

**U.S. Department of the Interior  
Bureau of Land Management  
Farmington Field Office**

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**Mancos-Gallup Resource Plan Amendment  
and  
Environmental Impact Statement**

**Biological Baseline Report  
May 2014**

**Bureau of Land Management  
Farmington Field Office  
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## Acronyms and Abbreviations

ACEC	area of critical environmental concern
API	area of potential impacts
BLM	United States Department of the Interior, Bureau of Land Management
EIS	environmental impact statement
ESA	Endangered Species Act
FAR	functioning at risk
FFO	Farmington Field Office
MBTA	Migratory Bird Treaty Act
MOU	memorandum of understanding
PFC	proper functioning condition
PIF	Partners in Flight
RFD	Reasonable Foreseeable Development Scenario
RMP	resource management plan
RMPA	resource management plan amendment
SDA	specialty designated area
USACE	United States Army Corps of Engineers
USBR	United States Department of the Interior, Bureau of Reclamation
USFWS	United States Fish and Wildlife Service

# **Chapter 1: Introduction and Project Background**



## 1.1 DESCRIPTION OF PROJECT

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This Biological Baseline Report is prepared in support of the upcoming United States Department of the Interior, Bureau of Land Management (BLM) Farmington Field Office (FFO) Resource Management Plan (RMP) Amendment/Environmental Impact Statement (RMPA/EIS). Management decisions for this land area are currently covered by the 2003 Farmington RMP/EIS. This RMPA will replace or update certain decisions from the 2003 RMP/EIS for lands within the current planning area.

The BLM analyzed the Mancos/Gallup formations in the 2002 Reasonable Foreseeable Development Scenario (RFD) and current 2003 RMP/EIS. Technology developed since that time is allowing for additional development of what was previously considered a fully developed oil and gas play within the San Juan Basin in northwestern New Mexico. Improvements and innovations in horizontal drilling technology and multi-stage hydraulic fracturing have enhanced the economics of developing this stratigraphic horizon. The types of fluids recovered from the Mancos/Gallup formations are quite variable throughout the basin. Depending on the region of the formation, the fluids pass from the “gas window” into the “oil window,” varying from dry gas with some carbon dioxide to producing oil with some associated gas.

With the rise in oil prices, the oil play to the south has drawn interest, and several wells are being drilled and planned for the near future.

Approximately 4,140 natural gas and oil wells have been drilled in the Mancos/Gallup formations. The current RFD forecasted an additional 300 Mancos oil wells to the existing fractured Mancos play in the southeast portion of the San Juan Basin. The RFD also forecasted multiple Mancos gas completions to add onto existing Mesa Verde and Dakota producing wells.

Full-field development, especially in the shale oil play, will result in additional impacts unforeseen or analyzed in the RFD or the current 2003 RMP/EIS. As a result, this development will require EIS-level analysis and revision in the form of an amendment to the RMP for complete analysis of the Mancos/Gallup formations. Additionally, the RMPA and EIS will need to address updated management related to lands and realty, vegetation, and lands with wilderness characteristics.

The revised and updated RFD will estimate the future number of oil and gas wells to be drilled in the Mancos/Gallup formations and the magnitude of the infrastructure improvements projected at this time to assess the environmental impacts of full-field development in the Mancos/Gallup formations. The impacts associated with the construction of infrastructure and additional well counts will involve more surface disturbance than was originally visualized in the 2003 RMP. The amended RMP will consider impacts on biological resources from expanded oil and gas development in the planning area and will include specific management objectives for raptors and migratory birds. It will also consider updated vegetation management (including habitat) and the 2010 US Department of the Interior, Fish and Wildlife Service (USFWS) memorandum of understanding (MOU) with the BLM to promote bird conservation.

## 1.2 PURPOSE OF THIS REPORT AND GENERAL OUTLINE

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The purpose of this Biological Baseline Report is to identify and characterize the biological issues in the area that may be impacted by implementation of the RMPA/EIS. The report is a general report and will help to inform the EIS preparation and impact analysis; it is not intended to be a comprehensive project impact evaluation. This report includes:

- A brief description of the project and the area of potential impact (API). The API is the area of potential direct impacts. A secondary API is also defined for the area of potential indirect impacts.

- A summary of applicable laws and regulations that govern the management of biological resources within the API.
- A brief description of habitat types, predominant land uses, special habitat features, and existing conditions in the API.
- A description of fish and wildlife, including big game, migratory birds, and special status species in the API.
- Representative photographs of the API and of special status species or habitats located in the API.

## 1.3 DESCRIPTION OF THE AREAS OF POTENTIAL IMPACTS

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Areas of potential impacts (APIs) on biological resources include areas with special designations for wildlife habitat, such as big game wintering areas or areas with listed botanical or wildlife species or critical habitat present. Although these areas are afforded some protection by stipulations limiting drilling (typically controlled surface use and timing limitation stipulations), the degree of habitat fragmentation or effective habitat loss in all wildlife and recreation and wildlife areas is significant. An analysis of the level of fragmentation for each of these areas was conducted in December 2008 as part of the BLM's Procedures for Requesting an Exception to Seasonal Drilling Restrictions (Revised). Two measures of habitat fragmentation were calculated for each of the areas: (1) the miles of road per square mile of land, and (2) a Thiessen polygon analysis based on individual well locations. The Thiessen polygon analysis (conducted in geographic information systems) calculates polygons around each feature (gas or oil wells) that provide a graphic illustration of the sphere of influence of the well. In other words, if a deer is anywhere within a particular polygon the well, in that polygon will be the closest to the deer. If that same deer is uncomfortable with the proximity of that well it would need to, in theory, move to a larger polygon. Vegetative cover, nature of the activity at the well, and topography will play a role in the deer's response, but as a metric for making a standard comparison between areas, the Thiessen polygon analysis is suitable, and has been included in the descriptions below where data are known.

- The Rattlesnake Canyon Wildlife Area (98,100 acres) is located in the northeast of the planning area east of Highway 550 and adjacent to the Colorado State Line. It encompasses a block of mule deer, black bear, Rocky Mountain elk, mountain lion, wild turkey, and migratory bird habitat and is dominated by pinyon-juniper with ponderosa pine stands present in canyons on the slopes. Sagebrush is also present along with browse shrubs and herbaceous forage. Vegetation treatments in this area have been conducted to enhance the amount of forage, and water features have been added to enhance wildlife habitat value. This area is grazed by livestock and heavily leased for natural gas development, with extensive road networks and pipelines throughout the area. Further development of natural gas resources could impact wildlife resources (BLM 1997).
- The Carracas Mesa Recreation/Wildlife Area (3,500 acres) provides critical deer winter habitat for migratory deer from southern Colorado as well as elk calving habitat. The northeastern portion of this area has relatively little natural gas development. The overall fragmentation level is 1.81 miles of road per square mile, and the average polygon size is 58.6 acres.
- The Rosa Mesa Wildlife Area (61,500 acres) contains critical wintering habitat for mule deer and elk calving grounds that is also grazed by livestock and wild horses. It is part of an established deer migration corridor from the Rosa Mesa to summer range habitat in Colorado. The area is leased for oil and gas and has been extensively drilled.
- The Crow Mesa Wildlife Area (34,200 acres) is located east of Highway 550 in the southeast of the planning area. It is characterized by deep canyons, pinyon-juniper woodlands with scattered

pockets of ponderosa pine and Douglas fir trees. This area includes year-round resident mule deer and elk populations, which are less productive than in the northern parts of the planning area, as well as pinyon jay nesting colonies. The majority of this area has been leased for oil and gas development. However, there are significant areas that have no oil or gas facilities or infrastructure.

- The Ensenada Mesa Wildlife Area (45,800 acres) provides yearlong habitat to the largest population of pronghorn antelope (150 to 200) in the planning area. Resident mule deer and elk are also common in this area. The area has an extensive oil and gas infrastructure. The overall fragmentation level is 3.3 miles of road per square mile, and the average polygon size is 62.9 acres.
- The Thomas Canyon Recreation/Wildlife Area (12,900 acres) provides winter habitat for 100 to 200 deer and, in some years, 15 to 20 elk. The majority of these animals migrate into this area from southern Colorado. The northern portion of this area (3,200 acres) is managed for non-motorized travel; the southern portion of the area contains a large amount of private lands. Resident numbers of deer and elk are fairly low. The western half of the area is heavily wooded with pinyon pine and Utah juniper. The overall fragmentation level is 2 miles of road per square mile, and the average polygon size is 526.9 acres.
- The Laguna Seca Mesa Wildlife Area (9,200 acres) is situated adjacent to the southern portion of the Jicarilla Ranger District. It supports good resident populations of mule deer, elk, black bear, Merriam's turkeys, Abert's squirrels and potential habitat for the Mexican spotted owl. The natural gas infrastructure tends to be less ubiquitous than adjacent lower lying areas due to the management prescriptions in place here. The overall fragmentation level is 2.35 miles of road per square mile, and the average polygon size is 86.9 acres.
- The Cereza Canyon Wildlife Area (26,200 acres) is located approximately 35 miles east of Farmington, New Mexico. It has significant amounts of private lands within its boundaries. Natural gas development in this area is pervasive resulting in a very fragmented landscape. Mule deer and elk are common throughout the area on a yearlong basis. The numbers of these animals tends to increase depending upon the severity of the winter and the migration from the Jicarilla Ranger District and Jicarilla Apache Reservation. The overall fragmentation level is 3.16 miles of road per square mile, and the average polygon size is 61.9 acres.
- The East La Plata Wildlife Area (5,800 acres) is located about 15 miles north of Farmington, New Mexico, along the Colorado–New Mexico border. It provides habitat for a small number of mule deer and elk on a yearlong basis with a modest increase in these numbers due to winter migration from southern Colorado. A significant amount of the land in this area is privately owned, and the density of gas wells and roads is very high. The overall level of fragmentation is 3.16 miles of road per square mile, and the average polygon size is 343.9 acres.
- The Gonzales Mesa Wildlife Area (6,100 acres) lies along the boundary with the Jicarilla Apache Indian Reservation in the upper Largo Canyon drainage. It provides yearlong habitat for a small number of mule deer and elk with some increases in these numbers due to winter migration from the Apache Reservation. Oil and gas development is pervasive, resulting in an extremely fragmented habitat. The overall fragmentation level is 3.4 miles of road per square mile, and the average polygon size is 95.4 acres.
- The Middle Mesa Wildlife Area (40,700 acres) is situated between the Los Pinos and San Juan Rivers on the north side of Navajo Reservoir. It provides yearlong habitat for mule deer, elk and a small number of Merriam's turkeys. The area has been heavily developed for natural gas and has an extensive infrastructure. The overall level of fragmentation is 2.64 miles of road per square mile, and the average polygon size is 59.9 acres.

- The Lybrook Fossil area is located in the badlands in the south of the planning area, near Crow Mesa. This area has rich deposits of oil and gas that are now becoming accessible using newer technologies like hydraulic fracturing. More drilling is anticipated in leased areas in the future. In addition to extensive paleontological remains, the area contains dense populations of the BLM special management species Brack's cactus (*Sclerocactus cloveriae* var. *brackii*).
- Hogback Area of Environmental Concern (ACEC) is located to the west of Farmington and features spectacular rock formations and Native American cultural sites. It is home to the endangered Mancos milkvetch (*Astragalus humillimus*) and is critical habitat for the Mesa Verde cactus (*Sclerocactus mesae-verdae*). It is also home to an antelope herd. Presently the area is closed to new leasing but management changes may soon allow leasing under a no surface occupancy stipulation.

## 1.4 APPLICABLE LAWS AND REGULATIONS

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### Final Vegetation Treatments Using Herbicides Programmatic Record of Decision

This BLM effort was developed on a national level to analyze the environmental effects of herbicides for treating and managing vegetation on western BLM-managed lands, including New Mexico. The 2007 decision allowed for the use of 4 new approved herbicides, provided updated analysis on 17 currently approved herbicides, and identified those herbicides that the BLM would no longer use on BLM-managed lands. The decision also guides the use of herbicides for field-level planning and on-the-ground projects designed to restore and sustain important riparian, range, and wildlife habitat on BLM-managed lands.

