BLM

United States Department of the Interior

Bureau of Land Management

South San Luis Lakes Wetland Restoration Project

DECISION RECORD
AND
FINDING OF NO SIGNIFICANT IMPACT

DOI-BLM-CO-140-2010-009-EA

March, 2010

SAN LUIS VALLEY RESOURCE AREA

Abstract: This Decision Record/FONSI discloses the decision to select Alternative A for implementation in the South San Luis Lakes Wetlands Restoration Project Analysis Area. It also documents the rationale for the decision and findings, discloses findings required by other laws and regulations, and explains appeal opportunities. The South San Luis Lakes Wetland Restoration Project Environmental Assessment is attached to this Decision Record/FONSI and is incorporated by reference.

Contents:

Decision Record	DR 1-3
FONSI	FONSI 1-4
Environmental Analysis	0-56

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DECISION RECORD

DOI-BLM-CO-140-2010-009-EA

South San Luis Lakes Wetland Restoration Project Environmental Assessment

USDOI Bureau of Land Management
La Jara Field Office, San Luis Valley Public Lands Center

Alamosa County, Colorado

INTRODUCTION: The La Jara Field Office, San Luis Valley Bureau of Land Management (BLM), is proposing to restore up to 1330 acres of wetlands within the South San Luis Lakes System with no more than 600 acres irrigated in a single season. This document describes my decision to irrigate up to 600 acres in the South San Luis Lakes area as well as place ditches and dikes where necessary to help distribute water and to provide flow between basins. The South San Luis Lakes project area is located in south-central Colorado and includes approximately 534 acres of public land managed by the BLM and 1992 acres of land managed by The Nature Conservancy (TNC).

Part of the intent of this project is to evaluate the effectiveness of the irrigation as part of a feasibility study requested by the Bureau of Reclamation and the Rio Grande Water Conservation District. This project is part of a broader vision for both South San Luis Lakes and Blanca Wetlands to allow large-scaled drying within Blanca Wetlands core area to meet important wetland management objectives and to provide connectivity with the wetlands found at San Luis Lakes State Parks to the North. The Environmental Assessment completed for the IAP for Blanca Wetlands (1995) addressed the benefits and effects from incorporating drying cycles on the Blanca Wetlands area; therefore, effects from drying Blanca Wetlands are not analyzed in this document.

BACKGROUND: South San Luis Lakes lies along the northern boundary of Blanca Wetlands about 10 miles northeast of Alamosa, Colorado. It lies south of the Great Sand Dunes National Park and west of the Sangre de Cristo mountain range.

For thousands of years Blanca Wetlands, South San Luis Lakes, and much of the closed basin were made up of a series of lakes, marshes, and shallow playa basins. By the mid 1900's, the basins dried up entirely due to the lowering of the water table in the sump and the diversion of traditional water sources to the site. After that, the area became known as "Dry Lakes" (not to be confused with the BLM Dry Lakes grazing allotment). In 1965, BLM personnel began a series of wildlife habitat projects to restore some of the San Luis Valley's dry playa basins to their historic wetland characteristics and a portion of the former "Dry Lakes" area became known as Blanca Wetlands. Restoration and preservation of habitat within Blanca Wetlands is an ongoing cooperative effort with many partners. In 1991, the San Luis Resource Area Management Plan (RMP) was signed designating Blanca Wetlands as an Area of Critical Environmental Concern

(ACEC) due to its high importance for wildlife and recreational values. At that time, South San Luis Lakes was not included in the ACEC boundary. In 1995, a Blanca Wetlands Integrated Activity Plan (IAP)/Environmental Assessment (IAP, 1995) was developed for both Blanca Wetlands and South San Luis Lakes, including goals identifying acquisition of the private lands and restoration efforts for South San Luis Lakes.

Restoration in the Blanca Wetlands area has resulted in over 200 playa lakes, ponds, and marshlands restored to date. Because of these efforts, Blanca Wetlands is now identified as nationally significant for three shorebird species, State significant for Western snowy plovers and amphibians, and locally significant for waterfowl. In addition, the site has been recognized for its tremendous diversity of macroinvertebrates, including a unique and undescribed species of fairy shrimp.

There are two other related actions occurring at this time as well: 1. A proposal has been submitted by BLM to acquire the lands held by TNC in the South San Luis Lakes area to the west of the closed basin canal; and 2. A request has been submitted by BLM to the Bureau of Reclamation to install another turnout on the Closed Basin canal that would allow permanent irrigation to this site. One of the requirements by the Bureau of Reclamation and the Rio Grande Water Conservation District prior to considering a permanent turn-out was that BLM do a feasibility study. The attached EA covers irrigation actions that are part of that feasibility study.

DECISION: It is my decision to implement the proposed action through Alternative A.

IMPLEMENTATION: This decision will be implemented in the Spring of 2010.

MONITORING: Monitoring will be conducted to assure mitigation measures were followed, as well as to determine the success of the project. Wetland monitoring will be performed periodically by BLM biologists to determine success of the restoration. The biologists will be responsible for coordinating with the resource specialists upon implementing any actions that trigger mitigation measures. Individual resource specialists will be responsible for monitoring the mitigation measures as outlined in the effects sections of the attached EA.

RATIONALE: There were two key issues that drove alternative development:

- Need for more flexibility in the amount of area that can be dried on Blanca Wetlands core area under current conditions
- Opportunities for developing more connected and diverse wetland habitats for key wildlife communities and TES species

Selection of the No Action (B) Alternative would not have met the purpose and need of this action. Wetting the South San Luis Lakes will allow for needed large scale drying of the Blanca Wetlands with no net habitat loss, as connected habitat will be provided by the newly wet areas.

APPEAL OPPORTUNITIES: Within 30 days of receipt of this decision, you have the right of appeal to the Board of Land Appeals, Office of the Secretary, in accordance with the regulations at 43 CFR 4.400.

SIGNATURE OF AUTHORIZED OFFICIAL:

Jack Lewis

Jack Lewis
Acting Field Office Manager
La Jara Field Office
San Luis Valley Public Lands Center

3/3/2010
Date

FONSI

DOI-BLM-CO-140-2010-009-EA

South San Luis Lakes Wetland Restoration Project Environmental Assessment

USDOI Bureau of Land Management
La Jara Field Office, San Luis Valley Public Lands Center

Alamosa County, Colorado

The purpose of the proposed action is to authorize the BLM to irrigate up to 600 acres annually within South San Luis Lakes on BLM public lands and The Nature Conservancy private lands.

Based on review of the Environmental Assessment (EA) and the supporting documents, I have determined that the project is not a major federal action and will not have a significant effect on the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects from any alternative assessed or evaluated meet the definition of significance in context or intensity, as defined by 43 CFR 1508.27. Therefore, an environmental impact statement is not required. This finding is based on the context and intensity of the project as described below.

RATIONALE:

Context:

The proposed action will take place within the South San Luis Lakes Area. The South San Luis Lakes Wetland restoration project area incorporates approximately 534 acres of public land and 1992 acres of private land in Alamosa County. The project area sits within the closed basin located on the east side of San Luis Valley at the base of the Sangre de Cristo Mountain range to the South of the Great Sand Dunes National Park. Populations in Alamosa County are small with the largest city being Alamosa and the remainder of the County population existing in smaller towns, scattered ranches, farms, and mountain subdivisions.

Intensity:

Impacts that may be beneficial and adverse: Mitigating measures presented in the EA address potential adverse impacts that may occur while irrigating in South San Luis Lakes. Mitigation measures address public concerns and reduce impacts to the environment. The benefit of the proposed action includes restoration of wetland basins that were dried artificially from off-site drainage diversions and pumping. Restoration of playa basins within the closed basin system will provide a benefit to wildlife by enhancing connectivity to other wetland systems and by allowing more flexibility in management on Blanca Wetlands.

Public health and safety: There would be no impacts to public health and safety under this proposal.

Unique characteristics of the geographic area: Within the project area, there are no formally identified areas with unique characteristics. However, adjacent to the project area is an area with unique geographic characteristics – the Blanca Wetlands Area of Critical Environmental Concern. This area was identified as unique in terms of wildlife and recreation in the RMP. BLM's analysis determined that wildlife habitat on the project area and on the adjacent ACEC would benefit from this proposal to irrigate north of the ACEC and help achieve target conditions set forth in the Blanca Wetlands ACEC Integrated Activity Plan.

Degree to which effects are likely not to be highly controversial: Through Public Scoping, several issues were identified including concern over the protection of heritage sites, working with the range program on BLM and private lands on timing of water application, and working with the BOR to assure water is pumped to not affect the canal functionality. The BLM will notify the private land owner when setting up annual plans for irrigation in their area and inform them when water is going on and off. BOR and BLM are working together on the feasibility study for this project and all pumping from the canal will be done through coordination with the BOR. Finally, mitigation measures were set in place under section 4.0 in the EA for the protection of all resources.

Degree to which effects are highly uncertain or involve unique or unknown risks: Because BLM restored a 10,000 acre wetland tract directly south of the proposed project, BLM managers are able to use that area to assess effects and risks from this similar and related project. Because of this previous experience with these types of soils, water applications, and hydrology, the risks are relatively predictable and known. The only uncertainty is how far the water will move laterally through the soils. Determining this, is one reason the project is part of a feasibility study.

Consideration of whether the action may establish a precedent for future actions with significant impacts: The proposed action will not result in setting standards of precedent for significant impacts. The BLM manages for impacts by monitoring all treatments annually and seasonally. Monitoring treatment affects will help the BLM determine whether treatment is successful or if a change is required. Mitigation measures will be followed prior to any type of treatment. If significant impacts occur while irrigating, BLM will make appropriate changes to meet agency objectives and address public or agency concerns.

Consideration of whether the action is related to other actions with cumulatively significant impacts: Within the project area and the surrounding vicinity, there are other uses that result in cumulative impacts. These other uses vary from impacts from diversions and pumping affecting water delivery and the depth to the water table to land development affecting habitat connectivity and quantity of terrestrial vegetation. The BLM manages for cumulative impacts and monitors effects using approved monitoring methods and the land health assessment evaluations. Additional mitigation measures will be implemented and steps taken to alleviate impacts to the environment, if it is determined that such impacts are occurring from combined uses.

Scientific, cultural or historical resources, including those listed in or eligible for listing in the National Register of Historic Places: The project will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will it cause loss or destruction of significant scientific, cultural, or historical resources. The effects on cultural resources were addressed within the EA in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and as implemented through a National Programmatic Agreement and state-specific protocol agreement with the Colorado State Historic Preservation Office. The cultural specialist inventoried the low lying areas of the project boundary included in the proposed action and did find sites of interest. Mitigation measures were listed in sections 3.3 and 4.0 of the EA to protect those sites. Consultation with SHPO was not undertaken at this time.

Threatened and endangered species and their critical habitat: Mitigation measures and design criteria to reduce impacts to Threatened and Endangered species (TE) have been listed within the EA for the action alternative. Two listed species and seventeen species on the BLM sensitive species list have habitat within the project boundary area. We determined that neither TE individuals nor Sensitive species populations will be affected because the scope of the project is small in terms of total habitat on the San Luis Valley Resource Area and appropriate mitigation measures will be implemented to protect these species.

Mitigation measures for special status species and species of concern are listed in Section 3.6B and within Section 4.0 of this EA.

Section 7 Consultation is not required because mitigation measures addressed in the analyses eliminate impacts when irrigating near sensitive species or TES habitat.

Any effects that threaten a violation of Federal, State or local law or requirements imposed for the protection of the environment: The project does not violate any known federal, state, local or tribal law or requirement imposed for the protection of the environment. State, local, and tribal interests were given the opportunity to participate in the environmental analysis process. Letters were sent to thirteen Native American tribes for the purposes of consultation . There were two responses from the tribes with no concerns for the project but with a request to be kept apprised of any cultural findings in the area. The project is consistent with applicable BLM land management plans, policies, and programs.

The proposed action conforms with the provisions of NEPA (U.S.C. 4321-4346) and FLPMA (43 U.S.C. 1701 et seq.) and is compliant with the Clean Water Act and The Clean Air Act, the National Historic Preservation Act, the Endangered Species Act, the Migratory Bird Treaty Act, and Executive Order 11990.

NAME OF PREPARER: Jill Lucero

NAME OF ENVIRONMENTAL COORDINATOR: Harold Dyer

SIGNATURE OF AUTHORIZED OFFICIAL: Jack Lewis
Jack Lewis
Acting Field Office Manager

DATE SIGNED: 3/3/2010

BLM

United States Department of the Interior

Bureau of Land Management

South San Luis Lakes Wetland Restoration Project Environmental Assessment

DOI-BLM-CO-140-2010-009-EA

Oct. 28, 2009

SAN LUIS VALLEY RESOURCE AREA

Location: *South San Luis Lakes is located in south-central Colorado within the eastern portion of the closed basin in the San Luis Valley. The project area includes approximately 534 acres of Bureau of Land Management land and 1992 acres of private land owned by The Nature Conservancy in Alamosa County. T. 39 N, R.11E (S 13), R 12E (S 6, 7,16,19, 20,30, 29, 32).*

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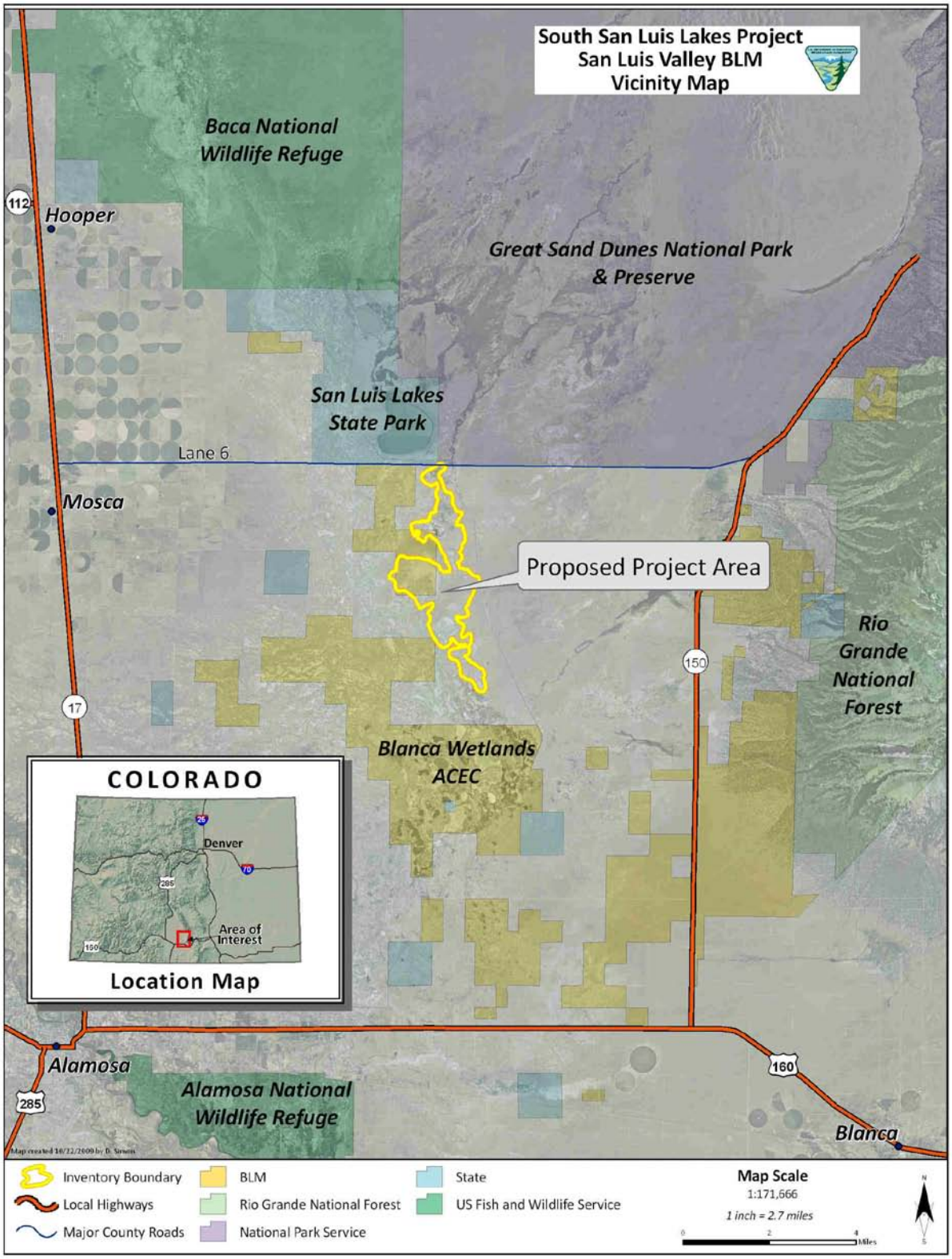
Figure 0.1: Vicinity Map



EA Table of Contents

1.0 PURPOSE AND NEED 1

1.1 Introduction 1

1.2 Background 1

1.3 Proposed Action and the Purpose 2

1.4 Need for the Proposed Action 2

1.5 Conformation with SLRA Record of Decision 3

1.6 Identification of Issues 3

1.7 Summary 4

2.O DESCRIPTION OF ALTERNATIVES 4

2.1 Introduction 4

2.2 Alternative A – Irrigation 4

2.3 Alternative B – Continue Present Management 5

2.4 Alternatives Considered but Not Analyzed Further 5

3.O AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 5

3.1 Affected Resources 5

3.2 Wetlands 7

3.3 Heritage Resources / Native American Concerns 11

3.4 Invasive Plant Species 16

3.5 Vegetation 17

3.6 Wildlife 20

3.6A Migratory Birds 20

3.6B Threatened, Endangered, Candidate and Sensitive Species 24

3.6C Aquatic Wildlife 28

3.6D Terrestrial Wildlife 30

3.7 Riparian/Floodplain 33

3.8 Hydrology/Water Quality/WaterRights 34

3.9 Soil Resources 38

3.10 Air Quality and Noise 43

3.11 Recreation 45

3.12 Visual Resources 46

4.O MITIGATION MEASURES 46

5.0 RESIDUAL IMPACTS 49

6.O MONITORING AND/OR COMPLIANCE 49

7.O CONSULTATION AND COORDINATION 49

APPENDICES

Appendix A: References 51

Appendix B: Pertinent Laws and Regulations 53

TABLES

3.1-1 Resources Considered for Analysis 6

3.6A-1 Migratory Bird Table 21

3.6B-1 Threatened, Endangered, Candidate and Sensitive Species Table 26

3.8-1 Water Quality Data from CBC salvage wells 36

3.9-1 Soils Properties of S. San Luis Lake 41

4.1-1 Summary of Mitigation Measures 46

7.1-1 List of Persons, Organizations and Agencies Contacted 49

FIGURES

0.1 Vicinity Map 0

2.1-1 Photo of Potential Irrigation Area 5

3.2-1 Historical Wetlands Map 1863 7

3.8-1 Hydrologic Map 34

3.8-2 Water Table Depth for 3 USBR Wells 35

3.9-1 Soils Map 39

3.9-2 Salt Accumulation Photos 40

1.0 INTRODUCTION AND PURPOSE & NEED

1.1 Introduction

The La Jara Field Office, San Luis Valley Bureau of Land Management (BLM), is proposing to restore up to 1330 acres of wetlands within the South San Luis Lakes System with no more than 600 acres irrigated in a single season. The South San Luis Lakes project area is located in south-central Colorado and includes approximately 534 acres of public land managed by the BLM and 1992 acres of land managed by The Nature Conservancy (TNC, Map 0.1). This area is located in the sump of the San Luis Valley where there is no outflow and a high water table. It is characterized by low-lying wetland saline basins with adjacent sand dunes. The average annual rainfall is approximately 7 inches, and the dominant plant make up is greasewood and inland salt grass with lesser amounts of other semi-desert shrubs and grasses.

