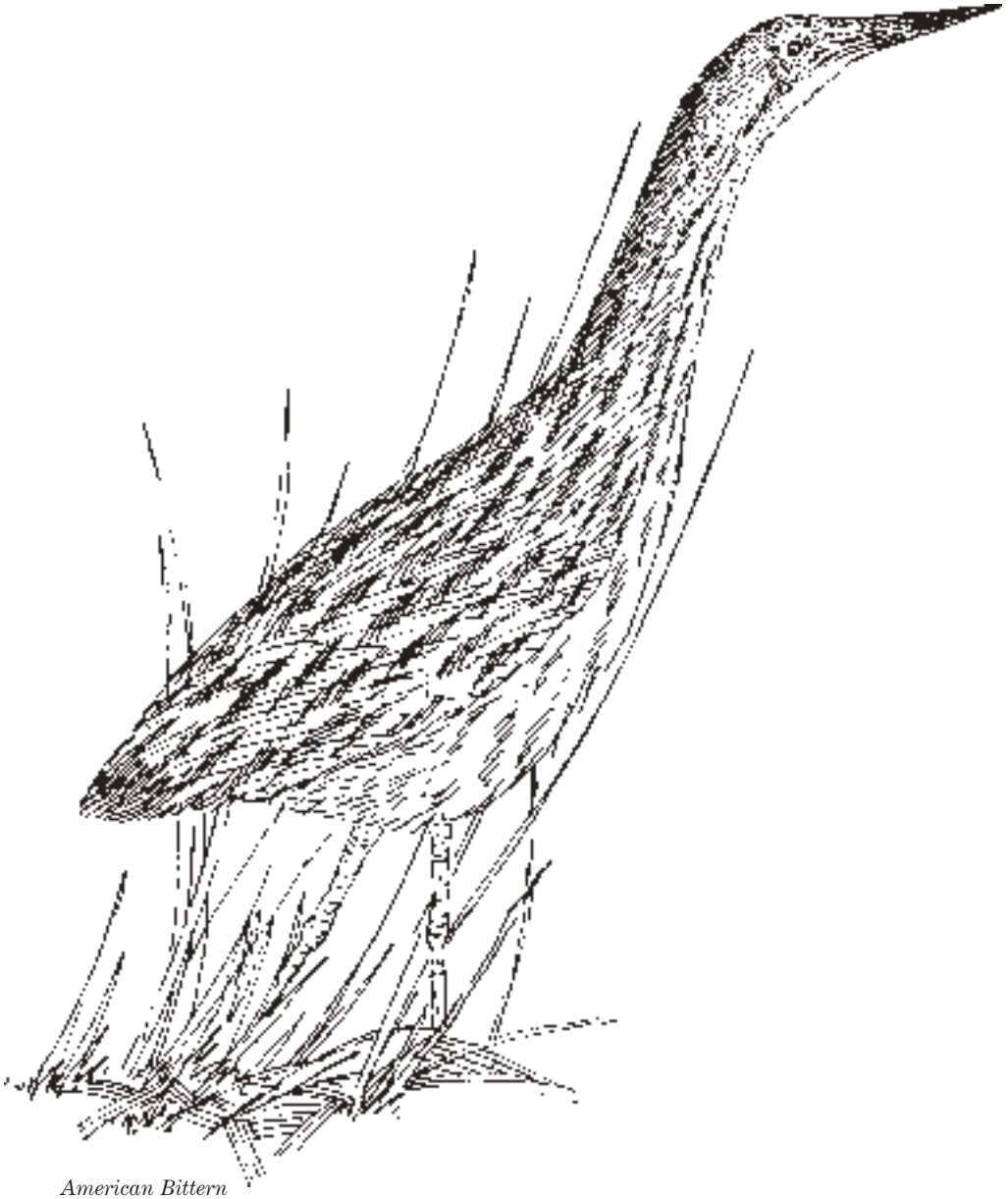
U. S. Fish & Wildlife Service

Alamosa

National Wildlife Refuge

Environmental Assessment and Land Protection Plan for the Lillpop Ranch Habitat Addition



American Bittern

Environmental Assessment

Alamosa National Wildlife Refuge
Lillpop Ranch Habitat Addition

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Chapter 1. Purpose of and Need For Action

Introduction and Background

The Alamosa National Wildlife Refuge (NWR) is located in the San Luis Valley (SLV), a high mountain basin located in south-central Colorado (see Map 1 - Vicinity Map). The Alamosa NWR was established under the Migratory Bird Conservation Act ". . . for use as inviolate sanctuaries, or for any other management purpose, for migratory birds." (16 U.S.C. 715D). The Refuge is approximately 3 miles east of the town of Alamosa off State Highway 160. The Refuge is located within the Upper Rio Grande Ecosystem of the U.S. Fish & Wildlife Service (see Map 2 - Ecosystem Map).

It is the vision of the U.S. Fish & Wildlife Service (Service) that the lands of the Alamosa NWR will be managed in a way that contributes to the migratory bird resource in the San Luis Valley to the greatest extent possible to benefit people of the Valley and the United States. Management will emphasize protection, enhancement, restoration and, where appropriate, creation of a variety of wetland and riparian habitats in this water rich, yet arid mountain valley.

The San Luis Valley consists of a flat and broad depression between mountain ranges converging to the north and is the first of a series of basins along the Rio Grande. The mountain ranges to the east reach altitudes over 14,000 feet and those to the west range between 13,000 and 14,000 feet. The length of the Valley from north to south is approximately 80 miles, and its greatest width is approximately 50 miles. The climate of the SLV is marked by cold winters and moderate summers, light precipitation, and much sunshine. This arid valley receives an average of 7 inches of precipitation a year, most of which is in the form of rain in mid-summer. The growing season around the Alamosa NWR averages approximately 90 days. July and August are usually the only frost-free months. Winds are light except for the spring and early summer months when speeds of 40 miles per hour can commonly occur with higher gusts.

The San Luis Valley is part of the much larger Rio Grande Rift Zone which extends from southern New Mexico northward through the San Luis and Upper Arkansas Valleys to its northern termination near Leadville, Colorado. The SLV is bordered on the east by the linear Sangre de Cristo Mountains, which resulted from extensive block faulting during the Laramide Orogeny. The western side of the SLV is flanked by the San Juan Mountains, the result of extensive tertiary volcanism. In sharp contrast with the steeply faulted eastern side of the Valley floor, the Oligocene volcanic rocks of the San Juans gently dip eastward into the Valley floor where they are interbedded with Valley-fill deposits (USDI, BLM 1989).

The San Luis Valley has two major aquifers, the shallow unconfined and the deep confined. These aquifers consist mainly of unconsolidated clay, silt, sand, and gravel. The unconfined aquifer is separated from the confined aquifer by clay layers and lava flows. Wells drilled into the confined aquifer frequently produce free flowing artesian wells. Unconfined groundwater occurs throughout the Valley floor. The confined aquifer underlies most of the Valley, extending from north of Mosca south to Romeo and from Monte Vista to east of Alamosa. The Alamosa NWR overlays both aquifers but primarily uses the confined aquifer. The aquifers provide water that is adjudicated for wildlife and irrigation uses on the Refuge. For example, the Mumm artesian well provides approximately one quarter of the water used on Alamosa NWR.

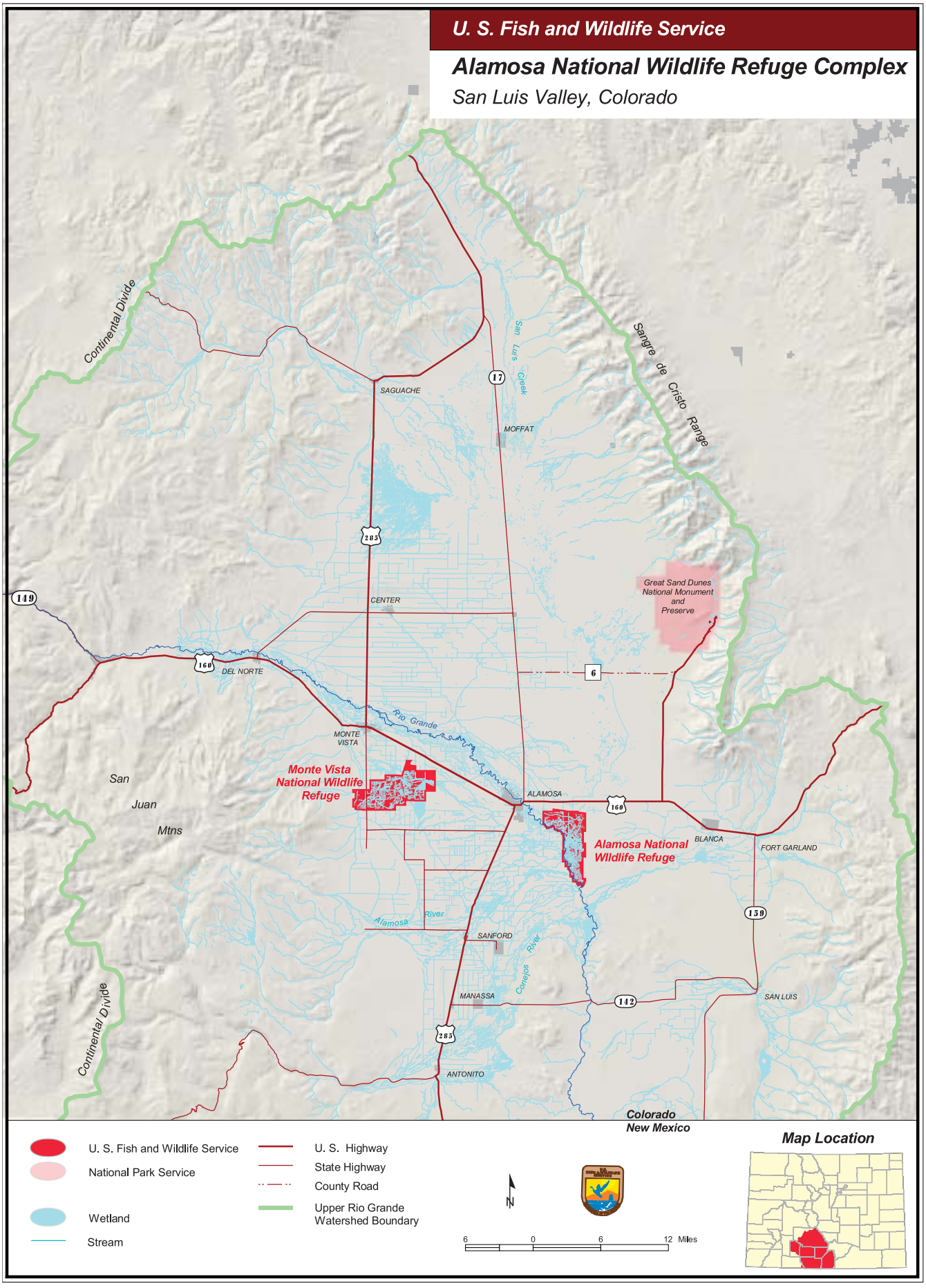
The Rio Grande is the largest and most significant river in the San Luis Valley, starting in the San Juan Mountains above Creede, Colorado and flowing southeast through the towns of South Fork, Del Norte (where it officially enters the San Luis Valley), Monte Vista and Alamosa and then south to the New Mexico State line. This major river is critical not only for the people and resources of the San Luis Valley but for these same entities as it flows south through the States of New Mexico and Texas and then along the border with Mexico. Similar to other river systems in arid environments that support extensive irrigation, the Rio Grande now has an extensive network of storage dams and diversions for irrigation and other purposes along its entire length. In the San Luis Valley, storage dams are located in the headwaters and upper reaches and extensive direct diversions (approximately 4,000 to 4,500 cubic feet per second sustained at peak of a normal irrigation season) that occur between South Fork and the Alamosa NWR. These and other uses and modifications in the Rio Grande have resulted in, but are not limited to: fewer over-bank flooding events, depressed flows during the spring and early summer (runoff period), and more prolonged flows throughout the remaining of the year due to water returning to the river from irrigated lands (Gerstle 2001). These factors in combination with alterations in groundwater and aquifers have impacted the type, quantity, quality, and persistence of habitats for wildlife near and adjacent to the Alamosa NWR.

