state.nd.us/wq/sw/Z7_Publications/303(d)Lists/TMDL_2004_IntegratedReport_Final.pdf. August 17. Accessed January 20, 2005.

APPENDIX D
CORRESPONDENCE

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APPENDIX D—CORRESPONDENCE

The following pages of this appendix contain scanned images of correspondence received during the environmental analysis of the North Dakota Conservation Resource Enhancement Program (CREP). The original correspondence is being kept as part of the North Dakota CREP project file.

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 9/28/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Michael Ell, Division of Water Quality, North Dakota Department of Health, (701) 328-5214

Subject: Impaired Water

Notes:

Mr. Ell informed me that his office has GIS data for North Dakota 303(d) waters. He suggested I contact Joe Gross at extension 5292 to obtain the data directly.

DK Wheeler
Signature

9-28-04
Date

TEM-0103
Rev. 0
Effective Date: 10/27/03
Page 1 of 1

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 9/29/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Terry O'Clare, Air Quality Program Director, N.D. Department of Health, (701) 328-5178

Subject: Air Quality

Notes:

Mr. O'Clare suggested I review the air quality reports at www.health.state.nd.us/aq, and that questions regarding these reports be directed to Dan Harmon. Mr. O'Clare said that the only other group monitoring air quality in North Dakota is the "transboundary group."

D Wheeler
Signature

9-29-04
Date

TEM-0103
Rev. 0
Effective Date: 10/27/03
Page 1 of 1

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 10/7/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Ron Reynolds, USFWS Habitat Specialist, (701) 250-4481 x 535

Subject: Wetlands

Notes:

I informed Mr. Reynolds that I had found wetland acreage per county on the Northern Prairie Wildlife Research Center (NPWRC) website for counties east of the Missouri River, and that I was trying to obtain similar data for counties west of the Missouri. He stated that the website data was obtained by using the National Wetland Inventory (NWI) data and then modifying it by grouping the NWI classifications into fewer classes (based on the work of Stewart and Kantrud in 1973). Mr. Reynolds said he does not think the same type of analysis has been performed for areas west of the Missouri River simply because wetlands there are far less abundant than in the prairie pothole region. He suggested that downloading the NWI data for counties west of the Missouri may be the only way to obtain the information I'm looking for.

DK Wheeler
Signature

10-7-04
Date

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 10/7/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Scott McLeod, Regional Biologist, Ducks Unlimited, (701) 355-3541

Subject: Wetlands

Notes:

I informed Mr. McLeod that I had found wetland acreage per county on the Northern Prairie Wildlife Research Center (NPWRC) website for counties east of the Missouri River, and that I was trying to obtain similar data for counties west of the Missouri. He informed me that there probably wasn't any such data in existence. When asked why, he said there were two reasons. First, the area east of the Missouri is the prairie pothole region, which is famous for abundant wetlands and associated water fowl. For these reasons, this area gets a lot of attention. Secondly, the area west of the Missouri has very few natural wetlands. Most wetlands have been created by farmers and ranchers diverting water and from anthropogenic features such as reservoirs. Mr. McLeod stated that, even if I used the NWI data to get wetland acreage per county, my results may not be accurate due to the rate at which man-made wetlands can change.

D Wheeler
Signature

10-7-04
Date

TEM-0103
Rev. 0
Effective Date: 10/27/03
Page 1 of 1

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 10/8/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Dan Harman, Manager of Air Quality Monitoring, N.D. Department of Health, (701) 328-5188

Subject: Air Quality

Notes:

I asked Mr. Harmon for a copy of the 2003 North Dakota Air Quality Monitoring Data Summary. He said it would be available Monday or Tuesday of next week at http://www.health.state.nd.us/aq/AmbientMonitoring.htm. He said North Dakota has excellent air quality and complies with all federal and state ambient air quality standards. I asked if NDDH utilized the Air Quality Index (AQI) developed by the EPA, and Mr. Harman stated that they do not simply because air pollutants in North Dakota are so low that "it would be an exercise in futility."