This restoration would include pumping irrigation water from the Franklin-Eddy closed basin canal and developing an infrastructure system of ditches and dikes where necessary to promote water movement through the area. This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of irrigating approximately 342 acres of BLM lands within the San Luis Resource Area (SLRA) and 988 acres of TNC lands (in rotations) in South San Luis Lakes. This document is required to analyze the effects to the parcels regardless of ownership as directed under NEPA Sec. 102 (1969) and 40 CFR 1508.18. The EA analyzes two alternatives: *Irrigation and No Action.*

1.2 Background

South San Luis Lakes lies along the northern boundary of Blanca Wetlands about 10 miles northeast of Alamosa, Colorado. It lies south of the Great Sand Dunes National Park and west of the Sangre de Cristo mountain range.

For thousands of years Blanca Wetlands, South San Luis Lakes, and much of the closed basin were made up of a series of lakes, marshes, and shallow playa basins. By the mid 1900's, the basins dried up entirely due to the lowering of the water table in the sump and the diversion of traditional water sources to the site. After that, the area became known as "Dry Lakes" (not to be confused with the BLM Dry Lakes grazing allotment). In 1965, BLM personnel began a series of wildlife habitat projects to restore some of the San Luis Valley's dry playa basins to their historic wetland characteristics and a portion of the former "Dry Lakes" area became known as Blanca Wetlands. Restoration and preservation of habitat within Blanca Wetlands is an ongoing cooperative effort with many partners. In 1991, the San Luis Resource Area Management Plan (RMP) was signed designating Blanca Wetlands as an Area of Critical Environmental Concern (ACEC) due to its high importance for wildlife and recreational values. At that time, South San Luis Lakes was not included in the ACEC boundary. In 1995, a Blanca Wetlands Integrated Activity Plan (IAP)/Environmental Assessment (IAP, 1995) was developed for both Blanca Wetlands and South San Luis Lakes, including goals identifying acquisition of the private lands and restoration efforts for South San Luis Lakes.

Restoration in the Blanca Wetlands area has resulted in over 200 playa lakes, ponds, and marshlands restored to date. Because of these efforts, Blanca Wetlands is now identified as nationally significant for three shorebird species, State significant for Western snowy plovers and amphibians, and locally significant for waterfowl. In addition, the site has been recognized for its tremendous diversity of macroinvertebrates, including a unique and undescribed species of fairy shrimp.

There are two other related actions occurring at this time as well: 1. A proposal has been submitted by BLM to acquire the lands held by TNC in the South San Luis Lakes area to the west of the closed basin canal; and 2. A request has been submitted by BLM to the Bureau of Reclamation to install another turnout on the Closed Basin canal that would allow permanent irrigation to this site. One of the requirements by the Bureau of Reclamation and the Rio Grande Water Conservation District prior to considering a permanent turn out was that BLM do a feasibility study. This EA covers irrigation actions that are part of that feasibility study.

1.3 The Proposed Action and the Purpose(s):

The Proposed Action is to irrigate up to 600 acres in South San Luis Lakes as well as place ditches and dikes where necessary to help distribute water and to provide flow between basins. Ditch and dike construction would disturb no more than five acres within the first two years and no more than one acre per year after that. The proposed irrigation project area includes both TNC and BLM lands. BLM and TNC are working on an agreement that formalizes the partnership between these entities.

Part of the intent of this project is to evaluate the effectiveness of the irrigation as part of a feasibility study requested by the Bureau of Reclamation and the Rio Grande Water Conservation District. This project is part of a broader vision for both South San Luis Lakes and Blanca Wetlands to allow large-scaled drying within Blanca Wetlands core area to meet important wetland management objectives and to provide connectivity with the wetlands found at San Luis Lakes State Parks to the North. The Environmental Assessment completed for the IAP for Blanca Wetlands (1995) addressed the benefits and effects from incorporating drying cycles on the Blanca Wetlands area; therefore, effects from drying Blanca Wetlands are not analyzed in this document.

Blanca Wetlands has been identified as one of the most important areas in Colorado for shorebird migration and nesting. The proposed project would provide habitat for shorebirds during migration and nesting seasons that will work in concert with what exists on Blanca Wetland's core area as well as replace habitat that is being dried to assist in meeting wetland objectives.

1.4 Need for the Proposed Action

The need for the Proposed Action is to assist BLM in moving toward meeting the conditions and goals as set forth in the Blanca IAP. The IAP under section G-4 promotes using periodic drying and water level control to maintain vigor on the site (1995). The primary need for this project is to allow species to move between other closed basin wetlands and to dry areas within Blanca core to meet both vegetative objectives set forth in the IAP (1995) and water quality objectives set annually by the wildlife biologist.

The IAP (1995) sets a production goal to develop and restore wetlands in South San Luis Lakes. Development and restoration of the South San Luis Lakes area is needed because there is currently no connectivity between wetlands to the north of this project, which is preventing some species groups from moving between the areas.

The need for periodic drying of wetland basins is a well established management tool that provides an opportunity for important ecological processes (plant succession, removal of salts from the system, etc.) to occur. Drying wetlands keeps salinities and soils at proper levels which are considered beneficial. The proposed wetland and playa restoration and development would allow the mimicking of natural processes. By restoring these wetlands to mimic the conditions that existed before water diversions and pumping, BLM will provide better shorebird and waterfowl habitat, improve wetlands and playa management, and will enhance migration habitat.

Currently, BLM managers are unable to effectively dry smaller areas to manage water quality and productivity because water table connectivity from adjacent wetted basins keeps the treatment basins from fully drying. A potential solution for this is incorporating large scale drying. However, drying a large wetland area without replacing the habitat would greatly limit the quantity of available habitat and risk creating an area that will draw wildlife to the site, but not be able to support important life history needs. This project is needed to allow for large scale drying, but also replacing the habitat that will be lost with comparable habitat in the newly irrigated area.

Another reason managers are prevented from drying basins is because of the requirement for meeting the mitigation needs for the closed basin canal as there are no other alternative basins within reach of the current water sources that can be irrigated. Irrigating in South San Luis Lakes would provide enhanced connectivity and allow for alternate wetlands habitat while areas on Blanca Wetlands are being dried. The irrigation alternative would maintain the required mitigation acres, allow the BLM to dry larger areas on Blanca Wetlands core, and maintain the overall habitat acres available to wildlife and plants.

1.5 Conformance with SLRA Record of Decision and Approved Resource Management Plan

The action alternatives described in Chapter 2 are in conformance with wetland objectives, goals, and decisions as stated on page 14 (1-12) of the RMP (1991), which provides for special management to improve the present acres of wetlands in the Dry Lakes area to the historic acres of wetlands.

The action alternatives are also in conformance with goals and objectives outlined in the Blanca Wetlands IAP (1995) as stated on Page 27 (Objective A), Page 28 (C.4) and Page 14 (D.2) within that document.

Laws and policies allowing and encouraging BLM to create, maintain, or promote wetlands habitat are listed in Appendix C. This appendix also lists other laws (i.e. Endangered Species Act, Clean Water Act) that BLM must comply with when authorizing activities on public lands.

1.6 Summary of Public Scoping and Identification of Issues

The BLM public scoping process occurred between November, 2009 and December 2009. The Public Lands Center issued letters to potentially interested parties.

The BLM received a total of 3 comments. Below is a summary of comments and issues that were identified and relevant to irrigation and ditch and dike construction within South San Luis Lakes.

1. A concern over reducing overall pastureland due to irrigation in South San Luis Lakes.
2. A comment on the importance of the site to the Hopi Tribe and to the Navajo Nation and the need for continued consultation if prehistoric sites are found in areas where ditch or dike construction is proposed.

Internal comments and concerns were identified during an Interdisciplinary Team meeting on October 22nd, 2009. A list of internal opportunities, comments, and issues that were identified are listed below. Key issues shown are those which shaped the proposed action.

Key Issues:

- Need for more flexibility in the amount of area that can be dried on Blanca Wetlands core area under current conditions
- Opportunities for developing more connected and diverse wetland habitats for key wildlife communities and TES species

Other Issues:

- Potential conflicts between wetland objectives and active grazing
- Protection of important heritage resource sites
- Potential for damage during implementation to buried archaeological sites/deposits that would not have been identified during initial surveys due to the extensive movement of sands
- The importance of obtaining a Memorandum of Agreement that solidifies the partnership and management strategies between public and private owners in the area
- Potential spread of noxious weeds
- Possible opportunities for enhanced recreation in the future

1.7 Summary

This chapter has presented the background, purpose and need of this environmental assessment, as well as the relevant issues. Two alternatives (*Irrigation and No Action*) are presented in Chapter 2. The affected environment and environmental consequences resulting from the implementation of each alternative are analyzed in Chapter 3 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

This chapter describes and compares two alternatives (*Irrigation and No Action*) that address wetland restoration in the South San Luis Lakes Area. This analysis provides a baseline, enabling the public to compare the magnitude of environmental effects of the two alternatives.

2.2 Alternative A – Irrigation

Under Alternative A, up to 600 acres/year of wetlands could be irrigated in South San Luis Lakes (Figure 2.2-1) and less than 5 acres of disturbance through excavation of ditches and dikes would occur in the first year with no more than 1 acre in subsequent years. This would include a consequent drying cycle of comparable acreage in Blanca Wetlands core area. Irrigation would

occur from pumping out of the Closed Basin Canal and would be applied through a ditch system to move the water between basins (this would occur on both public and private lands).

Target water depth within the basins would be less than an 8 inch average. In some areas, dikes might be necessary to more effectively distribute water or to divide basins that are too large for the available water. For the purposes of this project, the distinction between a ditch and a dike is as follows: ditches are excavated channels in the soil delivering water from one basin to another while a dike is an earthen berm scraped from adjacent soil and piled in a shape to provide dispersion or depth changes of water across the basin. Ditches on the wetlands tend to be about 4 feet wide and 18 inches deep and dikes tend to be about 2 feet high, 6 feet wide, and can cover an expanse that ranges from 10-100 yards.

Heritage resource sites will be avoided as project work is designed and a qualified archaeologist or designee will be present during implementation to assure the site integrity is maintained. Grazing would stay the same on BLM and TNC lands as authorized in the permits -leases unless other annual arrangements are made. Currently, the BLM lands are part of the active BLM Lakes grazing Allotment, which is permitted for cattle grazing but has not been grazed for 20 years. TNC private and state land is actively grazed during the year.

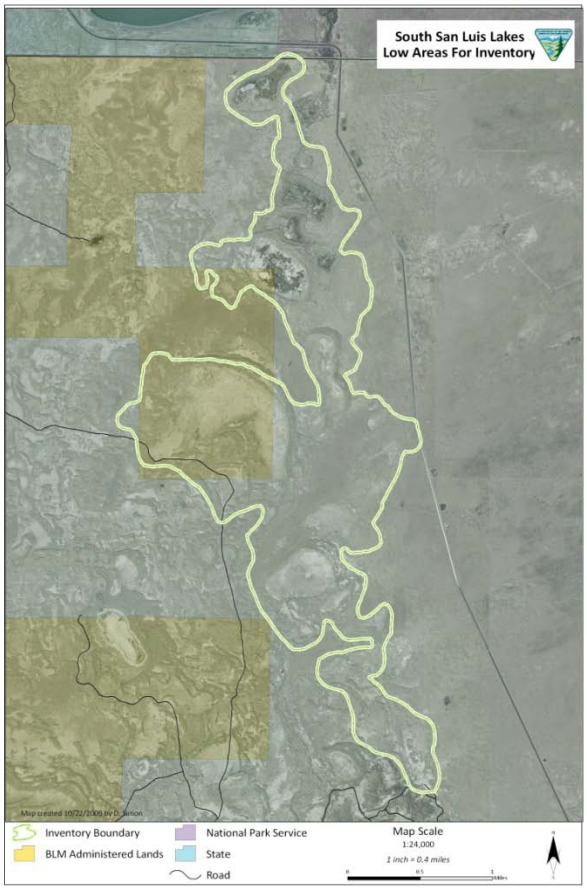


Figure 2.1-1 Potential Irrigation Areas

2.3 Alternative B – Continue Present Management (No Action)

Under Alternative B, there would be no wetting of basins as described under Alternative A, and there would be no construction of ditches or dikes. No substitution of mitigation sites would be necessary, and neither wetland restoration nor wetland corridors would be created.

2.4 Alternatives Considered but Not Analyzed Further

An alternative that considered eliminating grazing on the BLM land within the project boundary was considered but dropped due to lack of conformance with the RMP (1991).

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Affected resources and the degree of analysis

Table 3.1-1 below documents resources considered in this analysis. Resources deemed to be “not present” or “not affected” are dismissed from further analysis, with rationale, so that the effects analysis can focus on resources that are truly relevant to this proposal.

Table 3.1-1

ELEMENTS		
Determination*	**Resource**	**Rationale for Determination**
NI	Air Quality and Noise	The proposed project would have no direct, indirect or cumulative impact on air quality or noise levels within or adjacent to the project area.
PI	Heritage Resources	See Ch. 3
PI	Native American Concerns	See Ch. 3
NI	Environmental Justice	During the course of this analysis, no alternative considered resulted in any identifiable effects or issues specific to any minority group or low-income population or community.
NI	Public Health and Safety	No public health or safety issues were raised.
NP	Farmlands (Prime or Unique)	There are no prime and unique farmlands, within the project area. The lands within and adjacent to the site are primarily used for livestock grazing.
PI	Riparian/Floodplain	See Ch. 3
PI	Wetlands	See Ch. 3
PI	Hydrology/Water Quality/Water Rights	See Ch. 3
PI	Invasive Plant Species	See Ch. 3
PI	Soil Resources	See Ch. 3
PI	Threatened, Endangered, Proposed, or Sensitive Plant/Wildlife Species	See Ch. 3
PI	Wildlife/Migratory Birds/TECS Wildlife Species//Aquatic and Terrestrial Wildlife	See Ch. 3
NI	Wastes (hazardous or solid)	Significant quantities of wastes, hazardous or solid, are not expected to be used or generated as a result of the proposed action. There are no short-term environmental impacts, residual impacts, or cumulative impacts expected as a result of the proposed action.
NP	Wild and Scenic Rivers	None of these features are present in this project area.
NP	Inventoried Roadless Area	There are no inventoried Roadless Areas within the project area.
NP	Wilderness	There is no designated Wilderness or Wilderness Study Areas (WSA) near or adjacent to the project area.
PI	Recreation	See Ch 3
PI	Visual Resources	See Ch. 3
NI	Rangeland Resources	There are no changes to grazing allotments or any rangeland resources under any of the alternatives; therefore, there are no anticipated direct or indirect effects.
NP	Timber Resources	None of these features are present in this project area.
NI	Economics	Neither of the alternatives are anticipated to have any economic impacts within the County
NP	Realty Authorizations	No realty authorizations were required for this project.
PI	Vegetation	See Ch. 3
NI	Energy Policy	The project area is located in an area that is currently identified as having a low potential for oil and gas, and a low to moderate potential for geothermal development. There are no currently active or pending Geothermal, or oil and gas leases on BLM land within the proposed project area. There have been at least two oil and gas leases within the project area, but they are closed.

*Possible Determinations:
NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present and may be impacted to some degree. Will be analyzed in affected environment and environmental impacts. (NOTE: PI does not mean impacts are likely to be significant in any way).

3.2 WETLANDS

Affected Environment:

The scope of this section describes wetland habitat conditions on both South San Luis Lakes and Blanca Wetlands even though the proposed project boundary only includes South San Luis Lakes. This is because the need for this project is partially driven by the need to do large-scale drying on Blanca Wetlands.

South San Luis Lakes is located within the sump of the San Luis Valley where there is no outflow. For thousands of years, the watersheds on the North end of the San Luis Valley drained into this sump creating a series of connected saline basins known as playas. As late as the 1800's, maps of the site show either a lake or interconnected basins and marshes all across the eastern side of the SLV within this sump (Figure 1). As late as the 1940's, there is photographic evidence of water reaching the South San Luis Lakes Area.

Figure 3.2-1: Historical Map 1863

Map of San Luis Parc of Colorado Territory and Northern Portion of New Mexico (Brayer W. Blackmore)

By the 1950's, extensive water diversions and groundwater pumping eliminated the source of water for these wetlands resulting in consequent drying of nearly all wetlands within the Closed Basin. The area that was once wetted in depths up to 15' was thereafter named the "Dry Lakes". Shortly after the drying, nesting populations of waterfowl and water birds declined by 50% during the 1960s and 1970s largely due to the loss of wetlands in the San Luis Valley. As a result, the BLM initiated wetland restoration efforts in the 1960's to restore a portion of this area now known as Blanca Wetlands, which is just south of the South San Luis Lakes area.

Due to the significant biological values of the wetlands, Blanca Wetlands was designated as an Area of Critical Environmental Concern (ACEC) for its wetland values (RMP, 1991). At that time, South San Luis Lakes was not included in the designation. As a result of the Blanca Wetlands designation, in 1995, an Integrated Activity Plan (IAP) was written that included objectives and goals for both Blanca Wetlands *and* South San Luis Lakes areas to provide recommendations on how to manage the sites both in terms of wetland development and land acquisition.

To date, all restoration efforts focused on the initial area known as Blanca Wetlands; however, this proposed project tiers to direction given in the IAP, which states "In partnership with the USFWS and CDOW, cooperatively purchase, lease, exchange, and trade up to 7,000 acre-feet of water to develop

and restore wetlands in the South San Luis Lakes and Blanca South units" (Blanca South units include an area south of Blanca Wetlands). Plans for the South San Luis Lakes area were also included within the RMP (1991 section 1-12), which states "provide special management to improve the present acres of wetlands in the Mishak Lakes and Dry Lakes areas to the historical acres of wetlands".

Although the area was clearly identified as an area of interest for wetland restoration efforts, South San Luis Lakes has limited value as a wetland area currently. Because there are no developed water sources or infrastructure in this area, most of the area is dry except in high water years or after large precipitation events when some basins may be wetted. No wetland bird species have been seen on the area during wetland bird counts, and the existing habitat for water birds is limited. Potential for the site can be best documented by looking at the adjacent Blanca Wetlands area. Shorebird use on Blanca Wetlands occurs from March through October with the majority of nesting occurring in June and July. There are 22 species of shorebirds that occur on the wetlands with most of those being migrants that occur in spring and from July-September. Seven of those 22 species breed on the site (K. Stone 2008). Shorebird numbers in a given year have been as high as 59,701 individuals on 25% of the site that is surveyed. Blanca Wetlands is a nationally significant site for 3 species of shorebirds, including Baird's sandpiper, Wilson's phalarope and American avocet. Blanca also supports the largest breeding population of Snowy plover in the state of Colorado. It is anticipated that when the South San Luis Lakes area is irrigated, it will provide quality habitat for these species as well.

Like shorebirds, waterfowl populations projected on South San Luis Lakes would be similar to those found on Blanca Wetlands currently, but there is little waterfowl on South San Luis Lakes at this time. There are 19 species of waterfowl using Blanca Wetlands for migration or nesting. Numbers of individuals using the wetlands have been as high as 32,456 individuals from April-September on the 25% of the site that is randomly surveyed. Waterfowl use occurs year round with the majority of nesting occurring from April through mid-July. Migration occurs mostly from March-April and again in September-October.