### Healthy Lands Initiative

The Healthy Lands Initiative was launched in 2007 to accelerate land restoration, increase productivity, and improve the health of public lands in the Western US. The goal of the Initiative is to preserve the diversity and productivity of public and private lands across the landscape. The Initiative enables and encourages local BLM managers to set priorities across a broader scale and mitigate impacts to an array of resources in ways not previously available to them. The effort has focused on landscape-level restoration efforts in northwest and southeast portions of New Mexico.

### BLM Assessment, Inventory, and Monitoring (AIM) Strategy

The Assessment, Inventory, and Monitoring Strategy, completed in 2012, outlines a cross-program vision for data collection, analysis, use and reporting in the BLM. It requires that collection of monitoring data will follow a structured framework and include use of core quantitative indicators and consistent methods; implementation of a statistically valid, scalable sampling framework; application and integration of remote sensing technologies (e.g., vegetation and landcover maps); implementation of electronic field-data collectors and enterprise data management; and capture of legacy data in a digital format.

### Healthy Forests Restoration Act

As the central legislative component of the Healthy Forests Initiative, this act contains a variety of provisions aimed at expediting the preparation and implementation of hazardous fuels reduction projects on federal land and assisting rural communities, states, and landowners in restoring healthy forest and watershed conditions on state, private, and tribal lands.

### BLM Integrated Vegetation Management Handbook H-1740-2

This handbook guides implementation of vegetation management planning and treatment activities to achieve the objectives set forth for the updated manual, 1740 Renewable Resource Improvements and Treatments. These objectives include adding policy on maintaining and restoring native plant community diversity, resiliency, and productivity.

**Federal Noxious Weed Act**

This law provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. The Federal Noxious Weed Act prohibits importing or moving any noxious weeds identified by the regulation, and allows for inspection and quarantine to prevent the spread of noxious weeds.

**Executive Order 13112, Invasive Species**

Signed in 1999, this Executive Order directs federal agencies to prevent the introduction of invasive species, to provide for their control, and to minimize the economic, ecological, and human health impacts caused by invasive species. To do this, the Executive Order established the National Invasive Species Council. Currently, there are 13 departments and agencies on the Council.

**New Mexico Executive Order 00-22**

Issued in 2000, this Executive Order directs agencies to participate in generating noxious weed awareness within their agency and among the public with whom the agency interacts; manage infestations of plant species designated by the New Mexico Department of Agriculture as Class A noxious weed infestations on state land or rights-of-way under their jurisdiction by making use of integrated pest management techniques; and cooperate with the Department of Agriculture to increase the level of coordination on weed management efforts.

**Migratory Bird Treaty Act of 1918**

The Migratory Bird Treaty Act (MBTA) implements a series of international treaties that provide for migratory bird protection. The Act authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 United States Code [USC] 703) but does not regulate habitat. The list of species protected by the MBTA was revised in March 2010 and includes almost all bird species (1,007 species) that are native to the US.

**Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds**

Signed on January 11, 2001, this Executive Order directs each federal agency taking actions that are likely to have a measureable effect on migratory bird populations to develop and implement a MOU with the USFWS that promotes the conservation of migratory bird populations.

**Memorandum of Understanding to Promote the Conservation of Migratory Birds and FFO Interim Management Policy**

On April 12, 2010, the USFWS and BLM signed this MOU pursuant to Executive Order 13186. The purpose of this MOU is to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the USFWS and BLM, in coordination with state, tribal, and local governments. This MOU identifies specific activities where cooperation between the USFWS and BLM will contribute to the conservation of migratory birds and their habitat. In 2010, the BLM FFO also developed an Interim Management Policy for migratory birds pursuant to MBTA that requires nest surveys for disturbance during nesting season, and halts construction at nest sites until young have fledged.

**Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (1940, as amended 1959, 1962, 1972, 1978) prohibits the take or possession of bald and golden eagles with limited exceptions. Take, as defined in the Act, includes "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Disturb means to agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, injury to an eagle; a decrease in its productivity by substantially interfering with normal breeding, feeding or sheltering behavior; or nest abandonment by substantially interfering

with normal breeding, feeding, or sheltering behavior. An important eagle-use area is defined in the Act as an eagle nest, foraging area, or communal roost site that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles.

### **Endangered Species Act**

The Endangered Species Act of 1973 (ESA; 16 USC 1531 *et seq.*), as amended, provides for the conservation of federally listed plant and animal species and their habitats. The ESA directs federal agencies to conserve listed species and imposes an affirmative duty on these agencies to ensure that their actions are not likely to jeopardize the continued existence of a listed species or adversely modify its designated critical habitat.

### **New Mexico Wildlife Conservation Act**

This Act establishes a list of threatened and endangered species for New Mexico and requires that they be managed to maintain and, to the extent possible, enhance their numbers within the carrying capacity of the habitat. It is unlawful for any person to take, possess, transport, export, process, sell, or offer for sale or ship any species of wildlife listed under the act.

### **BLM Manual 6840 – Special Status Species Management**

BLM Manual 6840 provides management policy for federally listed species and BLM-designated sensitive species. Species classified as BLM-designated sensitive must be native species found on BLM-managed lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or
2. The species depends on ecological refugia or specialized or unique habitats on BLM-managed lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk. The BLM protects and manages habitat for the enhancement and protection of the species future existence.

# **Chapter 2: Vegetation and Land Use**



## 2.1 DESCRIPTION OF GENERAL LANDSCAPE/ECOREGION AND LAND USES IN THE PLANNING AREA

The analysis area is within portions of three US Environmental Protection Agency Level III ecoregions: Colorado Plateau, Arizona/New Mexico Plateau, and Southern Rockies (USEPA 2013).

The Colorado Plateau ecoregion is an uplifted, eroded, and deeply dissected tableland. Its benches, mesas, buttes, salt valleys, cliffs, and canyons are formed in and underlain by thick layers of sedimentary rock. Precipitous side-walls mark abrupt changes in local relief, often from 1,000 to 2,000 feet. The region contains large areas of pinyon-juniper and Gambel oak woodlands as well as saltbrush-greasewood, and many endemic plants occur. Summer moisture from thunderstorms supports warm season grasses (USEPA 2013).

The Arizona/New Mexico Plateau represents a large transitional region between the semiarid grasslands and low relief tablelands to the east, the drier shrublands and woodland covered higher relief tablelands of the Colorado Plateau in the north, and the lower, hotter, less vegetated areas in the west and southeast. Local relief in the region varies from a few feet on plains and mesa tops to well over 1,000 feet along tableland side slopes (USEPA 2013).

The Southern Rockies are composed of steep, rugged mountains with high elevations. Although coniferous forests cover much of the region, as in most of the mountainous regions in the western United States, vegetation, as well as soil and land use, follows a pattern of elevational banding. The lowest elevations are generally grass or shrub covered and are typically key primary areas for grazing. Low to middle elevations are also grazed and covered by a variety of vegetation types including Douglas-fir, ponderosa pine (*Pinus ponderosa*), aspen (*Populus* sp.), and juniper-oak woodlands. Middle to high elevations are largely covered by coniferous forests and have less grazing activity. The highest elevations have alpine characteristics (USEPA 2013).

## 2.2 DESCRIPTION OF HABITAT/VEGETATION TYPES

BLM-managed lands in San Juan, McKinley, Rio Arriba, and Sandoval Counties support a diversity of upland and riparian plant communities. These plant communities or vegetation types are controlled in large part by site-specific topography, soil type, and climatic conditions. The planning area contains seven major plant community types, as well as the nonnative cover type represented by the Agricultural Vegetation type (**Table 2-1**, Acres of Plant Community Types on Federal Mineral Estate within the Planning Area and **Figure 2-1**, Vegetation Communities). For the acres presented in Table 2-1, the SWReGAP communities are presented alongside the National Vegetation Classification System macrogroups.

**Table 2-1. Acres of Plant Community Types on Federal Mineral Estate within the Planning Area**

National Vegetation Classification System Macrogroup	National Vegetation Classification System Code	Acres	% of Decision Area
Rocky Mountain Two-needle Pinyon-Juniper Woodland	M027	874,460	39
Great Basin and Intermountain Dry Shrubland and Grassland	M171	696,330	31
Intermountain Basin Cliff, Scree and Rock Vegetation	M118	175,930	7.8
Great Basin and Intermountain Tall Sagebrush Shrubland and Steppe	M169	171,560	7.6
Southern Rocky Mountain Lower Montane Forest	M022	141,900	6.3
Cool Semi-Desert Alkali-Saline Wetland	M082	56,180	2.5
Great Basin Saltbrush Scrub	M093	40,690	1.8
Agricultural Vegetation	M330 and M331	38,900	1.7

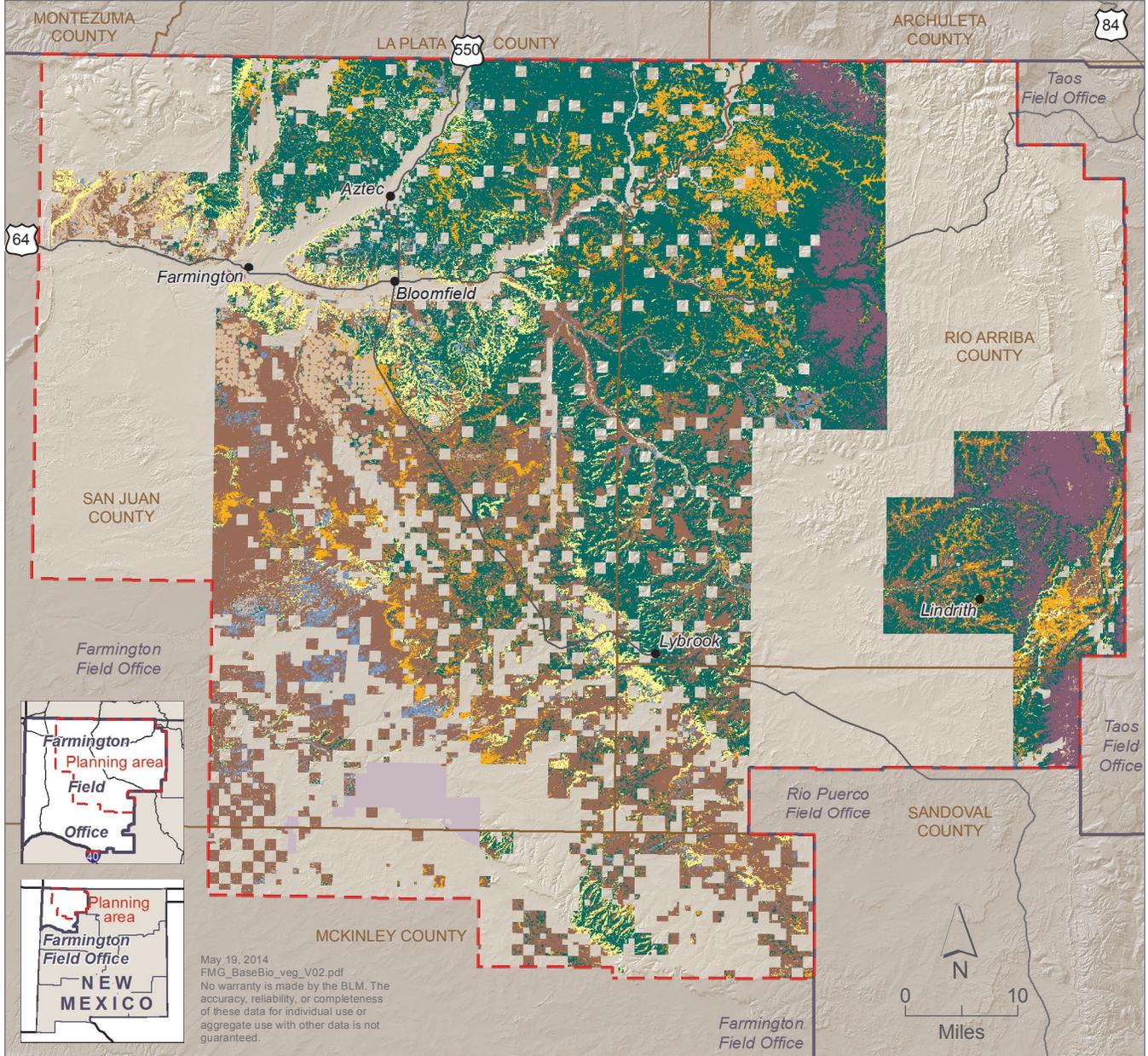
Source: BLM GIS 2014, SWReGAP GIS 2004, NVC GIS 2014



# Vegetation Communities



The SWReGAP project used satellite imagery from 2000 - 2001 and digital elevation model (DEM) derived datasets (e.g. elevation, landform, aspect) to model and classify natural and semi-natural vegetation. Vegetation communities for the planning area are classified according to the National Vegetation Classification Standard.