D Wheeler
Signature

10-8-04
Date

TEM-0103
Rev. 0
Effective Date: 10/27/03
Page 1 of 1

Portage ENVIRONMENTAL

Phone Conversation Record

Date: 10/12/04

Time: NA

Project Name: North Dakota CREP PEA **Project No.:** 5010-01LNW-1

Time of Call: NA **End Time:** NA

Portage Employee: Diane Wheeler

Other Party: Ron Reynolds, USFWS Habitat Specialist, (701) 250-4481 x 535

Subject: Wetlands

Notes:

I asked Mr. Reynolds if he would agreed with Scott McLeod from Ducks Unlimited that most of the wetlands west of the Missouri are anthropogenic. He stated that he would would be more comfortable saying that certainly a great number of the total and most of the ponded wetlands are man-made.

DM Wheeler
Signature

10-12-04
Date

TEM-0103
Rev. 0
Effective Date: 10/27/03
Page 1 of 1

DUCKS UNLIMITED

GREAT PLAINS REGIONAL OFFICE
2525 River Road
Bismarck, ND 58503-9011
(701) 355-3500 Fax (701) 355-3575
www.ducks.org

October 11, 2004

Jim Jost
Farm Service Agency – North Dakota State Office
1025 28th Street SW
Fargo, ND 58103

RE: PEA for North Dakota CREP agreement - CoverLocks

Mr. Jost:

Thank you for providing Ducks Unlimited (DU) with the opportunity to comment on the proposed programmatic environmental assessment (PEA) for the implementation of the Conservation Reserve Enhancement Program (CREP) in North Dakota. DU feels that the CREP has potential to deliver environmental and wildlife benefits for North Dakota, but that the existing CoverLocks program could be improved.

Many of the reasons listed for pursuing the CREP agreement between the Farm Service Agency (FSA) and the North Dakota Game and Fish Department (NDGF) are valid. However, several are not supported by current data sources and are a source of concern. Of particular concern to DU is the false perception that establishing trees will improve resident wildlife production. Although these areas may be good hunting areas in the fall, they do little to meet the needs of endemic birds during the nesting season, which should be the primary focus of any habitat program on northern breeding areas. Many studies have concluded that trees are detrimental to grassland nesting birds including neotropical migrants, breeding waterfowl, ring-necked pheasants, sharp-tailed grouse and prairie chickens. The presence of trees in prairie ecosystems has been shown to provide travel corridors for mammalian predators, over-wintering sites for mammalian predators, perch sites for avian predators and habitat for brown-headed cowbirds and thus, has increased nest predation and increased brood parasitism for grassland nesting songbirds. Breeding waterfowl, prairie grouse and ring-necked pheasants have also been shown to suffer increased nest predation when nests are located in proximity to trees and/or in small, patchy habitats. Some resource professionals insist that trees provide thermal cover for pheasants, however research indicates that trees provide inadequate thermal cover during the winter and that cattail wetlands and tall grass serve this purpose much better. A copy of an annotated bibliography on the effect of woody vegetation on grassland nesting birds is enclosed to further support the negative impacts of trees in prairie environments.

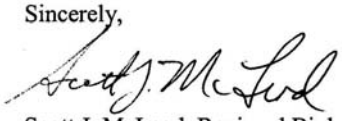
The small patch size (15 acres) of the herbaceous planting within each CoverLock can also be detrimental to ground nesting grassland birds. Mammalian predators can easily search these small patches, especially in landscapes dominated by agriculture, and nesting waterfowl and pheasants have been shown to have poor nest success in these habitats. Research strongly indicates that protection or restoration of large blocks of perennial cover and prairie wetlands in the Prairie Pothole Region is needed to provide grassland-nesting waterfowl, songbirds, shorebirds, pheasants and sharp-tailed grouse with the best chance to be successful.

CREP was designed to address high priority conservation issues of national or local significance such as impacts on water quality, loss of critical habitat for threatened or endangered species, soil erosion, etc. The CoverLocks program, as currently designed, fails to address any high priority conservation issues at the local or national scale. The small patches of restored grassland and planting of trees may in fact be detrimental to grassland nesting songbirds, many of which are already in serious decline. Negative impacts may also be realized for grassland nesting shorebirds, waterfowl and upland game birds. The CoverLocks program may address soil erosion at a relatively small scale but benefits to water quality within the Priority EPA-319 watersheds will be minimal unless the small patches of restored grassland are contiguous with larger blocks of perennial cover.