Should the South San Luis Lakes area be restored, not only will the area provide habitat for shorebird and waterfowl species as described above, it will also provide critical habitat connectivity from San Luis Lakes and the Baca National Wildlife Refuge to the North to Blanca Wetlands to the South as displayed on Map 0.1. Connectivity is one of the purposes for this project as described in section 1.3, but connectivity falls under a more comprehensive goal of broadening the scale of the management on the site.

Large-scaled management ties to the other purpose of the project described in section 1.3, which is drying larger areas. The ability to broaden the size of the areas to be dried helps managers to assist in enhancing or maintaining productivity of a wetland site. Productivity can be affected by many things, but on Blanca Wetlands, it appears implementing a drying cycle changes the salinity levels, and these changes in salinity correlate to enhanced productivity.

Existing water salinities on low-lying playa basins within Blanca Wetlands range from about 7ppt to 280ppt depending on the season and elevation of the basin. Over time, biologists on the site have noted that without large amounts of freshwater inputs into a basin during the summer, the basins will become more saline if the water table is high. On higher elevation basins where the water table

is disconnected, there is no elevated salinity occurring on the site. Therefore, there are two options for management of salinity, effective drying or large inputs of fresh water. Because large inputs of fresh water are not consistently available on the wetlands annually or spatially, this proposed irrigation effort would allow for a more intense and broad based drying cycle.

Outside of BLM's internal process that proposed a drying strategy to manage salinities and to enhance productivity, BLM brought in an outside Interdisciplinary team in 2007 to evaluate habitat conditions on Blanca Wetlands and make recommendations (Wetland Review Recommendations. Unpublished Report. 2007). The team of specialists recommended large-scale drying on Blanca Wetlands to promote long-term salinity and consequent vegetation and soil maintenance on the site by detaching larger areas from the water table through drying and replacing those dried areas with comparable irrigated areas in South San Luis Lakes.

***Environmental Consequences/Mitigation*: (includes all information related to Standard 2)**
The analysis of these alternatives in relationship to wetlands values, goals and objectives are largely based on the existing RMP and IAP direction and immediate management concerns on Blanca Wetlands. Under the RMP and IAP, there is general direction to emphasize wildlife production and recreation within the Blanca Wetlands area. The IAP further defines the Blanca area to include 20,323 acres, which incorporates Blanca Wetlands and South San Luis Lakes. In general, the Plans put emphasis and priority on wildlife and recreation within these areas.

Alternative A (Irrigation):
This alternative is beneficial for wetlands both within South San Luis Lakes and Blanca Wetlands because it allows for irrigation in a historically wetted area. It provides connectivity with wetlands to the North allowing free movement by species that aren't as mobile, such as amphibians, and for mobile species, reduces the energetic cost by minimizing distance to available wetland habitats. It also provides for long-term and larger-scaled rotations of drying and wetting cycles on the area by broadening the area water can be applied. Indirect impacts will include a change in the vegetative successional stages within both areas. On Blanca Wetlands, there will be a loss of overall wetland acres, but mostly, a loss of tall emergent cover types and some reduction in playa acreage. Within South San Luis Lakes, there will be an increase in overall wetland acres with an increase in earlier successional cover types, such as irrigated salt grass playa basins and short-emergent grasses. Overall wetlands acres will remain comparable. The irrigation will provide long-term sustainability of a variety of vegetative cover types and relative abundance of these types across the wetland area. A response by wildlife will likely follow as quality shorebird habitat will be created, which might otherwise decline over time on Blanca Wetlands without this project. This alternative will provide flexibility in wetlands management by allowing more options for water application and drying. Another indirect effect is the likelihood of declines in salinity on Blanca Wetlands. Elevated gradients of salinity are positive for many shorebirds and invertebrates; however, there appears to be an upper threshold where the diversity of wildlife and invertebrate species using the wetlands declines. Several of the wetlands on Blanca Wetlands appear to be approaching this threshold, so this project would be a positive step toward managing salinity levels and structuring irrigation rotations that would promote a sustainable distribution of salinity gradients across the wetlands.

Alternative B (No action Alternative)
Under the No action alternative, there would be no irrigation occurring in South San Luis Lakes. As a result, there would be no connectivity of Blanca Wetlands to the other wetlands located in the Closed Basin, there would no enhance flexibility for large-scale drying processes on Blanca Wetlands to better manage salinity levels, and there would be no opportunity to restore historically wetted basins in South San Luis Lakes.

Although there are no direct effects anticipated within either South San Luis Lakes or Blanca Wetlands areas from this alternative, there would be indirect effects, including no opportunity to recycle low-elevation playa basins to early successional stages. In other words, a lack of broad-scaled drying on Blanca Wetlands will reduce the flexibility in management options on Blanca Wetlands and maintain low-lying playa basins at high salinity levels. There will be no opportunity to change plant communities and recycle nutrients. The risks of this alternative relate to moving all of the lower elevation wetlands within the Blanca Wetlands area toward a uniform habitat type and consequent management toward a small group of birds and invertebrates that can tolerate those salinity levels (i.e. western snowy plovers, brine shrimp, fairy shrimp, and brine flies). Although this community type is a key element of the closed basin system, this alternative does not allow the flexibility in management to keep this type of system balanced with the other types. Over time, other fresher water playas will start to convert to this type and the overall percentage of lower salinity basins will decrease as will the overall diversity of birds and invertebrates within the area.

Cumulative Effects:
This project becomes even more critical for wetland development as checker-board housing subdivisions are being developed within the South San Luis Lakes area on private lands. New power lines placed in 2008 access subdivisions that had limited development due to previous lack of power. This has greatly accelerated development within low-elevation areas that were wetted as late as the 1940s, and now this development has reduced the ability of government to purchase or restore these areas. This puts even more importance on the BLM parcels (Lakes, Dry Lakes, and Blanca WHA) and The Nature Conservancy land to provide wetland habitat that promotes connectivity and continuity of the wetlands within the Closed Basin.

Other cumulative effects in the area include ongoing groundwater pumping for the Closed Basin Project, surface diversions from streams going to agricultural production, center pivot across the San Luis Valley Closed Basin area that affects groundwater levels, State Highway (Lane 6) which can serve as an impediment to water movement into South San Luis Lakes to the North and the Closed Basin Canal, which serves as an impediment to water from the East. In 2000, a siphon was placed under the canal to facilitate water movement to the West, but there is still difficulty moving it into South San Luis Lakes from the one point of control down on Blanca Wetlands.

This proposed irrigation project serves to reduce cumulative effects from the other sources. Although the no action would not add to the cumulative effects within the area, but it also would not provide for offsetting these other identified effects.

3.3 HERITAGE RESOURCES

The scope of this analysis focuses on the potential impacts to heritage resources that might be reasonably expected from each alternative. Federal policy (FSM 2361.3) requires that all areas slated for ground-disturbing activities, or land which will leave Federal agency control through sale or exchange, or that implements federal funding on privately owned property be surveyed for heritage resources in order to comply with 36 CFR 800, the National Historic Preservation Act (NHPA) of 1966 as amended. Other applicable laws framed for the protection of heritage resources include the Archeological Resources Protection Act (ARPA) of 1979, the American Indian Religious Freedom Act (AIRFA) of 1979 and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1992. This detailed analysis will also be documented in a Section 106 NHPA report to be sent to the Colorado State Historic Preservation Office (COSHPO) for consultation. The report and consultation correspondence will be included in the project record. The analysis area includes a cultural resource overview and inventory of the Areas of Potential Effect (APE) which is defined as low areas where water will be introduced and areas slotted for the construction of ditches and dikes.

Affected Environment

The San Luis Lakes project area is part of a unique cultural landscape where aboriginal human populations adopted a lacustrine (lake related) adaptation similar to Great Basin cultures. This adaptation was uniquely geared toward the exploitation of the rich and fluctuating wetland habitats for at least 10,000 years (Button 1987). Research in the area also strongly suggests that the paleoecology and the unique topography of playas and parabolic dunes have remained largely unchanged for the past 10,000 years, despite the strong aeolian influence of the prevailing winds (Jones 1977; Button 1987; Jodry 2008). By extension, archaeological site distribution appears directly tied to this relative stasis in topography and wetland wetting and drying regimes; most of the more significant extensive sites tend to be *above* 7,520 ft., clustering in the areas of higher ground. This data has direct implications to the currently proposed project in terms of developing a project design that can largely avoid archaeological sites. However, it is important to note that two Early Archaic sites (5AL830 and 5AL831) documented during this study and recommended as *eligible* to the National Register of Historic Places (NRHP) were both documented at 7,515 ft.

Fish bones recovered from site 5AL326, known as the Borrow Pit or Fish Bone Site, within the project area include the butchered remains of the Rio Grande chub (*Gila elegans*) and the Buffalofish (*Ictiobus bubalus*)(Jodrey 2008). The site appears to date to the end of the Early Archaic (6280 to 5990 Before Present (BP)) during the so-called Altithermal era that some researchers suggest was warmer and drier (Benedict 1979). The presence of the fish that need at least 12-15 ft. water depth indicates that perhaps the wetlands area did not experience the extreme heating and drying regimes evident in the Great Plains and Great Basin during that era.

Previous effects to heritage resources within the project area include cultural and natural impacts. The area is known well for having been heavily grazed historically and a popular place to illegally collect artifacts. Nature has taken its toll in the form of an aeolian (wind deposited) environment that displaces artifacts vertically and horizontally, creating the collapse and superimposition of 10,000 years of an archaeological record often in one soil horizon. There is however, some evidence of intact (with stratigraphy) buried cultural deposits at 5AL326 (Jodrey 2008). While the soil movement can be a problem for archaeologists, the sandy soil composition can also protect organic archaeological

assemblages such as bone and wood. Several archaeological sites within the project area are potentially significant in terms of their intact buried deposits, extraordinary time depth, and potential level of preservation. Most sites in the general vicinity, however, are more ephemeral in nature. By far the most ubiquitous site type generally dates to the Late Archaic, is diffuse, and is often characterized by one to four acre sites with thin surface scatters of lithics and fire cracked rock that were likely short-term, and as such, have low potential for stratified cultural deposits.

A cultural resource literature review and assessment was conducted for South San Luis Lakes Wetland Restoration Project and, in 2009, a literature review was also conducted for the Lakes, Dry Lakes, and Blanca Wetland Habitat Area (WHA) Grazing Allotments within the Nature Conservancy permit that is currently pending a decision (Krall 2009). The Nature Conservancy Term Permit Renewal area overlaps the current proposed project area most predominately in the Lakes Allotment and a small portion of the northern end of the Dry Lakes Allotment.

Only two previous surveys for cultural resources have been conducted within the project area. From 1976 to 1986, the Bureau of Reclamation performed archaeological inventories on 20,000 acres for the Closed Basin Project (CBP) (Button 1987). During the CBP project three prehistoric sites (5AL123, 5AL126, 5AL326), and one isolated find (5AL181) were identified and recorded within or adjacent the current project area. Site 5AL123 is a large *eligible* Paleoindian site just west and outside of the northern boundary that abuts state land. According to Button (1987) 10% of the site was impacted by the canal construction. Site 5AL126 is currently a 'need data' site in the COSHPO database where it is defined as an open camp. Button (1987) stated that this site was completely destroyed during the CBP project. The site was revisited in 2008, and not surprisingly, no cultural material was visible on the surface. Site 5AL326, currently a 'need data' site according to the COSHPO database, is a rare site type with the potential to yield important information regarding Early Archaic subsistence strategies. The Smithsonian conducted further research at the site in 2001 and found evidence of fishing and processing of chubs and suckers. Charcoal was collected and dated to the Early Archaic (between 6280 and 5990 BP)(Jodry 2008). During the same research project, the Smithsonian Institute conducted a small survey and documented site 5AL697 (*unevaluated*) and four isolated finds (5AL809, 5AL810, 5AL811 and 5AL812) within and near the current project area boundary (Jodry 2008). Site 5AL326 was recommended as *eligible* at this time due to intact buried cultural deposits. The new site information from this project will be sent in the Colorado State Historic Preservation Office (SHPO) in an informational.

The CBP effort is a valuable resource in understanding the archaeological site distribution and content as it relates to the current project proposal. The actual survey areas for this CBP project are unclear and can only somewhat be discerned by known site locations. It seems likely that the northern area encompassing a little over half of Nature Conservancy Land was surveyed during the CBP. The most significant site within the current project area (5AL326) seems to lie well outside the original CBP project area boundary, however. The survey strategy for the CBP was one of 'avoidance' to reduce the cost of data recovery and site mitigation. Subsequently, as more archaeological site data was gathered, the project design adapted to avoid all sites with any artifact density and potential buried deposits (Button 1987: I: 3). Therefore, one could easily surmise that much of the current project area has been previously covered by larger block surveys that fell outside of the impact zone, however, there is no survey data on hand to support this. The eight sites documented

during the current study did not correspond to any of the original CBP sites. This could be a function of the fact the area had not been previously surveyed, or that these sites have recently been uncovered since the CBP survey over 20 years ago.

Native American Concerns

The region encompassing the San Luis Lakes has been viewed by many tribal peoples as a sacred landscape. The Great Sand Dunes just to the east are sacred to several Tribes including the Ute, Jicarilla Apache, and Dineh (Navajo) to name a few. The Jicarilla Apache know the Great Sand Dunes as *"Seinanyédi"* , translated as "it goes up and down" (White 2005). Mount Blanca, another commanding landmark just to the east of the project area, is sacred to the Dineh as the White Shell Mountain of the East; *Sisnádjini,* known to be the eastern boundary marker of the traditional *Dinetah* or homeland.

Several Northern Rio Grande Pueblos view San Luis Valley as the mythic and literal source of their existence, or emergence place(*sipapu*), the place where they came up to this world from the World Below, and the place where *Posoge* (the Tewa "Big River" or Rio Grande) originates (White 2005). The Santa Ana Emergence story referred to the *Shipap* as a place in the north, "too sacred … to live there" so the people moved south (White 1942:87). The only place matching that particular description is San Luis Lake:

> …Ma-se-ua is the spirit of Rain who dwells in the lagune of 'Shipap.' This Lagune is said to be to the North, beyond the 'Conejos,' and is described to be very round and deep. Many streams flow into it, *but it has no issue*. Out of this Lagune came forth the Indians and in it dwells 'Te-tsha-na,' our mother, from which sprang the Indian race. Those who die go to heaven above where God judges them and while the bad ones go to perdition forever, the good ones return to their mother in the said Lagune (Lange 1959:416).

San Idelfonso Pueblo also recognizes a diety, *Somaikoli* who came, with the people from the Sandy Place Lake of the North that many believe to be in the San Luis valley in the vicinity of the Great Sand Dunes (Ortiz 1969). *Somaikoli* is a crippled and blind deity associated with a dance that has been carried on since the time of Emergence. Archaeological evidence, such as Northern New Mexico Puebloan ceramics (Taos Incised and Corrugated) and some projectile point types denote Puebloan influence in the area possibly between 900-1500 AD (Button 1987).

Tribal Consultation is in progress for this project. Additionally, an intertribal and interagency Native American Graves and Repatriation Act (NAGPRA) Memorandum of Understanding (MOU) has been recently finalized and signed by several tribes that claim affiliation to the San Luis Valley that include several Upper Rio Grande Pueblos, the three Colorado Ute Tribes and the Jicarilla Apache. The cooperating agencies include the Bureau of Land Management, the U.S. Forest Service, the National Park Service and the Fish and Wildlife Service. The MOU is designed as a guide for the Tribes and land management agencies in the care of inadvertent human burial discoveries in the San Luis valley. Anecdotally we know that the potential for such discoveries is high within the project area due to the high site density, the high potential for preservation of organic material and the erratic aeolian

environment that can quickly expose and cover cultural deposits. Ranchers and past land managers have shared their own experiences of these occurrences in similar landscapes across the San Luis Valley.

Environmental Consequences

In the fall of 2009 archaeologists from the San Luis Valley Public Lands Center conducted a cultural resource inventory of approximately 300 acres in a projected APE consisting of the 'low areas' and where ground disturbance will most likely occur. Archaeologists also focused on higher areas in-between low areas where archaeological sites are likely to occur based the past research model for the Closed Basin Project (Button 1987). Archaeologists encountered a high site density and documented eight prehistoric sites (5AL830, 5AL831, 5AL832, 5AL833, 5AL834, 5AL835, 5AL836, and 5AL837, 5AL838) and nine prehistoric isolated finds (5AL838, 5AL839, 5AL840, 5AL841, 5AL842, 5AL843, 5AL844, 5AL845 and 5AL846). Sites 5AL830, 5AL831, 5AL833, and 5AL836 are recommended as *eligible* to the NRHP and will be avoided by project activities. Site 5AL326 is an extremely significant site, also recommended as *eligible* to the NRHP. Site 5AL697 remains unevaluated and will be avoided by project activities.

Alternative A – Irrigation

Direct and Indirect Effects

The construction of ditches and dikes has the potential to directly affect heritage resources, especially in unsurveyed areas or in areas where there are buried cultural deposits not visible on the surface. Ditches and dikes will be constructed in higher elevation areas between the playas where archaeological sites are more likely. If wetted areas flood above 7515ft. the potential direct impacts to significant sites will increase greatly (see above). Indirect effects to heritage resources could include increased vandalism and collection of artifacts by persons hired to construct the ditches and dikes and/or move water in and out of the playas. A positive indirect effect of the overall project is the opportunity to collect much needed data in order to better understand the prehistory of the area.

Alternative B – No Action

Direct and Indirect Effects

If there is no federal action, then there is no undertaking, as defined in 36 CFR 800.2(o), for Section 106 of the National Historic Preservation Act (16 U.S.C. 470f). Under the *No Action* Alternative, the potential for direct and indirect effects to heritage resources would be eliminated as there would be no new construction or other ground disturbing activities.

Cumulative Effects

The potential for cumulative effects to heritage resources is high in the project area if one combines the effects of the current proposal (Alternative A), natural erosion forces within unstable soil matrices, historic livestock grazing and illegal artifact collection over time. The loss of archaeological resources has happened in the past and will happen in the future. An additional cumulative effect is that over time, fewer archaeological resources will be available to learn about past human lifeways, to study changes in human behavior through time, and to interpret the past to the public. In surveyed areas, documenting, evaluating and archiving basic information about each site for future reference serves to partially mitigate potential cumulative effects to cultural resources.

Mitigation

1. Sites 5AL830, 5AL831, 5AL833, 5AL836, 5AL326 and 5AL697 are considered eligible or require further research, and as such will be avoided by all project activities. If flooding is planned to exceed 7510 ft. in elevation, data recovery measures will need to be undertaken at sites 5AL830 and 5AL831 (Both at 7515 ft.) to mitigate adverse effects.

2. To mitigate the potential for direct adverse effects to heritage resources under the Irrigation Alternative (A), project managers will alert archaeologists when a finalized design for the ditches and dikes is complete. Archaeologists will then spot check these areas for potential heritage resources and will ask for design modifications to avoid the resources if discovered and the potentially expensive efforts of archaeological data recovery (excavation) if the site(s) are significant. If the site(s) areas are considered *not eligible* to the National Register of Historic Places, they will be documented and the project may proceed.

3. Archaeologists will monitor construction of ditches and dikes in high site potential areas in order to discern if there are buried cultural deposits. Archaeologists will ask for design modifications if buried cultural deposits are discovered.

4. Where possible, wetted areas will be restricted to historic/prehistoric playas below 7510 ft. to avoid potentially undetected significant heritage resources in the project area. In the event water deliveries need to be made to areas above 7510' to meet wetland objectives or to deliver water to another site, the archaeologist will review the proposal for risk to heritage sites.