- |   |   |   |                       |
|---|---|---|-----------------------|
|  | Rocky Mountain Two-needle Pinyon-Juniper Woodland             |  | Decision Area         |
|  | Great Basin and Intermountain Dry Shrubland Grassland         |  | Planning area         |
|  | Great Basin Intermountain Tall Sagebrush Shrubland and Steppe |  | National Park Service |
|  | Southern Rocky Mountain Lower Montane Forest                  |  | Field office boundary |
|  | Intermountain Basin Cliff, Scree and Rock Vegetation          |   |                       |
|  | Cool Semi-Desert Alkali-Saline Wetland                        |   |                       |
|  | Other vegetation  |   |                       |

Source: BLM GIS 2014, NVC GIS 2014, SWReGAP GIS 2004

The Rocky Mountain Two-Needle Pinyon-Juniper Woodland plant community type covers an estimated 874,460 acres within the planning area, the greatest area of all vegetation communities. Trees in these woodlands can form a dense canopy or be fairly open. Dense stands generally occur above 6,600 feet in elevation and the dominant tree species are Colorado pinyon (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), Gambel's oak (*Quercus gambellii*), and true mountain mahogany (*Cercocarpus montanus*), with occasional stringers of ponderosa pine (*Pinus ponderosa*). Common groundcover species are mutton grass (*Poa fendleriana*), prairie Junegrass (*Koeleria macrantha*), buckwheat (*Eriogonum* spp.), and penstemon (*Penstemon* spp.; BLM 1997). More open stands are located on drier sites below 6,600 feet elevation where pinyon, Utah juniper, big sagebrush (*Artemisia tridentata*) and antelope bitterbrush (*Purshia tridentata*) are common. Blue grama (*Bouteloua gracilis*) and galleta (*Pleuraphis jamesii*) are the principal grass species. Relatively large stands of big sagebrush can occur within the open woodlands (BLM 1997).

An estimated 696,330 acres of Great Basin and Intermountain Dry Shrubland and Grassland are found within planning area boundaries. There are large tracts of desert grassland vegetation throughout the central portion of the planning area. Blue grama, bottlebrush squirreltail (*Elymus elymoides*), needle-and-thread (*Stipa comata*), Indian ricegrass (*Achnatherum hymenoides*), galleta, and dropseeds (*Sporobolus* spp.) are common. Broom snakeweed (*Gutierrezia sarothrae*) occurs in most areas along with scattered big sagebrush and one-seed juniper (*Juniperus monosperma*) on ridges and rocky areas (BLM 1988).

The Intermountain Basin Cliff, Scree, and Rock Vegetation community covers approximately 175,930 acres within the planning area. This community generally occurs at elevations ranging from approximately 4,800 to 7,000 feet. It is generally a rough, broken badlands, sparsely vegetated, highly dissected and eroded into a series of low badland hills and gullies interspersed by somewhat sandy alluvial deposits. More of the surface area is comprised of bare ground and rock than vegetation. Large bare areas with only biological crust are not uncommon. Plant communities of the badland complex are typically sparsely vegetated, often with less than 10 percent vegetation cover but occasionally up to 30 percent. Many endemic species in northwest New Mexico occur in this vegetation community. Species composition is highly variable but may include Utah juniper, Colorado pinyon, fourwing saltbush (*Atriplex canescens*), Indian ricegrass, galleta, winterfat (*Krascheninnikovia lanata*), Mormon tea (*Ephedra* spp.), alkali sacaton (*Sporobolus airoides*), globemallow (*Sphaeralcea* spp.), and snakeweed.

The Great Basin and Intermountain Tall Sagebrush Shrubland and Steppe plant community covers approximately 171,560 acres total within the planning area. The major shrub species in this type are Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) with lesser amounts of basin big sagebrush (*A.t.* ssp. *tridentata*) and black sage (*Artemisia nova*). Fourwing saltbush, antelope bitterbrush (*Purshia tridentata*), and winterfat also occur. Other grass and forb species include western wheatgrass (*Pascopyrum smithii*), galleta, blue grama, Indian ricegrass, sand dropseed (*Sporobolus cryptandrus*), biscuit root (*Lomatium* spp.), woolly plantain (*Plantago patagonica*), milkvetch (*Astragalus* spp.) species, tansyaster (*Machaeranthera* spp.), and members of the borage (*Cryptantha* spp.) and sunflower (*Asteraceae* spp.) families. Big sagebrush naturally occurs in canopy covers of 25 to 35 percent in the absence of grazing and co-occurs with understory grassland species (Welch and Criddle 2003).

Southern Rocky Mountain Lower Montane Forest covers approximately 141,900 acres of federal mineral estate within the analysis area. It is characterized by mixed conifer forests, including ponderosa pine forests. Common tree species are ponderosa pine, pinyon pine, and Douglas fir (*Pseudotsuga menziesii*). The shrub component is dominated by antelope bitterbrush, true mountain mahogany, and Gambel's oak with grass cover dominated by mutton grass and western wheatgrass.

Cool Semi-Desert Alkali-Saline Wetland covers 56,180 acres and is dominated by black greasewood (*Sarcobatus vermiculatus*) vegetation. This community contains fourwing saltbush, Mormon tea, yellow rabbitbrush (*Chrysothamnus viscidiflorus*), and big sagebrush to a lesser degree. Other species include alkali sacaton, western wheatgrass, galleta, Indian ricegrass, and sand dropseed. This vegetation community is found predominantly in valley bottoms but can also be on fans with slopes less than eight percent as well as plateaus and mesas.

Great Basin Saltbrush Scrub covers 40,690 acres and is characterized by saltbush shadscale and winterfat. Other common species that occur include fourwing saltbush, Mormon tea, big sagebrush, galleta, Indian ricegrass, scarlet globemallow, snakeweed, and mustard.

Agricultural Vegetation covers 38,900 acres within the analysis area, mainly irrigated cropland adjacent to the San Juan, Animas, La Plata, and Los Piñas Rivers.

## 2.2.1 Sensitive Habitat or Vegetation Communities in the Planning Area

Riparian areas are defined by the BLM as “a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittent flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas” (Leonard et al. 1992). Wetlands are regulated by the US Army Corps of Engineers (USACE) and defined as “those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (USACE 1987).

BLM Technical Manual 1737 defines riparian areas as a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil are excluded. Riparian-wetland areas are grouped into two major categories: 1) lentic (standing water habitat such as lakes, ponds, seeps, bogs, and meadows) and 2) lotic (running water habitat such as rivers, streams, and springs; BLM 1993).

Within the planning area, the BLM defines riparian areas as all perennial systems of 0.12 mile or longer, all intermittent systems (30 days continuous flow) of 0.12 mile or longer, or ephemeral systems that support riparian vegetation communities for 0.12 mile or longer and support at least 3 of the following plants:

- Coyote willow (*Salix exigua*)
- Peach leaf willow (*Salix amygdaloides*)
- Baltic rush (*Juncus arcticus*)
- American rush (*Schoenoplectus americanus*)
- Cloaked bulrush (*Scirpus pallidus*)
- Three-square bulrush (*Schoenoplectus pungens*)
- Cattail (*Typha latifolia*)
- Reed canarygrass (*Phalaris arundinacea*)
- Common reed (*Phragmites australis*)
- Boxelder (*Acer negundo*)
- Cottonwood (*Populus* spp. var. *fremontii*, *angustifolia*, *wislizenii*, *sargentii*)

Any areas found to be meeting the above criteria may be designated as riparian areas within the planning area. The BLM developed a Riparian Habitat Management Plan (BLM 2000), which was incorporated into the 2003 RMP and will be updated with the RMPA in progress.

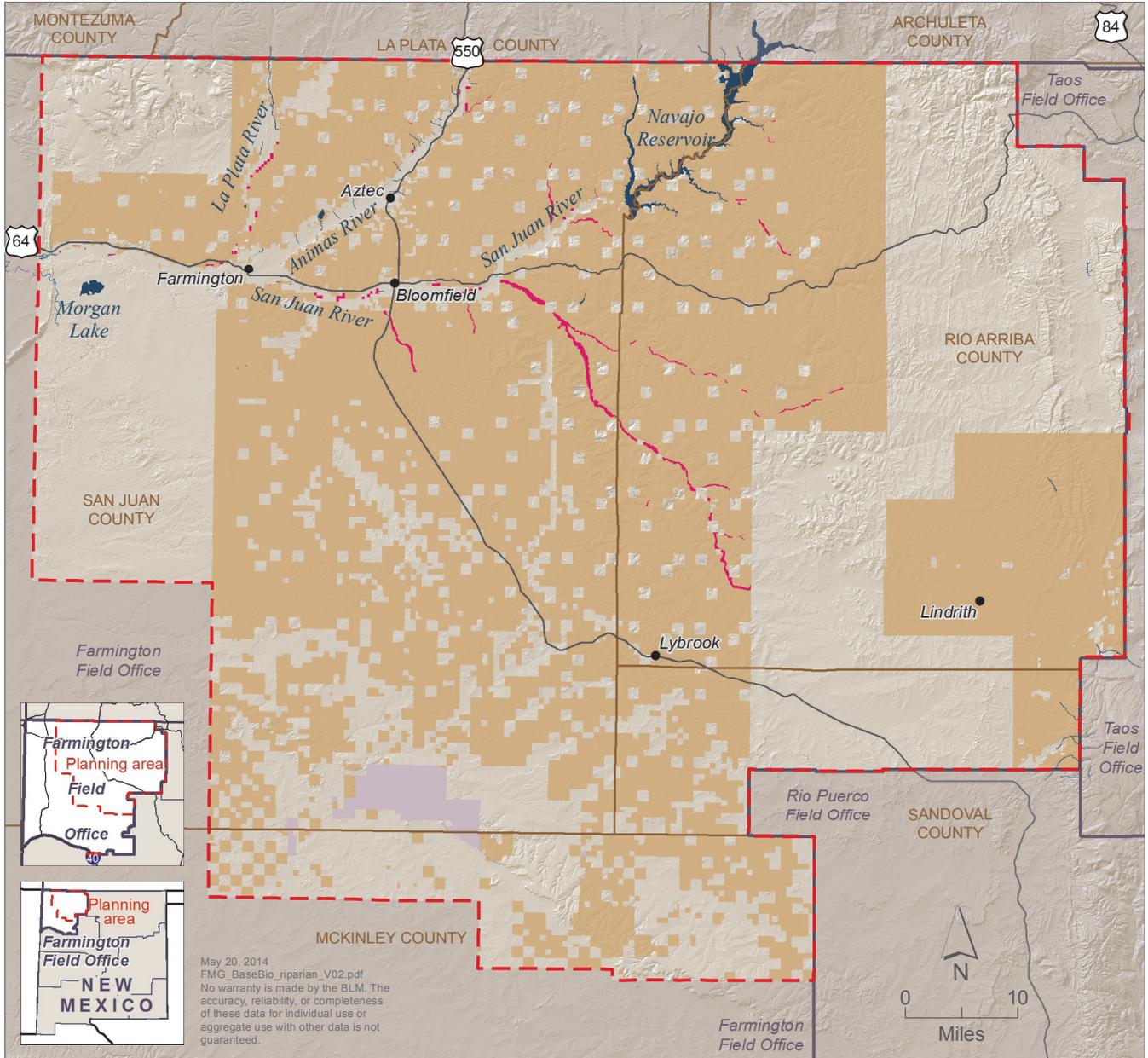
BLM-managed riparian areas are located on 30 river tracts and portions of 9 ephemeral stream reaches within the planning area as shown in **Figure 2-2** (Lakes, Rivers, and Riparian Areas). Riparian areas associated with the river tracts comprise nearly 1,000 acres adjacent to the Animas, San Juan, and La



# Lakes, Rivers, and Riparian Areas



Riparian areas are transitional wetlands between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, and the shores of lakes and reservoirs with stable water levels.