Although CREP acres are capped at 100,000 acres per state, these acres still count towards the nationwide CRP cap of 39.2 million acres. The CoverLocks program aims to enroll 1,000 20-acre plots into the CRP program meaning that 15,000 acres of cropland will initially be restored to grassland and counted against nationwide and county acreage caps. Greater benefits to neotropical migrants, waterfowl, pheasants and sharp-tailed grouse could be realized if these 15,000 acres were enrolled in larger blocks through the General CRP, CP23a or a redesigned CREP program that emphasizes restoration of large blocks of grassland and wetlands without the establishment of trees. The CP23a program aims to restore wetlands, which have been shown to provide better thermal cover for pheasants, if that is a goal, during the winter months. Larger blocks of CRP would also do a better job of reducing soil erosion and improving water quality.

Again, we thank you for providing DU with the opportunity to provide comments. We hope that you will consider our comments as you move forward with your programmatic assessment for implementing the ND CREP.

Sincerely,



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U.S. Fish and Wildlife Service

HAPET Habitat And Population Evaluation Team

Fact Sheet – The Effect of Woody Vegetation on Grassland Nesting Birds: An Annotated Bibliography by Kristel K. Bakker, Assistant Professor, Dakota State University

It is generally accepted among resource managers that trees are detrimental to grassland nesting birds. Yet published evidence is sparse and scattered among studies with numerous objectives. Dr. Bakker undertook a project, funded by HAPET, to compile published information on woody vegetation and grasslands birds. Effects of woody vegetation were summarized by 4 factors:

1) woody cover within the grassland patch,
2) perimeter of the patch comprised of shrubs (usually < 6 ft. tall) or trees,
3) distance from woodland habitat, and
4) the proportion of woodland habitat within the landscape.

Some of the highlights of the bibliography are summarized here. General management recommendations are marked with an arrow (➢), and supporting studies are given below (•). Specific guidelines regarding patch size or allowable amounts of woody cover are generally lacking, but suggestions can be found in some articles. The full bibliography is available from HAPET, and will be published in the Proceedings of the South Dakota Academy of Science.

Nongame Birds:

Nongame bird studies usually looked at the amount of woody cover within a grassland patch in relation to the occurrence or density of birds.

➢ **Woody vegetation within fields should be controlled to make patches more attractive to grassland nesting birds.**
- In twelve studies, birds were less likely to occur in fields that had woody vegetation. Four studies found no effect (positive or negative) on species occurrence.
- Four studies concluded that although species may occur in fields with shrubs, they will be less numerous. One study found both negative and neutral effects on bird abundance, depending on the species.

➢ **Some low shrub cover is tolerable and should be allowed for grassland species that nest in shrubs.**
- Clay-colored sparrows and dickcissels may be more likely to inhabit fields with some shrub cover. Both of these species will build nests in shrubs.
- A study on northern harriers found that they preferred to nest in fields with some shrub cover.

Distance to woody cover and the proportion of field edge surrounded by trees have also been studied, usually to determine the effect on nest success or bird abundance. Most authors speculated that woody cover surrounding fields provides a travel lane for mammalian predators and perch sites for avian predators and brown-headed cowbirds.

➢ **Trees and shrubs surrounding grassland patches should be removed to decrease nest predation and brood parasitism.**

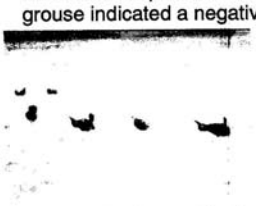
➢ **Patches for restoration of grassland habitat should be as large as possible to decrease contact with edge predators.**
- Predation rates on nests increased (1) when nests were closer to woody cover in 4 of 4 studies, and (2) in fields with a higher proportion of edge in woody cover in 2 of 3 studies.
- One third of nest predations caught on video tape were by predators associated with wooded edges.
- Cowbird brood parasitism increased (1) when nests were closer to woody cover in 2 of 2 studies, and (2) in fields with a higher proportion of edge in woody cover in 2 of 2 studies.
- Bird densities were higher in areas that were far from woody cover (3 of 3 studies).
- In 4 studies, bird densities were higher in fields with less woody cover surrounding the field; another study found no effect for some species. One study found more eastern meadowlarks in fields with more hedgerows.

Researchers are just beginning to study the effects of landscape on nongame grassland birds.