5. To mitigate the potential indirect effects of illegal looting and vandalism, the Discovery & Education Stipulations should be placed in all potential construction contracts:

Discovery and Education

1. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the Bureau of Land Management or any person working on the Bureau of Land Management's behalf, on public or Federal land shall be immediately reported to the Authorized Officer, Field Manager-BLM, Monte Vista, Colorado. The BLM or its contractors shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine the appropriate actions to follow to prevent the loss of significant cultural or scientific values. The BLM will be responsible for the cost of the evaluation. Any decision as to proper mitigation measures to be taken will be made by the Authorized Officer after consultation with the Colorado State Historical Preservation Office.

2. Collection or disturbance of artifacts and other archaeological, historical, and paleontological materials by the BLM, its representatives, contractors, or employees, shall not be allowed. Offenders shall be subject to prosecution under the appropriate State and Federal laws.

3.4 INVASIVE PLANT SPECIES

Affected Environment

There currently does not appear to be a major invasive, non-native species problem within the South San Luis Lakes project area. Russian Knapweed, hoary cress (short white top), and Perennial Pepperweed (tall white top) are the main species of concern within the project area. Salt Cedar and Russian olive are found scattered south of the project area along several ponds and canals but not within the current project area. The current invasive, non-native weed infestations are scattered in nature due to the lack of available water and limited soil disturbing activities. Normally the majority of weeds found on these low elevation project sites are found along county and BLM road systems or in this a case ditches and wet areas.

Environmental Consequences

Alternative A – Irrigation

Direct and Indirect Effects

Alternative A can be expected to increase the infestations of invasive, non-native species as the result of flooding of normally dry basins and soil disturbance resulting from the construction of ditches and dikes. Also, additional traffic on the existing road system can be expected as a result of maintenance traffic and road maintenance activities, which will potentially spread weeds. Additionally, new species can be expected as they become established on the non-project related lands both private and public. Currently Russian Knapweed and tall white top are the main weeds of concern that are likely to establish within the project area since it is currently found on lands adjacent to the project area.

The anticipated direct, indirect or cumulative impacts from Alternative A, could be a change in the upland range vegetation conditions with the increased effects of the flooding and drying which is conducive to increased invasive, non-native species. These species will generally out compete the native dry land plant community and some of the vegetation within the basins, which may not be as competitive as the invader plants.

To combat the potential spread of invasive, non-native species affects upon the project area, the implementation of the SLV Public Lands Center Noxious Weed Program will need to be fully implemented into the project with the resulting inventory, monitoring and treatment by mechanical, chemical or biological means being applied aggressively as appropriate. With an aggressive weed management program in place, we can expect to reduce the occurrence of invasive, non-native species and increase native riparian species.

Alternative B – No Action

Direct and Indirect Effects

Because there is no wetting of basins or disturbance on the site under this alternative, invasive, non-native species would not be expected to increase at a significant rate due to grazing but the potential for new weed species would be increased due to livestock coming off of private property which has not been inventoried for invasive, non-native species.

There are no formal mitigation measures in place to inventory or monitor any weed infestations and provide the appropriate treatment within the project area, and it is expected that existing invasive, non-native species will spread over time. Road maintenance is generally the primary method for spreading invasive, non-native species seed within project areas on BLM administered lands.

The anticipated direct, indirect or cumulative impacts from Alternative B could be a decline in the quality/diversity of the native range and riparian vegetation communities. Without an aggressive weed management program on the allotment we can expect more invasive, non-native species which will affect the overall plant diversity by reducing the occurrence of native species.

In order to combat the potential spread of invasive, non-native species affects upon the project area, the implementation of the SLV Public Lands Center Noxious Weed Program will need to be fully implemented into the project with the resulting inventory, monitoring and treatment by mechanical, chemical or biological means being applied aggressively as appropriate. With an aggressive weed management program in place, we can expect to reduce the occurrence of invasive, non-native species and increase native riparian species.

Mitigation

Mitigation common to all alternatives:

1) Continue annual monitoring for invasive non-native species. If they occur, provide appropriate treatment to eradicate or control the spread.
2) Minimize riparian habitat vegetation utilization by livestock so native species have an opportunity to become re-established.
3) Only chemicals approved for use adjacent to water will be used to treat those infestations located adjacent or in close proximity to water.
4) All treatment, whether chemical, biological, and/or mechanical will be pre-approved by BLM invasive species specialist.
5) All ground disturbing activities will require re-seeding with approved native vegetation.
6) Funding for weed management will be part of the annual planning process.

3.5 VEGETATION

Affected Environment

The affected environment consists of only those acres of the total project area (BLM and TNC private lands) that will be impacted by the application of water and the construction of ditch and dike work. Vegetative effects from drying on Blanca Wetlands were analyzed in the IAP (1995) so they will not be covered within this section. Out of the total 1,330 acres (both BLM and TNC lands) of dry playa basins that are proposed to be irrigated in this EA, only 600 actual acres of these dry playa basins would be irrigated per year. The playa areas selected for wetting or drying and the locations for the ditches and dikes in a given year is unknown at this time due to the uncertainty of water flow patterns.

Black greasewood/Upland type vegetation:
Sarcobatus vermiculatus (black geasewood) forms expansive shrublands on alkaline soils with a perennially high water table. Stands of this long-lived deciduous shrub are extensive in the San Luis Valley. This association of almost pure greasewood with very little understory has been documented only from the San Luis Valley and North Park. The community typically has an open canopy and extensive bare ground with a hard crusty surface and a deposit of salts during the dry season. The *Sarcobatus vermiculatus* (black greasewood) plant association occurs where the water table is close to the surface of the soil for a large portion of the growing season and where the soil salinity is high. *Sarcobatus vermiculatus* is an indicator of saline-sodic or relatively moist soils, and grows on clay-loam, silt-loam, or deep, fine sandy loam soils with high salinity or alkalinity. *Sarcobatus vermiculatus* (black greasewood) typically forms an open shrubland community with 20-60% cover. The understory is primarily bare ground, although sparse cover of *Suaeda calceoliformis* (Pursh seepweed) or *Spartina gracilis* (alkali cordgrass) may be present. *Sarcobatus vermiculatus* may occur as a band of vegetation around a salt flat or depression. This visible zonation is caused by the relative tolerances to soil salinity and depth to groundwater of the dominant species.

In *Sarcobatus vermiculatus* dominated sites , the herbaceous understory sometimes is a dry carpet of *Distichlis spicata* (inland saltgrass) with up to 40% cover as shown in the more vegetated photo elow.

Left: Community found in irrigated playa bottoms

Right: Community found on high ground between playa basins

Nuttall alkaligrass Herbaceous Vegetation
Puccinellia nuttalliana (=*airoides*)

Below: Alkaligrass/Playa basins

Puccinellia nuttalliana (Nuttall alkaligrass) forms a short grassland (15-30 in, 4-8 dm) with small amounts of forbs and other grasses present. *Puccinellia nuttalliana* needs moist soils of intermediate salinity in seasonally wet meadows. The topography of the area is generally flat, with poor drainage. Much of the ground surface may be bare.

This association is generally found on flat, seasonally wet meadows with fine soil. These moist soils are saline and alkaline. The soils usually dry out during the growing season. Soils are generally fine

colluvial material and range in moisture from dry to permanently wet. *Puccinellia nuttalliana* (Nuttall alkaligrass) is the characteristic and diagnostic species of this association, and is always present. Cover values range from 5-100%. It is usually the dominant species. Associated species are usually herbaceous, and commonly include *Hordeum jubatum* ssp*. jubatum* (foxtail barley), *Triglochin maritmum* (seaside arrowgrass) and *Spergularia maritima* (media sandspurry). In playas, salt flats and saline lakes this community forms a ring around concentrated stands of species that are more tolerant of inundation. In this type of community it is common for *Puccinellia nuttalliana* (Nuttall alkaligrass) to dominate the graminoid layer. *Distichlis spicata* (inland saltgrass) or *Hordeum jubatum* (foxtail barley) can co-dominate some stands. *Hordeum jubatum* can replace *Puccinellia nuttalliana* if a stand receives prolonged disturbance.

Environmental Consequences

As mentioned in the background section of this EA, several of these playa basins dried up in the mid 1900's, thereby permanently altering, over time, the wetland type plant communities to resemble that of the present day xeric type plant communities typical of these dry basins. Applying Irrigation water to these remnant dry playa beds would transpose once again the existing xeric plant community to that of a wet basin type plant community. The extent of the modification or direct effects to the present xeric plant community would largely depend on the volume of water to these playa basins, the length of time the playas are wet and the water quality (fresh versus alkali) which is dependent on the alkalinity of these basins.

Alternative A – Irrigation

This alternative analyzes the vegetative impacts and affects from the application of irrigation water to several acres of dry playa basins on lands belonging to both BLM and the Nature Conservancy. These once dry playa basins will respond to the irrigation water with the eventually conversion from drier upland type plant species to wetland type species more typical of those species that once inhabited these playa basins and which are similar to the Blanca Wetland area.

Direct and Indirect Effects

Direct effects to the existing vegetation could be minimal in those areas where water infiltration is very low with existing vegetation changes being slight. Areas of minimal inflow of water may see more inland saltgrass establishment and a decrease in greasewood habitat. Areas where the water is stagnant and more alkali for long periods of time may promote bulrush and sedge establishment. Those areas receiving larger volumes of fresh water may encourage cattail establishment and other wetland species therefore having a much larger effect on the existing vegetation.

The construction of dike and ditch structures to either impound water or to move water to other areas would cause direct effects to the vegetation from heavy machinery disturbance, however, this would be limited to a disturbance area of 5 acres per year. Some areas of vegetative disturbance would naturally re-vegetate over the life of this plan. Reseeding with native plant species could assist with reestablishment for these disturbed areas. The life of this plan is approximately 5 to 10 years therefore the long-term effects to the vegetation of building dikes and ditches would be increased, however, by reseeding these disturbed areas the impacts would be minimal and less disruptive to the native plant community. An indirect effect of the dike and ditch construction would be the exposing of the bare soil to wind and water erosion.

Alternative B – Continue Present Management (No Action)
Direct and Indirect Effects
Under this alternative there would be no action taken to irrigate the remnant playa beds . No dikes or ditches would be constructed and no water moved to new areas involved in the South San Luis Lakes area. There would be no impacts to the existing vegetative community under this alternative.

Mitigation:
Alt. A

1. Areas disturbed by activities associated with the construction of ditches and dikes will be reseeded with native plant species that are representative of the plant community for that area.
2. Reserve top-soil during construction activities and redistribute on the site following construction.

Cumulative Effects
There are no cumulative effects anticipated for vegetation under either of the alternatives because this project involves no net change of wetted vs. non-wetted acres. Therefore, the total amount of aquatic versus terrestrial vegetation should remain the same across the landscape. There is the potential for cumulative effects from increases in weeds under the action alternative, but implementing the mitigation measures under section 3.4 would mitigate these potential impacts.

3.6 WILDLIFE

3.6A MIGRATORY BIRDS
Affected Environment
The Migratory Bird Act (MTBA) protects all migratory birds and their parts (including eggs, nests, and feathers). A primary concern for migratory birds from actions analyzed by this EA involves the flooding of grassland/ shrubland habitat during the nesting season which has the potential to flood out nests of ground nesting songbirds, burrowing owls, or ferruginous hawks. A secondary concern for migratory birds from actions analyzed by this EA involves the temporary construction and associated disturbance of the dike and ditch system, particularly those that may result in the loss of habitat or disturbance to roosting birds outside of the nesting season. The ditch and dike construction will occur outside of the nesting season (May 15 to July 15), except during emergency situations. Impacts to habitat include loss of upland habitat and construction and maintenance of wetland/ playa habitat which may change how and what species of migratory birds use the habitat. The costs of upland habitat conversion for the benefits of wetland/ playa habitat production are considered a benefit for most migratory bird species using the project area. Loss of a minimally productive rabbit brush/ salt grass/ greasewood plant association to the conversion of a wetland or playa complex will provide habitat for many shorebirds, water birds, raptors, and waterfowl.

A review of the migratory bird table indicates that five species on the (Birds of Conservation Concern) BCC List for Bird Conservation Region (BCR) 16 are excluded from analysis because they do not occur or are considered accidental within the San Luis Valley and will therefore not be affected by any management actions. These species include the veery, gray vireo, black rosy finch, Grace's warbler, and chestnut collared longspur. Species that do not occur or have habitat present in the South San

Luis Lakes Wetland/ Dry Lakes complex area are those labeled "No" in the Occurrence in the Analysis Area column of the table below.

3.6A-1 Migratory Bird Table: FWS Birds of Conservation Concern (BCC) for BCR 16 and their status within the project area (FWS 2008 list)

Species	Associated Habitat Types(s)	Occurrence in Analysis Area/ Adjacent Wetlands complex
American Bittern	Wetlands	Yes
Bald Eagle	Lakes and rivers	Yes
Ferruginous Hawk	Grassland, Mountain Shrub, Semi-Desert Shrubland, Sagebrush Shrublands	Possible
Golden Eagle	Agricultural, Grassland, Cliff/Rock/Talus	Yes
Peregrine Falcon	Agricultural, Pinyon-Juniper, Spruce-Fir, Ponderosa Pine, Cliff/Rock/Talus, Wetlands	Yes
Prairie Falcon	Agricultural, Grassland, Semi-Desert Shrubland, Cliff/Rock/Talus	Possible
Gunnison's sage-grouse	Mountain Shrub, Sagebrush Shrubland, Low Elevation Riparian	No
Snowy Plover	Wetlands	Yes
Mountain Plover	Agricultural, Grassland, Semi-Desert Shrubland, Sagebrush Shrubland	Possible
Long-billed Curlew	Shorelines	Yes
Willow Flycatcher	Willow-Riparian	Possible
Juniper Titmouse	Pinyon-Juniper Woodlands	No
Yellow-billed Cuckoo	Low Elevation Riparian, Wetlands	No
Flammulated Owl	Aspen, Ponderosa Pine, Mixed-Conifer, Spruce-Fir	No
Burrowing Owl	Grassland, Semi-Desert Shrubland, Sagebrush Shrubland	Possible
Veery	Dense riparian thickets, willow-riparian	No*
Lewis's Woodpecker	Ponderosa Pine, Low Elevation Riparian	Possible
Gray Vireo	Oak woodlands/scrub	No*
Pinyon Jay	Pinyon-Juniper, Ponderosa Pine	No
Bendire's Thrasher	Semi-Desert Shrubland	Possible
Black Rosy Finch	Spruce-fir forest; alpine	No*
Brown-capped Rosy Finch	Nests above timberline in alpine zone in cliffs, crevices; also utilizes spruce-fir forest	No
Cassin's Finch	Primarily spruce-fir, but also mixed-conifer forest	No
Grace's warbler	Ponderosa pine	No*
Brewer's sparrow	Sagebrush Shrubland	Possible
Grasshopper Sparrow	Grasslands	Possible
Chestnut-collared longspur	Shortgrass Prairie	No*

* Excluded from analysis because the species does not occur or has very rare migratory occurrence in the SLV.

The information provided in the migratory bird table indicates that fifteen species designated as Birds of Conservation Concern for BCR 16 could breed in or near the analysis area or migrate through the general vicinity. Most migratory bird use in the San Luis Valley is limited to the summer period due to the harsh fall, spring and winter months. Most birds arrive during late spring (April/ May) and migrate from the area in early fall (August/ September). The species present during summer are most likely breeding and rearing young. Most species on the BCR 16 list follow this migration pattern; however, a few species are present during the wintertime. Resident species that spend all or part of

the winter in the San Luis Valley include the ferruginous hawk, golden eagle, Gunnison's sage-grouse, burrowing owl, peregrine falcon, prairie falcon, Lewis's woodpecker, and pinyon jay. Of these winter resident species golden eagle, peregrine falcon, prairie falcon, burrowing owl, and Lewis's woodpecker have potential year-round habitat present in the South San Luis Lakes Wetland/ Dry Lakes complex project area.

Environmental Consequences

Direct and Indirect Effects

The project area includes habitat for fifteen species of conservation concern, including five species that may be present during the winter period. The proposed action authorized under this EA may pose a risk for disturbance of species present during the breeding season. Disturbance to migratory birds includes destruction of nests, loss of life of the individual due to collisions with vehicles or by other means, and disturbance to individual birds that can cause them to abandon a nest or an area during the nesting season which would lower individual reproductive success and fecundity (the number of offspring a female produces over her lifetime).

Direct impacts are those that cause disturbance to individual birds or take of a nest. Direct impacts of construction of ditches and dikes may include disturbance to roosting and foraging birds. Direct effects from wetting playas or wetlands will possibly flood out upland or grassland nesting birds which may cause take of an individual or loss of fecundity from loss of eggs or young which have not yet fledged.

Indirect impacts are those that remove habitat from use or availability to migratory birds is the present or future. Indirect impacts include loss of minimally productive upland habitat and disturbance to soils and vegetation that may have provided nesting habitat. Construction associated with the dike and ditch system that occurs outside of the May 15 to July 15 primary breeding and nesting season will not likely affect migratory birds within the area to the degree of loss of recruitment into the population. Indirect effects from flooding playas or wetlands will permanently remove habitat from its current use and will convert that use from upland/ shrubland habitat to wetland and playa habitat. The application of water will convert the habitat type and change the guild of animals that use the area but wetlands are generally considered a much more productive habitat type.

Alternative A – Irrigation

Under Alternative A, there would be wetting of the basins and construction of ditches or dikes as well as large scale drying of basins on the Dry Lakes, private property, and on Blanca core areas. The management of these systems is considered intensive and human presence will likely be increased on Dry Lakes and private property to change and move water throughout the system and monitor the effectiveness of that management. However, use of the area by the public is limited and access is non-vehicular so recreational use of the area is extremely minimal.

The wetland and playa construction, development, and alteration of low-lying areas allow the mimicking of natural processes. Drying wetlands keeps salinities and soils at proper levels which are considered very beneficial. Restoring these wetlands to mimic pre-irrigation processes will provide

better shorebird and waterfowl habitat, improved wetlands and playa management, and will contribute more stopover habitat to the bird migration process.

Direct and indirect effects to migratory birds are possible under Alternative A. Take of an individual or a nest as well as loss of habitat for upland/ shrubland/ grassland nesters is possible with construction, maintenance, and irrigation. Birds generally adapt to changes in landscape and water or irrigation practices so if an area is converted to a wetland and is wetted frequently throughout the summer and in consecutive years, birds will not likely re-nest in the areas that will be flooded. This possible one-time loss of nests based on flooding is possible for raptors and songbirds. However, this loss is deemed to be minimal as far as population viability is concerned. The benefits to waterfowl, shorebirds, and water birds, a more locally rare bird community outweigh the loss of habitat and possibly individual fecundity of a few individual species.

Alternative B – Continue Present Management (No Action)

Under Alternative B, there would be no wetting of basins as described under Alternative A or C, there would be no construction of ditches or dikes, and there would be no large-scaled drying of basins on the Blanca Wetlands core area. No direct or indirect effects are anticipated to migratory birds from this action.

Cumulative Effects

Cumulative impacts include the effect of future State, tribal, local, or private actions that are reasonably certain to occur in the action area under consideration. Factors that have contributed to changes in wildlife habitats are numerous. Some issues in the San Luis Valley include habitat loss, agricultural developments, housing developments, water table reductions, fire suppression, and recreation activities each with the potential to reduce the habitat quality for migratory birds that use the area for foraging, nesting, roosting and for migratory stop-over habitat and may contribute as cumulative effects under alternatives A. Cumulative effects to migratory birds under alternative B are not anticipated.