Source: BLM GIS 2014, NHD GIS 2014

- River
- Lake or reservoir
- Riparian areas
- Planning area
- Decision area
- National Park Service
- Field office boundary

Plata Rivers (**Table 2-2**, Riparian Areas in the Planning Area). An estimated 96.4 miles of ephemeral streams occur, including Blanco Reach, Carrizo Canyon, Ditch Canyon, Gobernador Canyon, Kutz Canyon, La Jara Canyon, Largo Canyon, Palluche Canyon, and Simon Canyon (BLM 2000).

**Table 2-2. Riparian Areas in the Planning Area**

Riparian Areas (number of segments)	Length (miles)	Size (acres)	Rating
<b>River Tracts</b>			
Animas River (3)	1.14	42.82	All segments in PFC <sup>1</sup>
Wheeler	0.28	4.71	PFC
Bradshaw	0.75	31.45	PFC
Schneider	0.24	17.22	PFC
Jewett Valley	0.48	21.74	PFC
Subdivision	0.76	14.04	PFC
La Plata (San Juan)	0.38	12.49	PFC
Gallegos	0.86	99.11	PFC
Desert Hills	0.38	35.31	PFC
Bull Calf	0.35	36.55	PFC
Kutz	0.86	76.65	PFC
South Bloomfield	0.62	68.64	PFC
Bloomfield	0.38	44.99	FAR (static)
Valdez	0.76	97.78	FAR (downward)
Blanco	0.67	193.99	FAR (upward)
Santa Rosa	0.24	12.55	FAR (static)
Archuleta	0.1	12.96	PFC
Old Road	0.1	3.57	PFC
Simon River Tract	1	46.42	PFC
La Plata River (11)	3.17	126.69	8 PFC, 2 FAR (static), and 1 FAR (upward)
<b>Ephemeral and Intermittent Systems</b>			
Carrizo Canyon (8)	23.25	950.82	1 PFC, 5 FAR (upward), and 2 FAR (static)
Largo Canyon (11)	32.25	3,783.68	1 PFC, 9 FAR (upward), and 1 FAR (static)
Pump (6)	5.55	221.51	2 PFC, 3 FAR (upward), and 1 NF
La Jara (5)	6.5	224.02	3 FAR (upward) and 2 FAR (static)
Blanco Wash	0.75	29.96	FAR (upward)
Gobernador (3)	3.95	191.36	2 FAR (upward) and 1 FAR (static)
Ditch Canyon	4	47.22	FAR (upward)
Palluche	0.5	27.16	FAR (static)
Simon Canyon Wash	1	15.14	PFC
La Fragua	0.6	18.84	FAR (static)
Cutter Canyon	0.75	24.43	PFC
Tapicito (3)	2.5	92.18	2 FAR (upward) and 1 FAR (static)
Bancos Canyon	1	8.05	PFC
Cabresto Canyon	0.75	16.92	FAR (static)
McDermott Wash	0.5	3.37	FAR (upward)
Gonzales Wash	2.5	25.28	FAR (upward)
Armenta Wash	3	71.26	FAR (downward)
Desert Hills Overflow	0.75	11.01	PFC
Decker Spring	0.25	3.61	FAR (upward)
Kutz Wash (2)	6	499.75	Both FAR (upward)
<b>Wetlands</b>			
Desert Hills Wetland	--	10.88	PFC
Carrizo Oxbow wetland	--	20.79	PFC

Source: BLM 2014a

<sup>1</sup>PFC = proper functioning condition; NF = nonfunctional; FAR = functioning at risk; upward = upward trend in condition; downward = downward trend in condition; static = no apparent trend in condition.

Naturally occurring wetlands include the 15-acre Carrizo Oxbow wetland and the 10-acre Desert Hills wetland. Human-made wetlands have been constructed in coordination with the US Army Corps of Engineers (USACE), New Mexico Highway Department, and the City of Bloomfield to fulfill Clean Water Act mitigation requirements. These wetlands include the 10-acre Valdez wetland and the 6-acre Blanco wetland. Common plant species in riparian areas in the planning area are cottonwoods, willows (*Salix* spp.), saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), sedges (*Carex* spp.), rushes (*Juncus* spp.), reed canarygrass, cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), alkali sacaton, galleta grass, Indian ricegrass, sagebrush (*Artemisia* spp.), black greasewood, and fourwing saltbush.

Springs also occur within the planning area and are mapped (Figure 2-2). Springs are important components of the desert ecosystem for a number of reasons. Historically, springs were the only reliable source of water for humans and animals and have become known as “biodiversity hotspots” that support a large proportion of the aquatic and riparian species in arid regions. Several hundred species or subspecies of fishes, mollusks, crustaceans, aquatic insects, and plant species are endemic to western US springs (Sada and Pohlman 2002).

Plant community structure and function are determined largely by the hydrology of the system: depth to water table, frequency of flooding and ponding and the occasional complete alteration of the channel (e.g., channel position and function may be altered by flood events as the channel constantly seeks equilibrium with its flow regime and constraining landscape features). Flooding of the riparian zone affects soil chemistry by producing anaerobic conditions, importing and removing organic matter, and replenishing nutrients. The varying hydrology for active floodplains and one-hundred year floodplains result in different plant communities.

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### **Active Floodplain**

Species assemblages in the active floodplain are variable and more based upon seasonality of water and elevation rather than soil type, but generally include a cottonwood-willow dominated community. Shrubs and trees include willows (coyote [*Salix exigua*], Goodding’s [*S. gooddingii*], peachleaf [*S. amygdaloides*], Bebb’s [*S. bebbiana*], and other willows), cottonwood (Rio Grande [*Populus deltoides* ssp. *wislizeni*] and narrow leaf cottonwood [*P. angustifolius*]), stretchberry (the native New Mexico olive, *Forestiera pubescens*), and invasive and non-natives Russian olive and tamarisk (saltcedar). Tree species diversity is low, however age class and structural diversity is high. Younger recruits are found closer to the active channel while older, more mature cottonwoods can be hundreds of yards from the active channel. The character of the understory is dependent on previous disturbances (e.g., fire, human disturbance, livestock grazing, flooding) but typically include forbs, grasses, and graminoids such as horsetail (*Equisetum arvense*), rush, cattails, spikerush (*Eleocharis* spp.), sedges, galleta grass, sunflowers (*Helianthus* spp.), Rocky Mountain beeplant (*Cleome serrulata*), saltgrass (*Distichlis spicata*), scratchgrass (alkali muhly-*Muhlenbergia asperifolia*), reed canarygrass, common reed; invasive non-natives Russian thistle (*Salsola tragus*), Russian knapweed (*Acroptilon repens*) or other knapweed species, and downy brome (cheatgrass-*Bromus tectorum*) may be present in disturbed sites.

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### **One-Hundred Year Floodplain**

Species assemblages in the one-hundred year floodplain are generally more associated with Blancot or Notal soil types and support a more grass dominated community, but can include shrubs and trees. The species found are those that are tolerant of drier conditions yet have a root structure capable of withstanding infrequent high flow events. Species may include willows (coyote, peachleaf, Bebb’s, and other willows), cottonwood (Rio Grande and narrow leaf cottonwood), stretchberry (the native New Mexico olive), and invasive and non-native Russian olive and tamarisk (saltcedar). Graminoids include spikerush, sedges, rushes (in wetter low-lying areas in the floodplain); other grasses and forbs include scratchgrass, alkali sacaton, spike dropseed (*S. contractus*), giant dropseed (*S. giganteus*), sand dropseed, Indian ricegrass, reed canarygrass, Rocky Mountain beeplant, lupine (*Lupinus* spp.), evening primrose (*Oenothera* spp.), buckwheat, Indian paintbrush (*Castilleja* spp.), and hoary tansyaster (*Machaeranthera canescens*). In disturbed sites, invasive/non-native downy brome (cheatgrass), Russian thistle and Russian knapweed or other knapweed species may be present. In dryer portions of the

floodplain, native shrubs rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush big sagebrush, skunkbush (*Rhus aromatica*), black greasewood, and fourwing saltbush can be found.

Generally a riparian-wetland area in a physically nonfunctioning condition does not provide quality habitat conditions. A riparian-wetland area that has recovered to a proper functioning condition (PFC) would either be providing quality habitat conditions or would be moving in that direction if recovery is allowed to continue. A riparian-wetland area that is functioning-at-risk (FAR) would likely lose any habitat that exists in a 25- to 30-year flow event.

Upland plants, such as rabbitbrush, have moved into some of the riparian areas. However, native vegetation is evident and increasing in some areas due to the exclusion of livestock or limitations on grazing during the plant growing season from May 1 to September 30. Vegetation in these areas typically grows in zones from wetter to dryer, starting with sedges and rushes common in the wettest zone and willows, grasses, saltcedar, rabbitbrush, and salt grass growing in drier areas. A few scattered remnant cottonwoods are present (BLM 2000).

PFC surveys were first conducted on BLM-managed lands in the planning area in 1994. Since 1998, PFC surveys have been conducted on an annual basis, assessing a portion of the reaches each year. During the latest PFC surveys from 2010 to 2012, 23 of the river tracts were rated as PFC, 2 were rated as FAR with an upward trend, 4 were rated as FAR with no apparent trend, and 1 was rated as FAR with a downward trend (Table 2-2). Of the intermittent and ephemeral systems, 8 were rated as PFC, 31 were rated as FAR with an upward trend, 10 were rated as FAR with no apparent trend, 1 was rated as FAR with downward trend, and 1 was rated nonfunctional. Both wetlands were rated as PFC. No surveys were conducted in 2013 due to unavailable resources.

The PFC surveys in the 1990s revealed that significant portions of riparian areas were in less than PFC. BLM staff began a process to evaluate the cause and effects of management techniques in relationship to riparian conditions. Management actions implemented as a result of the evaluation process include a decision in 1998 to defer all designated riparian areas from grazing during the plant growing season from May 1 to September 30, the development of an EIS for Riparian and Aquatic Habitat Management in the FFO (BLM 2000), and the development of a riparian monitoring plan.

In addition to riparian and wetland areas, sensitive wildlife habitats are also present in the planning area. The pinyon-juniper and Great Basin Desert Scrub plant communities in the northeastern part of the planning area provide habitat for herds of wintering and resident populations of mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*). Most of the National Forest System land within the project boundary is managed as year-round big game and critical wintering habitat.

Rattlesnake Canyon and Crow Mesa Wildlife Management Areas are managed for big game and other wildlife on BLM-managed land (BLM 1997,1999). These areas are characterized by deep canyons, pinyon-juniper woodlands with stringers of ponderosa pine, and areas dominated by big sagebrush. The habitats are managed to provide forage to sustain and increase the year-round resident mule deer and elk populations, contribute to the stabilization of the watersheds, and improve existing biological diversity. The condition of wildlife habitats are affected by multiple uses of the land, including mineral extraction activities, livestock grazing, recreation, and fire management, as well as habitat treatments.