- **Restoration focus areas for nongame grassland birds should be in landscapes with few trees and high amounts of grass to increase attractiveness of grass patches.**
  - Four of five studies found that bird densities were higher in landscapes with fewer trees; the fifth study found no differences.
  - Two studies found that as the amount of trees in the landscape increased, the less likely nongame birds would occur there.
  - Nesting success was found to be unrelated to the amount of trees in the landscape in one study.

Prairie Grouse:

All studies on prairie-chickens and sharp-tailed grouse indicated a negative association with woody vegetation.



- **Trees in or near active leks and potential nesting areas should be removed.**
- **Maintenance of active leks requires suppressing tree establishment in the surrounding landscape.**
- **Restoration areas for prairie-chickens should target treeless landscapes.**
  - Active prairie-chicken leks in Wisconsin and in Minnesota had less forest cover in the surrounding landscape than random points.
  - Prairie-chicken leks in Minnesota that were used annually had less forest cover (average 1.6% in 2,000 acres) than leks used sporadically (average 3.2%).
  - Only 3 of 17 prairie-chicken nests in southwestern Missouri hatched when woody cover near the nest was >5%. When woody cover was ≤5%, 15 of 26 nests hatched.
  - Woody vegetation encroachment on the Sheyenne National Grasslands in North Dakota is believed to be reducing the quality of prairie-chicken nesting cover.
  - Landscapes with declining lesser prairie-chicken populations had more juniper encroachment than landscapes with stable populations in Oklahoma and Texas.
  - Sharp-tailed grouse in Minnesota were sensitive to even small increases (1-2%) in the amount of woody vegetation in their home range.
  - In Manitoba, the habitat surrounding a sharp-tailed grouse lek must be <44% closed aspen forest and must be >23% prairie to sustain a population of grouse. Once aspen succeeds to >56% forest and less than 15% prairie remains, the lek will likely be abandoned.

Pheasants and Ducks:

Although pheasants sometimes use woody cover, it is not always preferred and usually does not enhance survival or nesting success.

- **Most food plots for pheasants should be established in areas of dense grass and cattail winter cover, rather than near shelterbelts.**
- **Trees should be removed or not established near pheasant nesting cover.**
  - Food plot use in 4 consecutive South Dakota winters was associated with the amount of wetland and grass cover in the surrounding area. Woody vegetation appeared to be negatively associated with use.
  - During a typical South Dakota winter, cattail wetlands, tall grass, and food plots ranked highest in hen use. Woody cover was used only at the end of a severe winter (a 1 in 10 year event) and may have prevented total mortality of hens that year.
  - Nesting success was lower in and near shelterbelts in South Dakota and Colorado.
- **Trees along ponds may decrease use by mallard broods.**

  - A study in western South Dakota found that trees along pond edges decreased use by mallard broods.
- **Trees in nesting areas should be controlled before predation rates increase.**
  - Nest success in Idaho was negatively affected by the density of Russian olive, mostly due to use by nesting magpies that depredated duck nests. After removing the trees, magpies switched to sagebrush and duck nesting success did not improve.

For a copy of the bibliography contact:
Diane Granfors
USWFS, HAPET
21932 State Highway 210
Fergus Falls, MN 56537
diane_granfors@ fws.gov
218-736-0665

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

October 14, 2004

Gary J. Nelson, State Executive Director
ND State FSA Office
1025 28th Street SW
Fargo, ND 58103

ND SHPO Ref.: 04-1254, Proposed CREP Agreement in 17 Counties of ND.

Dear Mr. Nelson:

We have reviewed Project: 04-1254, proposed CREP agreement for 17 counties in ND, and have the following comment:

1) As no legal information (i.e., Township, Range, Section) was provided for the 1,000 APEs, the ND SHPO cannot determine whether any actual or potential historic properties could be impacted by the proposed agreement. If the locations of all 1,000 20 acre plots are presently known, we recommend that a Class I literature search be conducted to determine if any specific APEs have been investigated for such properties, or if any warrant cultural resource investigation. We look forward to working with the FSA as plans are more fully developed for individual plots.