The current recreation based activities appear to be having minimal influences on migratory birds and the habitats that support them. These animals have adapted to human use in this area and tend to avoid humans, however the habitat lends cover, foraging, and nesting/ burrowing/ birthing habitat for many migratory bird species. Recreational development or development on private lands may serve to fragment the contiguous habitat currently available.

Private lands nearby are subdivided in the Zapata subdivision and other private lands are currently used and contain houses. Activities on private lands are not under the control of the BLM and loss of habitat could occur through land clearing/ conversion, development, fencing, or other activities. This situation puts the impetus on the public lands to support more migratory bird species during critical periods such as the spring and fall migration and during the nesting season as they are displaced from adjacent habitat from human presence and habitat loss or fragmentation.

Modifying the juxtaposition (configuration) of the Blanca wetlands complex by adding playas and wetlands north in the South San Luis Lakes project area will improve riparian and wetland habitat for migratory birds on lands managed by the BLM, Nature Conservancy, and the State of Colorado on

State Wildlife Areas due to increased connectivity and improvements in flexibility in managing vegetative cover type. The project is beneficial for the San Luis Valley wetlands and riparian areas as a whole because it re-connects historic wetland/ playa processes that functioned pre-irrigation practices. Irrigation, wild land to farmland conversion, and development in the San Luis Valley has greatly altered the water tables, the river flows, aquifer recharge and has created lands that are less productive with increased salinities and changes in vegetation types. Groups and partners have worked together to provide or connect wetland systems, recreate the historic processes, sometimes through intensive management, on the National Wildlife Refuges, State Wildlife Areas, BLM, and private lands and this reconfiguration of the Blanca wetlands/playa system will help to connect expansive wetlands complexes and provide wildlife habitat in an important migratory flyway.

Mitigation

1. Construction and maintenance of the dike and ditch system and fence construction and maintenance conducted outside the time period of May 15 to July 15 will not result in take of migratory birds. Therefore, operating outside the breeding, nesting, and fledgling periods will ensure protection of these species regarding construction and will prevent take of individuals, including nest destruction and nest abandonment.
2. Flooding of the wetlands or playa basins will likely occur during the migratory bird breeding and nesting periods and the area is subject to review and clearance of nests before areas are wetted to protect nests.

3.6B THREATENED, ENDANGERED, CANDIDATE, AND SPECIAL STATUS WILDLIFE SPECIES

Affected Environment

Twenty-nine species of threatened, endangered, candidate, or sensitive (TECS) wildlife may occur in the San Luis Resource Area (Table 4) based on reports from the Colorado Natural Heritage Program (CNHP), Natural Diversity Information Source (NDIS), Bureau of Land Management, and personal observations. Based on life history information, eleven species are carried forward because they are documented in the area, have foraging, roosting, and/or burrowing habitat in the project area, and/or cannot be completely discounted due to lack of occurrence data. These species include the Western snowy plover, American white pelican, white-faced ibis, Barrow's goldeneye, black tern, Texas horned lizard, peregrine falcon, ferruginous hawks, burrowing owls, big free-tailed, bald eagle, Yuma myotis, Townsend's big-eared bat, Rio Grande chub, and flathead chub.

The South San Luis Lakes project area does not currently support habitat for any federally listed threatened or endangered species. Habitat is present for federal candidate species, Gunnison prairie dog, and BLM sensitive species and species of concern. Overall the South San Luis Lakes development project area does not appear to currently supply primary habitat for BLM sensitive species. However, with modification of the area by adding water to mimic historic wetlands and playa processes, this area will provide important habitat for threatened, endangered, candidate, and sensitive species. Negative effects to sensitive species are anticipated to be negligible from the development, construction, and maintenance/ use of this wetlands/ playa complex. Beneficial effects to threatened, endangered, candidate and sensitive species are expected by adding water back into the system, mimicking historic aquatic processes.

Environmental Consequences
Direct and Indirect Effects
TECS species that currently have potential foraging, roosting or burrowing habitat within the project area include Gunnison prairie dog, Texas horned lizard, peregrine falcon, ferruginous hawks, burrowing owls, big free-tailed bat, Yuma myotis, Townsend's big-eared bat, and bald eagle. After project completion and conversion of a portion of the upland habitat to wetlands/ playas by adding water, the habitat will be suitable for the species listed above and for additional sensitive species including: Western snowy plover, American white pelican, white-faced ibis, Barrow's goldeneye, black tern and Northern leopard frog, and possibly Rio Grande chub and flathead chub based on water depth and connectivity. Depending on willow availability and density the habitat may eventually be suitable for Southwestern willow flycatcher.

Direct impacts to the threatened, endangered, candidate, and sensitive species include disturbance to individuals roosting, nesting, burrowing, or foraging from presence of livestock and recreationists. Human and livestock presence may lead to lost foraging opportunities and abandonment of the area. Livestock use of the project area can lead to crushing of nests and burrows. Construction and maintenance of ditches and dikes can lead to crushing of nests and burrows. Flooding the historic wetland/ playa basins may damage existing burrows and nests that occur in the area. Direct effects to bats, raptors, and waterbirds/ shorebirds will include improved and increased availability of foraging, nesting, and roosting habitat and opportunities. The possible negative direct effects to TECS will be reduced after initial construction of the ditch and dike system and if the construction work occurs outside of the breeding/ nesting/ burrowing/ rearing season (May 15 through July 15) for most TECS than effects will be further reduced.

Indirect effects from construction and maintenance of ditches and dikes include removal of a limited amount of vegetation to create this water transport system and conversion of a rabbitbrush/ greasewood/ salt grass habitat type to a wetland/ playa complex with the surrounding rabbitbrush/ greasewood/ salt grass upland. Loss of upland habitat with the creation of wetlands is considered a negligible effect to threatened, endangered, candidate, and sensitive species because the upland habitat is expansive and relatively contiguous throughout the eastern portion of the San Luis Valley. The upland habitat remains intact but adding water to the historic wetland system will greatly increase the productivity of the area for birds, amphibians, and insects and will provide a mosaic of habitat for other species.

Potential habitat is present for three bat species – the big free-tailed bat, Yuma myotis, and Townsend's big-eared bat – all of which may forage along the edges of the waterways, ditches and roads. There is not a primary roost habitat available for bat species and the wetland/ playa complex construction or subsequent water delivery is not expected to have any negative impacts on local bat species. Increases in insect populations from the addition of water will likely greatly improve bat foraging opportunities.

Table 3.6B-1 Direct, Indirect, and Cumulative effects on threatened, endangered, and sensitive species for the South San Luis Lakes Development and Maintenance.

Species	Status	Species Occurrence	Alternative A	No Action
Federally Listed Species & Candidates				
Black-footed Ferret	FE	No habitat present; no known occurrence	None	None
Canada Lynx	FT	No habitat present; no known occurrence	None	None
Whooping Crane	FE	Habitat present; no known occurrence, population extirpated	None	None
Southwestern Willow Flycatcher	FE	No habitat currently present; no known occurrence but some use in Blanca wetlands	NLAA	NE
Mexican Spotted Owl	FE	No known occurrence. Not suitable habitat in project area	None	None
Yellow-billed cuckoo	FC	No habitat present; no known occurrence	None	None
Gunnison Prairie Dog	FC	Suitable habitat present; no known occurrence	NLAA	NE
Rio Grande Cutthroat Trout	FC	No habitat present; no known occurrence	None	None
BLM Sensitive Species				
Amphibians & Reptiles				
Northern Leopard Frog	SS	Habitat not currently present; known population stronghold on Blanca wetlands	BI	NI
Milk Snake	SS	Suitable habitat present; no known occurrence	NI	NI
Texas Horned Lizard	SS	No known occurrence; possible suitable habitat	NI	NI
Invertebrates				
Great Basin Silverspot Butterfly	SS	No habitat present; no known occurrence	None	None
Birds				
American White Pelican	SS	No habitat currently present; known occurrence in Blanca wetlands	BI	NI
Bald Eagle	SS	Foraging habitat available, winter range	BI	NI
Barrow's Goldeneye	SS	No habitat currently present; known occurrence in Blanca wetlands	BI	NI
White-faced Ibis	SS	No habitat currently present; known occurrence in Blanca wetlands	BI	NI
Northern Goshawk	SS	No known occurrence; Not suitable habitat	None	None
Ferruginous Hawk	SS	Habitat present; known occurrence in uplands near Blanca wetlands	NI	NI
Peregrine Falcon	SS	Known occurrence; Suitable foraging habitat	BI	NI
Mountain Plover	SS	Minimal habitat present; no known occurrence	NI	NI
W. Snowy Plover	SS	No habitat currently present; known occurrence in Blanca wetlands	BI	NI
Black Tern	SS	No habitat currently present; known occurrence in Blanca wetlands	BI	NI
Burrowing Owl	SS	No habitat present; no known occurrence	None	None
Gunnison's Sage Grouse	SS	No habitat present; no known occurrence	None	None
Mammals				
Big Free-tailed Bat	SS	Foraging habitat present, may occur across the area.	NI	NI
Yuma Myotis	SS	Foraging habitat present, may occur across the area.	NI	NI

Townsends' Big-eared Bat	SS	Foraging habitat present, may occur across the area.	NI	NI
Fish				
Rio Grande Chub	SS	Habitat is not currently present; habitat may occur with changes in management of the area.	BI	None
Flathead Chub	SS	Habitat is not currently present; habitat may occur with changes in management of the area.	BI	None

**Species Status:*
FE = Federally Endangered ST = State Threatened SS = BLM Sensitive Species
FT = Federally Threatened SE = State Endangered

*Determinations for Federally listed (T&E) species: NE = No Effect; NLAA = Not Likely to Adversely Affect; MA = May Affect; LAA= Likely to Adversely Affect; None= Species or its habitat is not present.

*Determinations for State Sensitive Species: NI = No Impact; MI= May Impact (May Impact Individuals, but is not likely to cause a trend towards Federal listing or loss of viability in the planning area); BI= Beneficial Impact; LI= Likely Impact (Likely to result in a trend towards Federal listing or a loss of viability in the planning area); None= Species habitat is not present or species is known not to be present

Alternative A – Irrigation
Direct and indirect effects to threatened, endangered, candidate, and sensitive species may occur under this alternative. Those effects are described above under Environmental Consequences. This project is considered beneficial to threatened, endangered, and sensitive and candidate species after the initial construction and effects to wildlife during construction are considered to be negligible.

Alternative B – Continue Present Management (No Action)
The no action alternative will maintain the current status of wildlife habitat for threatened, endangered, candidate, and sensitive species. There are no direct or indirect effects expected under the no action alternative to these wildlife species.

Cumulative Effects
Cumulative impacts include the effect of future State, tribal, local, or private actions that are reasonably certain to occur in the action area under consideration. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Endangered Species Act. Factors that have contributed to changes in wildlife habitats are numerous. Some issues in the San Luis Valley include habitat loss, agricultural developments, housing developments, water table reductions, fire suppression, and recreation activities each with the potential to reduce the habitat quality for TECS that use the area for foraging, nesting, burrowing, cover, roosting and for migratory stop-over habitat and may contribute as cumulative effects under alternatives A. Cumulative effects to TECS under alternative B are not anticipated.

The current recreation based activities appear to be having minimal influences on TECS and the habitats that support them. These animals have adapted to human use in this area and tend to avoid humans, however the habitat lends cover, foraging, and nesting/ burrowing/ birthing habitat for many threatened, endangered, candidate, and sensitive species. Recreational development or development on private lands may serve to fragment the contiguous habitat currently available.

Activities on private lands are not under the control of the BLM and loss of habitat could occur through land clearing/ conversion, development, fencing, or other activities. This situation puts the

impetus on the public lands to support more TESC migration and during the nesting season as they are displaced from adjacent habitat from human presence and habitat loss or fragmentation.

Modifying the juxtaposition and connectivity of the Blanca wetlands complex by replacing playas being dried in other parts of the system in the South San Luis Lakes project area will improve available riparian and wetland habitat for TESC on lands managed by the BLM, Nature Conservancy, and the State of Colorado on State Wildlife Areas. The project is beneficial for the San Luis Valley wetlands and riparian areas as a whole because it re-connects and allows more flexibility in vegetative management to better mimic historic wetland/ playa processes that functioned pre-irrigation practices. Irrigation, wildland to farmland conversion, and development in the San Luis Valley has greatly altered the water tables, the river flows, aquifer recharge and has created lands that are less productive with increased salinities and changes in vegetation types. Groups and partners have worked together to provide or connect wetland systems, recreate the historic processes, sometimes through intensive management, on the National Wildlife Refuges, State Wildlife Areas, BLM, and private lands and this reconfiguration of the Blanca wetlands/ playa system will help to connect expansive wetlands complexes and provide wildlife habitat in an important migratory flyway.

Mitigation

1. Construction and maintenance of the dike and ditch system and fence construction and maintenance conducted outside the time period of May 15 to July 15 will not likely affect nesting, burrowing, breeding individual TECS. Therefore, operating outside of this critical season will aid in protection of these species regarding grazing and will prevent loss of individuals, including nest/burrow destruction and habitat abandonment.
2. Flooding of the wetlands or playa basins will likely occur during the breeding and nesting/burrowing periods and the area is subject to review and clearance of nests before areas are wetted to protect nests and burrows.

3.6C AQUATIC WILDLIFE

Affected Environment

The South San Luis Lakes project area occurs on sandy, rolling hills and lowlands topography and encompasses arid desert shrubland habitat types including greasewood, rabbit brush, salt grass, forbs and grasses. This area historically was made of wetlands, playas, and uplands but was converted to uplands through human activities that diverted water and dropped water tables in the Closed Basin. The project area has dry drainages that may run water during large precipitation events and during snowmelt but are considered ephemeral drainages. There is no associated riparian habitat because the area has been dried through irrigation practices and construction of the closed basin canal which has interrupted water flow across the project area. At this time there are no perennial water sources, little riparian vegetative species present, and no solely aquatic species. However, some species such as amphibians may use the area for burrowing and wintering because it is close to water sources for a portion of their lifecycle and breeding activities.

Environmental Consequences

Direct and Indirect Effects

Environmental consequences for aquatic wildlife are generally positive since under the current situation the absence of water in the system does not afford aquatic habitat for aquatic species. A few aquatic species that can travel away from water during some portion of their life cycle may use the current habitat for burrowing and foraging. Pre-project direct effects to amphibians are crushing of burrows and possible loss of individuals from livestock use of the area. Pre-project indirect effects to aquatic species are loss of historic wetlands and associated riparian vegetative communities that provided habitat for many aquatic species including amphibians like Northern leopard frogs, chorus frogs, Woodhouse's toads, Great plains toads, spadefoot toads, and some fish species such as Rio Grande chub and flathead chub.

Post-project direct effects include crushing of burrows and loss of a few individuals from livestock and from maintenance of dikes and ditches as well as flooding of a minimal number of burrows when water is distributed. Post-project indirect effects include conversion of upland habitat to wetland/ playa/ riparian habitat which changes the way that animals use the habitat and allows for species that are not currently present to colonize the area. Positive indirect effects include expansive habitat available for amphibians, fish, fairy shrimp, and an abundant insect population to provide a food source for many animals.

Alternative A – Irrigation

Alternative A may have the direct and indirect impacts listed above. The overall benefit of adding water to mimic historic wetland processes for aquatic wildlife far surpasses any negative impacts to aquatic wildlife species (amphibians) that may be comprised of disturbance to burrows and individuals during the construction stages and general maintenance of the ditch and dike system.

Alternative B – Continue Present Management (No Action)

The no action alternative will maintain the current status of wildlife habitat for aquatic wildlife. There are no new direct or indirect effects expected under the no action alternative to these wildlife species. Continued loss of aquatic habitat due to human irrigation practices can limit aquatic animal species population sizes and habitat availability as well as aquatic habitat quality.

Cumulative Effects

Cumulative impacts include the effect of future State, tribal, local, or private actions that are reasonably certain to occur in the action area under consideration. Factors that have contributed to changes in wildlife habitats are numerous. Some issues in the San Luis Valley include habitat loss, agricultural developments, housing developments, water table reductions, fire suppression, and recreation activities each with the potential to reduce the habitat quality for aquatic wildlife that use the area for foraging, burrowing, and cover habitat and may contribute as cumulative effects under Alternative A.

The current recreation based activities appear to be having minimal influences on aquatic wildlife and the habitats that support them. These animals are generally nocturnal and have few interactions with humans save for collisions with vehicles. Recreational development or development on private lands may serve to fragment the contiguous habitat currently available.

Activities on private lands are not under the control of the BLM and loss of habitat could occur through land clearing/ conversion, development, fencing, irrigation or other activities. This situation puts the impetus on the public lands to support more aquatic wildlife as they are displaced from adjacent habitat from human presence and habitat loss or fragmentation.

Reconfiguring the juxtaposition of the Blanca wetlands complex by adding playas and wetlands north in the South San Luis Lakes project area will greatly improve the quality of available riparian and wetland habitat for aquatic wildlife on lands managed by the BLM, Nature Conservancy, and the State of Colorado on State Wildlife Areas. The project is beneficial for the San Luis Valley wetlands and riparian areas as a whole because it improves flexibility in water management thereby improving the available habitat and re-connects historic wetland/ playa processes that functioned pre-irrigation practices.

Irrigation, wildland to farmland conversion, and development in the San Luis Valley has greatly altered the water tables, the river flows, aquifer recharge and has created lands that are less productive with increased salinities and changes in vegetation types. Groups and partners have worked together to provide or connect wetland systems, recreate the historic processes, sometimes through intensive management, on the National Wildlife Refuges, State Wildlife Areas, BLM, and private lands and this reconfiguration of the Blanca wetlands/ playa system will help to connect expansive wetlands complexes and provide wildlife habitat that is connected for aquatic wildlife movement and colonization and to prevent population inbreeding and bottlenecking.

Mitigation

1. Flooding of the wetlands or playa basins will likely occur during the breeding and burrowing periods and the area is subject to review and clearance of the wetted and disturbed areas to protect amphibian burrows.

3.6D TERRESTRIAL WILDLIFE

Affected Environment

The South San Luis Lakes project area is dominated by semi-desert shrubland habitat that is comprised primarily of greasewood, rabbitbrush and inland salt grass, and various grasses and forbs. The area is designated crucial winter range in the RMP (1991) and as winter habitat by the Colorado Division of Wildlife's Natural Diversity Information Source (NDIS) for elk and mule deer. A year-round herd of Elk use the area for habitat, especially for calving and rearing young.

In general, semi-desert shrublands are occupied by ungulates, small mammals and select bird species but may support a high diversity of reptiles. Carnivores use the area such as coyotes. Native ungulates occupy semi-desert shrubland year-round including pronghorn antelope, mule deer, and elk which are the most prevalent. Elk frequent this habitat type year-round because food resources, water, and habitat security is available. Mule deer use the area year-round because it provides browse and cover. The project area is utilized by most native ungulates and the quantity and quality of forage available to these species remains a critical habitat consideration.

Environmental Consequences
Direct and Indirect Effects
It is possible that the human presence and associated recreational activities may influence native ungulates such as elk and mule deer. Direct interactions such as disturbance and displacement to individuals may occur because recreational use of the area occurs during the breeding, birthing and rearing periods for ungulates. The area is elk and mule deer over-all range and winter concentration and winter range.

Indirect effects include loss of foraging and cover habitat due to creation of wetlands/ playas and changes in the way that wildlife use the area based on a creation of a habitat mosaic. Indirect impacts can lead to permanent habitat loss or avoidance of the area due to human presence or alteration of the current condition of the habitat.