Proposed Action

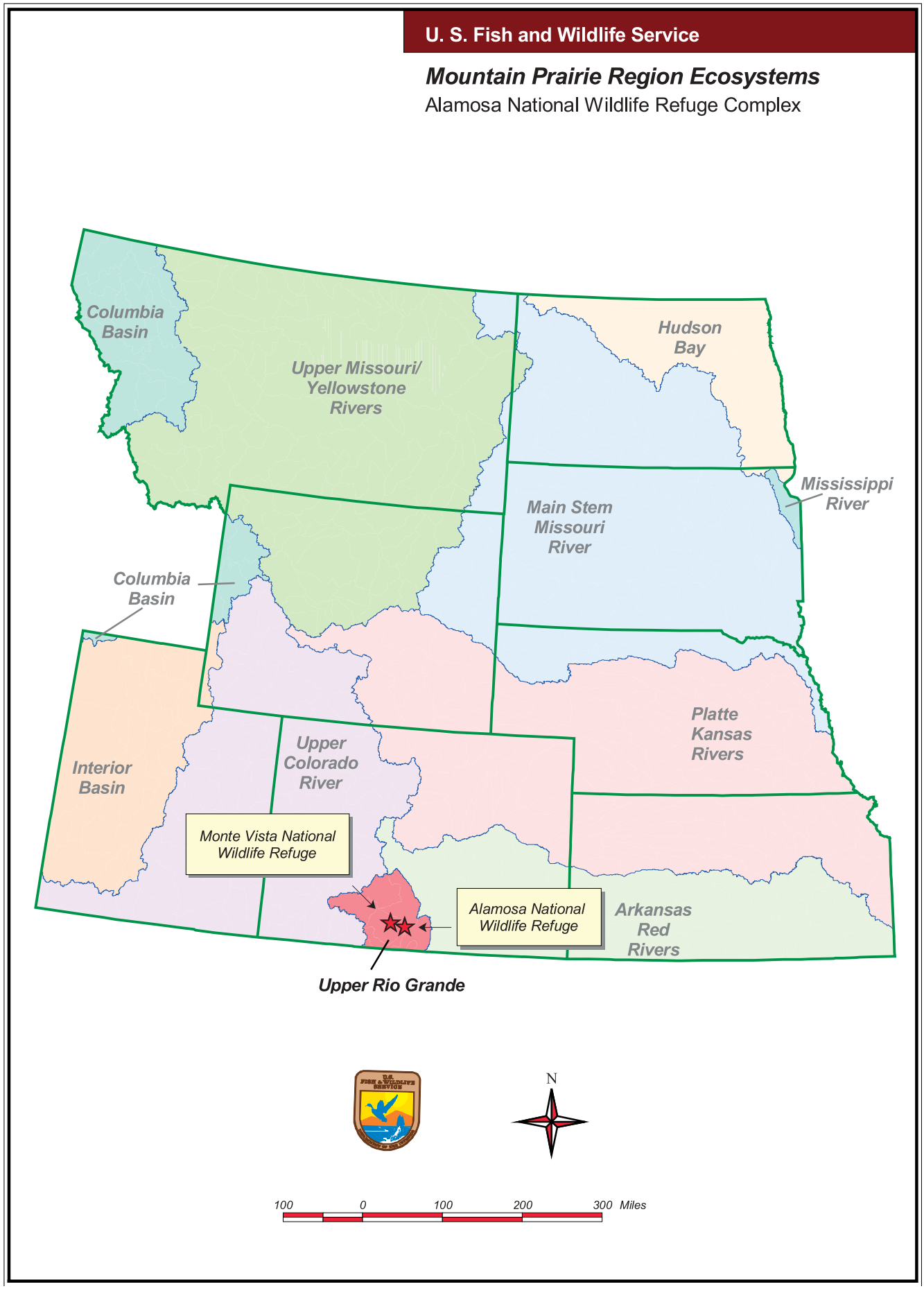
The Service was contacted originally by Mr. Lillpop with an offer to sell his Ranch to the Service. It was later in the year the U.S. Bureau of Reclamation and the Trust for Public Land, a nonprofit organization, chose to partner in the purchase of the Lillpop Ranch and the protection of approximately 857 acres adjoining the Rio Grande River and Alamosa NWR. The two entities pursued in purchasing the Lillpop Ranch from the willing landowner. The Lillpop Ranch will then be conveyed to the Service as an addition to the Alamosa NWR. The property, Lillpop Ranch (see Map 3 - Project Map), is located at the northwest side of the Alamosa NWR. Protection of this area is directed at the large complex of native wetland habitat for waterfowl and shorebirds, and the riparian habitat along the Rio Grande River which is essential for the life requirements of the endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

Project Area

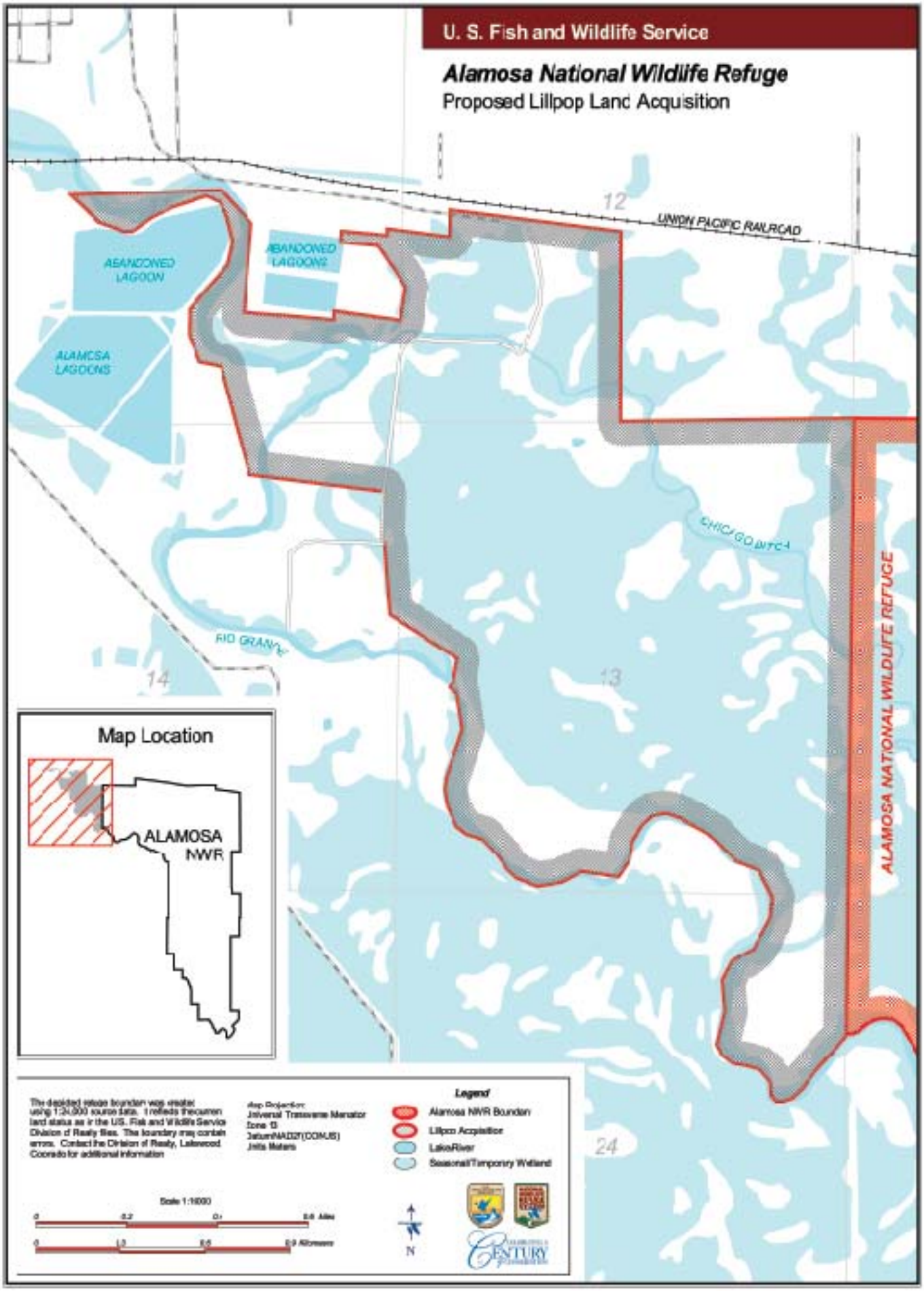
The project area, Lillpop Ranch, sets just southeast of the City of Alamosa. The property is bordered on the west by the Rio Grande River and on the east by the Alamosa NWR. Access to the property is by Adams Lane and Emperius Lane, within the town of Alamosa. The legal description of the tract is T.37N., R.10E., N.M.P.M. that portion of or all of Sections 11, 12, 13, and 24, within Alamosa County, Colorado.



Map 1 - Vicinity Map



Map 2 - Ecosystem Map



Map 3 - Project Map

Purpose of and Need for Proposed Action

The purpose of the proposed action is to protect and restore a large wetland complex on the Lillpop Ranch as well as enhance riparian habitat along the Rio Grande River. The proposed acquisition also will help promote more efficient compatible agricultural activities. The proposed action will ultimately benefit neotropical birds, migrating waterfowl, water birds (i.e., cranes) and shorebirds.

The proposed acquisition is needed to protect wetland habitat for waterfowl and enhance the habitat of the endangered southwestern willow flycatcher and, to a lesser extent, the protection of upland habitats for San Luis Valley native birds and mammals.

To date, existing wetlands of the San Luis Valley have been relatively unchanged by the rapid housing development that has occurred throughout much of the State. However, ranches have been recently subdivided into housing and other developments. Large ranches in the Valley have been subdivided for a number of reasons, including the demographic trend in Western States of people moving from urban areas to more rural settings, income from traditional ranch operation being below what is generated from sale for residential development, scenic values of the properties, and the reasonably close proximity to communities with services and vast tracts of public lands.

Numbers and species of ducks are abundant in the spring, summer, and fall with annual population peaks of 20,000 occurring in mid-March. The Alamosa NWR also produces approximately 5,000 to 8,000 ducks annually. Eighteen duck species use the Refuges to refuel and rest during migration; most are dabbling ducks (mallard, northern pintail, cinnamon and green-winged teal); however, scaup, bufflehead, common mergansers and other diving ducks also use the Refuge.

Ten species of ducks (mallard, gadwall, cinnamon, green-winged and blue-winged teal, Northern pintail, Northern shoveler, American wigeon, redheads, and ruddy ducks) and one species of goose (Canada) nest on the Refuge.

The endangered southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs). Most of these habitats are classified as forested wetlands or scrub-shrub wetlands. Habitat requirements for wintering are not well known, but include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water. The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat with consequent reductions in population levels. Destruction and modification of riparian habitats have been caused mainly by: reduction or elimination of surface and subsurface water due to diversion and groundwater pumping; changes in flood and fire regimes due to dams and stream channelization; clearing and controlling vegetation; livestock grazing; changes in water and soil chemistry due to disruption of natural hydrologic cycles; and establishment of invasive nonnative plants throughout much of its range. Concurrent with habitat loss have been increases in brood parasitism by the brown-headed cowbird *(Molothrus ater*), which inhibit reproductive success and further reduce population levels (USFWS *Southwestern Willow Flycatcher Draft Recovery Plan 4/01*).

The purposes of the habitat protection addition are:
- to protect and restore native wetland habitat;
- to protect and restore native wet riparian habitat;
- to protect habitat integrity by preventing fragmentation;
- to preserve key wildlife values adjacent to the Alamosa NWR;
- to promote landscape integrity in order to maintain, sustain, and enhance the historic plant, animal, and insect biodiversity of the Rio Grande River and its habitat;
- to minimize noxious weed infestations from soil disturbance, road building, and increased traffic resulting from rural housing development.

Decisions to be Made

Based on the analysis provided in this Environmental Assessment, the Regional Director of the U.S. Fish & Wildlife Service, Region 6 - Mountain Prairie Region, will make three decisions.

1. Determine whether the Service should extend the boundary of the Alamosa NWR. If yes,

2. Select an approved boundary area that best fulfills the habitat protection purpose.

3. Determine whether the selected alternative will have a significant impact upon the quality of the human environment. This decision is required by the National Environmental Policy Act (NEPA) of 1969. If the quality of the human environment is not significantly affected, a Finding of No Significant Impact will be signed and will be made available to the public. If the alternative will have a significant impact, then an Environmental Impact Statement will be prepared to further address those impacts.

Issues Identified and Selected for Analysis

Comments were solicited from the public for the proposed addition to the Alamosa NWR through a news release and a public meeting. A news release explaining the project and inviting the public to attend a public meeting was sent to the local newspapers in Alamosa and local radio stations. A total of six people attended the public meeting and provided comments on the project. The public meeting was held at the Alamosa NWR the evening of October 29, 2002. In addition, personal invitations were extend to the County Commissioners, local government agencies, the Friends of the San Luis Valley National Wildlife Refuges, members of the San Luis Valley Wetlands Focus Area Committee and Congressional delegation.

All people commenting on the project were supportive of the effort to acquire wetland, riparian, and upland habitat on the Lillpop Ranch. Some additional wildlife habitat and management issues were raised, such as:

Biological Issues

Wildlife Habitat

- In addition to direct loss of habitat, subdivision brings human presence in the form of roads, fences, pets, and other sources of disturbance that can disrupt wildlife movement patterns and render habitat unusable. Key geographic linkages can be lost, and wildlife populations isolated. Increased human settlement can also result in actions to control important natural ecological events, such as fire and seasonal floods.

Water Rights

- What are the deeded water rights associated with the Lillpop Ranch and the use of those rights?

Noxious Weeds

- Concern for an increase in noxious weeds.

Social and Economic Issues

Ranching

- Too many ranches in the Valley are being separated into small tracts for ranchetts. The Refuge staff manages the Ranch for wildlife habitat with compatible agriculture production use.

Public Use

- For those lands that are purchased by the Service in fee-title, what will be the allowed public use?