Thank you for the opportunity to review this project. Please include the ND SHPO Reference number listed above in any further correspondence for this specific project. If you have any questions please contact Duane Klinner at (701) 328-3576.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer
(North Dakota)

North Dakota Heritage Center • 612 East Boulevard Avenue, Bismarck, ND 58505-0830 • Phone 701-328-2666 • Fax: 701-328-3710
Email: histsoc@state.nd.us • Web site: http://DiscoverND.com/hist • TTY: 1-800-366-6888

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

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Ms. Heidi L. Hall
Portage Environmental Inc.
1075 S. Utah Avenue, Suite 200
Idaho Falls, Idaho 83402

Dear Ms. Hall:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter of September 27, 2004, and the accompanying attachments concerning the Farm Service Agency's plans to prepare a Programmatic Environmental Assessment for the Conservation Reserve Enhancement Program (CREP) in the state of North Dakota. The proposed CREP would enroll 1,000 20-acre-plots in 17 counties in North Dakota including Adams, Burleigh, Dickey, Dunn, Emmons, Grant, Hettinger, Lamoure, Logan, McIntosh, Mercer, Morton, Oliver, Ransom, Sargent, Sioux, and Stark. The location of the 20-acre parcels will be determined as landowners enroll eligible land into the program. Only lands with a cropping history are eligible to be enrolled in CREP. We offer the following comments to assist with the project planning process in accordance with the provisions of the Endangered Species Act (16 U.S.C. 1531 et seq.), the Migratory bird Treaty Act (16 U.S.C. 703-712), and Executive Order 11990 concerning the protection of wetland resources.

Each 20-acre plot that is enrolled in North Dakota CREP will consist of a five acre tree planting and 15 acres of herbaceous cover. After the tract has been enrolled for five years, five acres of the herbaceous cover will be converted to a wildlife food plot. The agreement also provides payments to landowners for 30 years of public access to the 20-acre CoverLock and the remaining 140 acres in the quarter section. The North Dakota Game and Fish Department and U.S. Department of Agriculture will offer payments and cash incentives to encourage landowner participation.

A list of federally endangered, threatened, and candidate species that have been documented for each county in the project area is enclosed. I have also enclosed species profile sheets and maps highlighting critical habitat that has been designated for the piping plover. This list fulfills the requirements of the Fish and Wildlife Service under Section 7 of the Endangered Species Act.

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the proposed action "may affect" listed species or "adversely modify" designated critical habitat. If it is determined that the action "may affect" a listed species or "adversely modify" critical habitat, then the responsible agency

shall request formal section 7 consultation with this office. If the evaluation indicates that there will be "no affect" to listed species, further consultation is not necessary.

The piping plover critical habitat that has been designated in the 17 county project area occurs on private, state, tribal, and federal lands. Plover habitat along the Missouri River system, including Lake Sakakawea, Lake Audubon, Lake Oahe, and the free flowing reach of the river, is owned by the U.S. Army Corps of Engineers, the State of North Dakota, or tribal interests. We do not anticipate impacts to critical habitat in the counties bordering on the Missouri River system (Dunn, Mercer, Oliver, Morton, Emmons, and Sioux Counties, and the western boundary of Burleigh County) from the implementation CREP.

Piping plovers also nest along the shores of saline lakes and wetlands in Burleigh, Logan, and McIntosh Counties. The lakes and wetlands identified as critical habitat on the attached maps are owned by private landowners, North Dakota Game and Fish Department, and the Service. Research that is currently underway indicates that locating a tree planting adjacent to designated critical habitat has the potential to increase predation by raptors and furbearers such as mink, fox, and raccoons. To minimize this risk, we request that a one-mile buffer be established around the 10 saline wetlands and lakes that have been designated as critical habitat in Burleigh, Logan and McIntosh Counties.

With the exception of the area surrounding the 10 saline wetlands designated as piping plover critical habitat, we concur with your determination that implementation of CREP in the identified counties will not negatively impact Federally listed threatened and endangered species.

As part of the Programmatic Environmental Assessment, I recommend that the effects of establishing tree plantings on grassland nesting birds be evaluated. I have enclosed a map of North Dakota showing waterfowl pair distribution for six species of dabbling ducks in the prairie pothole region of North Dakota. In areas with a high density of wetlands, establishing tree plantings may contribute to higher rates of nest predation and brood parasitism. I have enclosed a fact sheet and annotated bibliography to assist with your evaluation.