It is also possible that livestock grazing activities may influence carnivores and small mammals. Direct interactions may occur from disturbance to individuals, displacement or avoidance of human, livestock, and wetlands/ playa construction or maintenance. Indirect impacts such as changes in foraging habitat and in the patterns of use of the wetlands/ playas and their associated riparian areas will occur with the development of the wetland complex. The wetland/ playa complex will likely be an attractant to wildlife based on water resources, cover, and new foraging opportunities. It is possible that wetland/ playa construction may influence reptiles, small mammals, and song birds through direct displacement and disturbance or indirectly through conversion of habitat. Direct interactions may occur through crushing or removal of burrows or nests or disturbance to individuals through direct contact and presence of heavy equipment or of livestock.

Direct and indirect impacts are likely for native ungulates, small mammals, carnivores, some lizards, and birds. These impacts, namely disturbance and habitat loss, are considered minimal due to the nature of the surrounding habitat, abundant available cover and foraging areas across a broad landscape, and the relative non-recreational use of the area due to limited access and recreational infrastructure. Animals will likely avoid the area when recreationists are present, except for the few individuals that are attracted to human activities.

Alternative A- Irrigation
Under this alternative, direct and indirect effects listed above apply. Creating a mosaic of habitat for terrestrial wildlife, adding water to the system, and availability of the associated riparian area are considered a benefit for wildlife and an improvement for habitat in the shrubland landscape. Livestock are also attracted to the riparian vegetation associated with the wetlands and interactions between terrestrial wildlife and livestock may increase with changes in habitat.

Alternative B – Continue Present Management (No Action)
The no action alternative will maintain the current status of wildlife habitat for terrestrial wildlife. There are no new direct or indirect effects expected under the no action alternative to terrestrial wildlife species because habitat will remain the same and intact. There are also no beneficial effects to terrestrial wildlife without the addition of water. Available water, riparian habitat, and additional prey species associated with wetlands and playas allows for increases in wildlife abundance and a variety of habitat types to meet various wildlife ecological needs. Without adding water to the basin

the landscape remains limited in wildlife habitat uses. Lack of water, monotypic habitat, and limited palatable forage provides habitat for wildlife but does not provide the same level of biodiversity and abundance of wildlife as under Alternative A, especially for amphibians, birds, and small mammals.

Cumulative Effects

Cumulative impacts include the effect of future State, tribal, local, or private actions that are reasonably certain to occur in the action area under consideration. Factors that have contributed to changes in wildlife habitats are numerous. Some issues in the San Luis Valley include habitat loss, agricultural developments, housing developments, water table reductions, fire suppression, and recreation activities each with the potential to reduce the habitat quality for terrestrial wildlife that use the area for foraging, burrowing, and cover habitat and may contribute as cumulative effects under Alternative A.

The current recreation based activities appear to be having minimal influences on terrestrial wildlife and the habitats that support them. These animals have adapted to human use in this area and tend to avoid humans, however the habitat lends cover, foraging, and nesting/burrowing/birthing habitat for many wildlife species. Cumulative effects to native ungulates are of future concern because the available habitat surrounding the wetlands is readily available to wildlife but recreational development or development on private lands may serve to fragment the contiguous habitat currently available.

Activities on private lands are not under the control of the BLM and loss of habitat could occur through land clearing/conversion, development, fencing, or other activities. This situation puts the impetus on the public lands to support more and more ungulates during critical periods as they are displaced from adjacent habitat from human presence and habitat loss or fragmentation.

Modifying the configuration and juxtaposition of the Blanca wetlands complex by adding playas and wetlands north in the South San Luis Lakes project area will greatly improve available riparian and wetland habitat for wildlife on lands managed by the BLM, Nature Conservancy, and the State of Colorado on State Wildlife Areas. The project is beneficial for the San Luis Valley wetlands and riparian areas as a whole because it improves vegetative condition through increased flexibility in management and re-connects historic wetland/ playa processes that functioned pre-irrigation practices.

Irrigation, wildland to farmland conversion, and development in the San Luis Valley has greatly altered the water tables, the river flows, aquifer recharge and has created lands that are less productive with increased salinities and changes in vegetation types. Groups and partners have worked together to provide or connect wetland systems, recreate the historic processes, sometimes through intensive management, on the National Wildlife Refuges, State Wildlife Areas, BLM, and private lands and this reconfiguration of the Blanca wetlands/ playa system will help to connect expansive wetlands complexes and provide wildlife habitat that is connected for wildlife movement and colonization and to prevent population inbreeding and bottlenecking.

Mitigation

1. Mitigation for terrestrial wildlife is to avoid wetland construction during the main birthing period to prevent disturbance during this critical period (May 15 to July 15).

3.7 RIPARIAN/FLOODPLAIN

Affected Environment

There are no monitored or delineated riparian zones influenced by permanent water, which has visible vegetation of physical characteristics that reflect this permanent water influence, within this project area. However, few very shallow ephemeral lentic riparian areas exist. Some areas of the site are occasionally flooded for brief periods of time. Sediment deposition from past wind and flood events has filled in some depressions and distribution channels, and has isolated other areas from natural water flow. Field shovel tests indicated the presence of hydric soil conditions in these shallow riparian areas. There are no floodplains within the project area.

Environmental Consequences

Alternative A – Irrigation

Direct and Indirect Effects

This alternative would maintain condition of riparian areas at historical levels. However, floodplain characteristics may not be restored to their historic extent and hydrologic capability following implementation of the proposed action. Leveling and ditching, and ponding activities will be conducted within the project area to restore water to the deteriorated South San Luis Lake wetland areas. These construction activities would negatively affect the existing ephemeral lentic riparian zone. However, due to the rapid and prolific growth of wetland riparian vegetation, these impacts would likely be very short lived. Livestock grazing and disturbance on the wetland riparian areas will also negatively affect the development of riparian vegetation.

Alternative B – No Action

Direct and Indirect Effects

With the No Action alternative the deterioration of the existing lentic wetland riparian areas would continue and their historic extent and hydrologic capability would not be restored.

Cumulative Effects

The proposed action will provide cumulative long term benefits by restoring the lentic riparian environment to a condition closer to what it had been historically.

Mitigation

1. Mitigation includes managing and monitoring livestock use by controlling the time, intensity, and frequency of grazing in riparian areas and wetlands to improve or maintain long-term riparian health. If riparian vegetation conditions degrade, proper fencing may be required to protect the riparian ecosystem from livestock disturbance. Fencing is the last option to be used due to high maintenance and potential livestock trailing issues may arise.
2. Equipment working in riparian zones will be cleaned of any possible weed seeds prior to bringing it into these areas. The riparian area will be revegetated using certified local native plants.

3.8 HYDROLOGY/WATER QUALITY/WATER RIGHTS

Affected Environment

The project area is situated south of San Luis Lake and north of Blanca wetlands within two, sixth level watersheds (HUC-130100030605 and 130100030701). All streams running from the upstream portions of these watersheds quickly subs or disappears into permeable alluvial sediments at the foot of the mountains. Well defined channels do not extend to lower portions of the watersheds or to the chain of wetlands and lakes in the basins where the project site is located (Figure 3.8-1). The project site receives an average of 7 inches of precipitation per year with most the rainfall occurring in July and August. The area has high evaporation rates because of low humidity, high wind speed in the spring, and high temperatures in the summer. Water sources are temporary from runoff, snowmelt, and groundwater discharge. There is no surface water connection between the San Luis Lake and the proposed wetland area.

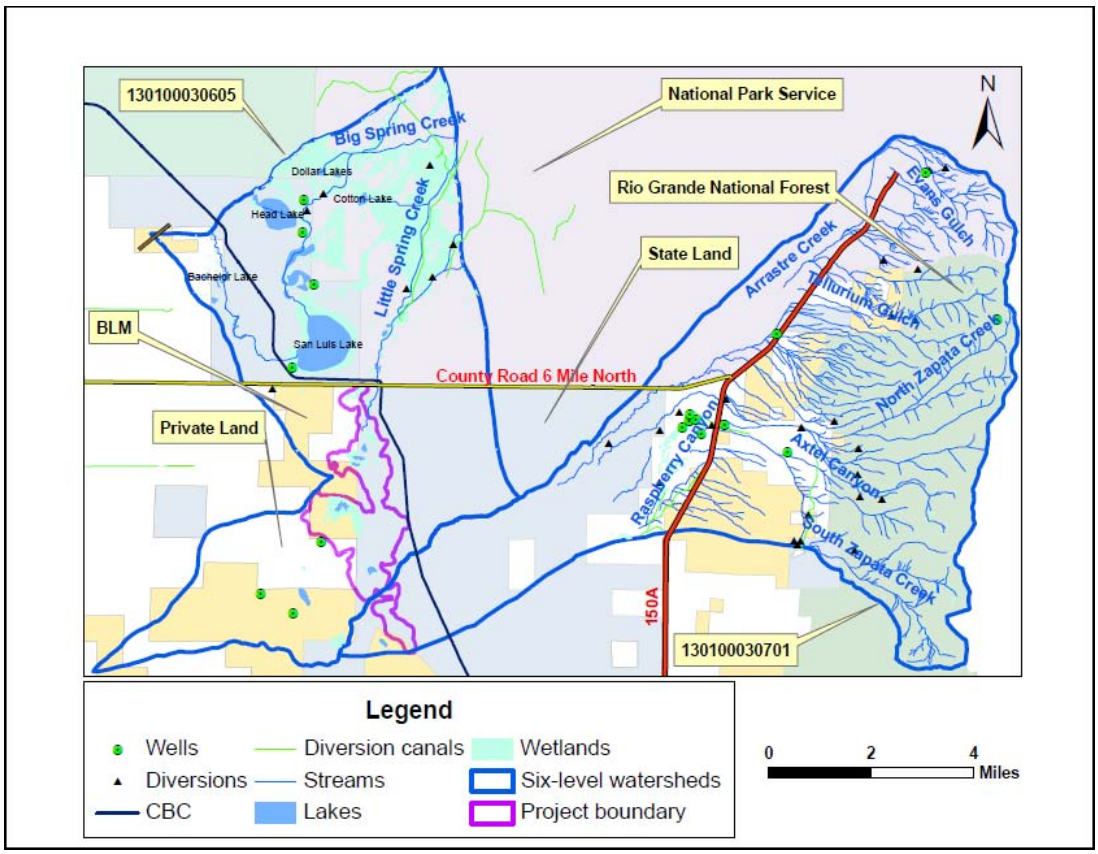


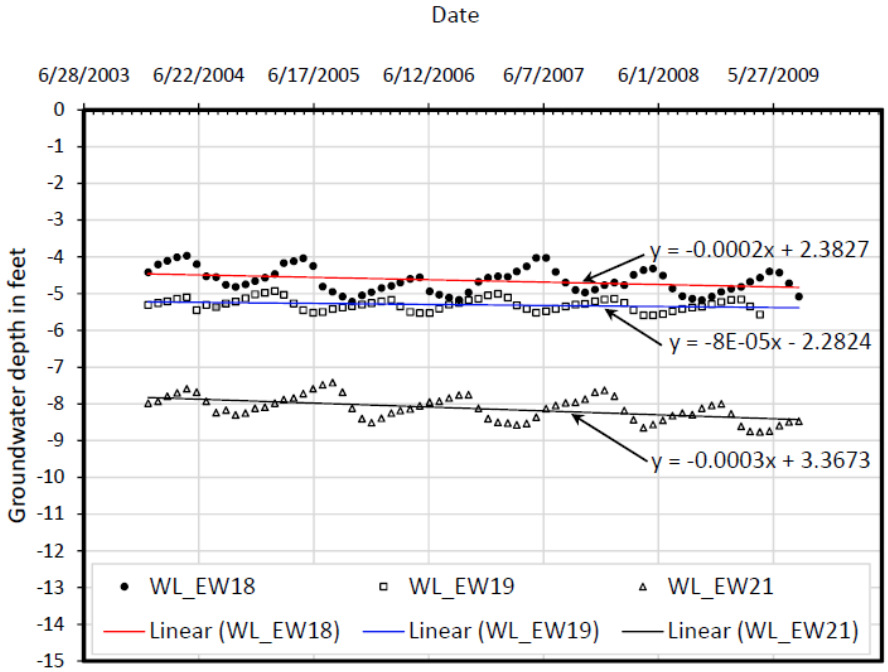
Figure 3.8-1 Hydrologic map of the proposed San Luis Lake wetlands and surroundings

The hydrology of this wetland basin was modified by intensive groundwater use, construction of roads, and construction of ditches for agricultural purpose since the start of irrigation farming in the valley. As a result, the basin no longer functions as a wetland playa (wetland) appropriate to site potential and capability The Little Spring Creek rarely supplies water to the proposed wetland area. Water storage is no longer occurring in the wetland basin throughout all seasons to the extent that it did historically. The proposed action is designed to restore the hydrology of this basin as nearly as possible to the conditions that existed prior to ditching and farming activities.

The proposed site is situated within a Closed Basin aquifer located north-east of the City of Alamosa within both Alamosa and Saguache Counties. This unique feature of the San Luis Valley covers a large area in the northern part of the Valley and drains about 2,900 square miles. It is separated from the rest of the valley by a low alluvial fan. There is no drainage from the basin and much of the water that flows into it is lost through evapotranspiration. The Closed Basin Division of San Luis Valley salvages water from the basin and the salvaged water is delivered to the Rio Grande for beneficial use in accordance with the Rio Grande Compact among the States of Colorado, New Mexico, and Texas, and the Treaty of 1906 with the Republic of Mexico. Project water is also made available to the Alamosa National Wildlife Refuge, Blanca Wildlife Habitat Area, and San Luis Lake for fish and wildlife enhancement purposes (U. S. Department of the Interior, Bureau of Reclamation, 2008).

The project site is positioned at the groundwater sump where the water level is near to the ground surface. Plot of groundwater level from three (EW18, EW19, and EW21) U.S. Bureau of Reclamation observation wells, located nearby or within the project site (see Figure 3.8-1 for location of these observation wells), is shown in Figure 3.8-2. Two of the observation wells (EW19 and EW21) are located within the boundary of the project area and one observation well (EW18) is located outside the boundary (Figure 3.9-1). The groundwater depth below the ground surface varies from 3.97 to 5.22 feet, 4.93 to 5.59 feet, and 7.42 to 8.76 feet for observation wells EW18, EW19, and EW21, respectively. The depth of groundwater level from the ground surface varies depending on the location of the observation wells. The depth of groundwater within the playas would probably be near to ground surface. The negative slopes of the trend lines, which fit the observed water-level for all three observation wells, indicate slight decrease of the groundwater table from the surface during the seven years of recording period (Figure 3.8-2).

Figure 3.8-2 Watertable depth for three USBR observation wells



There are several wells, canals, and diversions located around the proposed wetland area to pump and divert groundwater for domestic and agricultural activities. Several salvage wells are also located around the site to pump water to the CBC. In addition to groundwater withdrawal from wells for agricultural uses, environmental changes, and losses due to evapotranspiration, pumping of groundwater to the CBC from the salvage wells could also cause long-term water-level declines in the aquifer system.

Irrigation water would be diverted from the Closed Basin Canal (CBC) to the project area. Therefore, the water quality from this source is essential for future development and restoration of the wetland. Water is salvaged or pumped from 170 salvage wells (SW) in the unconfined closed basin aquifer to the CBC. The U.S. Bureau of Reclamation has been collecting water quality data from the salvage wells as well as from CBC (Figure 3.-1). For this analysis, water quality data collected at the section of the CBC (at Check 3 Feeder Canal) just north of the project area and from several salvage wells nearby the area of interest are used to characterize the existing water quality (Table 3.8-1 and Figure 3.8-1).

The water quality data included in the table is the average values collected between 2004 and 2008 for some chemical constituents (Alkalinity, pH, Nitrate, and Dissolved Solids). Alkalinity test shows the quantity of alkaline materials, which form hydroxide ions when dissolved in the water. The alkaline content of the water from the CBC is lower than the mean alkaline content of the water from the salvage wells and hence, the alkaline content of the irrigation water from the CBC would not affect the already strongly alkaline groundwater at the project site (Table 3.8-1).

Total dissolved solids (TDS) is a measure of the total amount of minerals dissolved in water and is, therefore, a very useful parameter in the evaluation of water quality. TDS comprises inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonates, chlorides and sulfates) and some small amounts of organic matter that are dissolved in water. The amount of TDS content and pH levels (Table 3.8-1) observed from both the CBC and the salvage wells are within the limits for the Environmental Protection Agency (EPA) established standards for drinking water (TDS less than 500 mg/L and pH between 6.5 and 8.5). However, one of the salvage wells (SW064) had slightly higher mean content of TDS (540 mg/L) and one individual observation of pH from the feeder CBC had pH value of 8.636.

Table 3.8-1 Mean water quality data of the CBC and salvage wells for some chemical constitutes

Location	Alkalinity (mg/L)	pH-Lab (mg/L)	Nitrate (mg/L)	Total Dissolved Solids (mg/L)
Feeder Canal	158.41	8.29	1.389	327.30
SW041	256.40	7.49	-	179.50
SW042	78.52	8.19	-	158.00
SW061	111.57	7.95	-	199.00
SW063	127.35	7.60	-	228.00
SW064	443.44	7.77	-	540.00
Mean SW	203.46	7.80	-	260.90

Source of nitrates in water bodies are animal waste, fertilizer, natural deposits, septic tanks, and sewage. The main source of nitrates around the project area is fertilizer use of local farmers for agricultural activities throughout the valley. The average content of nitrate of the feeder CBC, is also well below (1.389 mg/L) the EPA water quality standard (10 mg/ L). Data for nitrate content for salvage wells located nearby the site is not available.

Water rights: This project does not rely upon water rights held by BLM. The water rights available to BLM for use on this project, include:

1. The proposed turnout would divert "mitigation water" from Bureau of Reclamation's Closed Basin Project. Currently, this "mitigation water" is diverted at two existing turnouts located south of the proposed project area. The water rights for the mitigation water are held by the Rio Grande Water Conservation District. This source of water is highly reliable, because the "mitigation water" must be supplied to BLM as an official mitigation requirement for the Closed Basin Project.

2. BLM can also utilize water, belonging to the Colorado Division of Wildlife (CDOW), via exchange. Basically, the CDOW brings water into the Rio Grande from their transmountain diversions water rights, they route that water to the river, and then BLM can divert an equivalent amount of water from the Closed Basin Project canal. This water supply is variable, depending upon how much yield the CDOW water rights have in a given year. The CDOW provides water to BLM in most years except during droughts.

3. Appropriate water sources that could come available for lease or purchase.

Environmental Consequences
Alternative A – Irrigation
Direct and Indirect Effects
Alternative A– Irrigation
At present there are no surface water bodies present in the study area, except some occasional ponding at depressions due to rainfall, snowmelt, and groundwater discharge. The water that will be diverted from the Closed Basin Canal to irrigate the project site will remain within the boundary of the project area and will not be connected to any other surface water body. With no flowing water and little soil disturbance and/or displacement, Alternative A would have no effect on water quality of the nearby surface water bodies. The groundwater quality would not also be impacted adversely by introducing irrigation water diverted from the CBC, because most of the water quality parameters of the incoming water are within the standard limits.

Negative impacts to water quality are expected to be short-term and result in temporary increases in turbidity and particle bound nutrients only during construction phase of the project. Turbidity and sediment related impacts are expected to subside within a few days after construction as water from the main CBC enters to the proposed area. Following restoration, the hydrologic system is expected to recharge, resulting in basins holding more water for a longer period of time. This alternative would restore the hydrology of the wetland as nearly as possible to the conditions that existed prior to farming development.