Issues Not Selected for Detailed Analysis

The Service looked into accepting only the Rio Grande River riparian corridor from the Bureau of Reclamation. However, the property owner wanted to sell the property in its entirety.

The Service looked into a conservation easement purchase only. However, the landowner was not interested in an easement.

Related Actions, Activities, and Authorities

Colorado Wetlands Initiative Legacy Project which is led by the Wetlands Program of the Colorado Division of Wildlife. The Wetlands Initiative is a voluntary approach to wetlands conservation and each of the 27 component projects have to meet the requirement of involving a "willing-to-participate-landowner." It is an effort aimed at conserving all biologically significant wetlands of Colorado and associated wildlife including birds, mammals, reptiles, and amphibians.

Bureau of Reclamation Closed Basin Water Project - In the mid-1980s, the Bureau of Reclamation began construction of the San Luis Valley Closed Basin Project. The project area stretches from the east side of the (Closed Basin Area) of the San Luis Valley through Alamosa NWR where it dumps into the Rio Grande. As part of the mitigation requirements of the project, the Refuge annually receives up to 4,500 acre-feet of water from the project's canal to enhance wetlands. This water is used to irrigate wet meadows and provide wetlands throughout all but approximately 1,500 acres of the Refuge.

Trust for Public Land (TPL) was founded in 1972 as a national nonprofit working exclusively to protect land for human enjoyment and well-being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL pioneers new ways to finance parks and open space, promotes the importance of public land, and helps communities establish land protection goals.

Migratory Bird Conservation Act established the Migratory Bird Conservation Commission which oversees the purchase and rental of properties benefitting migratory birds. These land acquisitions are funded primarily through money generated by the purchase of Migratory Bird Hunting and Conservation Stamps or "Duck Stamps."

North American Waterfowl Management Plan was enacted in 1986 to address declining waterfowl populations. Land protection efforts focus on quality waterfowl habitat, i.e. grasslands associated with wetlands. The funding and efforts for this project are based on a partnership between private landowners, U.S. Fish & Wildlife Service, Ducks Unlimited, State Game and Fish Department, and other partnerships of public and private organizations working toward the common goal of wetland preservation.

Southwestern Willow Flycatcher Recovery Plan to recover the endangered race of the southwestern willow flycatcher is currently being written by the U.S. Fish & Wildlife Service. The draft recovery plan was released for public review in June 2001 and finalized in August 2002.

Partners for Fish and Wildlife Program (PFW), administered by the Service, has been working in the San Luis Valley since 1989. This program provides a tool to work cooperatively with landowners to voluntarily improve habitat. Habitat restoration to-date in the Valley has included over 10,000 wetland acres, 8,000 acres of upland management, and 14.5 miles of stream/riparian restoration. Habitat restoration projects to-date have been funded by Partners for Fish and Wildlife, Colorado Division of Wildlife, Great Outdoors Colorado, Ducks Unlimited, Natural Resources Conservation Service, North America Wetland Conservation Fund, The Nature Conservancy, and private landowners.

The Nature Conservancy (TNC) has been working in the San Luis Valley over years with other conservation organizations, agencies, and ranching families with the common goal of protecting the Valley from development for the benefit of agriculture and biodiversity.

Private Landowners within the San Luis Valley have primary stewardship of the remaining wetland and grassland meadows. A significant portion of the wetland biodiversity of the San Luis Valley, in particular rare species and species of special concern, occur on private lands. Many landowners in the area are concerned with protecting wildlife and preserving wetlands and have worked cooperatively with the Service and other partner agencies.

National Wildlife Refuge System and Authorities

The Service proposes to help maintain a functional ecosystem for the benefit of wildlife and the American people through conservation easements or fee-title acquisition to enhance the survival prospects of key mammalian species in the area, such as elk and deer, and to protect and maintain grassland and wetland habitat for migratory birds, such as sandhill cranes and other species of waterfowl and sensitive plants.

The proposed resource protection actions would be consistent with the mission and guiding principles for the National Wildlife Refuge System. The Service's Partners for Fish and Wildlife Program would continue to assist landowners with livestock operation enhancements such as water development and fencing with the companion goal of enhancing wildlife habitat and use on private lands.

Guiding Principles of the National Wildlife Refuge System

1. **Habitat.** Fish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.

2. **Public Use.** The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

3. **Partnership.** America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within national wildlife refuges. Conservation partnership with other Federal agencies, State agencies, Tribes, organizations, industry and the general public can make significant contributions to the growth and management of the Refuge System.

4. **Public Involvement.** The public should be given full and open opportunity to participate in decisions regarding acquisition and management of our national wildlife refuges.

The Lillpop Ranch acquisition would become part of Alamosa National Wildlife Refuge in accordance with the overall mission of the National Wildlife Refuge System. The ***mission*** of the National Wildlife Refuge System is *"to preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the United States for the benefit of present and future generations."* The broad goals of the National Wildlife Refuge System describe the conservation of the nation's wildlife resources for the ultimate benefit of people.

Goals of the National Wildlife Refuge System

a. To fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.

b. Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.

c. Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.

d. Conserve a diversity of fish, wildlife, and plants.

e. Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.

f. To foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

The proposed addition to Alamosa National Wildlife Refuge would be managed as part of the National Wildlife Refuge System in accordance with the National Wildlife Refuge System Administration Act of 1966, Refuge Recreation Act of 1962, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), National Wildlife Refuge System Improvement Act of 1997, and other relevant legislation, executive orders, regulations and policies.

Conservation of additional wildlife habitat in the San Luis Valley area would also continue to be consistent with the following policies and management plans:

- North American Waterfowl Management Plan (USFWS 1987, updated 1994, 1998)
- Bald Eagle Recovery Plan (Northern states) (USFWS 1983)
- Whooping Crane Recovery Plan (USFWS 1994 revised)
- San Luis Valley Waterbird Plan (USFWS, CDOW, BLM 1995)
- Management Plan of the Pacific and Central Flyway for the Rocky Mountain Population of the Greater Sandhill Cranes (Pacific Flyway Study Committee and Central Flyway Technical Committee Revised 1998)
- Nongame Bird Management Plan for Region 6 (USFWS 1994, revised 1998)
- Intermountain West Joint Venture Implementation Plan (1994)
- Southwestern Willow Flycatcher Recovery Plan (USFWS 2002)
- Migratory Bird Treaty Act (1918)

The Habitat Protection and Land Acquisition Process

Once the project area boundary is approved, the tracts will be donated and fee-title purchased from the Trust for Public Land. The authority for the donation and acquisition is from the Migratory Bird Conservation Act (16 U.S.C. 715d) ". . . for the use as an inviolate sanctuary, or for any other management purpose, for migratory birds." The Migratory Bird Conservation Fund is proposed to be used as the funding source. The Migratory Bird Conservation Fund provides the Department of Interior with monies to acquire migratory bird habitat. There are four major sources of money for the Fund. The most well-known source is the revenue received from the sale of Migratory Bird Hunting and Conservation Stamps, commonly known as Duck Stamps, as provided for under the Migratory Bird Hunting and Conservation Stamp Act of March 18, 1934, as amended. The other three major sources include appropriations authorized by the Wetlands Loan Act of October 4, 1961, as amended; import duties collected on arms and ammunition; and receipts from sale of refuge admission permits as provided for in the Emergency Wetlands Resources Act of 1986. The Fund is further supplemented by receipts from sale of products from refuge lands and rights-of-way access to national wildlife refuges, the disposal of refuge lands, and reverted Federal Aid funds. The Migratory Bird Conservation Commission oversees the purchase and rental of properties benefitting migratory birds.

The Service may use other means of habitat protection such as no-cost transfer and long-term lease; donation or exchange also may occur. It is the established policy of the Service to acquire land or interest of land from willing sellers.

The basic considerations in acquiring land are the biological significance of the land, existing and anticipated threats to wildlife resources, and landowner's willingness to sell an interest of the property, or otherwise make property available to the project. The purchase of grassland easements progresses according to the availability of funds.

Refuge Revenue Sharing Act

Under provisions of the Refuge Revenue Sharing Act (Public Law 95-469), the Service annually reimburses counties to offset revenue lost as a result of acquisition of property. This Law states that the Secretary of the Interior (Secretary) shall pay to each county in which any area acquired in fee-title is situated, the greater of the following amounts:

1. An amount equal to the product of 75 cents multiplied by the total acreage of that portion of the fee area which is located within such county.
2. An amount equal to 3/4 of 1 percent of the fair market value, as determined by the Secretary, for that portion of the fee area which is located within such county.
3. An amount equal to 25 percent of the net receipts collected by the Secretary in connection with the operation and management of such fee area during such fiscal year.

However, if a fee area is located in two or more counties, the amount for each county shall be apportioned in relationship to the acreage in that county.

The Refuge Revenue Sharing Act also requires that Service lands be reappraised every 5 years to ensure that payments to local governments remain equitable. Payments under this Act would be made only on lands that the Service acquires in fee-title.

Chapter 2. Alternatives, Including the Preferred Alternative

This Chapter describes the two alternatives identified for this project: a No Action Alternative and an alternative giving the Service the authority to expand the Alamosa National Wildlife Refuge, that would accept the Lillpop Ranch acreage. The Alternatives consider the effects of a Refuge expansion and fee-title acquisition within the project area boundary identified in this Environmental Assessment.

If the preferred alternative is selected, current and future tracts acquired by the U.S. Fish & Wildlife Service are administered in accordance with Executive Order 12996, *Management and General Public Use of The National Wildlife Refuge System* (1996) and the *National Wildlife Refuge System Improvement Act* (1997). The Service would continue to monitor the status and recovery of endangered, threatened, and candidate species, conduct other activities for enhancing wildlife habitat and restoring native species with the coordination of private organizations, and State and Federal agencies.

Alternative A. No Action

Under the No Action Alternative, the 11,169-acre Alamosa NWR would not expand its boundary, and therefore, the Service would not accept land in donation or funds from the Migratory Bird Conservation Fund would not be used to purchase the Lillpop Ranch in fee-title. Lands within the project area may be developed as government zoning allows or commercial uses as the agricultural economy changes or when the land changes ownership. Habitat enhancement or restoration projects on private lands, such as water developments, grazing systems, and riparian management exclosures, would also continue through landowner efforts or other partnerships.

Alternative B. Addition of the Lillpop Ranch to the Alamosa NWR through donation and fee-title (Preferred Alternative)

Under Alternative B, the Service would accept in donation and acquire simple fee interest in the 857-acre Lillpop Ranch and its associated water rights adjacent to the Alamosa National Wildlife Refuge (see Map 3). The Service will work with the Trust for Public Land (TPL), a national non-profit organization that specializes in structuring conservation real estate transactions, to properly convey the donation of approximately 219 acres riparian habitat along the Rio Grande River and acquire in fee-title the remainder of approximately 638 acres. TPL has secured an option to purchase the property and will complete all the actions necessary to complete the transaction. Once TPL takes ownership of the property, it will be conveyed subsequently to the Service for inclusion in and management under the Alamosa NWR.

Under the preferred alternative, wetland habitat and its management will use the tools of water management, rest, and prescribed burning.

Water management enables the Refuge staff to meet the Refuges' mission by enhancing migratory bird production, providing for migratory birds resource needs during critical portions in the life cycle, and supporting an array of wildlife species. Rest refers to the lack of grazing, burning, mowing, and other habitat management tools which alter plant species composition, successional stage, structural density, and other characteristics of plant communities. Prescribed burning, as with other habitat management tools, affects wildlife primarily through its modification of the habitat. The resulting impacts of burning depend on a variety of variables, including vegetation type, condition of the habitat, and climatic conditions.

Under Refuge ownership, riparian habitat as identified by the National Wetlands Inventory, in portions of Sections 11, 13, and 24 will be restored by maintaining the existing hydrology and restoring the vegetative community by managing livestock and other impacts to the riparian shrub community. Longer term restoration objectives would be determined after assessing habitat response to the initial restoration effort. Restoration would be accomplished by reducing grazing and restoring riparian habitat.

The water rights associated with the Lillpop Ranch include 310 shares of the San Luis Valley Canal. All water rights associated with the proposed acquisition would be used on the subject property.

Under Alternative B, the Service would perpetually protect wetlands, river courses, and grasslands habitat from conversion to home, industrial, or commercial building sites. The goal of the project is to preserve habitat that will protect vegetation of high quality riparian and wetland habitat.

Lands already within the Executive Order boundary of the Alamosa NWR would continue to be purchased from willing sellers as opportunities arise.

Chapter 3. Affected Environment

This Chapter describes the biological, social and economic, and cultural resources that would most likely be affected by extending the Alamosa NWR boundary to include the Lillpop Ranch.

Biological Environment

The Alamosa National Wildlife Refuge is located in the San Luis Valley, a high mountain basin located in south-central Colorado. The San Luis Valley consists of a broad depression between mountain ranges converging to the north and is the first of a series of basins along the Rio Grande. The mountain ranges to the east reach altitudes over 14,000 feet and those to the west range between 13,000 and 14,000 feet. The length of the Valley from north to south is approximately 80 miles, and its greatest width is approximately 50 miles.