Thank you for the opportunity to provide comments on the work that is underway to prepare a Programmatic Environmental Assessment for the implementation of CREP in North Dakota. If additional information is needed, please contact Bill Bicknell of my staff at (701) 250-4481.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosures

cc: State Conservationist, NRCS, Bismarck
(Attn: Dave Dewald)
Director, ND Game and Fish Dept., Bismarck
(Attn: Jon Roaldson)

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APPENDIX E
NET PRESENT VALUE ANALYSIS

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APPENDIX E—NET PRESENT VALUE ANALYSIS

Data used for the net present value analysis for the proposed North Dakota Conservation Resource Enhancement Program over 30 years is shown on the following pages of this appendix.

Year	Discount Factor	Cost Share (FSA)	PIP (FSA)	Farm Expenditure	NDGFD Cost Share	Signing incentive Payment	Rental Rate	Maintenance	State Easement Fee	Lost Jobs	Lost Sales	Sum	NPV
2005	1.00	6,495,000	4,746,000		1,727,670	750,000	600,000	110,000	8,692,500	-49,304	-1,040,000	22,031,866	22,031,866
2006	0.95						600,000	110,000		-49,304	-1,040,000	-379,304	-360,339
2007	0.90						600,000	110,000		-49,304	-1,040,000	-379,304	-342,322
2008	0.86						600,000	110,000		-49,304	-1,040,000	-379,304	-325,206
2009	0.81				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-64,594
2010	0.77				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-61,364
2011	0.74				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-58,296
2012	0.70				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-55,381
2013	0.66				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-52,612
2014	0.63				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-49,981
2015	0.60				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-47,482
2016	0.57				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-45,108
2017	0.54				300,000		600,000	110,000		-49,304	-1,040,000	-79,304	-42,853
2018	0.51				300,000					-49,304	-1,040,000	-789,304	-405,183
2019	0.49				300,000					-49,304	-1,040,000	-789,304	-384,924
2020	0.46				300,000					-49,304	-1,040,000	-789,304	-365,678
2021	0.44				300,000					-49,304	-1,040,000	-789,304	-347,394
2022	0.42				300,000					-49,304	-1,040,000	-789,304	-330,024
2023	0.40				300,000					-49,304	-1,040,000	-789,304	-313,523
2024	0.38				300,000					-49,304	-1,040,000	-789,304	-297,847
2025	0.36				300,000					-49,304	-1,040,000	-789,304	-282,954
2026	0.34				300,000					-49,304	-1,040,000	-789,304	-268,807
2027	0.32				300,000					-49,304	-1,040,000	-789,304	-255,366
2028	0.31				300,000					-49,304	-1,040,000	-789,304	-242,598

Year	Discount Factor	Cost Share (FSA)	PIP (FSA)	Farm Expenditure	NDGFD Cost Share	Signing incentive Payment	Rental Rate	Maintenance	State Easement Fee	Lost Jobs	Lost Sales	Sum	NPV
2029	0.29				300,000					-49,304	-1,040,000	-789,304	-230,468
2030	0.28				300,000					-49,304	-1,040,000	-789,304	-218,945
2031	0.26				300,000					-49,304	-1,040,000	-789,304	-207,997
2032	0.25				300,000					-49,304	-1,040,000	-789,304	-197,598
2033	0.24				300,000					-49,304	-1,040,000	-789,304	-187,718
2034	0.23				300,000					-49,304	-1,040,000	-789,304	-178,332
TOTAL									**8,692,500**	**-1,479,120**	**-31,200,000**	**6,762,050**	**15,810,975**
NPV per Acre													**791**

Assumptions

1) 5% discount rate
2) $25/acre for rental
3) 20% incentive fee on top of rental fee
4) Cost Share includes 50% of eligible costs
5) Cost share includes 40% PIP for tree planting
6) Cost Share includes SIP for tree planting ($150/acre of trees)
7) State cost share is 13.3% of eligible costs
8) State cost share includes all costs for food plots in year 5 for the remaining years of the easement.
9) Easements fee is 95% of the sum of the rental fee + maintenance fee
10) Easement fee is paid for the 15 years of the CREP contract and paid in year 1
11) Native grass seeding is estimated at $56.25/acre
12) Shelter belts are estimated at $2,373/acre

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