## 2.2.2 Noxious Weeds and Invasive Species

Invasive plants are found in the San Juan Basin, particularly in areas disturbed by surface activities. These plants displace native plant communities and degrade wildlife habitat. A total of 212 invasive and poisonous weeds have been identified on BLM-managed land (Heil and White 2000). **Table 2-3** (New Mexico Noxious Weeds), lists the New Mexico designated noxious weeds, the current management classes for each species, and their occurrence within the planning area. The New Mexico statewide list is the baseline document that the BLM uses to establish their primary noxious weed species of concern.

**Table 2-3. New Mexico Noxious Weeds**

Common Name	Scientific Name	Class	Occurrence <sup>1</sup>
African rue	<i>Peganum harmala</i>	B	X
Alfombrilla	<i>Drymaria arenariodes</i>	A	
Black henbane	<i>Hyoscyamus niger</i>	B	X
Bull thistle	<i>Cirsium vulgare</i>	C	X
Camelthorn	<i>Alhagi pseudalhagi</i>	A	X
Canada thistle	<i>Cirsium arvense</i>	A	X
Cheatgrass	<i>Bromus tectorum</i>	C	X
Chicory	<i>Cichorium intybus</i>	B	X
Crimson fountaingrass	<i>Pennisetum setaceum</i>	WL	
Dalmatian toadflax	<i>Linaria dalmatica</i>	A	
Diffuse knapweed	<i>Centaurea diffusa</i>	A	X
Dyers weed	<i>Isatis tinctoria</i>	A	
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	A	
Giant cane	<i>Arundo donax</i>	WL	
Giant salvinia	<i>Salvinia molesta</i>	A	
Halogeton	<i>Halogeton glomeratus</i>	B	X
Hoary cress	<i>Cardaria</i> spp.	A	X
Hydrilla	<i>Hydrilla verticillata</i>	A	
Jointed goatgrass	<i>Aegilops cylindrica</i>	C	X
Leafy spurge	<i>Euphorbia esula</i>	A	X
Malta starthistle	<i>Centaurea melitensis</i>	B	
Meadow knapweed	<i>Centaurea pratensis</i>	WL	
Musk thistle	<i>Carduus nutans</i>	B	X
Oxeye daisy	<i>Leucanthemum vulgare</i>	A	
Pampas grass	<i>Cortaderia sellonana</i>	WL	
Parrotfeather	<i>Myriophyllum aquaticum</i>	A	
Perennial pepperweed	<i>Lepidium latifolium</i>	B	X
Poison hemlock	<i>Conium maculatum</i>	B	
Purple loosestrife	<i>Lythrum salicaria</i>	A	
Purple starthistle	<i>Centaurea calcitrapa</i>	A	
Quackgrass	<i>Elytrigia repens</i>	WL	
Ravenna grass	<i>Saccharum ravennae</i>	A	
Russian knapweed	<i>Acroptilon repens</i>	B	X
Russian olive	<i>Elaeagnus angustifolia</i>	C	X
Sahara mustard	<i>Brassica tournefortii</i>	WL	
Saltcedar	<i>Tamarix</i> spp.	C	X
Scotch thistle	<i>Onopordum acanthium</i>	A	X
Siberian elm	<i>Ulmus pumila</i>	C	X
Spiny cocklebur	<i>Xanthium spinosum</i>	WL	
Spotted knapweed	<i>Centaurea biebersteinii</i>	A	X
Teasel	<i>Dipsacus fullonum</i>	B	
Tree of heaven	<i>Ailanthus altissima</i>	B	X
Wall rocket	<i>Diploaxis tenuifolia</i>	WL	
Yellow starthistle	<i>Centaurea solstitialis</i>	A	X
Yellow toadflax	<i>Linaria vulgaris</i>	A	

Source: BLM 2014b; New Mexico Department of Agriculture 2009

<sup>1</sup> Includes species that occur or have occurred in the planning area

The State of New Mexico places designated invasive plants into four categories:

- **Class A:** Currently not present in New Mexico or has limited distribution
- **Class B:** Limited to portions of the state. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread
- **Class C:** Widespread. Management decisions for these species should be determined at the local level based on feasibility of control and level of infestation
- **Watch List:** Species of concern with the potential to become problematic. More data are needed to determine if these species should be listed

The BLM controls invasive plant species on BLM-managed lands through cooperative agreements with the San Juan County Soil and Water Conservation District. In addition to county agencies, the BLM works with other federal and state agencies, management groups, private landowners, and industry cooperators. The BLM also addresses invasive plant management by incorporating prevention and control measures in realty, wildlife, range, recreation, oil and gas, and other mineral-related actions. Generally speaking, county agencies and pesticide use proposals from resource users have not been able to meet all the weed control needs in the planning area.

**Table 2-4**, Noxious Weeds Inventoried in the Decision Area, lists the noxious weeds that have been inventoried in the planning area. Of these species, halogeton, musk thistle, and Russian knapweed are most prevalent, but the inventory list far from comprehensive. Cheatgrass, for example, is much more widespread than indicated in this inventory.

**Table 2-4. Noxious Weeds Inventoried in the Decision Area**

Common Name	County	Acres
Black henbane	Rio Arriba	0.1
Canada thistle	Rio Arriba	41
	San Juan	15
Cheatgrass	Rio Arriba	0.2
	San Juan	1.9
Diffuse knapweed	San Juan	0.3
Halogeton	McKinley	18
	Rio Arriba	27
	San Juan	1,020
	Sandoval	0.4
Hoary cress	Rio Arriba	2.5
	San Juan	4.5
Musk thistle	Rio Arriba	252
	San Juan	555
Russian knapweed	Rio Arriba	110
	San Juan	463
	Sandoval	0.1
Russian olive	Rio Arriba	0.4
	San Juan	54
Saltcedar	Rio Arriba	28
	San Juan	14
Scotch thistle	Rio Arriba	24
	San Juan	63
Spotted knapweed	San Juan	1

Source: BLM GIS 2014

# **Chapter 3: Fish and Wildlife**



## 3.1 GENERAL DISCUSSION OF FISH AND WILDLIFE/HABITATS

### 3.1.1 Fisheries

The BLM manages a small amount of fisheries habitat on small, generally isolated tracts of land mostly along the San Juan River. Some of this land on the San Juan upstream from Archuleta, New Mexico, provides good habitat for rainbow trout (*Oncorhynchus mykiss*). Further downstream, the water temperature rises and the river bottom is covered with mostly mud as opposed to the gravel/cobble substrate upstream. The general absence of a substrate (gravel/cobble) suitable for the production of macroinvertebrates precludes the establishment of any significant trout populations in the area downstream from Archuleta. However, native species such as the flannelmouth (*Catostomus latipinnis*) and bluehead (*C. discobolus*) suckers are abundant in this area.

The State of New Mexico classifies the Navajo Reservoir as both a cold water and a warm water fishery (USBR 1999). The reservoir also carries a Class 1 supporting warm aquatic life by the State of Colorado (USBR 1999). Kokanee salmon (*Oncorhynchus nerka*), rainbow trout, brown trout (*Salmo trutta*), and northern pike (*Esox lucius*) comprise the primary cold water game fish species in the reservoir. Warm water game fish species include smallmouth bass (*Micropterus dolomieu*), largemouth bass (*M. salmoides*), bluegill (*Lepomis macrochirus*), white and black crappie (*Pomoxis annularis* and *P. nigromaculatus*), channel catfish (*Ictalurus punctatus*), and black bullhead (*Ameriurus melas*). Roundtail chub (*Gila robusta*), bluehead sucker, and flannelmouth sucker are nongame species of concern (USBR 1999). Refer to Section 2.1.12, Special Status Species, of the Assessment of the Management Situation document regarding sensitive fish species.

Stocking efforts from the Colorado Parks and Wildlife and the New Mexico Department of Game and Fish supports Kokanee salmon populations in the reservoir. Rainbow trout levels are attributed to New Mexico Department of Game and Fish stocking efforts, while brown trout and northern pike populations are supported through migrations from adjacent tributaries. The warm water fishery of the Navajo Reservoir is sustained through natural reproduction. Fish harvesting patterns fluctuate temporally due to accompanying species patterns. Restrictions are implemented for kokanee salmon during the fall and in the spring for trout and other fishes to protect specific spawning behaviors.

The San Juan River, prior to the completion of the Navajo Dam (1962), was warm with high sediment flows typical of rivers in the American southwest (Wethington and Wilkinson 2005). The original hydrograph was characterized by large spring peak flows from snowmelt, low summer and winter base flows, and acute high-volume summer and fall flows from storm events. These conditions supported native warm water fish species, see **Table 3-1** (Native Fish Species of the San Juan River Basin) for a list of native warm water fish with the potential to inhabit the planning area.

**Table 3-1. Native Fish Species of the San Juan River Basin**

Species	Status
Bluehead Sucker	Abundant, generally distributed and typically numerous
Bonytail	Endangered, United States
Colorado Pikeminnow	Endangered, United States
Colorado River Cutthroat Trout	Protected, Colorado
Flannelmouth Sucker	Abundant, generally distributed and typically numerous
Mottled Sculpin	Rare, not generally distributed and never numerous
Razorback Sucker	Endangered, United States
Roundtail Chub	Protected, New Mexico
Speckled Dace	Common, generally distributed but typically not numerous

Source: SJRRIP 2002

Dam operations following the opening of the Navajo Dam substantially altered the hydrograph impacting native fish species downstream of the dam (Wethington and Wilkinson 2005). High sediment loads were captured in the newly formed reservoir behind the dam. Deep water releases from the reservoir changed the once warm water San Juan River to a cold water river with cobble substrate below the dam. The physical alterations to the river provided the conditions to support a flourishing trout fishery for rainbow (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) on the San Juan River from 1962 until 1991 (Wethington and Wilkinson 2005).

The San Juan River Basin Recovery Implementation Program was established in 1991 to protect and recover Colorado Pikeminnow and razorback sucker in the San Juan River Basin while water development proceeds in compliance with all applicable federal and state laws, including fulfillment of federal trust responsibilities to several Native American tribes including Southern Utes, Ute Mountain Utes, Jicarillas, and the Navajos. Actions taken under this program to recover Colorado Pikeminnow and razorback sucker are anticipated to also benefit other native fishes in the basin and prevent future listings under ESA (SJRRIP 2002).

In 1992, the San Juan River base flows were reduced to mimic the original hydrograph for meeting the habitat requirements of federally protected native fish species downstream (Wethington and Wilkinson 2005). For further discussion regarding threatened, endangered, and special status fish species, refer to Section 2.1.12, Special Status Species, of the Assessment of the Management Situation. From 1992 until recently, the base flows of the San Juan River averaged around 500 cubic feet per second; habitat studies conducted by the US Bureau of Reclamation (USBR) showed that trout habitat downstream of the Navajo Dam was maximized when discharge ranged from 1,000 to 2,000 cubic feet per second (Wethington and Wilkinson 2005). Since September 24, 2013, USBR has been releasing 250 cubic feet per second from the Navajo Reservoir to meet the San Juan River Basin Recovery Implementation Program recommended target base flow of between 500 cubic feet per second and 1,000 cubic feet per second (USBR 2014). In 2005, New Mexico Department of Game and Fish (Wethington and Wilkinson 2005) estimated that a reduction in base flows in the San Juan River to 250 cubic feet per second would reduce trout habitat by 34 percent and reduce available aquatic insects as well.

Macroinvertebrate surveys are conducted annually in the cold water fishery section of the San Juan to assess the abundance of species suitable for trout food and the overall water quality and health of the aquatic ecosystem. To date these surveys have revealed a healthy insect population with a good representation of species. Mayflies (*Ephemeroptera* sp.), caddisflies (*Trichoptera* sp.), stoneflies (*Plecoptera* sp.), and black flies (*Simuliidae* sp.) are among the more prominent species found on the BLM-managed stretch of the river near Simon Canyon. Electrofishing surveys conducted by the New Mexico Department of Game and Fish found about 40 percent of the trout in the Simon Canyon area to be rainbow and 60 percent to be brown trout. Other species are listed in **Table 3-2** (Non-Native Fish Species of the San Juan River Basin). Fish densities in this stretch of the river range from about 5,500 to 6,500 fish per mile (Wethington, 2014).