The San Luis Valley is part of the much larger Rio Grande Rift Zone which extends from southern New Mexico northward through the San Luis and Upper Arkansas Valleys to its northern termination near Leadville, Colorado. The San Luis Valley is bordered on the east by the linear Sangre de Cristo Mountains, which resulted from extensive block faulting during the Laramide Orogeny. The western side of the San Luis Valley is flanked by the San Juan Mountains, the result of extensive tertiary volcanism. In sharp contrast with the steeply faulted eastern side of the Valley floor, the Oligocene volcanic rocks of the San Juans gently dip eastward into the Valley floor where they are interbedded with Valley-fill deposits (USDI, BLM 1989).

The San Luis Valley contains two types of aquifers, the shallow unconfined and the deep confined, both of which support artesian well flows. These aquifers consist mainly of unconsolidated clay, silt, sand, and gravel. The unconfined aquifer is separated from the confined aquifer by clay layers and lava flows. Unconfined groundwater occurs nearly everywhere in the Valley while confined groundwater occurs under nearly one-half of the Valley (Emery, et al. 1973).

Soils

Three major soil/vegetation associations also make up Alamosa NWR. More detailed descriptions of these and the many minor soil associations present on the Refuge can be found in *Colorado Field Office Technical Guide, Range Site Descriptions* (USDA, SCS 1975) The eastern part of the Refuge contains a narrow strip (approximately 900 acres) of Costilla-Space City Association. These soils are level to gently sloping, very permeable and coarse textured. They support a desert plant community dominated by small rabbitbrush, blue grama, Indian ricegrass, and limited amounts of greasewood and alkali sacaton.

Soils in the northern 2,200 acres of the Refuge are in the Hapney-Hooper-Corlett Association. These soils are level except for a few dunes. They too are very permeable but have no pattern of surface drainage so surface water either soaks into the ground, evaporates or transpires. These soils support a native plant community primarily consisting of greasewood, rabbitbrush, western wheatgrass, alkali sacaton, inland saltgrass, blue grama, and creeping wildrye.

The largest group of soils on the Refuge is the Alamosa-Vastine-Alluvial land Association. These soils comprise approximately 7,900 acres of the Rio Grande floodplain. They are deep, level or undulating, and range from fine to coarse texture. These soils tend to be very saline due to the high water table; however, most of this area is subject to frequent spring flooding that tends to flush salt from the soil. Next to the river, these soils support a band of cottonwood trees and willows with an understory of grasses. Farther from the river and outside of the tree band these soils support wetland plants characteristic of the area, including thick stands of sedges, rushes and water tolerant grasses. Still within this association are areas less frequently flooded that support greasewood, rabbitbrush, alkali sacaton, and inland saltgrass. Slender spider flower is commonly found throughout this association.

Water

Average annual precipitation in the San Luis Valley is 7 inches. Sixty percent of this falls between July and August, mostly from erratic thundershowers of short duration. Wide seasonal and yearly variations in precipitation are common. Mean annual temperature is 42 degrees Fahrenheit. The average frost-free period is 90 days, from late-May or early June through early September. Summer daytime temperatures are frequently in the 80s, but rarely exceed 90 degrees Fahrenheit; nights are cool. Temperatures of minus 20 degrees to minus 30 degrees Fahrenheit can be expected each year and are common most winters. Temperatures lower than minus 40 degrees Fahrenheit are frequently recorded. High velocity winds are common, especially in the spring. Relative humidity is usually low, but evaporation rates average lower than those of many other dry regions because of the cool climate. Snow cover may be light and is sometimes lacking through much of the winter (USDI, BLM 1989).

Excluding precipitation, Alamosa NWR is affected by water from a number of major sources. In addition, some habitat is influenced by irrigation water applied to non-Refuge lands that flow onto or subirrigates Refuge lands.

Snow Melt (on the San Luis Valley floor)
In some years, surface water is directly obtained from melting snowpack. In general, however, this on-site generated water results in the saturation of the wetland soils, which allows these areas to be filled faster in the spring with water diversions. Usually, not enough direct snow melt is available to fill wetlands to the degree required to reach refuge habitat objectives.

Rio Grande Water
Water in the Rio Grande headwaters is generated from snowfall in the San Juan and Sangre de Cristo Mountains. Peak river flows usually occur in June with a peak 40-year average of approximately 5,348 cubic feet per second (cfs) measured at Del Norte, Colorado. During some years flows in the Rio Grande are influenced by July and August rains.

Use of Rio Grande water is governed by a 1939 compact between the States of Colorado, New Mexico, and Texas. This compact also contains water provisions for Mexico. The compact ensures an equitable amount of river water to all parties and is the basis for assessing the effects of today's river water use.

Alamosa NWR is rarely flooded by the Rio Grande due to the extensive use of water along the 48 irrigation ditch diversions upstream of the Refuge. The Rio Grande usually leaves its banks annually during the first or second week of June, flooding only a small area of riparian vegetation for a short period of time. Since the Alamosa NWR was established, major floods (those greater than the annual activity described above) occurred in 1965, 1970, 1979, 1986, 1987, and 1995. If the Rio Grande is typical of other stream systems that are used for irrigation of arid lands, it floods less frequently due to upstream diversions but flows are prolonged after the period of summer run while irrigation water flows back to the River.

Alamosa NWR receives irrigation water from the Rio Grande primarily from the Costilla Ditch, the San Luis Ditch, the Chicago Ditch, and the New Ditch. The Chicago and New Ditch diversions are entirely owned by the Refuge. The New Ditch Dam is the last dam on the Rio Grande in Colorado. The past 27-year average annual Refuge diversion of Rio Grande water is 13,750 acre-feet. The primary use of this water is to irrigate wetland vegetation throughout Refuge bottomlands. Water delivery is facilitated by 2 major dikes, 20 smaller dikes, over 200 water control structures, and 5 major canals.

Artesian Wells
The Alamosa NWR has 53 artesian wells within its boundaries. Most of these wells flow approximately 10 to 30 g.p.m. and create very small (less than one acre) wetlands. The Refuge also contains the largest artesian well in the SLV, the Mumm Well. This well is adjudicated for a flow of 2,860 g.p.m. with total use not to exceed 1,541 acre-feet per year. The well is approximately 2,000 feet deep, and the water temperature is approximately 85 degrees Fahrenheit. The Mumm Well provides water to support wetlands throughout the middle third of the Refuge.

Habitat

The various vegetation associations found on the Alamosa NWR were described and divided into 11 plant communities by a team of biologists and ecologists from the U.S. Fish & Wildlife Service, U.S. Geological Service, Colorado Division of Wildlife, representatives from non-government organizations, and Dr. Leigh Fredrickson.

Plant Communities Described In 1996

Upland shrub	Tall-emergent
Cattail	Bulrush
Short-emergent	Baltic rush
Spikerush/carex	Saltgrass
Shallow seasonal water (no vegetation)	Semipermanent wetland
Riparian	Riverine
Dense cover (planted by Refuge staff)	Agriculture

Annuals (kochia, chenopodiums, spikerush, foxtail, barley)

Since 1996, these plant or habitat types have been used in the development of a habitat map for the Alamosa NWR, and in the day-to-day work done on the Refuge. Through time, some modifications have been made in the list of habitat types.

Short Grass

This habitat type is comprised of a variety of plant species most of which are also found in short-emergent wetlands and in saltgrass, however, it is usually not dominated by either group and is a real mix of plant species such as alkali muhly, alkali sacaton, hoary cress, silverweed cinquefoil, silver sage, wild iris and wild licorice. Short grass is a grass upland habitat occurring on drier, more upland sites than wetland communities and often occurs as "hummocks" within wetlands and oxbows, and is most prevalent on the Alamosa NWR. In the past this habitat type has been called saltgrass but the short grass category occurs on soils with less salinity, is not dominated by salt tolerant species, and is usually not flooded like salt grass can be. This habitat type is often a transition zone and when that is the case it can contain scattered individuals of rabbitbrush and greasewood. Wildlife use of this habitat type is not well documented although some species of ducks, sparrow species, meadowlarks, and other ground-nesting migratory birds use it for breeding purposes. It also provides cover to small mammals.

Upland Shrub

The upland shrub community consists of sub-categories based on the shrub species and understory vegetation. This habitat includes the drier areas (rarely flooded) dominated by greasewood in areas of tighter and more alkali soil and rabbitbrush in looser and sandier soils. At higher elevations with sandy soils, the community is dominated by Indian rice grass with an intermix of alkali sacaton and four-wing saltbush. In higher elevations with tighter soils, winterfat, fringed sage and blue grama dominant. The upland shrub areas of the Refuge primarily support greasewood and rabbitbrush; however, the eastern edge of the Alamosa NWR contains areas of four-wing saltbush and Indian ricegrass. Currently, little information exists on the wildlife use of this habitat on the Refuge as other habitat types because traditionally monitoring efforts have focused on wetland and associated habitats. Species of sparrows, mourning doves, and sage thrashers have been observed nesting in upland shrub.

Riparian
This habitat type includes vegetation associated with and along rivers or waterway edges. Crack willow, sandbar willow and broad-leafed cottonwood comprise the overstory. The understory can contain a variety of shortgrass and short-emergent species such as: sedges, curly dock, western wheatgrass, cinquefoil, and others. The majority of riparian habitat is along the Rio Grande River on and adjacent to the Alamosa NWR. This strip of habitat supports nesting and migrating passerines and raptors, as well as providing habitat for amphibians, reptiles, small mammals, and deer. The southwestern willow flycatcher has been documented nesting in relatively high numbers in the riparian habitat on the Alamosa NWR (Owen and Sogge 1997).

Riverine
This habitat type includes plant and wildlife species in the river channel itself but does not include the adjacent vegetation which is usually classified as riparian. The riverine habitat type occurs within the Rio Grande as it flows through neighboring properties and the Alamosa NWR (approximately 7 river miles). River flows through the Refuge are inconsistent and can even be so reduced as to produce mere puddles within the channel. Therefore, the fisheries is fairly limited to carp, occasional northern pike and various species of minnows. During electro-shocking efforts on the Alamosa NWR in the mid-1990s, no trout species, native or nonnative, were detected.

Bird use of the river through the Alamosa NWR includes wintering common mergansers, foraging greater and lesser yellowlegs in the fall when flows are low and mudflats are exposed, Canada geese and various duck species in the fall, winter, and early spring when the river is ice-free, and a few hundred roosting sandhill cranes in the spring and fall. In the past, this habitat type on Alamosa NWR has not gotten much management nor monitoring attention because there were no pressing issues. However, in approximately the last 2 years, the noxious weed, Eurasian Milfoil has become more noticed in portions of the Rio Grande, including some portions of the Alamosa NWR.

Willows and Cottonwood
On Alamosa NWR, the riparian community consists primarily of crack willow (*Salix fraglis*), sandbar willow (*Salix exiqua),* and narrow leaf cottonwoods (*Populus angustifolia*) with an understory of grasses, sedges, and forbs. Protecting, maintaining, and enhancing riparian vegetation is a priority for refuge managers because it is a limited yet critical habitat in the western United States and in the San Luis Valley, and it supports a myriad of wildlife species, notably the southwestern willow flycatcher. This neotropical migrant nests in dense stands of mixed willow species that are usually near or immersed in water, at least during nest initiation. As a result, all tall and dense stands of willows and cottonwoods will be treated as if it were southwestern willow flycatcher habitat.

The oxbows and water delivery canals within Alamosa NWR support willows and a few cottonwoods. Some cottonwood regeneration, or seedling establishment, is occurring on Alamosa NWR; however, since these species depend on the river flooding for establishment, and flooding frequency has been reduced, overall tree establishment is infrequent. Beaver have also had an impact on older trees by cutting them down. The Refuge staff is interested in investigating techniques to promote and possibly expand riparian habitat on the Alamosa NWR through irrigation and other means.

Wildlife

Historically, the San Luis Valley was rich in wildlife with numerous herds of antelope, elk and deer, and abundant small game, waterfowl, and water birds.

The area near Alamosa NWR supports many groups of nesting, migrating, and wintering birds including grebes, herons, ibis, ducks, geese, hawks, eagles, falcons, shorebirds, owls, songbirds, and others. The area also supports the largest nesting colony of white-faced ibis in Colorado. American avocets, black-necked stilts, common snipe, spotted sandpipers and Wilson's phalarope nest in the surrounding area as do American bittern, sora, and Virginia rails. Alamosa wetlands are also important staging areas for many migrating birds. Approximately 95 percent of the Rocky Mountain population of greater sandhill cranes spend several weeks in the Valley during the spring and fall migrations feeding and resting to replace critical fat reserves. Wintering bald eagles are very abundant at the Alamosa NWR as well as wintering rough-legged hawks and short-eared owls.

Many species of mammals use the Refuges including elk, deer, coyote, porcupine, rabbit, beaver, muskrat, weasel, and others. The San Luis Valley is a cold desert and, as such, supports a limited number of amphibians and snakes; however, tiger salamanders, garter snakes, and chorus frogs are abundant on both Refuges.