Alternative B – Continue Present – (No Action)
Direct and Indirect Effects
Alternative B- Continue Present Management (No Action)
It is unlikely that natural processes would ever result in reoccupation of the historic hydrologic condition of the wetland and existing dry conditions would likely persist indefinitely. Short-term adverse water quality impacts due to construction activities would not occur under the No Action alternative.

Cumulative Effects
Wetlands are crucial to the health of water bodies and both aquatic and terrestrial wildlife. Wetland restoration, which is the renewal of natural and historical wetlands that have been lost or degraded, is a growing activity. Therefore, these growing future activities to restore natural and historical wetlands, considered cumulatively with proposed action, would have long-term positive impacts on hydrologic processes in relation to enhancing the connectivity of various wetlands in the basin and imitating the functions of a healthy natural wetland ecosystem. Insignificant localized adverse water quality impacts may result from oil/grease from motorized vehicles and vegetative trampling and associated soil disturbance following the wetland development phase of the project. In general, this project is not expected to contribute to significant changes in water quality or sediment processes and therefore, will not contribute to cumulative negative impacts.

Mitigation
Consideration should be given to construction of salinity mitigation structures or techniques. Head gates and conveyance channel should be designed in such a way that to avoid turbidity and sediment transport. Keep access roads out of wetlands unless there is no other practicable alternative. Avoid actions that may dewater or reduce water budgets in wetlands and monitor water levels and drainage patterns. Stabilize newly constructed ditches with certified local native plants.

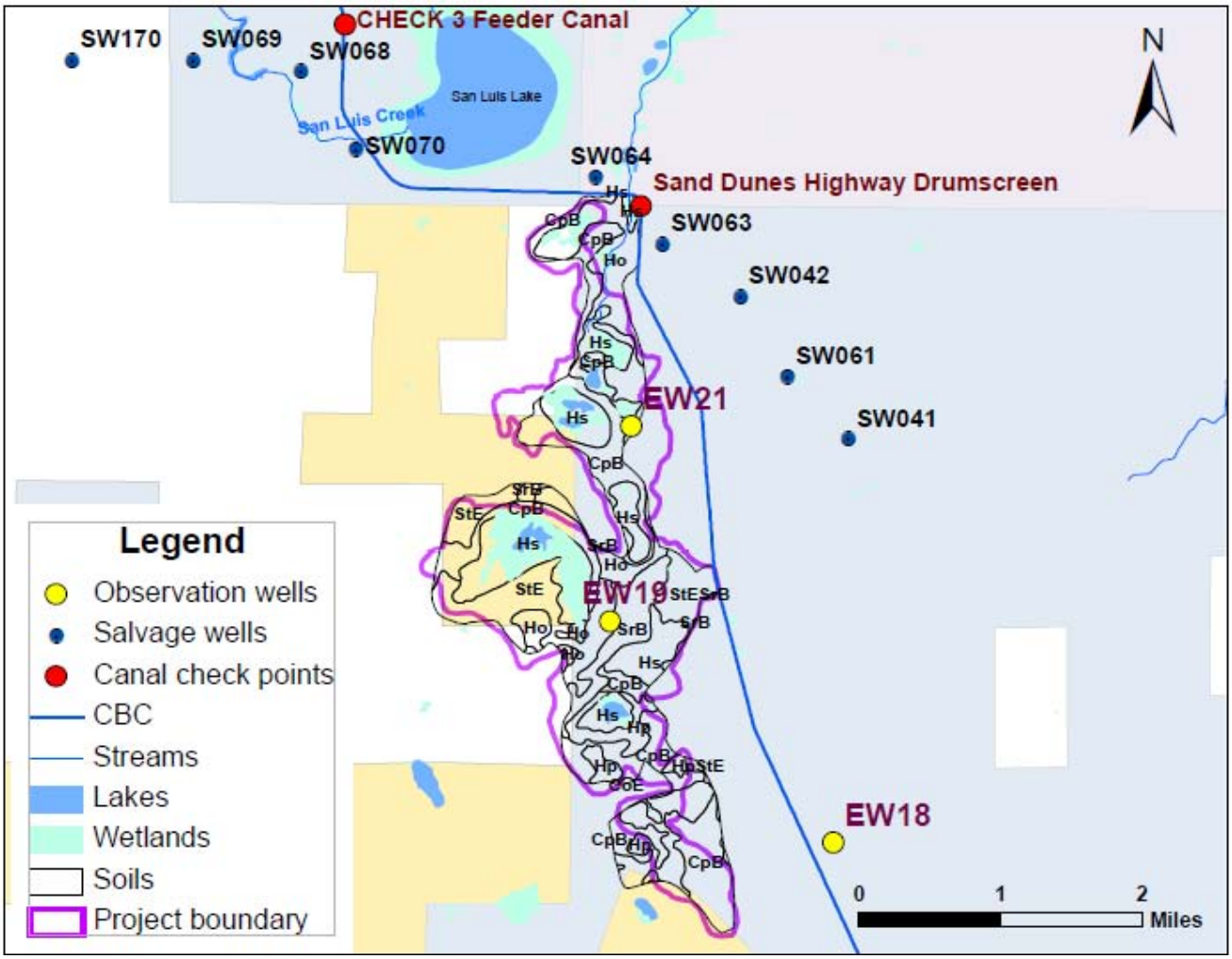
3.9 SOIL RESOURCES

Affected environment
Soils in the project area are described in the Alamosa County area soil survey report (USDA-SCS, 1973). The Alamosa soil survey report is now under revision by the Natural Resources Conservation Services (NRCS) to reclassify soils on nonagricultural lands. This revision of the soil classification is not finalized. The soil series within the proposed project area are Corlett, Hooper, and Space City. The Corlett series consists of excessively drained, alkaline soils. The Corlett soils formed in reworked and wind-modified sand material in low dunes. These soils have rapid permeability and low available water holding capacity and the water-table is within 3.5 feet depending on the height of the dunes. The sandy texture of the Corlett soils allows water to move easily between the wetland and the groundwater. Depending on the depth of the water table, Corlett sand-hilly (*CoE*) and Corlett-Hooper complex (*CpB*) are the two soil types within the Corlett series found in the project area (Table 3.9-1 and Figure 3.9-1).

The Hooper series consists of well-drained, moderately fine textured, nearly level soils in the flood plain of the valley floor and have a high water-table. In the representative profile of the Hooper soils, both the surface and the subsurface layers are very strongly alkaline. The soils have very slow

permeability and low available water holding capacity. Hooper loam sand (*Ho*), Hooper clay loam (*Hp*) and Hooper soils, occasionally flooded (*Hs*) are the three soil types within the Hooper series found in the project area (Table 3.9-1 and Figure 3.9-1).

Figure 3.9-1 Soils map, location of observation and salvage wells, and canal check points



The Space City series consists of excessively drained, coarse-textured calcareous soils. The sandy material is mostly of igneous origin and has been washed down on the alluvial fans and subsequently reworked by wind. The Space city soils have rapid permeability and low available water holding capacity. In a representative profile of Space City soils, the surface layer is noncalcareous and moderately alkaline; while below the surface, the layer is noncalcareous to a depth of about 30 inches and is moderately calcareous below that depth. Space City fine sand (*SrB*) and Space City-Hooper complex (*StE*) are the two soil types within the Space City series found in the project area (Table 3.9-1 and Figure 3.9-1).

The Corlett and Space City series are rated "severe" for wind erosion susceptibility. The hydrological regime, which is determined by the duration, flow, amount, and frequency of water on a site, is typically the primary factor driving the other ecological elements of the system. A site has wetland hydrology when it is wet enough to produce soils that can support hydrophytic vegetation (plants

that are adapted to waterlogged environments). Wetland substrates are called hydric soils, meaning they are saturated with water for part or all of the year. Saturated soils become anaerobic (without oxygen) as water stimulates the growth of micro-organisms, which use up the oxygen in the spaces between soil particles. When soils become anaerobic, they change significantly in structure and chemistry. These factors all make wetland soils stressful to terrestrial plants.

Some of the site soils have low to moderate salinity. However, the occasionally flooded (*Hs*) Hooper soils are highly saline. The main source of salinity at the project area is from the presence of natural soil minerals, which produce carbonates upon weathering. Salts can be transported to the soil surface by capillary action from the salt rich water table and then accumulate on the surface due to evaporation (Figure 3.9-2).

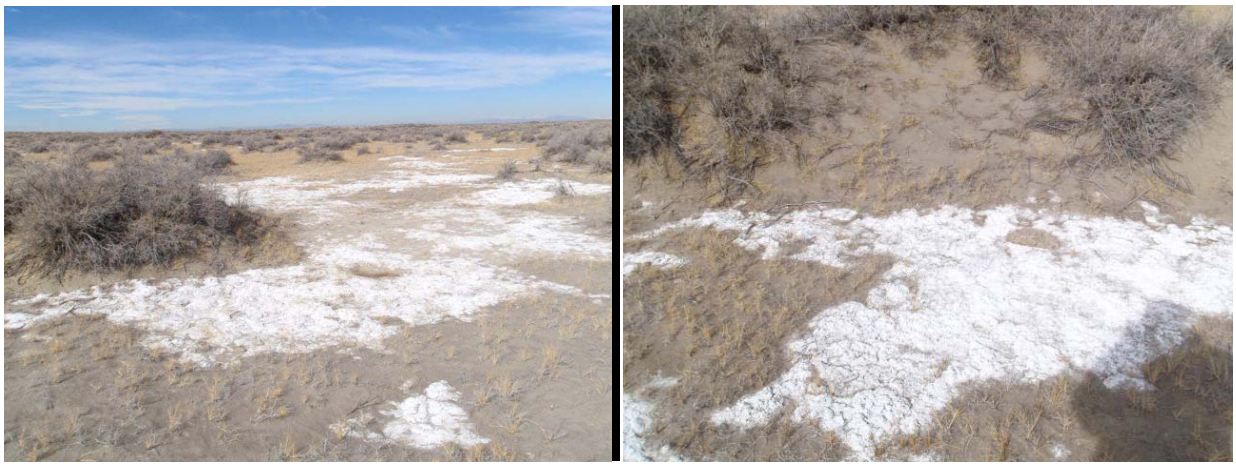


Figure 3.9-2 Accumulation of salt on the soil surface (UTM: 0437524/4165558)

Sandy wetland soils are the most permeable, allowing water to move easily between the wetland and the groundwater, depending on the depth of the water table. Less permeable clayey soils are more likely to maintain water in the wetland even if the water table is low. Some sites have “hard pan” layers underneath them, impermeable layers of clay or rock, essential to the ecology of the wetland. These hard subsurface layers may allow water to stay ponded for much longer than would occur otherwise, resulting in unique ecosystems.

Table 3.9-1 Soils properties of the South San Luis Lake project area

Soil series	Map symbol	Depth to seasonal high water table (feet)	Depth from surface (inches)	Dominant USDA texture	Permeability (inches per hour)	Available water-holding capacity (Inches per inch of soil)	pH	Salinity (Millimhos per cm at 25°C)
Corlett	CoE	3.5 – 5.0+	0 - 60	Sand	> 5.0	0.04 - 0.06	9.1 - 10.5	0 - 4.0
	CpB	3.5 – 5.0+	0 - 60	Sand	> 5.0	0.04 - 0.06	9.1 - 10.5	0 - 4.0
Hooper	Ho	4.0 – 5.0+	0 - 7	Loamy sand	2.0 - 6.0	0.06 -0.08	9.0 - 10.0	0 - 4.0
			7 - 16.0	Clay loam	< 0.6	0.04 - 0.06	9.0 - 10.5	4.0 - 8.0
			16 - 32	Sandy loam	2.0 - 6.0	0.04 - 0.06	9.0 - 10.5	2.0 - 4.0
			32 - 60	Sand	> 10.0	0.03 - 0.05	9.0 - 10.0	0 - 4.0
	Hp	4 .0 – 5.0+	0 -16.0	Clay loam or Clay	< 0.6	0.04 - 0.06	9.0 - 10.0	4.0 -8.0
			16 - 32	Sandy loam	2.0 - 6.0	0.04 - 0.06	9.0 - 10.5	2.0 - 4.0
			32 - 60	Sand	> 5.0	0.03 - 0.05	9.0 - 10.5	0 - 4.0
	Hs	2.0 – 3.0	0 - 7	Loamy sand	2.0 - 6.0	0.06 -0.08	9.0 - 10.0	15.0 - 30.0
			7 - 16.0	Clay loam	< 0.6	0.04 - 0.06	9.0 - 10.5	15.0 - 30.0
			16 - 32	Sandy loam	2.0 - 6.0	0.04 - 0.06	9.0 - 10.5	15.0 - 30.0
			32 - 60	Sand	> 10.0	0.03 - 0.05	9.0 - 10.0	8.0 - 15.0
Space city	SrB	> 5.0	0 -20	Loamy fine sand	6.0 - 20.0	0.09 -11.0	7.9 - 8.4	0 - 2.0
		> 5.0	20 -60	Loamy fine sand	6.0 - 20.0	0.07 -10.0	8.5 - 10.0	4.0 -8.0
	StE	> 5.0	0 - 60	Loamy fine sand	6.0 - 20.0	0.09 -0.11	7.9 - 8.4	0 - 2.0

Environmental Consequences
Alternative A – Irrigation
Direct and Indirect Effects
Alternative A: Irrigation
Temporary soil disturbance and subsequent soil displacement would occur as a result of wetland restoration construction and cattle grazing. However, these areas of disturbance would be improved and further stabilized with existing and introduced native seed mixes. Soil contamination would also occur due to machinery involved with construction activities that may deposit insignificant amounts of natural and synthetic petro-hydrocarbons onto soils through equipment failure or normal operations.

Addition of irrigation water to the proposed site could create a short term problem of soil salinity. The problem of salinity occurs in depressions within the project area. Water from rainfall and snow melt accumulates over the ground surface and temporarily ponds in low lying areas. Gradually, the ponded water drains away, evaporates, or infiltrates into the soil. Groundwater at the edge of the playas or wetlands moves upslope through the upper soil layer and rises to the soil surface and the water evaporates leaving the salt on the surface causing soil degradation by salinization. Proper mitigation measures should be carried out to control soil salinity.

Overall, the proposed action would result in local, short-term, minor, adverse effects on soils during the development phase of the project. These effects would cease following completion of the construction. However, soil salinity could be a long-term problem unless proper control measures are carried out. Wetting this area will be cyclic in long-term 20 year cycles. The idea behind this long-term cycling is control of salinity via controlling the distance to the water table and consequent capillary action . In the long run, after the restoration of the wetland, soil erosion due to wind blowout would be reduced because most of the soil surfaces within the boundary would either be covered with water or saturated.

Alternative B – Continue Present – (No Action)
Direct and Indirect Effects
Alternative B – Continue Present Management (No Action)
Impacts to soil resources would occur naturally from the effects of various climatic events. Other impacts to soils may occur from ongoing livestock use and human effects. Because no surface-disturbing activities would take place, the No Action alternative would have no negative short-term effect on soils.

Mitigation
The contractor, together with BLM Wetland Managers, must develop and implement a soil erosion/sediment control plan to specify methods for minimizing soil erosion or sedimentation using appropriate practices, such as erosion blankets or straw wattles; although soil erosion caused by storm runoff will be negligible due to a very low gradient and low precipitation amount within the analysis area.

3.10 AIR QUALITY AND NOISE

Affected Environment

The existing air quality throughout the San Luis Resource Area can only be inferred, because insufficient monitoring data is available for most pollutants. However, the air quality of the study site is thought to be typical of undeveloped regions in the western United States and has been designated as Prevention of Significant deterioration (PSD) Class II (USDI-BLM, 1989). PSD Class II areas are those areas where moderate, controlled growth can take place; while PSD Class I areas are national parks and certain wilderness areas that have greatest limitation and any degradation would have be significant. On the other hand, Class III areas are areas that allow greatest degree of impacts.

Ambient pollutant levels are usually near or below the measureable limits. Total Suspended Pollutants (TSP), around the project site, is expected to be higher because of unpaved roads and wind blowout of dust particles. The Colorado Air Pollution Control Division (APCD) assesses the maximum 24- hour average of particulate matter (PM10) levels at Alamosa center. The center is located in close proximity to the project site. The data shows that the PM10 level is well above the National Ambient Air Quality Standard (NAAQS) for PM10 (24-hour average) of 150 $\mu g/m^3$ for some years in the recording period. For example, historical maximum of PM10 levels recorded at Alamosa center were 473, 424, and 412 $\mu g/m^3$ for the years of 1991, 2006, and 2007, respectively. According to the 2008 Colorado state ranking based on PM10 level monitoring by 24-hr maximum concentration, the Alamosa center had the third highest PM10 concentration level from the 41 monitoring stations located throughout the state (APCD, 2008).

Typical noise at the site includes sounds of farming operations and traffic on Sixmile road located north of proposed wetland project (Figure 3.xa). During active construction phase of the project there would be noise from construction heavy equipments. Because the closest residence to the analysis area is about five miles, it is unlikely that residents around South San Luis wetland to be affected by noise emerging from the project site.

Environmental Consequences

Alternative A – Irrigation

Direct and Indirect Effects

Alternative A - Irrigation

There will be noise and air pollution (fugitive dust) generated by land based equipment during clearing, leveling, excavating, placement of water control structures, and ditching activities to divert irrigation water from the Closed Basin Canal (CBC) to the site. In addition to the dust generated by construction activities, natural wind blowout of dust particles would create minor adverse air quality impacts to the surrounding. Increased salinity will also affect air quality. The wind blowout, especially in the spring, would disperse salt accumulated on the surface to surrounding areas creating minor long-term adverse impact on air quality around the project site. Dust blown out by wind would also deplete nutrients in the soil. The noise would be of short duration during construction activities and would become part of the background noise levels associated with surrounding farming operations and traffic. It is anticipated that some short-term and minor air quality impacts would be created

during ground disturbance activities. However, best management practices will be used to control dust and maintain air quality.

Saturated soils are not susceptible to wind blowout. As a result, air pollution due to dust blowout will be reduced following completion construction activities and start of the wetland development process attributable to the introduction of irrigation water to the analysis area. There will be no measurable adverse impacts on air quality and noise in consequence of alternative A.

Alternative B – Continue Present Management (No Action)
Direct and Indirect Effects
Alternative B - Continue Present Management (No Action)
Under No Action Alternative, there would be no wetting of basins and construction of ditches or dikes, as described under Alternative A and C and hence no additional fugitive dust and noise pollutions would be generated from construction activities. Dust will continue to move around the site due to wind blowout at the current levels, despite the fact that no construction activity would be carried out under this alternative. No measurable air quality and noise problems are anticipated.

Cumulative Effects
The change in the air quality which results from the incremental impact of the proposed project when added to the Blanca wetland restoration project developed in the past, and future project plans to develop historical wetland around the analysis area, would result from individually minor, but collectively measurable positive impact on reducing fugitive dust in the long run, and hence improve air quality. Construction equipment producing elemental and organic carbon via fuel combustion combined with surface disturbing activities that leave soils exposed to *Eolian* processes (winds' ability to shape the surface of the earth) will both increase creation of particulate matter (PM10) during construction phase of the project, in addition to the already existing higher level of PM10 around the analysis area. Organic carbon existing in the air as PM10, as such, would not reduce visibility and increase the potential of respiratory health problems because of the size of disturbed area and intensity of construction activities are minimal for this project. In addition, following suggested mitigation, criteria pollutant levels are expected to return to near pre-construction levels.