**Table 3-2. Non-native Fish Species of the San Juan River Basin**

Species	Status
Black Crappie	Navajo Reservoir, may rarely enter riverine habitats
Black Bullhead	Rare, not generally distributed and never numerous
Bluegill	Rare, not generally distributed and never numerous
Brown Trout	Common, generally distributed and typically not numerous
Channel Catfish	Abundant, generally distributed and typically numerous
Common Carp	Abundant, generally distributed and typically numerous
Snake River Cutthroat Trout	Common, generally distributed and typically not numerous
Fathead Minnow	Common, generally distributed and typically not numerous
Golden Shiner	Navajo Reservoir, may rarely enter riverine habitats
Green Sunfish	Rare, not generally distributed and never numerous
Kokanee Salmon	Navajo Reservoir, may rarely enter riverine habitats
Largemouth Bass	Rare, not generally distributed and never numerous
Mosquitofish	Common, generally distributed and typically not numerous

**Table 3-2. Non-native Fish Species of the San Juan River Basin**

Species	Status
Northern Pike	Lake Powell and Navajo Reservoir, may rarely enter riverine habitats
Plains Killifish	Rare, not generally distributed and never numerous
Rainbow Trout	Common, generally distributed and typically not numerous
Red Shiner	Common, generally distributed and typically not numerous
Sand Shiner	Rare, not generally distributed and never numerous
Smallmouth Bass	Rare, not generally distributed and never numerous
Striped Bass	Lake Powell, may rarely enter riverine habitats
Threadfin Shad	Lake Powell, may rarely enter riverine habitats
White Crappie	Lake Powell and Navajo Reservoir, may rarely enter riverine habitats
White Sucker	Rare, not generally distributed and never numerous

Source: SJRRIP 2002

### 3.1.2 Wildlife

The BLM strives to maintain a biologically diverse complement of endemic wildlife species. Consequently, a variety of monitoring and survey efforts are undertaken each year. Generally, the focus of these efforts has been upon species with a special status designation (i.e., threatened, endangered, or sensitive, or game animals such as mule deer, elk, antelope, and wild turkey). However, in recent years, nongame species (primarily avian) have received more attention. See the Migratory Bird section below for more information about avian populations in the planning area. Important wildlife species within the planning area include mule deer, elk, Merriam's wild turkey (*Meleagris gallopavo merriami*), and pronghorn antelope (*Antilocapra americana*). Mountain lion (*Felis concolor*) and black bear (*Ursus americanus*) also inhabit the planning area.

The pinyon-juniper and Great Basin Desert Scrub plant communities in the northeastern part of the planning area provide habitat for a wide array of wildlife species; including large mammals such as mule deer, elk, black bear and mountain lion, and small mammals such as coyote, bobcat and gray fox. The population density of any of these species varies with the quality of the habitat (i.e. the juxtaposition of food, water, and cover).

Bat surveys in the planning area have detected 14 species, the most common of which were California myotis (*Myotis californicum*), long-legged myotis (*M. volans*), big brown bat (*Eptesicus fuscus*), and long-eared myotis (*M. evotis*; Gannon 1998). Bat surveys were also conducted in the Jicarilla Ranger District in 1998 with 9 species comprising 251 individuals captured. The big brown bat, long-eared bat, pallid bat (*Antrozous pallidus*), and fringed myotis (*Myotis thysanodes*) were the most common species identified in these surveys (Gannon 1998). It is expected that these species also occur in suitable habitat on the Santa Fe National Forest and within the Albuquerque Field Office.

Within the planning area, the BLM has established Specialty Designated Areas (SDAs) for the protection of wildlife habitat. The 2003 RMP designated nine wildlife SDAs; two additional SDAs were designated for recreation and wildlife. Management prescriptions included seasonal restrictions for drilling, seismic studies, work-over activities in the winter to coincide with critical activity of wildlife. The objective of designating SDAs in the planning area was to protect, maintain, and enhance the special resource values on BLM-managed lands. Other areas that have special resource values are identified where some uses may be restricted in order to protect the resources. These areas include ACECs, Wilderness Areas, Wilderness Study Areas, Special Recreation Management Areas, and Research Natural Areas, Wildlife Areas, and Riparian Areas.

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### 3.1.2.1 **Big Game Occurrence and Habitats**

Mule deer and elk are widely distributed throughout the planning area. The areas of highest concentrations are those woodland areas of more rugged topography, in particular the area east of Highway 550 and north of Highway 64. The number of elk and their distribution in the planning area has increased greatly over the past 30 years. Resident populations in the Largo and Cereza Canyon drainages and the Rattlesnake Canyon and Middle Mesa Wildlife SDAs are well established. Resident populations of both deer and elk in the Carracas Mesa, Cereza Canyon and Rosa Mesa Wildlife SDAs fluctuate upward during most winters due to migrations from southern Colorado and the Jicarilla Ranger District and Jicarilla Apache Reservation to the east.

Resident numbers of deer vary widely on the landscape with some drainages showing considerable and pervasive use of the available forage while other areas reflect only light use. Based on helicopter surveys conducted over the past 20 years by the New Mexico Department of Game and Fish and the BLM in a core use area within the Rosa Unit, the trend in total deer numbers is slightly down. Similarly, the fawn to doe ratio is trending slightly downward but for the 20-year period has averaged 59 fawns per 100 does. In the Thomas Canyon Wildlife area, helicopter survey data for the last 10 years indicates a fawn to doe ratio of 61 fawns per 100 does with a slight downward trend. Total deer numbers in this area are also trending downward. Survey data for the remainder of the planning area is less complete. However, based on anecdotal reports and browse and pellet group studies, there has been a general decline in deer numbers. Conversely, there has been a significant increase in the numbers and distribution of elk in the planning area (Hansen 2014). An on-going deer study in the Rosa Wildlife Area to assess the impacts of yearlong drilling on deer has revealed a well-defined migration corridor being used by the deer wintering on BLM-managed lands in the Rosa and summer range in southern Colorado.

There are several populations of pronghorn antelope (*Antilocarpra americana*) in the planning area. The most prolific is the one in the Ensenada Mesa Wildlife SDA. This population numbers between 150 and 200 animals and appears to be increasing slightly. The New Mexico Department of Game and Fish allows limited entry hunting in this area. The only other viable population is a transitory herd that roams between the Ute Mountain Indian Reservation northwest of Farmington, New Mexico, and that portion of the planning area west of Highway 170 and north of Kirtland, New Mexico. This herd numbers about 50 animals and has limited potential for expansion due to urban sprawl and recurring incidents of poaching and thrill killing. In addition to these populations, there are remnants of 2 other populations, 1 near Huerfano Mesa, approximately 15 miles south of Bloomfield, New Mexico, and the other in the Star Lake area, approximately 20 miles south of Counselors, New Mexico (Hansen 2014).

Mountain lion (*Felis concolor*) and black bear (*Ursus americanus*) are also considered big game animals that occur in the planning area. Both species are doing well in the planning area. NMDGF allows hunting under a quota system whereby the season is closed when a specific number of animals have been harvested. The current annual harvest goals established by the New Mexico Department of Game and Fish for the area encompassed by the planning area are 20 bears and 42 mountain lions (Hansen 2014).

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### 3.1.2.2 **Migratory Birds**

A variety of migratory song bird species use habitats within the planning area for breeding, nesting, foraging, and migratory habitats. Migratory birds are protected under the MBTA. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that Federal actions evaluate the effects of actions and agency plans on migratory birds.

The New Mexico Partners in Flight (PIF, now called New Mexico Avian Conservation Partners) Bird Conservation Plan identifies a number of bird species within the Colorado Plateau physiographic region as priority species. A number of the highest priority species have been detected in the planning area. This group includes sage sparrow, mountain bluebird, loggerhead shrike, and gray vireo. The PIF has

identified the pinyon jay and western bluebird, which occur in the planning area, as having a high percentage (over 10 percent) of their US population. PIF suggests that New Mexico land managers have a high level of responsibility to maintain or increase the current populations of these species. The BLM will consider PIF's recommendations in its future management actions. In this regard, the BLM has been working in concert with the University of New Mexico during the past two years to locate and define colonial nest site characteristics for the purposes of constructing a habitat model that could be used as a planning tool to minimize the future impacts on pinyon jays. A third season of field work will be conducted during 2014.

Throughout the planning area, pinyon-juniper woodlands are the dominant habitat type. Studies regarding the habitat use by pinyon-juniper obligate bird species have been conducted within the planning area. In 2013, a study investigated nest-scale habitat use by pinyon jays and gray vireos at multiple study sites for each species (Johnson et al. 2013). Estimates indicated that pinyon jays nested in trees that were taller and had larger diameters than random trees within the colony. For pinyon jays, the authors recommended no net loss of mature Colorado pinyon or juniper (especially Utah juniper) trees in pinyon-juniper nesting habitat in the planning area. Additionally, they further recommended that size distributions on areas maintained for pinyon jay nesting colonies should leave all mature trees for nesting and for pinyon cone production. For the gray vireo study, estimates indicated that these birds nested in areas with slightly more trees than available habitat but selected nest trees with slightly smaller foliage diameter than randomly selected trees. The study authors recommended no net loss of juniper trees, especially in juniper-dominated woodlands, to support populations of nesting gray vireos. In addition, gray vireos should be considered where tree removal is proposed in pinyon-dominated landscapes in the planning area. Where tree removal activities may occur, they recommended maintaining similar tree densities as reported in this study (Johnson et al. 2013).

Another study was conducted in the Rattlesnake Canyon Habitat Management Area within the planning area designed to investigate the effects of energy extraction activities on avian communities in pinyon-juniper woodlands. The aim was to understand species' habitat use with respect to nest placement, nest site selection, and nesting success in pinyon and juniper trees and to evaluate the management implications of nesting habitat use (Francis et al. 2011). The results indicated that of all the nests in live trees, 86 percent were in junipers. The selection of juniper as a nest tree was significantly higher than expected from the region's pinyon-juniper ratio (1:1.06) for the community as a whole. Nest survival, however, was not higher in juniper than in pinyon trees for the nesting community as a whole. The high use of juniper as a nesting substrate differs from previous studies, which have suggested that a presence of pinyon is among the most important habitat features for many pinyon-juniper species. The authors recommended that because of their importance to nesting birds, managers should avoid preferential thinning of junipers within pinyon-juniper woodlands (Francis et al. 2011).

Waterfowl habitat within the planning area is limited to stock ponds, sumps, a few acres of wetlands in Carrizo and Pump Canyons, and scattered parcels of BLM-managed land along the San Juan, Animas, and La Plata Rivers. Potholes enclosed by a fence to exclude livestock have been constructed in the Largo Canyon drainage for the purpose of providing waterfowl nesting habitat. Mallards (*Anas platyrhynchos*), American widgeon (*Anas americana*), green wing teal (*A. crecca*), cinnamon teal (*A. cyanoptera*), common merganser (*Mergus merganser*), American coot (*Fulica americana*), and common goldeneye (*Bucephala clangula*) are species typically encountered on the water impoundments and rivers. Canada geese (*Branta canadensis*) are abundant on the San Juan and Animas Rivers and adjacent lands.