Threatened and Endangered Species

Whooping Cranes (*Grus americana)*

While rare, whooping cranes were commonly observed in the San Luis Valley and to the west on the Monte Vista NWR during spring and fall migrations up until 2001. Shallow water wetlands and wet meadows provided roosting, resting, and some feeding habitat for whooping cranes while migrating through the Valley. Similar to sandhill cranes, these birds fed on privately owned small grain fields during the fall migration and agriculture fields on the Monte Vista NWR during spring migration. However, as of August 2002, the one whooping crane left in the Rocky Mountain flyway was declared dead (Tom Stehn, pers comm, 2002).

Southwestern Willow Flycatchers (*Empidonax traillii extimus*)
Willow flycatchers (*Empidonax traillii*) are a small neotropical songbird and are fairly abundant in the willow-cottonwood corridor along the Rio Grande on the Alamosa NWR, and in other riparian habitats within the Valley. The species has four or five recognized subspecies, including the southwestern willow flycatcher (*Empidonax traillii extimus*), which was listed as endangered in 1995 (USFWS 1995). Arizona, New Mexico, and California comprise the core of the southwestern willow flycatcher's historic and current range (Owen and Sogge 1997). Southwestern Colorado may have been used by breeding *extimus* but nesting records are lacking (USFWS 1995). Determining the boundaries of *extimus'* range has been difficult due to many factors including the limited number of museum specimens from some regions including southwestern Colorado (Paxton 2000), the difficulty in separating breeders from migrants in many areas, and the lack of data on willow flycatchers in south-central Colorado (Owen and Sogge 1997). In general, *extimus* nests in dense stands of mixed willow species which are near water or are temporarily flooded at least during nest initiation.

Genetic studies have recently been underway to evaluate the genetic composition of willow flycatchers including those captured in the San Luis Valley. A 1996-1997 study conducted by the Colorado Plateau Field Station (Owen and Sogge 1997) evaluated the number, location, and extent of willow flycatcher breeding sites and analyzed genetic characteristics of willow flycatchers at 20 sites in Arizona, California, New Mexico, and Nevada and five sites in Colorado including the Alamosa NWR and McIntrye Springs (Owen and Sogge 1997). The results suggest that considerable genetic diversity exists within the *extimus* subspecies and within local breeding sites (Busch, et al. 2000). Another study examined the molecular genetic structuring of willow flycatchers throughout their range and the results indicate that the flycatchers sampled on the Alamosa NWR and McIntrye Springs (managed by the BLM) belong to the endangered *extimus* subspecies. Southwestern Colorado, however, proved to be the intergrade zone between the *extimus* and the northern neighboring subspecies *E.t. adatmus* (Paxton 2000).

The 1995 listing (USFWS 1995) identifies the entire San Luis Valley as being within the *extimus* breeding range. However, the results of the above studies will be used to reexamine the range of the southwestern willow flycatcher. The draft recovery plan was released for public comment in June 2001 and finalized in August 2002.

During the 1996 and 1997 work, 29 willow flycatcher territories were documented on the Alamosa NWR. This was the highest number of territories documented on any of the sites in the study. At least 10 of those sites had confirmed breeding pairs and 18 flycatchers were banded, more than on any of the other 16 study sites. Three captured females had brood patches confirming nesting for the site. Additionally, six willow flycatchers were heard singing further east along the Rio Grande. The habitat on the Alamosa NWR was described as monotypic stands of coyote willow (*Salix exiquea*) and peach-leaf willow (*S. amygladoides*) with little narrow-leaf cottonwood overstory bordering the Rio Grande. These willow stands ranged from 3 to 12 meters in width and flycatchers were evenly distributed throughout them. McIntyre Springs, south of the Alamosa NWR, was also identified as high-quality habitat which could probably support more willow flycatchers than are currently present. The researchers concluded that the Valley could have an overall breeding population of willow flycatchers several times larger than is currently known (Owen and Sogge 1997). The opportunities to improve and/or expand potential habitat for breeding willow flycatchers appears to be significant in the Valley, and these efforts will also benefit a large suite of riparian-obligate and other species.

Bald Eagles (*Haliaeetus leucocephalus*)
Bald eagles migrate and winter through the surrounding project area due to the presence of prey such as waterfowl and shorebirds during migration (November and March) and winter-killed fish, primarily carp in the winter (December through February). Up to 105 bald eagles have wintered on both Alamosa and Monte Vista NWR; however, maximum numbers of bald eagles usually occur in mid-March during migration. In the 1980s, the Monte Vista NWR was a major wintering waterfowl area and the presence of this prey base attracted large number of bald eagles. Since 1995, refuge managers and other wetland managers in the San Luis Valley no longer intentionally provide habitat for wintering waterfowl in order to disperse ducks further south into the Rio Grande Corridor where wintering conditions may be less harsh than the San Luis Valley. Subsequently, bald eagles have also disbursed throughout the San Luis Valley. Locations of wintering bald eagles is largely determined by the location of ice-free water which attracts waterfowl. The Refuge staff participates in an annual winter (January) eagle count which is conducted throughout the United States. Both Refuges are included in survey routes which cover most of the San Luis Valley. These data are compiled and managed by the Colorado Division of Wildlife.

U.S. Fish & Wildlife Service's Species of Management Concern
American Bittern (*Botaurus lentiginosus*)
Based on data collected during the annual duck nest transects on the Monte Vista NWR and incidental observations, American bittern are fairly common nesters in tall-emergent habitat. On the Alamosa NWR booming bittern (indicative of breeding males) as well as observations of young bittern have been documented. No quantitative surveys have been done on this and other secretive marsh bird species; however, in 2001 and 2002 portions of both Refuges are included in a pilot study testing secretive marsh bird survey methods (D. Klute, USFWS Regional Office).

Black Tern (*Chlidonias niger*)
Black tern pairs are observed on both Refuges in the spring through early fall. This species typically nests in tall-emergent vegetation such as bulrush which is fairly common; however, nests have never been documented. Juvenile black terns have been observed, notably on the Alamosa NWR in the last few years but it is not known if these individuals were produced in the San Luis Valley or were migrating through. Black terns are also documented on the Alamosa Breeding Bird Survey (BBS) route which is southeast of the Alamosa NWR (Owen and Sogge 1997). There haven't been specific efforts to survey black tern activity on the Refuges, therefore, all of the data are incidental observations; however, refuge biologists are working with the Rocky Mountain Bird Observatory to begin a more formal survey for this species of management concern. Refuge managers are aware of this species and its habitat requirements, and in wetlands hosting tall-emergent vegetation, water levels are kept constant during the breeding season (mid-May through July) to protect any black tern nests as recommended (Shuford 1999).

Burrowing Owls (*Athene cunicularia*)
Borrowing owls have been documented on the Alamosa NWR but not since at least 1999. Appropriate nesting habitat, short-grass prairies and prairie-dog colonies, is not very common, but it primarily exists on the southeastern corner of the Alamosa NWR. There was an active prairie dog colony here but it has not been used for several years.

Ferruginous Hawk (*Buteo regalis*)
These hawks are fairly common and have been documented using the wetland and salt desert shrub habitat surrounding Alamosa NWR in the fall and winter.

White-faced Ibis (*Plegadis chihi)*
White-faced ibis use both Refuges but most of the use occurs on the Monte Vista NWR. Four major colonial nesting colonies exist in the San Luis Valley, Bowen Pond and Parker Pond on the Monte Vista Refuge, Russell Lakes State Wildlife Management Area, and on a privately-owned lake south of Alamosa. White-faced ibis, snowy and cattle egrets, and black-crowned night heron nest in stands of bulrush in Bowen and Parker ponds. The number of ibis pairs nesting on the refuge colonies varies; however, at least one of them is consistently the largest to second largest colony in the state (Ron Ryder pers comm).

Resident Fish
The Alamosa NWR contain fish populations of primarily fathead minnows, red shiners, and carp. The marshes receive fish annually via Rio Grande irrigation water and periodic flooding, but most fish die in the winter when the marshes freeze. Northern pike are found primarily in the Rio Grande and deeper wetlands of Alamosa NWR.

Amphibians and Reptiles
The altitude, climate, and relative isolation of the San Luis Valley limits the number of amphibians and reptiles to 3 species of lizards, 3 species of snakes, 1 salamander, 3 toads, and 1 frog species (L. Harvey, pers comm). Species fairly common in the San Luis Valley include the tiger salamander, great plains toad, Woodhouse's toad, western chorus frog, and western garter snake. Additionally, the Alamosa NWR hosts northern leopard frogs and bullsnakes. Several amphibian and reptile species may occur on the Alamosa NWR including: the plains spadefoot toad, variable skink, short-horned lizard, and snapping turtle. Bullfrogs were not historically present in Colorado, but early introductions as a game species by the Colorado Division of Wildlife and accidental introductions with fish stock have lead to firmly established populations along the Rio Grande River corridor, as well as in other isolated locations in the San Luis Valley.

Social and Economic Considerations

The San Luis Valley area consists of six counties: Alamosa, Conejos, Rio Grande, Costilla, Mineral, and Saguache Counties. The total population for the area has increased approximately 11 percent from April 1990 to July 1999 and is presently estimated at approximately 45,000 people. Saguache County has experienced the largest population increase, numerically and by percentage (1,557 people, 33.7 percent). Alamosa and Rio Grande Counties have the largest populations, approximately 14,500 and 11,500 respectively. One of the most significant social characteristics is the large Spanish speaking and Spanish surname population. The Hispanic population represents 52 percent of the total population in the five counties. The State of Colorado, as a whole, has a 15 percent Hispanic population. (U.S. Census Bureau 1999a,b)

Lifestyles within the counties are varied. In Saguache, lifestyle is centered around a farming and ranching economy where most of the ranches are family-owned and operated. Alamosa in Alamosa County and Del Norte and Monte Vista in Rio Grande County provide retail trade and support services for the surrounding smaller communities and rural areas. Alamosa, an academic community associated with Adams State College, offers the community additional cultural activities.

Landownership

No new or additional zoning or land-use regulations would be created by the Service within the approved addition to the Alamosa NWR or to neighboring landowners. The land-use would change from agricultural land (grazing) to wildlife preservation with limited public use.

Property Tax

Alamosa County currently collects property taxes on the Lillpop Ranch. The private property tax is based on the assessed value of the agricultural land. Upon acquisition of the Lillpop Ranch by the Service, Alamosa County will receive payments-in-lieu-of-taxes from the Service under the Refuge Revenue Sharing Act (see Chapter 1).

Public Use and Wildlife-dependent Recreational Activities

The San Luis Valley provides opportunities for hunting, fishing, wildlife observation, off-highway vehicle use, hiking, picnicking, camping, vegetation and mineral gathering, snowmobiling, cross-country skiing, general leisure, and sightseeing. Although this region has a low population density, national attention focuses on attractions such as the Great Sand Dunes National Monument, Sangre de Cristo Mountains, Rio Grande Corridor, Rio Grande National Forest, south San Juan Mountains, and Alamosa and Monte Vista National Wildlife Refuges (USDI, BLM, 1989).

Approximately 30,000 people visit the Refuges annually. The Refuges have visitor contact stations, auto tour routes, nature trails, several wildlife observation areas, and waterfowl/small game hunting areas. The Monte Vista Crane Festival attracts approximately 13,000 visitors each year. It is the largest and oldest wildlife event in Colorado. Refuge employees, Friends of the San Luis Valley National Wildlife Refuges, and volunteers provide spotting scopes and interpretation to Refuge visitors as a partnership with the Monte Vista Crane Festival Committee.

Contaminants and Hazardous Waste

Fieldwork for the pre-acquisition contaminant survey was completed. The preliminary survey conducted on these tracts determine that no contaminants pose a threat to fish and wildlife or they would be a liability to the Service (Hise 2002).

Cultural Resources

The U.S. Fish & Wildlife Service, as a Federal agency, has a trust responsibility to Tribes which includes the protection of the sovereignty of the Tribal government and preservation of Tribal culture and other trust resources.

Humans have used the San Luis Valley approximately 11 thousand years. Documented prehistoric and historic archaeological sites total 11 on Alamosa NWR. All but one site have been determined as non-eligible for nomination to the National Register of Historic Places. The remaining sites require further investigation and data collection before eligibility can be determined. These sites are being protected in accordance with the National Historic Preservation Act of 1996. Extensive archaeological sites exist along Hansen's Bluff on Alamosa NWR.

Currently, the Service does not propose any project, activity, or program that would result in changes in the character of, or would potentially adversely affect, any historic cultural resource or archaeological site. When such undertakings are considered, the Service would take all necessary steps to comply with section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Service would also pursue proactive compliance with section 110 of the NHPA to survey, inventory, and evaluate cultural resources.

Chapter 4. Environmental Consequences

Effects on the Biological Environment

This Chapter assesses the environmental impacts expected to occur from the implementation of Alternatives A or B as described in Chapter 2. Environmental impacts are analyzed by issues for each alternative and appear in the same order as discussed in Chapter 1.