Mitigation
Contractors will be responsible for complying with all local, state, and federal air quality and noise pollution regulations as well as providing documentation to the BLM that they have done so. Use of Best Management Practices to reduce fugitive dust emissions would be included in the construction contractor agreements. All construction activities will be suspended when wind speeds exceed a sustained velocity of 20 miles per hour. Construction equipment will be maintained in proper operating condition to ensure that engines are running efficiently. Vehicles and construction equipment with emission controls will also be maintained to ensure effective pollutant emission reductions. To minimize production of fugitive particulate matter (fugitive dust) from construction of ditches or dikes, vehicle speeds must not exceed 15 mph. In addition, the application of a BLM approved dust suppressant (i.e. water) could be used if complaints are issued during dry periods when dust plumes are visible at low speeds. Surfacing access roads with gravels are also an option to help mitigate production of fugitive particulate matter, but are not required at this time as BLM does not own the access roads.

3.11 RECREATION

Affected Environment

The scope of this analysis discusses recreation, such as camping, picnicking, hiking, fishing, hunting, scenic, travel management, trail systems and serenity use within the South San Luis Lakes Project Area. The analysis is restricted to the Analysis Area within the project boundaries and specifically focuses on the BLM lands that are included as part of the proposed project area as shown in Figure 0.1 and detailed in Figure 2.1-1.

Currently, there is no water on the site to draw recreationists, no developed recreation sites, no fishing, and little public access. Because the predominant access routes are owned by TNC, there is little opportunity to develop recreation. About the only recreation use on the site is ATV use and that is minimal.

Environmental Consequences

Alternative A – Irrigation

Direct and Indirect Effects

Under Alternative A, there would be little to no direct impact to the recreational resources within the proposed project area. However there could be indirect and cumulative impacts to recreational resources under this alternative. Indirectly and cumulatively, under this alternative, recreational use and opportunities could likely increase over time in the proposed project area. This increase could be the result of an increase in wetland and playa habitat characteristics that would draw a larger number of wildlife. This would provide an increased opportunity for recreational activities such as wildlife watching, big game and waterfowl hunting, and serene quiet use. These areas would most likely draw recreationists from surrounding recreational areas such as San Luis Lakes State Park, the Great Sand Dunes National Park and Preserve and the BLM Blanca Wetlands WHA. Limiting factors for a large increase in recreational use under these alternatives is closely correlated with the unavailable parking areas and reasonable public access to the areas within the proposed project area.

Alternative B – No Action

Direct and Indirect Effects

Because of the undesirable recreational characteristics for public use mentioned above, under Alternative B, recreational use would continue to remain low. Therefore there would be no positive (impacts that would improve resource conditions and opportunities) or negative (impacts that would not improve resource conditions and opportunities) direct, indirect or cumulative impacts to recreation.

Cumulative Effects

Cumulatively over time as recreational use increases in these areas, and if the BLM acquires the adjacent lands owned by the Nature Conservancy, this area would have great recreational potential for a future recreation plan that may provide increased recreational infrastructure, facilities, improved parking, travel access and opportunities that would fit the needs of the growing population of recreationists to the area.

Mitigation

None listed

3.12 VISUAL RESOURCES

Affected Environment

The project site is classified as Visual Resource Management (VRM) Class III (USDI-BLM, 1989). The VRM Class III management objectives are to partially retain the existing character of the landscape; thus the level of change to the characteristic landscape should be moderate; and management activities may attract attention but should not dominate the view of the casual observer.

Environmental Consequences/Mitigation

The wetland will be managed to meet Visual Resource Management (VRM) Class III objectives to retain the natural character of the landscape. Changes in any of the basic elements (form, line, color, texture) caused by the proposed alternatives should be insignificant and no mitigation measures are required.

4.0 MITIGATION MEASURES

Resource	Mitigation Measures
Soil Resources	1.The contractor together with BLM Wetland Managers must develop and implement a soil erosion/sediment control plan to specify methods for minimizing soil erosion or sedimentation using appropriate practices, such as erosion blankets or straw wattles; although soil erosion caused by storm runoff will be negligible due to a very low gradient and low precipitation amount within the analysis area.
Hydrology, Water Resources and Quality	Consideration should be given to construction of salinity mitigation structures or techniques. Head gates and conveyance channel should be designed in such a way that to avoid turbidity and sediment transport. Keep access roads out of wetlands unless there is no other practicable alternative. Avoid actions that may dewater or reduce water budgets in wetlands and monitor water levels and drainage patterns. Stabilize newly constructed ditches with certified local native plants.
Riparian Areas	1. Mitigation includes managing and monitoring livestock use by controlling the time, intensity, and frequency of grazing in riparian areas and wetlands to improve or maintain long-term riparian health. If riparian vegetation conditions degrade, proper fencing may be required to protect the riparian ecosystem from livestock disturbance. Fencing is the last option to be used due to high maintenance and potential livestock trailing issues may arise. 2. Equipment working in riparian zones will be cleaned of any possible weed seeds prior to bringing it into these areas. The

Resource	Mitigation Measures
	riparian area will be revegetated using certified local native plants.
Threatened, Endangered, Sensitive or Candidate Species / Migratory Birds/ Aquatic Wildlife	1. Construct and maintain the dike and ditch system outside the time period of May 15 to July 15. 2. Flooding of the wetlands or playa basins will likely occur during the breeding and nesting/burrowing periods and the area is subject to review and clearance of nests, and disturbed areas to protect nests and burrows.
Terrestrial Wildlife	Avoid wetland construction during the main birthing period to prevent disturbance during this critical period (May 15 to July 15).
Cultural Resources	1. Sites 5AL830, 5AL831, 5AL833, 5AL836, 5AL326 and 5AL697 are considered eligible or require further research, and as such will be avoided by all project activities. If flooding is planned to exceed 7510 ft. in elevation, data recovery measures will need to be undertaken at sites 5AL830 and 5AL831 (Both at 7515 ft.) to mitigate adverse effects. 2. To mitigate the potential for direct adverse effects to heritage resources under the Irrigation Alternative (A), project managers will alert archaeologists when a finalized design for the ditches and dikes is complete. Archaeologists or designees will then spot check these areas for potential heritage resources and will ask for design modifications to avoid the resources if discovered and the potentially expensive efforts of archaeological data recovery (excavation) if the site(s) are significant. If the site(s) areas are considered *not eligible* to the National Register of Historic Places, they will be documented and the project may proceed. 3. Archaeologists or designees will monitor construction of ditches and dikes in high site potential areas in order to discern if there are buried cultural deposits. Archaeologists will ask for design modifications if buried cultural deposits are discovered. 4. Where possible, wetted areas will be restricted to historic/prehistoric playas below 7510 ft. to avoid potentially undetected significant heritage resources in the project area. In the event water deliveries need to be made to areas above 7510' to meet wetland objectives or to deliver water to another site, the archaeologist will review the proposal for risk to heritage sites. 5. To mitigate the potential indirect effects of illegal looting and vandalism, the Discovery & Education Stipulations should be placed in all potential construction contracts.

Resource	Mitigation Measures
Air Quality and Noise	Contractors will be responsible for complying with all local, state, and federal air quality and noise pollution regulations as well as providing documentation to the BLM that they have done so. Use of Best Management Practices to reduce fugitive dust emissions would be included in the construction contractor agreements. All construction activities will be suspended when wind speeds exceed a sustained velocity of 20 miles per hour. Construction equipment will be maintained in proper operating condition to ensure that engines are running efficiently. Vehicles and construction equipment with emission controls will also be maintained to ensure effective pollutant emission reductions. To minimize production of fugitive particulate matter (fugitive dust) from construction of ditches or dikes, vehicle speeds must not exceed 15 mph. In addition, the application of a BLM approved dust suppressant (i.e. water) could be used if complaints are issued during dry periods when dust plumes are visible at low speeds. Surfacing access roads with gravels are also an option to help mitigate production of fugitive particulate matter, but are not required at this time as BLM does not own the access roads.
Vegetation	1. Areas disturbed by activities associated with the construction of ditches and dikes will be reseeded with native plant species that are representative of the plant community for that area. 2. Reserve top-soil during construction activities and redistribute on the site following construction.
Invasive Plants	1. Continue annual monitoring for invasive non-native species. If they occur, provide appropriate treatment to eradicate or control the spread. 2. Minimize riparian habitat vegetation utilization by livestock so native species have an opportunity to become re-established. 3. Only chemicals approved for use adjacent to water will be used to treat those infestations located adjacent or in close proximity to water. 4. All treatment, whether chemical, biological, and/or mechanical will be pre-approved by BLM invasive species specialist. 5. All ground disturbing activities will require re-seeding with approved native vegetation. 6. Funding for weed management will be part of the annual planning process.

5.0 RESIDUAL, IRREVERSIBLE, OR IRRETRIEVABLE IMPACTS

Potential impacts to this project, both residual and non-residual, were addressed under the mitigation section. Implementation of the mitigation measures will eliminate the risk of residual impacts. There would be no irreversible or irretrievable commitment of resources if the proposed action is implemented.

6.0 MONITORING AND/OR COMPLIANCE

Monitoring will be conducted to assure mitigation measures were followed as well to determine the success of the project. Purpose for the project is restoration of wetland playa basins. Therefore, wetland monitoring will be performed periodically by the wetlands biologist to determine success of the restoration. The Wetland's biologist will be responsible for coordinating with the resource specialists upon implementing any actions that trigger mitigation measures. Individual resource specialists will be responsible for monitoring the mitigation measures as outlined in the mitigation section of this document

7.0 CONSULTATION AND COORDINATION

Persons, Groups, and Agencies Consulted

During preparation of the EA, the public was notified of the proposed action through letters to potentially interested parties dated November 23, 2009 with a follow up letter sent to the tribes on January 21, 2010. Contacts established in response to the notices are shown below. A public comment period was offered from November 23 through December 19, 2009 and January 21 through February 6, 2010.

7.1-1 List of Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Bureau of Reclamation (BOR)	*Consult with BOR as the agency who owns the Closed Basin Canal where pumping would occur.*	*A meeting was held on 11/25/2008 to address concerns with BOR and RGWCD to address how to initiate potential irrigation in South San Luis Lakes. The parties decided a feasibility study was necessary prior to allowing a permanent turnout on the area. BLM issued a follow up letter to BOR on 12/3/2009*
Rio Grande Water Conservation District (RGWCD)	*RGWCD is the party who will take over the canal once negotiations are finalized between BOR and them. Agreements with BOR also must be satisfactory with RGWCD.*	*Same as above.*
The Nature Conservancy	*Consult with them as partners on this project as their land is within the proposed project boundary and would be irrigated.*	*A meeting was held on 2/3/2010 to clarify details of the proposed action. TNC and their partners were amenable to move forward with the proposed action as presented within this EA.*
Colorado State Historic Preservation Office (SHPO)	*National Historic Preservation Act (NHPA) (16 USC 470)*	*The Section 106 report is provided to the Colorado SHPO as an informational under the Colorado State BLM protocol.*
The Hopi Tribe	*Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA*	*Response – established the need to consult with them should any cultural sites be found during surveys that are ongoing through the duration of the project that could be adversely affected under*

	(16 USC 1531.)	*the proposed action.*
The Navajo Nation	*Same as above*	*Response – established the need to consult with them should any cultural sites be found during surveys that are ongoing through the duration of the project that could be adversely affected under the proposed action.*
Southern Ute Indian Tribe	*Same as above*	*The Tribe has not responded identifying any concerns.*
Ute Mountain Ute Tribe	*Same as above*	*Same as above*
Jicarilla Apache Tribe	*Same as above*	*Same as above*
Uintah &Ouray/Northern Ute Tribe	*Same as above*	*Same as above*
Pueblo of Santa Ana	*Same as above*	*Same as above*
Pueblo of Santo Domingo	*Same as above*	*Same as above*
San Ildefonso Pueblo	*Same as above*	*Same as above*
Pueblo of Nambe	*Same as above*	*Same as above*

BLM/FS Employees

Jill Lucero	Wildlife Biologist	Preparer, Wetlands, TES
Melissa Garcia	Wildlife Fisheries Biologist	Aquatic Wildlife, Terrestrial Wildlife, TES/Wildlife, Migratory Birds, Fisheries
Angie Krall/Ken Frye	Archeologist	Cultural Resources, Native American Religious Concerns
Steve Sanchez/Negussie Tedela	Natural Resource Specialists	Soils, Hydrology, Water Rights, Water Quality, Riparian, Floodplains, Farmlands
Melissa Shawcroft	Rangeland Management Specialist	Rangeland Management, Vegetation
Jeremiah Martinez	Supervisory Natural Resource Specialist in Recreation	Recreation, Wilderness, TES plant species , Air Quality, Wild and Scenic Rivers, Noise, Visual Resources
Gary Snell	Invasive Species	Invasive Species
Nick Sandoval	Geologists	Geology, Minerals, Hazardous Materials
Leon Montoya	Lands Specialist	Lands, Realty
Dave Dyer	NEPA Coordinator	Review and Editing
Doug Simon	GIS specialist	GIS, Mapping

APPENDIX A

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APPENDIX B

AUTHORITIES AND LAWS

This document tiers to and is consistent with direction provided in the RMP (1991) and the IAP (1995). The proposed action is also consistent with other programs and policies of other agencies, such as the US Fish and Wildlife and the Colorado Division of Wildlife and assists in meeting the intent of joint wetland plans, such as the San Luis Valley Waterbird Plan (CDOW et al. 1995). The project and this document follow the regulations and direction of the following laws:

ENVIRONMENTAL POLICY

The National Environmental Policy Act (1969)

- requires the preparation of Environmental Impact Statements (EIS) for federal projects that may have a significant effect on the environment
- requires systematic, interdisciplinary planning to ensure the integrated use of natural and social sciences and environmental design arts in making decisions about major federal actions that may have a significant effect on the environment

Federal Land Policy and Management Act (1976)

Directs the BLM to "take any action necessary to prevent unnecessary and undue degradation of public land."

Federal Noxious Weed Act (1974), as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990

Congress amended the Federal Noxious Weed Act of 1974, and this amendment was signed into law November 28, 1990. This Act requires that each federal agency:

- designate a lead office and person trained in the management of undesirable plants;
- establish and fund an undesirable plant management program;
- complete and implement cooperative agreements with state agencies; and
- establish integrated management systems to control undesirable plant species.

Executive Order 13112, Invasive Species (1999)

Directs federal agencies to prevent the introduction of invasive species and provide for control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

Public Rangelands Improvement Act (1978)

This Act requires the BLM to manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.

The **Clean Air Act (1990),** as amended (42 U.S.C. 7401, 7642), requires BLM to protect air quality, maintain federal- and state-designated air quality standards, and abide by the requirements of the State Implementation Plans.

Colorado Air Quality Standards and Regulations specify the requirements for air permitting and monitoring to implement Clean Air Act and state ambient air quality standards.

The Paleontological Resource Protection Preservation Act provides for the protection of paleontological resources on federal lands, to promote the systematic compilation of baseline paleontological resource data, science-based decision-making, and accurate public education, to provide for a unified management policy regarding paleontological resources on federal lands, to promote legitimate public access to fossil resources on federal lands, to encourage informed stewardship of the resources through educational, recreational, and scientific use of the paleontological resources on federal lands, and for other purposes.

The **Historic Sites Act** (16 U.S.C. 461) declares national policy to identify and preserve historic sites, buildings, objects, and antiquities of national significance, thereby providing a foundation for the National Register of Historic Places.

The **National Historic Preservation Act** (**1966**), as amended (16 U.S.C. 470), expands protection of historic and archeological properties to include those of national, state, and local significance. It also directs federal agencies to consider the effects of proposed actions on properties eligible for or included in the National Register of Historic Places.

The **Archaeological Resources Protection Act** (**1979)**, as amended (16 U.S.C. 470a, 470cc, 470ee), requires permits for the excavation or removal of federally administered archeological resources, encourages increased cooperation among federal agencies and private individuals, provides stringent criminal and civil penalties for violations, and requires federal agencies to identify important resources vulnerable to looting and to develop a tracking system for violations.

The **Native American Graves Protection and Repatriation Act (1990)** (Public Law 101-601) provides a process for federal agencies to return certain Native American cultural items (e.g., human remains, funerary objects, sacred objects, and objects of cultural patrimony) to lineal descendants and culturally affiliated Native American tribes.

Protection and Enhancement of the Cultural Environment (EO 11593) directs federal agencies to locate, inventory, nominate, and protect federally owned cultural resources eligible for the National Register of Historic Places and to ensure that their plans and programs contribute to preservation and enhancement of nonfederally owned resources.

The **Comprehensive Environmental Response, Compensation, and Liability Act (1980)** (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601–9673), provides for liability, risk assessment, compensation, emergency response, and cleanup (including the cleanup of inactive sites) for hazardous substances. The Act requires federal agencies to report sites where hazardous wastes are or have been stored, treated, or disposed and requires responsible parties, including federal agencies, to clean up releases of hazardous substances.

The **Resource Conservation and Recovery Act** (RCRA), as amended by the federal Facility Compliance Act of 1992 (42 U.S.C. 6901–6992), authorizes the Environmental Protection Agency (EPA) to manage, by regulation, hazardous wastes on active disposal operations. The Act waives sovereign immunity for federal agencies with respect to all federal, state, and local solid and hazardous waste laws and

regulations. Federal agencies are subject to civil and administrative penalties for violations and to cost assessments for the administration of the enforcement.

The **Clean Water Act** (**1987**), as amended (33 U.S.C. 1251), establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water. The Act also requires permits for point source discharges to navigable waters of the United States and the protection of wetlands and includes monitoring and research provisions for protection of ambient water quality.

Protection of Wetlands (EO 11990) requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Floodplain Management (EO 11988) provides for the restoration and preservation of national and beneficial floodplain values, and enhancement of the natural and beneficial values of wetlands in carrying out programs affecting land use.

Executive Order 13186 - Responsibilities of Federal Agencies to Protect Migratory Birds

The **Endangered Species Act (1973)** (ESA), as amended (16 U.S.C. 1531, et seq.), directs federal agencies to ensure that their actions do not jeopardize threatened and endangered species, and that through their authority they help bring about the recovery of such species.

The **Bald Eagle Protection Act (1940)** (16 U.S.C. 668), amended in 1962 to include the golden eagle, prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions.

Fish and Wildlife Coordination Act (1958) (16 U.S.C. 661 et seq.) provides that, whenever the waters or channel of a body of water are modified by a department or agency of the United States, the department or agency first will consult with the U.S. Fish and Wildlife Service and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur, with a view to the conservation of wildlife resources.

Fish and Wildlife Conservation Act (1980), as amended, (16 U.S.C. 2901–2911, commonly known as the Nongame Act) encourages states to develop conservation plans for nongame fish and wildlife of ecological, educational, aesthetic, cultural, recreational, economic, or scientific value. The states may be reimbursed for a percentage of the costs of developing, revising, or implementing conservation plans approved by the Secretary of the Interior. Amendments adopted in 1988 and 1989 also direct the Secretary to undertake certain activities to research and conserve migratory nongame birds.

Migratory Bird Treaty Act (1918) (16 U.S.C. 703–711) manages and protects migratory bird species through consultation with state and local governments and protection of land and water resources necessary for the conservation of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful.

The Sikes Act (1960) (16 U.S.C. 670a–670o), as amended, Public Law 86-797, provides for cooperation by the departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. Public Law 93-452, signed in 1974, authorized conservation and rehabilitation programs on BLM lands. Public Law 97-396, approved in 1982, provided for the inclusion of endangered plants in conservation programs developed for BLM lands. It also defined "cooperative agreements" with states and clarified section 209 concerning purchases and contracts for property and services from states.