There are several species of upland game birds found on BLM-managed lands in the planning area. Gambel's quail (*Callipepla gambelii*) are common in many of the drainages that are well vegetated while scaled quail (*C. squamata*) tend to be more prevalent on drier sagegrass sites in the southern portion of the planning area. Scattered tracts of BLM-managed land adjacent to private agricultural lands support small numbers of ring-necked pheasants (*Phasianus colchicus*). Merriam's wild turkey are found year-round in the ponderosa and pinyon-juniper/Gambel's oak habitat types in the Laguna Seca Mesa and Rattlesnake Canyon Habitat Management Areas. Turkeys are also found on various BLM-managed river tracts along the San Juan and Animas Rivers. These birds are a mix of Rio Grande (*Meleagris gallopavo*

*intermedia*), Merriam's, and domestic (*Meleagris* spp.) turkeys. They are hunted over an unlimited entry season in the spring and fall. The majority of the planning area that supports wild turkeys (Rattlesnake Canyon Wildlife SDA) is closed to hunting.

The BLM has inventoried and monitored golden eagles (*Aquila chysaetos*), ferruginous hawks (*Buteo regalis*), prairie falcons (*Falco mexicanus*), and other raptors since 1981 (HawksAloft 1998, 1999, 2006; Animas 2013). Abundance and nesting success has fluctuated, likely due to weather conditions and cyclic prey abundance, including a drop associated with a crash in the desert cottontail population in 2009-2010. In 2014, the population of nesting golden eagles had rebounded and appeared to have recovered from the 2010 crash (Kendall 2014). Populations of ferruginous hawk and golden eagle have remained relatively stable, but golden eagles continue to show limited nesting success (Animas 2013). Owls recorded during Mexican spotted owl surveys included the long-eared owl (*Asio otus*), northern saw-whet owl (*Aegolius acadicus*), flammulated owl (*Otus flammeolus*), and great-horned owl (*Bubo virginianus*; BLM 1995). The northern goshawk (*Accipiter gentilis*), Cooper's hawk (*A. cooperii*), and red-tailed hawk (*Buteo jamaicensis*) are known to nest on the Jicarilla and Cuba Ranger District National Forest System land (Forest Service 2000).

The New Mexico PIF Priority Species List and the USFWS Birds of Conservation Concern list for Region 16 (Colorado Plateau) were used to identify potential priority species that could utilize habitats within the decision area. **Table 3-3** (Migratory Birds including New Mexico Partners in Flight Priority Species and USFWS Birds of Conservation Concern within the FFO) lists the migratory birds observed within the FFO and highlights which are New Mexico PIF Priority Species and the USFWS Birds of Conservation Concern species within the planning area.

**Table 3-3. Migratory Birds, including New Mexico PIF Species and USFWS Birds of Conservation Concern within the FFO**

Species	New Mexico Partners in Flight Priority Species	USFWS Birds of Conservation Concern (BCR Region 16)
American Bittern	X	X
Baird's Sparrow	X	
Bald Eagle	X	X
Band-tailed Pigeon	X	
Bank Swallow	X	
Bell's Vireo	X	
Belted Kingfisher	X	
Bendire's Thrasher	X	X
Black Rosy-Finch		X
Black Swift	X	
Black-chinned Hummingbird	X	
Black-throated Gray Warbler	X	
Black-throated Sparrow	X	
Bobolink	X	
Brewer's Sparrow		X
Broad-tailed Hummingbird	X	
Brown-capped Rosy-Finch	X	X
Bullock's Oriole	X	
Burrowing Owl		X
Cassin's Finch	X	X
Chestnut-collared Longspur (nb)		X
Clark's Grebe	X	
Common Black-Hawk	X	
Cordilleran Flycatcher	X	

**Table 3-3. Migratory Birds, including New Mexico PIF Species and USFWS Birds of Conservation Concern within the FFO**

Species	New Mexico Partners in Flight Priority Species	USFWS Birds of Conservation Concern (BCR Region 16)
Dickcissel	X	
Eared Grebe	X	
Ferruginous Hawk	X	X
Flammulated Owl	X	X
Golden Eagle	X	X
Grace's Warbler	X	X
Grasshopper Sparrow	X	X
Gray Vireo	X	X
Hooded Oriole	X	
Juniper Titmouse	X	X
Lazuli Bunting	X	
Least Bittern	X	
Least Tern	X	
Lewis's Woodpecker	X	X
Loggerhead Shrike	X	
Long-billed Curlew	X	X
Lucy's Warbler	X	
McCown's Longspur	X	
Mississippi Kite	X	
Mountain Bluebird	X	
Mountain Plover	X	X
Northern Harrier	X	
Northern Pygmy-Owl	X	
Olive-sided Flycatcher	X	
Painted Bunting	X	
Peregrine Falcon	X	X
Pinyon Jay	X	X
Plumbeous Vireo	X	
Prairie Falcon	X	X
Red-headed Woodpecker	X	
Red-naped Sapsucker	X	
Sage Sparrow	X	
Sage Thrasher	X	
Scaled Quail	X	
Snowy Egret	X	
Snowy Plover	X	X
Sprague's Pipit	X	
Summer Tanager	X	
Swainson's Hawk	X	
Vesper Sparrow	X	
Virginia's Warbler	X	
Warbling Vireo	X	
Western Bluebird	X	
Western Grebe	X	
Western Scrub-Jay	X	
Whip-poor-will	X	
White-throated Swift	X	

**Table 3-3. Migratory Birds, including New Mexico PIF Species and USFWS Birds of Conservation Concern within the FFO**

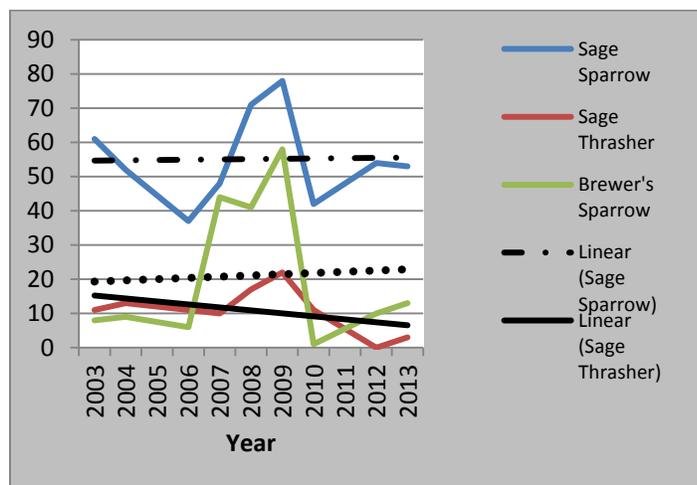
Species	New Mexico Partners in Flight Priority Species	USFWS Birds of Conservation Concern (BCR Region 16)
Williamson's Sapsucker	X	
Willow Flycatcher	X	X
Wilson's Warbler	X	
Yellow-billed Cuckoo	X	X

Source: USFWS 2008; NMPIF 2007

The BLM has conducted long-term monitoring of migratory bird species using point counts beginning in 1999 and continuing through the present. The BLM regularly surveys 10 routes representing a variety of habitats, including pinyon-juniper woodlands, sagebrush shrublands and riparian areas. Although the counts represent the species richness of each route, some may underestimate numbers of birds due to disturbances along the route from compressor noise or vegetation treatments in sagebrush habitat. Detailed data including species and counts along each route for these study years are on file in the FFO (Hansen 2014).

The BLM has also monitored sage-obligate songbird species to determine population trends as a result of reductions in sagebrush habitat in the planning area. **Figure 3-1** (Long term Trend in Numbers of Sage Obligate Songbirds in the FFO) shows the results of long-term monitoring of sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*) and Brewer's sparrow (*Pooecetes gramineus*) populations. Both sage and Brewer's sparrows populations appeared stable but sage thrashers showed a decline over the study years.

**Figure 3-1. Long term Trend in Numbers of Sage Obligate Songbirds in the FFO**



From 2004 through 2006, the BLM investigated nesting season migratory birds in sagebrush areas that had been treated with herbicide (tebuthiuron) and control areas in San Juan County, to investigate whether declines in species diversity were associated with application of herbicide to sagebrush (Schmitt 2009). Results indicated that declines in sagebrush-obligate bird species were associated with herbicide treatment. A total of 25 bird species were detected during the surveys, of which seven (black-chinned hummingbird [*Archilochus alexandri*], sage sparrow [*Amphispiza belli*], Brewer's sparrow [*Pooecetes gramineus*], mountain bluebird [*Sialia currucoides*], pinyon jay [*Corvus corax*], loggerhead shrike [*Lanius ludovicianus*] and sage thrasher [*Oreoscoptes montanus*]) are PIF priority species (Schmitt 2009).

### 3.1.2.3 Special Status Species

Special status species include federally listed and proposed species, federal candidate species, state listed species, BLM sensitive species, and special management species.

The BLM focuses on protecting and enhancing the habitats of threatened, endangered, and other special status species to ensure their continued existence. BLM special status species are:

- Species listed or proposed for listing under the ESA. The ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the USFWS and the US National Oceanic and Atmospheric Administration Fisheries Service. The USFWS maintains a worldwide list of endangered species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.
- Species designated as sensitive by the BLM State Director that require special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. All federal candidate species, proposed species, and species delisted for five years or less are considered BLM sensitive species.

#### Federally Listed Endangered/Threatened/Proposed and Candidate Species

According to the ESA, an endangered species is any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Species proposed for listing as threatened or endangered are managed with the same level of protection as listed species. Candidate species do not have ESA protection and are managed as BLM sensitive species; the BLM policy for candidate species is contained in BLM Manual 6840. The BLM carries out management consistent with the principles of multiple-use for the conservation of candidate species and their habitat. The BLM must ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered, and that BLM actions would not adversely affect the likelihood of recovery of any threatened or endangered species. Protection and management of all special status species would continue to be a high priority and coordinated with other programs and activities as needed to meet management objectives.

The BLM manages habitats for species listed by the USFWS as endangered, threatened, or proposed under the authority of the ESA. Currently, there are eight endangered, three threatened, and four proposed species that occur, or have the potential to occur, on lands managed by the BLM (**Table 3-4**, Federally Listed, Proposed, and Candidate Species and Critical Habitat that Occur or Potentially Occur in McKinley, Rio Arriba, San Juan, and Sandoval Counties). In addition, the USFWS has designated portions of BLM-managed lands as critical habitat for the Mexican spotted owl, the Rio Grande silvery minnow, the razorback sucker, and the Colorado pikeminnow.

**Table 3-4. Federally Listed, Proposed, and Candidate Species and Critical Habitat that Occur or Potentially Occur in McKinley, Rio Arriba, San Juan, and Sandoval Counties**

Species	Status <sup>1</sup>	Comments
Knowlton's cactus <i>Pediocactus knowltonii</i>	E	Endemic to New Mexico on rolling gravel hills in the pinyon-juniper/sagebrush plant community. Entire wild population is fenced and protected from most disturbances such as oil and gas development and permitted grazing. The population is not protected from impacts from wildlife. Illegal collection is an issue.
Mancos milkvetch <i>Astragalus humillimus</i>	E	Found in pinyon-juniper woodlands and desert shrublands on sandstone rimrock ledges and mesa tops in San Juan County and adjacent Colorado. All populations in the planning area are protected in the Hogback ACEC. Potentially impacted by illegal off-highway vehicle use, equestrian recreation, and grazing.