Wildlife and Riparian Habitat

Alternative A (No Action)

If the Service does not purchase the Lillpop Ranch, the endangered southwestern willow flycatcher, waterfowl, and shorebirds will continue to use the property on a limited basis, but an opportunity to restore and improve 219 acres of riparian habitat along the Rio Grande River and 638 acres of wetland and upland habitat for these birds will be lost. Historic grazing on the Lillpop Ranch has reduced or eliminated the riparian wetland vegetation from reaching a density and a structure that provides cover to nesting ducks, rails, northern harriers, shorebirds and other species. A denser vegetative overstory also provides cover/habitat for rodents and other species which are the prey base for raptors (especially in the winter) and other species. By not removing shrubs, such as greasewood, in dry areas, the shrubs will provide nesting structure for some birds such as mourning doves, sage thrashers, and others.

Alternative B (Preferred Alternative)

This alternative benefits wildlife on the Lillpop Ranch and the adjacent Alamosa NWR. The number of species, timing of use and types of uses will increase on the Lillpop Ranch once riparian, wetlands, and uplands are restored. The species that will benefit on the Lillpop Ranch include the endangered southwestern willow flycatcher, neotropical migrates, foraging water birds such as white-faced ibis, egrets, geese, shorebirds such as black-necked stilts, common snipe, Wilson's phalarope, killdeer, and others. Once vegetation structure and density are increased through Service management, many of the above mentioned species will also nest on the Lillpop Ranch, either for the first time or in greater numbers with greater success.

The restoration of shallow water wetlands also increases the amount of potential loafing habitat for sandhill cranes. Additionally, there will be a benefit to nesting and foraging rails, shorebirds, raptors, passerines, and other water birds.

Alternative B will provide a mixture of habitat types which support almost all of the migratory and resident birds that use Alamosa NWR; in other words, the number of avian species that will benefit is potentially the entire suite of birds that use the San Luis Valley. Alternative B improves the quality and increases the availability of habitat on and off refuge and allows for greater management flexibility.

Water Resources

Alternative A (No Action)

Historically, the Lillpop Ranch had deeded Chicago Ditch water rights. Those water rights were sold to the U.S. Government (Alamosa NWR) along with the tract of land in 1986. The water rights left to the Lillpop Ranch contained 310 shares of the San Luis Valley Canal. According to the property owner, within a typical water year, the water rights are adequate to maintain grazing on the property. However, during dry years, such as 2002, no water has reached the property. Three wells are on the property, all appropriated pre-1938.

Under this alternative, the water rights remain with the property and are subject to irrigation and stockwater use.

Alternative B (Preferred Alternative)

Under this alternative, the Service would acquire the water rights (310 shares of San Luis Valley Canal) with the property. Available water would irrigate pastureland, as it was done historically.

Water from the Chicago Ditch will potentially be used again on the newly acquired property, increasing habitat management flexibility. Acreage irrigated on the Lillpop tract would result in a corresponding reduction in irrigated acres on Alamosa NWR.

Noxious Weeds

Alternative A (No Action)

As in many places in the western states, noxious weeds are becoming a greater management challenge to public and private landowners. Due to the management of the property owner, the Lillpop Ranch is somewhat free of a noxious weed problem. Under the no action alternative, Lillpop Ranch could be sold for other than agricultural uses, such as ranchetts. A private landowner can find assistance from other agencies in fighting the spread of noxious weeds. The counties of San Luis Valley have taken an active role in fighting the spread of noxious weeds. The San Luis Valley Coordinated Noxious Weed Program (Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache Counties) will continue to work with the State of Colorado in applying for grants and federally matching grants from the National Fish and Wildlife Foundation to build upon its efforts to establish a coordinated, valley-wide weed management effort and standardized mapping system.

Alternative B (Preferred Alternative)

Because Alamosa NWR lands are a combination of wetlands and uplands, the Service is limited on the approach in technics in management. Tall whitetop weed invasion into wet meadow communities can be extensive under long-term rest and create monotypic conditions. The Service will be taking advantage of all control tactics available. Under this alternative noxious weeds will likely be more visible to the public since grazing pressure from livestock will likely be reduced to release growth of desired plant species. Management will emphasize maintenance of noxious weeds at current levels with the goal of reducing noxious weed infestations on the property. As with other Refuge lands, all techniques available, including grazing, prescribed burning, herbicide application, mowing and water management, will be integrated to best achieve weed control and wildlife habitat objectives. Noxious weed control efforts will be most intense along acquisition boundaries shared with private landowners. All legal and approved means will be employed to contain weed infestations on Refuge lands.

Effects on Social and Economic Environment

Landownership/Land use

Alternative A (No Action)

Under this alternative, the primary agricultural use is grazing. Historically, the Lillpop Ranch has a carrying capacity of approximately 175 to 200 animal units. Typically without an agricultural base, as other ranches in the San Luis Valley, the property would be divided into small parcels and sold for ranchetts. Smaller ranchetts are highly desirable along the Rio Grande River.

Ranches within the Alamosa and Monte Vista area, that included grazing on a complex of wetland and riparian vegetative resources, have been recently subdivided into housing and other developments thus reducing wildlife habitat in the vicinity of the Complex. This development is also occurring all along the Rio Grande from South Fork to Alamosa NWR. This type of development is especially severe between South Fork and Del Norte, Colorado where numerous, relatively large residential subdivisions have been established along the Rio Grande. Large ranches have been subdivided in smaller ranchetts as part of the demographic trend in western states of people moving from urban areas to more rural settings. Developers seek out these properties for their scenic value, proximity to communities with full services, and accessibility to vast acreage of public lands. Many ranchers are deciding to sell their property to developers as income from traditional ranching operations fall far below that from sale for residential development. In many cases, all or portions of existing ranches are being subdivided in order to pay inheritance tax liabilities.

Alternative B (Preferred Alternative)

Under Preferred Alternative no new or additional land-use regulations would be created by the Service within the approved boundary.

Different grazing management will likely benefit willow flycatcher habitat throughout this reach of the river. The western boundary of Alamosa NWR is formed, in part, by the Rio Grande. However, in some cases the river is entirely on neighboring private land, in some stretches the Refuge boundary runs down the center of the River, and in some cases portions of the riparian zone is on privately owned land. This boundary has resulted in several areas where fence maintenance is almost impossible due to constant bank erosion and regular destruction of water gaps. This condition allows the neighbors livestock to enter and graze in the riparian areas of the Refuge until discovered and moved.

Currently, the only cattle grazing on the Refuge is part of a research effort examining various habitat management tools; this project is part of an out-of-court lawsuit settlement. In 1992, several national wildlife refuges throughout the country were sued by the Audubon Society and other non-government organizations due to concern that the refuges were being used or managed in ways that were not compatible with each refuge's particular purpose. The Monte Vista NWR was included in the lawsuit because of cattle grazing in the growing season and concern that the tool was detrimental to Refuge habitats and incompatible with the Refuge purpose, namely waterfowl production. The case was settled out of court in 1993. As part of the settlement, it was agreed that refuge managers would not use any grazing on the refuge until the completion of a 5-year research study which would evaluate habitat management tools including grazing. Dr. Leigh Fredrickson, a wetland ecologist from the University of Missouri's Gaylord Memorial Laboratory, was selected to conduct the project and research began on both Refuges in 1996. This study will end in 2002, at which time the Refuge staff will reexamine grazing and its ability to meet Refuge goals and objectives.

From 1996 until present, cattle grazing has only occurred on the Refuge to meet the needs of the research. The grazing prescription being examined in the study is similar to the one used when the Refuge was sued, a holistic grazing regime (Savory 1988). Grazing occurs during the growing season and animals are moved every 1 to 6 days to a new site. A grazed site is then rested from 25 to 35 days before it is grazed again. Sites may be grazed 2 to 3 times during May 15 to September 1. Some work examining grazing has been completed and the subsequent thesis has been written (Diebboll 1999) with manuscripts in press. The remaining research, including two more graduate studies, will end in 2002.

The proposed action would affect location and distribution but not rate or density of human population growth. There may be positive effects to eco-tourism from increased opportunities for wildlife viewing and hunting pursuits. A study initiated by the Service to determine the impact of national wildlife refuges on their local economies suggested a high economic value. The study revealed that recreational visits to national wildlife refuges generate substantial economic activity. In some areas, refuge visitors are major stimuli to the local economy. Non-consumptive use of wildlife at refuges generated far more economic activity than hunting and fishing. Finally, surveys show refuge visitors would have been willing to pay more for their visit than it actually cost them (USFWS 1997). Open space also may enhance the property value of adjoining land. Open space and undeveloped lands will become more valuable in the future as residential development encompasses more rural lands.

Effects on Public Use

Alternative A (No Action)

The Lillpop Ranch would not be purchased and public use will be managed by the landowner.

Alternative B (Preferred Alternative)

With the purchase of the Lillpop Ranch, a compatibility determination will be completed on the Ranch by the Refuge Manager. The property would remain closed to the public until the Refuge Manager determines, through the compatibility determination, the property can be open to hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

Unavoidable Adverse Impacts

No direct or indirect unavoidable adverse impacts to the environment would result from the selection of Alternative B. The identification of an approved boundary for the acquisition of the Lillpop Ranch would not result in unavoidable adverse impacts on the physical and biological environment. The selection of an approved boundary does not, by itself, affect any aspect of landownership or values. Once the property is acquired, the Service would prevent incremental adverse impacts, such as degradation and loss of habitat over time, to the lands with their associated native plants and animals.

Irreversible and Irretrievable Commitments of Resources

Irreversible or irretrievable commitments of resources associated with the selection of an approved refuge boundary would be nonexistent. Under the No Action Alternative, if riparian, upland and wetland habitat were not protected and continue to decline, some plant and animal species could disappear over time, causing an irreversible and irretrievable loss. Once the property is acquired, irreversible and irretrievable commitments of funds to protect these lands (such as expenditure for fuel and staff for monitoring) would exist.

Short-term Uses Versus Long-term Productivity

The proposed acquisition of the Lillpop Ranch is intended to maintain the long-term biological productivity of the riparian, upland and wetland ecosystem of the San Luis Valley. The local short-term uses of the environment following acquisition include managing wildlife habitats and maintaining compatible agricultural practices. The resulting long-term productivity includes increased protection of endangered and threatened species and maintenance of biological diversity. The public would gain long-term opportunities for wildlife-dependent recreational activities.

Chapter 5. Coordination and Environmental Review

Agency Coordination

The proposal for the expansion of the Alamosa National Wildlife Refuge, through the authorization of an executive boundary consisting of approximately 857 acres, has been discussed with landowners, conservation organizations, Federal, State and county governments, and other interested groups and individuals.

This Environmental Assessment addresses the protection of native riparian, upland and wetland habitats, through acquisition of Lillpop Ranch, by the Service under the direction of the National Wildlife Refuge System.

Funding for acquisition of 638 acres will be provided by the Migratory Bird Conservation Fund. The donation of 219 acres will be accepted from the Trust for Public Land.

National Environmental Policy Act

As a Federal agency, the U.S. Fish & Wildlife Service must comply with provisions of the National Environmental Policy Act (NEPA). An Environmental Assessment is required under NEPA to evaluate reasonable alternatives that will meet stated objectives and to assess the possible impacts to the human environment. The Environmental Assessment serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment. The Environmental Assessment also facilitates the involvement of government agencies and the public in the decision making process.

Distribution and Availability

Copies of the Environmental Assessment were sent to Federal and State legislative delegations, agencies, landowners, private groups, and other interested individuals. Additional copies of these documents are available at the U.S. Fish & Wildlife Service, Alamosa National Wildlife Refuge, 9383 El Rancho Lane, Alamosa, Colorado, 81101 (719-589-4021 or email r6rw_alm@fws.gov) and at the U.S. Fish & Wildlife Service Regional Office, Division of Refuge Planning, Branch of Land Protection Planning, P.O. Box 25486-DFC, Denver, Colorado 80225 (303-236-8145 ext. 658; fax 303-236-4792). The Environmental Assessment and Land Protection Plan may also be viewed or downloaded at: http://mountain-prairie.fws.gov/planning.

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Appendix B. Endangered and Threatened Species

Lillpop Ranch Habitat Additions

A. Listed species and/or their critical habitat within the county / action area:

Birds:

Eskimo Curlew (E)	*Numenius borealis*
Whooping Crane (E)	*Grus americana*
Southwestern willow flycatcher (E)	*Empidonax trailli extimus*
Bald eagle (T)	*Haliaeetus leucocephalus*

Insects:

Uncompahgre fritillary butterfly (E)	*Boloria acrocnema*

B. Proposed species and/or their proposed critical habitat within the action area:

Mountain plover	*Charadrius montanus*

Key:

(E)	Endangered	Listed (in the Federal Register) as being in danger of extinction
(T)	Threatened	Listed as likely to become endangered within the foreseeable future

Appendix C. Wildlife Species of Alamosa/Monte Vista National Wildlife Refuge Complex

Birds

Loons

Arctic Loon	*Gavia arctica*
Common Loon	*Gavia immer*

Grebes

Pied-billed Grebe	*Podilymbus podiceps*
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*

Pelicans

American White Pelican	*Pelecanus erythrorhynchos*

Cormorant

Double-crested Cormorant	*Phalacrocorax auritus*

Bitterns, Herons

American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Little Blue Heron	*Egretta caerulea*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron	*Nycticorax nycticorax*

Ibis, Stork

White-faced Ibis	*Plegadis chihi*

Vultures

Turkey Vulture	*Cathartes aura*

Geese

Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Ross' Goose	*Chen rossii*
Canada Goose	*Branta canadensis*

Swans

Tundra Swan	*Cygnus columbianus*

Ducks

Wood Duck	*Aix sponsa*
Gadwall	*Anas strepera*
American Wigeon	*Anas americana*
Mallard	*Anas platyrhynchos*
Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clypeata*
Northern Pintail	*Anas acuta*
Green-winged Teal	*Anas crecca*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Greater Scaup	*Aythya marila*
Lesser Scaup	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*

Hawks, Kites, Eagles

Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Goshawk	*Accipiter gentilis*
Swainson's Hawk	*Buteo swainsoni*
Red-tailed Hawk	*Buteo jamaicensis*
Ferruginous Hawk	*Buteo regalis*
Rough-legged Hawk	*Buteo lagopus*
Golden Eagle	*Aquila chrysaetos*

Falcons

American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon	*Falco mexicanus*

Gallinaceous Birds

Ring-necked Pheasant(Introduced)	*Phasianus colchicus*

Rails, Gallinules

Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Purple Gallinule	*Porphyrula martinica*
American Coot	*Fulica americana*

Cranes

Sandhill Crane	*Grus canadensis*
Whooping Crane	*Grus americana*

Plovers

Black-bellied Plover	*Pluvialis squatarola*
Semipalmated Plover	*Charadrius semipalmatus*
Killdeer	*Charadrius vociferus*

Stilt, Avocet

Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*

Sandpipers

Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitis macularia*
Whimbrel	*Numenius phaeopus*
Long-billed Curlew	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Sanderling	*Calidris alba*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
Baird's Sandpiper	*Calidris bairdii*
Pectoral Sandpiper	*Calidris melanotos*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Common Snipe	*Gallinago gallinago*

Phalaropes

Wilson's Phalarope	*Phalaropus tricolor*
Red-necked Phalarope	*Phalaropus lobatus*

Gulls

Franklin's Gull	*Larus pipixcan*
Bonaparte's Gull	*Larus philadelphia*
Ring-billed Gull	*Larus delawarensis*

Terns

Caspian Tern	*Sterna caspia*
Common Tern	*Sterna hirundo*
Forster's Tern	*Sterna forsteri*
Least Tern	*Sterna antillarum*
Black Tern	*Chlidonias niger*

Pigeons, Doves, Parakeet

Rock Dove (Introduced)	*Columba livia*
Band-tailed Pigeon	*Columba fasciata*
Mourning Dove	*Zenaida macroura*

Owls

Barn Owl	*Tyto alba*
Great Horned Owl	*Bubo virginianus*
Burrowing Owl	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*

Goatsuckers

Common Nighthawk	*Chordeiles minor*
Common Poorwill	*Phalaenoptilus nuttallii*

Swifts

White-throated Swift	*Aeronautes saxatalis*

Hummingbirds

Black-chinned Hummingbird	*Archilochus alexandri*
Broad-tailed Hummingbird	*Selasphorus platycercus*
Rufous Hummingbird	*Selasphorus rufus*

Kingfisher

Belted Kingfisher	*Ceryle alcyon*

Woodpeckers

Lewis' Woodpecker	*Melanerpes lewis*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
Northern Flicker	*Colaptes auratus*

Flycatchers

Olive-sided Flycatcher	*Contopus cooperi*
Western Wood-Pewee	*Contopus sordidulus*
Willow Flycatcher	*Empidonax traillii*
Gray Flycatcher	*Empidonax wrightii*
Say's Phoebe	*Sayornis saya*
Vermilion Flycatcher	*Pyrocephalus rubinus*
Cassin's Kingbird	*Tyrannus vociferans*
Western Kingbird	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*

Shrikes

Loggerhead Shrike	*Lanius ludovicianus*

Vireo

Warbling Vireo	*Vireo gilvus*

Jays, Magpies, Crows, Ravens

Black-billed Magpie	*Pica pica*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*

Lark

Horned Lark	*Eremophila alpestris*

Swallows

Purple Martin	*Progne subis*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Bank Swallow	*Riparia riparia*
Cliff Swallow	*Petrochelidon pyrrhonota*
Barn Swallow	*Hirundo rustica*

Chickadees, Titmice, Verdin, Bushtit

Black-capped Chickadee	*Poecile atricapillus*
Mountain Chickadee	*Poecile gambeli*

Nuthatches

White-breasted Nuthatch	*Sitta carolinensis*

Wrens, Dipper

Rock Wren	*Salpinctes obsoletus*
House Wren	*Troglodytes aedon*
Marsh Wren	*Cistothorus palustris*

Kinglets

Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*

Thrushes, Bluebirds

Western Bluebird	*Sialia mexicana*
Mountain Bluebird	*Sialia currucoides*
Swainson's Thrush	*Catharus ustulatus*
American Robin	*Turdus migratorius*

Thrashers

Northern Mockingbird	*Mimus polyglottos*
Sage Thrasher	*Oreoscoptes montanus*

Starling

European Starling	*Sturnus vulgaris*

Pipits

American (Water) Pipit	*Anthus rubescens*

Warblers

Yellow Warbler	*Dendroica petechia*
Yellow-rumped Warbler	*Dendroica coronata*
Townsend's Warbler	*Dendroica townsendi*
Northern Waterthrush	*Seiurus noveboracensis*
MacGillivray's Warbler	*Oporornis tolmiei*
Common Yellowthroat	*Geothlypis trichas*
Wilson's Warbler	*Wilsonia pusilla*

Tanagers

Western Tanager	*Piranga ludoviciana*

Towhee, Sparrows

Green-tailed Towhee	*Pipilo chlorurus*
Cassin's Sparrow	*Aimophila cassinii*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow	*Spizella passerina*
Brewer's Sparrow	*Spizella breweri*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
Black-throated Sparrow	*Amphispiza bilineata*
Sage Sparrow	*Amphispiza belli*
Lark Bunting	*Calamospiza melanocorys*
Savannah Sparrow	*Passerculus sandwichensis*
Grasshopper Sparrow	*Ammodramus savannarum*
Song Sparrow	*Melospiza melodia*
Swamp Sparrow	*Melospiza georgiana*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Lapland Longspur	*Calcarius lapponicus*

Grosbeaks, Buntings

Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Guiraca caerulea*
Indigo Bunting	*Passerina cyanea*

Blackbirds, Orioles

Bobolink	*Dolichonyx oryzivorus*
Red-winged Blackbird	*Agelaius phoeniceus*
Western Meadowlark	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Great-tailed Grackle	*Quiscalus mexicanus*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*

Finches

Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*
Cassin's Finch	*Carpodacus cassinii*
House Finch	*Carpodacus mexicanus*
Pine Siskin	*Carduelis pinus*
Lesser Goldfinch	*Carduelis psaltria*
American Goldfinch	*Carduelis tristis*

Old World Sparrow

House Sparrow (Introduced)	*Passer domesticus*

Mammals

Virginia Opossum	*Didelphis virginiana*
Masked Shrew	*Sorex cinereus*
Dusky Shrew	*Sorex monticolus*
Water Shrew	*Sorex palustris*
Western Small-footed Myotis	*Myotis ciliolabrum*
Long-eared Myotis	*Myotis evotis*
Little brown Myotis	*Myotis lucifugus*
Yuma Myotis	*Myotis yumanensis*
Hoary Bat	*Lasiurus cinereus*
Silver-haired Bat	*Lasionycteris noctivagans*
Big Brown Bat	*Eptesicus fuscus*
Townsend's Big-eared Bat	*Plecotus townsendii*
Desert Cottontail	*Sylvilagus audubonii*
Mountain Cottontail	*Sylvilagus nuttallii*
Black-tailed Jackrabbit	*Lepus californicus*
White-tailed Jackrabbit	*Lepus townsendii*
Least Chipmunk	*Tamias minimus*
Yellow-bellied Marmot	*Marmota flaviventris*
Thirteen-lined Ground Squirrel	*Spermophilus tridecemlineatus*
White-tailed Prairie Dog	*Cynomys leucurus*
Botta's Pocket Gopher	*Thomomys bottae*
Northern Pocket Gopher	*Thomomys talpoides*
Olive-backed Pocket Mouse	*Perognathus fasciatus*
Plains Pocket Mouse	*Perognathus flavescens*
Silky Pocket Mouse	*Perognathus flavus*
Ord's Kangaroo Rat	*Dipodimys ordii*
American Beaver	*Castor canadensis*
Western Harvest Mouse	*Reithrodontomys megalotis*
Deer Mouse	*Peromyscus maniculatis*
Northern Grasshopper Mouse	*Onychomys leucogaster*
House Mouse	*Mus musculus*
Southern Red-backed Vole	*Clethrionomys gapperi*
Heather Vole	*Phenacomys intermedius*
Long-tailed Vole	*Microtus longicaudus*
Montane Vole	*Microtus montanus*
Meadow Vole	*Mecrotus pennsylvanicus*
Western Jumping Mouse	*Zapus princeps*
Common Porcupine	*Erithizon dorsatum*
Coyote	*Canis latrans*
Red Fox	*Vulpes vulpes*
Gray Fox	*Urocyon cinereoargenteus*
Black Bear	*Ursus americanus*
Common Raccoon	*Procyon lotor*
Long-tailed Weasel	*Mustela frenata*
Mink	*Mustela vison*
American Badger	*Taxidea taxus*
Western Spotted Skunk	*Spilogale gracilus*
Striped Skunk	*Mephitis mephitus*
Mountain Lion	*Felis concolor*
Bobcat	*Lynx rufus*
American Elk	*Cervus elaphus*
Mule Deer	*Odocoileus hemionus*
White-tailed Deer	*Odocoileus virginianus*
Pronghorn	*Antilocapra americana*

Reptiles

Snapping Turtle	*Chelydra serpentia*
Short-horned Lizard	*Phrynosoma douglassii*
Eastern Fence Lizard	*Sceloporous undulatus*
Many-lined Skink	*Eumeces multivigratus*
Milk Snake	*Lampropeltis triangulum*
Bullsnake	*Pituophis melnoleucus*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Western Rattlesnake	*Crotalus viridis*

Amphibians

Tiger Salamander	*Ambystoma tigrinum*
Plains Spadefoot	*Scaphiopus bombifrons*
Western Frogs	*Bufo boreas*
Great Plains Toad	*Bufo cognatus*
Woodhouse's Toad	*Bufo woodhousii*
Striped Chorus Frog	*Pseudacris triseriata*
Bullfrog	*Rana catesbeiana*
Northern Leopard Frog	*Rana pipiens*

Land Protection Plan

Alamosa National Wildlife Refuge
Lillpop Ranch Habitat Addition

Prepared by

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Land Protection Plan

Alamosa National Wildlife Refuge
Lillpop Ranch Habitat Addition

Introduction

The *Environmental Assessment for the Lillpop Ranch Habitat Addition* evaluated the environmental effects of expanding the approved Refuge boundary to conserve approximately 857 acres of additional land. The preferred alternative (Alternative B) is the approved project boundary for the proposed addition to the Alamosa National Wildlife Refuge (Refuge).

The Fish and Wildlife Service has developed this Land Protection Plan during the planning process to provide local landowners, governmental agencies and the interested public with a general understanding of the anticipated management approaches for the Refuge addition. The purpose of the Land Protection Plan is to present a broad overview of the Service's proposed management approach to wildlife and associated habitats, public uses, interagency coordination, public outreach and other operational needs.

Project Description

The Service was contacted originally by Mr. Lillpop with an offer to sell his Ranch to the Service. It was later in the year the U.S. Bureau of Reclamation and the Trust for Public Land, a nonprofit organization, chose to partner in the purchase of the Lillpop Ranch and the protection of approximately 857 acres adjoining the Rio Grande River and Alamosa NWR. The two entities pursued in purchasing the Lillpop Ranch, from the willing landowner. The land will then be conveyed to the Service as an addition to the Alamosa NWR. The property, Lillpop Ranch, is located at the northwest side of the Alamosa NWR (see Project Map). Protection of this area is directed at the large complex of native wetland habitat for waterfowl and shorebirds, and riparian habitat along the Rio Grande River which is essential for the life requirements of the endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

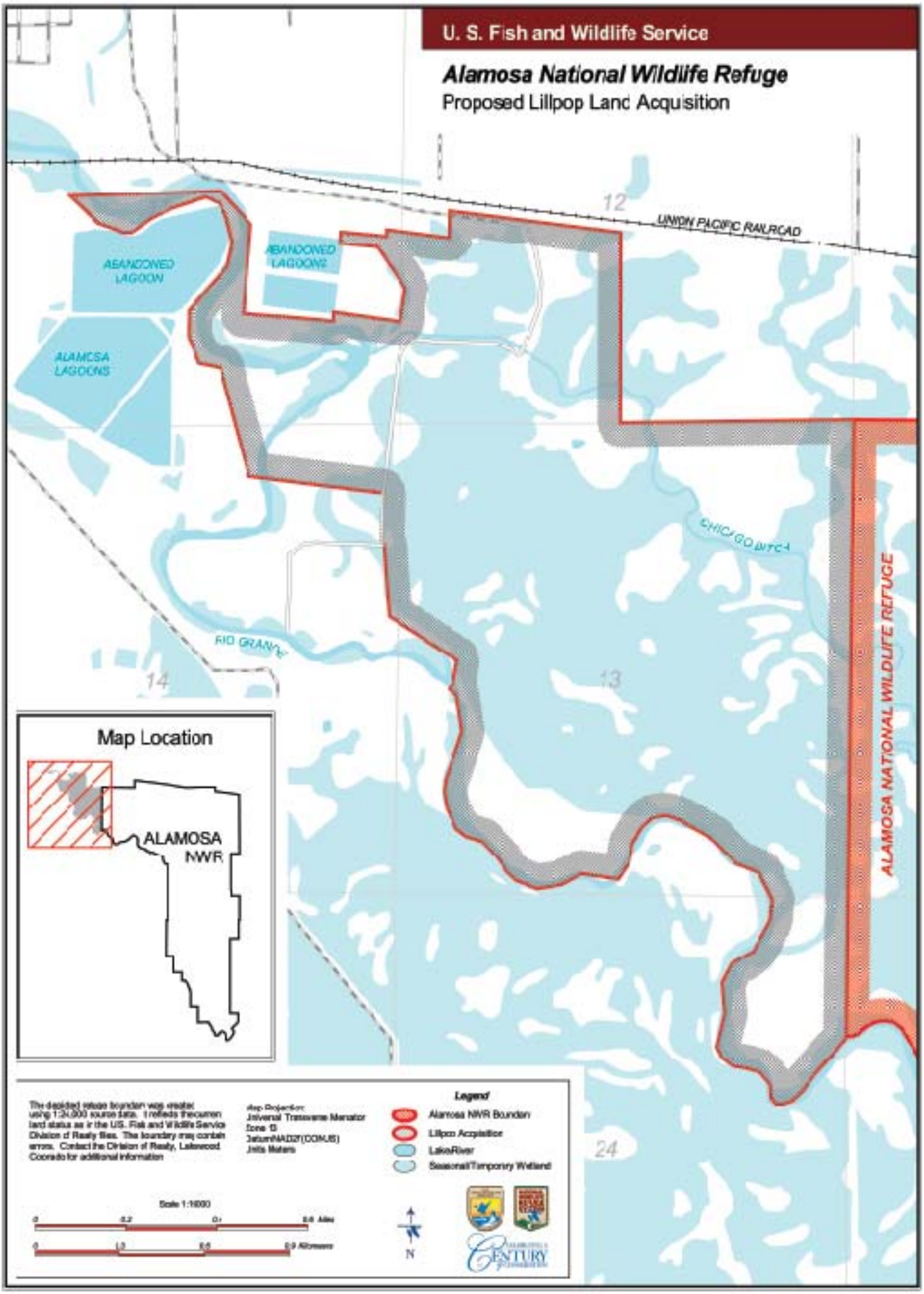
Purpose of the Action

The purpose of the Refuge addition is to protect and restore a large wetland complex on the Lillpop Ranch as well as enhance riparian habitat along the Rio Grande River. The proposed acquisition also will help promote more efficient compatible agricultural activities. The proposed action will ultimately benefit neotropical birds, migrating waterfowl, water birds (i.e., cranes) and shorebirds.

The proposed acquisition is needed to protect wetland habitat for waterfowl and enhance the habitat of the endangered southwestern willow flycatcher and, to a lesser extent, the protection of upland habitats for San Luis Valley native birds and mammals.

The purposes of the habitat protection addition are:

- to protect and restore native wetland habitat;
- to protect and restore native wet riparian habitat;
- to protect habitat integrity by preventing fragmentation;
- to preserve key wildlife values adjacent to the Alamosa Refuge;
- to promote landscape integrity in order to maintain, sustain, and enhance the historic plant, animal, and insect biodiversity of the Rio Grande River and its habitat;
- to minimize noxious weed infestations from soil disturbance, road building, and increased traffic resulting from rural housing development.



Map 1 - Project Map

Threats to and Status of the Resources

To-date, existing wetlands of the San Luis Valley have been relatively unchanged by the rapid housing development that has occurred throughout much of the state. However, ranches have been recently subdivided into housing and other developments. Large ranches in the Valley have been subdivided for a number of reasons, including the demographic trend in western states of people moving from urban areas to more rural settings, income from traditional ranch operation being below what is generated from sale for residential development, scenic values of the properties, and the reasonably close proximity to communities with services and vast tracts of public lands.

Habitat requirements for the southwestern willow flycatcher are not well known but include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water. The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat, with consequent reductions in population levels. Destruction and modification of riparian habitats have been caused mainly by: reduction or elimination of surface and subsurface water due to diversion and groundwater pumping; changes in flood and fire regimes due to dams and stream channelization; clearing and controlling vegetation; livestock grazing; changes in water and soil chemistry due to disruption of natural hydrologic cycles; and establishment of invasive nonnative plants. Concurrent with habitat loss have been increases in brood parasitism by the brown-headed cowbird *(Molothrus ate*r), which inhibit reproductive success and further reduce population levels.

Purpose of the Alamosa National Wildlife Refuge

The Alamosa National Wildlife Refuge (NWR) (11,169 acres) is located three miles east of the town of Alamosa, off State Highway 160. Alamosa NWR was approved for acquisition on June 27, 1962, by the Migratory Bird Conservation Committee. Establishing and acquisition authorities include: Migratory Bird Conservation Act of 1929, Public Land Order 3899 dated December 1965.

Summary of Planning and Land Acquisition Processes

The Regional Director of the U.S. Fish & Wildlife Service approved the designation of the expanded project boundary upon completion of the planning and environmental coordination process. This process included compliance with NEPA (National Environmental Policy Act), the endangered Species Act, and other Federal regulations and executive orders. Based on NEPA and other compliance documents, the Regional Director selected an expanded project boundary and determined that the selected alternative would not have a significant impact upon the quality of human environment. With the selection of an approved project boundary, the selected alternative can be implemented as decided in the Environmental Assessment, and discussions with the willing landowner can commence.

Comments were solicited from the public for the proposed addition to the Alamosa NWR through a news release and a public meeting. A news release explaining the project and inviting the public to attend a public meeting was sent to the local newspapers in Alamosa and the local radio station. A total of six people attended the public meeting and provided comments on the project. The public meeting was held at the Alamosa Refuge the evening of October 29, 2002. In addition, personal invitations were extend to the County Commissioners, local government agencies, the Friends of the San Luis Valley National Wildlife Refuges, members of the San Luis Valley Wetlands Focus Area Committee, and Congressional delegation.

The selection and approval of an expanded project boundary only allows the Service to acquire lands from a willing seller at fair-market value or to enter into management agreements with interested landowners. An approved project boundary does not grant the Fish and Wildlife Service jurisdiction or control over lands within the boundary, and it does not automatically make lands within the project boundary part of the National Wildlife Refuge System until they are acquired by the Service or are placed under an agreement that provides for management as part of the Refuge System.

Protection Alternatives

The Service studied two alternatives identified for this project: a No Action Alternative and an alternative giving the Service the authority to expand the Alamosa National Wildlife Refuge, that would accept the Lillpop Ranch acreage. The Alternatives consider the effects of a Refuge expansion, through donation and fee-title acquisition within the project area boundary, and were identified in the Environmental Assessment.

The preferred alternative was selected and the future tract acquired by the U.S. Fish & Wildlife Service will be administered in accordance with Executive Order 12996, *Management and General Public Use of The National Wildlife Refuge System* (1996) and the *National Wildlife Refuge System Improvement Act* (1997). The Service would continue to monitor the status and recovery of endangered, threatened, and candidate species, conduct other activities for enhancing wildlife habitat and restoring native species with the coordination of private organizations, and State and Federal agencies.

Alternative A, No Action, was studied which would not expand the 11,169-acre Alamosa NWR boundary. Therefore, the Service would not accept land in donation and funds from the Migratory Bird Conservation Fund would not be used for acquiring the Lillpop Ranch. Lands within the project area may be developed as government zoning allows for commercial uses as the agricultural economy changes or when the land changes ownership. Habitat enhancement or restoration projects on private lands, such as water developments, grazing systems, and riparian management exclosures, would also continue through landowner efforts or other partnerships.

Alternative B, the preferred alternative, the addition of Lillpop Ranch to the Alamosa NWR was accepted by the Regional Director. The Service would accept in donation and acquire simple fee interest in the 857-acre Lillpop Ranch and its associated water rights adjacent to the Alamosa National Wildlife Refuge. The Service will work with the Trust for Public Land (TPL), a national non-profit organization that specializes in structuring conservation real estate transactions, to properly convey the donation of approximately 219 acres riparian habitat along the Rio Grande River and acquire in fee-title the remainder of approximately 638 acres. TPL has secured an option to purchase the property and will complete all the actions necessary to complete the transaction. Once TPL takes ownership of the property, it will be conveyed subsequently to the Service for inclusion in and management under the Alamosa NWR.

Planning and Coordination

The proposal for the expansion of the Alamosa National Wildlife Refuge, through the authorization of an executive boundary consisting of approximately 857 acres, has been discussed with landowners, conservation organizations, Federal, State and county governments, and other interested groups and individuals.

The Environmental Assessment addresses the protection of native riparian, upland and wetland habitats, through acquisition of Lillpop Ranch, by the Service under the direction of the National Wildlife Refuge System.

Sociocultural Considerations

Under the selected alternative, no new or additional land-use regulations would be created by the Service within the approved boundary.

Different grazing management will likely benefit willow flycatcher habitat throughout this reach of the river. The western boundary of Alamosa NWR is formed, in part, by the Rio Grande River. However, in some cases the river is entirely on neighboring private land, in some stretches the Refuge boundary runs down the center of the River, and in some cases portions of the riparian zone is on privately owned land. This boundary has resulted in several areas where fence maintenance is almost impossible due to constant bank erosion and regular destruction of water gaps. This condition allows the neighbors livestock to enter and graze in the riparian areas of the Refuge until discovered and moved.

Currently, the only cattle grazing on the Refuge is part of a research effort examining various habitat management tools; this project is part of an out-of-court lawsuit settlement. In 1992, several national wildlife refuges throughout the country were sued by the Audubon Society and other non-government organizations due to concern that the refuges were being used or managed in ways that were not compatible with each refuge's particular purpose. The Monte Vista NWR was included in the lawsuit because of cattle grazing in the growing season and concern that the tool was detrimental to Refuge habitats and incompatible with the Refuge purpose, namely waterfowl production. The case was settled out of court in 1993. As part of the settlement, it was agreed that refuge managers would not use any grazing on the refuge until the completion of a 5-year research study which would evaluate habitat management tools including grazing. Dr. Leigh Fredrickson, a wetland ecologist from the University of Missouri's Gaylord Memorial Laboratory, was selected to conduct the project, and research began on the both Refuges in 1996. This study will end in 2002, at which time the Refuge staff will reexamine grazing and its ability to meet Refuge goals and objectives.

From 1996 until present, cattle grazing has only occurred on the Refuge to meet the needs of the research. The grazing prescription being examined in the study is similar to the one used when the Refuge was sued, a holistic grazing regime. Grazing occurs during the growing season and animals are moved every 1 to 6 days to a new site. A grazed site is then rested from 25 to 35 days before it is grazed again. Sites may be grazed 2 to 3 times during May 15 to September 1. Some work examining grazing has been completed and the subsequent thesis has been written with manuscripts in press. The remaining research, including two more graduate studies, will end in 2002.

Preventing subdivision and development could decrease the tax base. However, open space could be a net saver of tax dollars when compared to the revenues generated and costs of services associated with residential development. The proposed action would affect location and distribution but not rate or density of human population growth. Positive effects may occur to eco-tourism from increased opportunities for wildlife viewing and hunting pursuits. Open space also may enhance the property value of adjoining land. Open space and undeveloped lands will become more valuable in the future as residential development encompasses more rural lands.

Summary of Proposed Action

Under the selected alternative, the Service will accept in donation and acquire simple fee from one landowner, Trust for Public Land.

The Service will accept in donation approximately 219 acres of riparian habitat along the Rio Grande River. The remainder of approximately 638 acres will be purchased in fee-title for a total of 857 acres. TPL has secured an option to purchase the property and will complete all the actions necessary to complete the transaction. Once TPL takes ownership of the property, it will be conveyed subsequently to the Service for inclusion in and management under the Alamosa National Wildlife Refuge.

Under Refuge ownership, riparian habitat as identified by the National Wetlands Inventory, will be restored by maintaining the existing hydrology and restoring the vegetative community by managing livestock and ending mechanical removal of the shrub community. Longer term restoration objectives would be determined after assessing habitat response to the initial restoration effort. Restoration would be accomplished by reducing/managing grazing and restoring riparian habitat.

The Service would perpetually protect wetlands, river courses, and grasslands habitat from conversion to home, industrial, or commercial building sites. The goal of the project is to preserve habitat that will protect vegetation of high quality riparian and wetland habitat.

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For Refuge Information
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November 2002

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