**Table 3-4. Federally Listed, Proposed, and Candidate Species and Critical Habitat that Occur or Potentially Occur in McKinley, Rio Arriba, San Juan, and Sandoval Counties**

Species	Status <sup>1</sup>	Comments
Mesa Verde cactus <i>Sclerocactus mesae-verdae</i>	T	Found in soils derived from Mancos, Fruitland, and Lewis shale. Largest population on Ute and Navajo tribal lands. All populations in the planning area are protected in the Hogback ACEC. Fences constructed to prevent access by off-highway vehicles on BLM-managed lands. Potentially impacted by illegal off-highway vehicle use, equestrian recreation, and grazing.
Zuni fleabane <i>Erigeron rhizomatus</i>	T	Found in pinyon-juniper woodlands on steep easily eroded sandstone slopes and clay banks, usually in close association with the Chinle and Baca Formations, at 7,200 to 7,900 feet.
Colorado pikeminnow <i>Ptychocheilus lucius</i>	E	Inhabits sections of the San Juan River and other rivers in the upper Colorado River basin. No wild Colorado pikeminnows have been detected in the planning area.
Colorado pikeminnow designated critical habitat	CH	Colorado pikeminnow designated critical habitat consists of portions of the San Juan River beginning at the NM Highway 371 bridge in Farmington and continues downstream to Lake Powell.
Razorback sucker <i>Xyrauchen texanus</i>	E	Inhabits off-channel backwaters and shallow flooded areas of the San Juan River and other rivers in the upper Colorado River basin. No razorback suckers have been detected in the planning area.
Razorback sucker critical habitat	CH	Critical habitat for this species in New Mexico is in 39 miles of the lower San Juan river. In the San Juan, the wild population has been extirpated and is being reestablished through stocking.
Rio Grande cutthroat trout <i>Oncorhynchus clarkia virginalis</i>	C	Subspecies of cutthroat trout found in small headwater streams and pools of the Pecos River and Rio Grande drainages in Rio Arriba and Sandoval Counties. Spawns in clean gravel.
Rio Grande silvery minnow <i>Hybognathus amarus</i>	E	Found in pools and backwaters of creeks and rivers in the Rio Grande and Pecos River drainages in Rio Arriba and Sandoval Counties. Extirpated from most historical habitat.
Rio Grande silvery minnow designated critical habitat	CH	Critical habitat for the silvery minnow extends from Cochiti Dam on the Rio Grande in Sandoval County downstream 157 miles to the middle Rio Grande.
Zuni bluehead sucker <i>Catostomus discobolus yarrow</i>	PE	Sedentary sucker found in shady pools in low velocity runs of rivers and creeks of the Rio Nutria drainage of the Little Colorado River in McKinley County.
Jemez Mountains salamander <i>Plethodon neomexicanus</i>	E	Restricted to the Jemez Mountains in Sandoval and Rio Arriba Counties, a small salamander found in mixed coniferous forests with rotted logs and rocks for cover.
Least tern, interior population <i>Sterna antillarum athalassos</i>	E	Breeds locally along Colorado and other southern river systems. Not known to occur in any planning area counties.
Mexican spotted owl <i>Strix occidentalis lucida</i>	T	Found in the southwestern US, principally in New Mexico and Arizona. After extensive surveys, no nesting has been confirmed in the planning area.
Mexican spotted owl designated critical habitat	CH	Critical habitat designated in 2001. All designated critical habitat in the planning area is located within the boundaries of the Mexican Spotted Owl ACEC.
Sprague's pipit <i>Anthus spragueii</i>	C	Grassland ground-nesting bird found in pastures and weedy fields, including agricultural fields. Rare visitor to the planning area during migration; winters in southern US including southern New Mexico.
Yellow-billed cuckoo <i>Coccyzus americanus</i>	PT	Western subspecies breeds in Arizona, California, and New Mexico. Nests in cottonwood/willow riparian habitat along rivers; rare in the San Juan River valley. Potential habitat on in the planning area was surveyed for this species in 2002.

**Table 3-4. Federally Listed, Proposed, and Candidate Species and Critical Habitat that Occur or Potentially Occur in McKinley, Rio Arriba, San Juan, and Sandoval Counties**

Species	Status <sup>1</sup>	Comments
Southwestern willow flycatcher <i>Empidonax trailii extimus</i>	E	No breeding southwestern willow flycatchers have ever been detected in the planning area. All designated potential habitat is protected and managed under the guidelines of the Southwestern Willow Flycatcher Habitat Management Plan of 1998.
Southwestern willow flycatcher designated critical habitat	CH	Critical habitat for this species is located in riparian corridors along the San Juan River in San Juan County, outside the planning area.
Canada lynx <i>Lynx canadensis</i>	PT	Medium-sized cat found in boreal and montane forests, feeds primarily upon snowshoe hare and other small mammals and birds. Distributed through western and northern US into southern Rocky Mountains; has been observed in the planning area along the San Juan River corridor.
New Mexico meadow jumping mouse <i>Zapus hudsonius luteus</i>	PE	Found in wet meadows and willow zones along streams in the Jemez mountains, within the Rio Grande watershed in Rio Arriba and Sandoval Counties.

Sources: BLM 2003, NatureServe 2014

Notes: (1) E = endangered, T = threatened, PE = proposed endangered, PT = proposed threatened, C = candidate species.

Critical habitat for the Mexican spotted owl occurs in the planning area, and critical habitat for the Colorado pikeminnow occurs in part of the San Juan River and within the 100-year floodplain from the State Highway 371 Bridge in Farmington down to Lake Powell, downstream from the planning area. Razorback sucker critical habitat on the San Juan River extends from the Hogback Diversion about 20 river miles downstream from Farmington to Lake Powell. Listed fish species have the potential to occur in the San Juan River in the area of BLM-managed river tracts. Rio Grande silvery minnow critical habitat begins below the Cochiti Dam, approximately 40 miles southeast of the planning area.

Listed plant species occur on BLM-managed land, and transplanted Knowlton's cactus (*Pediocactus knowltonii*) occurs on USBR-managed lands. The Mexican spotted owl has the potential to occur in the planning area.

### Other Special Status Species

Special status species include those which are not yet rare enough to be listed under the ESA but still warrant some protection, or for which insufficient data have been collected about the species for the USFWS to make a determination for listing. Other special status species could include: USFWS candidate species, New Mexico State-listed species, BLM Sensitive Species, species that are protected by other laws (e.g., bald and golden eagles), and other species that may warrant protection (e.g., rare plants, important pollinators, species that may be important as hosts or prey for other species (e.g., prairie dogs). Federal land management agencies are mandated to manage special status species so that they should not need to be listed under the ESA in the future.

The BLM must ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered. It also must ensure that its actions would not adversely affect the likelihood of recovery of any threatened or endangered species. Protection and management of all special status species would continue to be a high priority and coordinated with other programs and activities as needed to meet management objectives.

Lists of special status species are maintained by several agencies including the USFWS, BLM, Forest Service, and the State of New Mexico. There are 23 special status species that may have the potential to occur in the planning area (**Table 3-5**, BLM Sensitive and FFO Special Management Status Species that Occur in the Planning Area). The BLM has coordinated with the other agencies to determine which of these 23 species warrant special management, or field studies to collect data.

**Table 3-5. BLM Sensitive and FFO Special Management Status Species that Occur in the Planning Area**

Species	Status <sup>1</sup>		Comments
	BLM	State of NM	
<b>Plants</b>			
Acoma fleabane <i>Erigeron acomanus</i>	Sensitive	SOC	Grows in sandy soil at base of Entrada sandstone cliffs. Endemic to McKinley County on and in the planning area.
Aztec gilia <i>Aliciella formosa</i>	Sensitive, SMS	E	Grows in salt desert shrublands on soil from Nacimiento Formation. Known from San Juan County in New Mexico in the planning area in the tri-cities area.
Brack's hardwall cactus <i>Sclerocactus cloveriae</i> var. <i>brackii</i>	Sensitive, SMS	E	Occurs on sandy-clay hills of the Nacimiento Formation in desert scrub habitat.
Grama grass cactus <i>Sclerocactus</i> <i>Papyracanthus</i>	Sensitive		Found in north-central New Mexico, southern juniper-pinyon woodlands and Chihuahuan Desert grassland, usually on sandy soils with a calcareous or gypseous component, on open flats or gentle slopes from 4,900-7,200 feet elevation.
Mancos saltbush <i>Proatriplex pleiantha</i>	Sensitive	SOC	Desert badlands in saline clay soils of the Mancos and Fruitland shale formations. Found in clay slopes of mesas and barren clay flats.
Parish's alkali grass <i>Puccinellia parishii</i>	Sensitive	E	Grows in alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes at 2,600-7,200 feet elevation. Requires continuously damp soils during its late winter to spring growing period. Recently documented on the Carson-Jicarilla District National Forest System lands adjacent to the planning area. Has the potential to occur within the planning area.
San Juan milkweed <i>Asclepias sanjuanensis</i>	Sensitive	SOC	Found in sandy loam soils, usually in disturbed sites, in juniper savanna and Great Basin desert scrub; 5,000 to 5,500 feet.
<b>Birds</b>			
American peregrine falcon <i>Falco peregrinus</i> <i>anatum</i>	SMS	T	The American peregrine falcon nests in the western and eastern US, while the arctic peregrine falcon breeds north of the tree line. The American peregrine falcon nests in New Mexico and both subspecies migrate through the state. There are at least three nest sites in the planning area.
Bald eagle <i>Haliaeetus</i> <i>leucocephalus</i>	Sensitive, SMS	T	Widespread distribution, found throughout North America nesting in tall trees or cliffs. Breeding habitat most commonly includes areas close to coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water with available food sources including fish, waterfowl, or seabirds
Bendire's thrasher <i>Toxostoma bendirei</i>	Sensitive		Found in sparse desert habitats from sea level to 5,900 feet. Breeders favor relatively open grassland, shrubland or woodland with scattered shrubs or trees; it is not found in dense vegetation.
Chestnut-collared longspur <i>Calcarius ornatus</i>	Sensitive		Found in level to rolling mixed-grass and shortgrass uplands, and, in drier habitats, moist lowlands. Prefers open prairie and avoids excessively shrubby area.

**Table 3-5. BLM Sensitive and FFO Special Management Status Species that Occur in the Planning Area**

Species	Status <sup>1</sup>		Comments
	BLM	State of NM	
Ferruginous hawk <i>Buteo regalis</i>	SMS		Breeds from the Canadian provinces south to New Mexico in grassland habitat. Five to seven active nests in the planning area.
Golden eagle <i>Aquila chrysaetos</i>	SMS		Golden eagles generally inhabit open and semi-open country such as prairies, sagebrush, arctic and alpine tundra, savannah or sparse woodland, and barren areas, especially in hilly or mountainous regions, in areas with sufficient mammalian prey base and near suitable nesting sites.
Mountain plover <i>Charadrius montanus</i>	SMS		Found in high plains/shortgrass prairie, desert tablelands and sagebrush habitats. Commonly associated with prairie dog towns.
Pinon jay <i>Gymnorhinus cyanocephalus</i>	Sensitive		Pinyon-juniper woodland, less frequently pine; in nonbreeding season, also occurs in scrub oak and sagebrush.
Prairie falcon <i>Falco mexicanus</i>	SMS		Primarily open situations, especially in mountainous areas, steppe, plains or prairies. Typically nests in well-sheltered ledge on rocky cliff or steep earth embankment, 30 to more than 300 feet aboveground.
Western burrowing owl <i>Athene cunicularia</i>	Sensitive, SMS		Breeds in much of the western US and Canada. Populations in New Mexico consist of breeding and wintering birds. Nests in grasslands and desert scrub habitats in association with prairie dogs or other burrowing rodents. Burrowing owls were observed during wildlife surveys in the planning area.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	Sensitive, SMS		Breeding habitat is generally deciduous riparian woodland, especially including dense stands of cottonwood and willow, but may also include mesquite and salt-cedar (tamarisk) in some areas. Non-breeding habitats include various types of forest, woodland, and scrub
<b>Mammals</b>			
Cebolleta pocket gopher <i>Thomomys bottae (umbrinus) paguatae</i>	Sensitive	T	Habitat appears to be limited only by a soil layer deep and tractable enough to hold burrow systems, and enough succulent plants to form a food base
Gunnison's prairie dog <i>Cynomys gunnisoni</i>	Sensitive		High mountain valleys and plateaus at elevations of 6,000 to 12,000 feet; open or slightly brushy country, scattered junipers and pines. Mainly in areas with high abundance of native plants. Burrows usually on slopes or in hummocks.
New Mexico jumping mouse <i>Zapus hudsonius luteus</i>	Sensitive	E	This subspecies occurs in Arizona and New Mexico, where it inhabits herbaceous wetland habitats in valley and mountain areas. It may occur in riparian habitat in the planning area.
Spotted bat <i>Euderma maculatum</i>	Sensitive	T	Occurs in the western US, with historic records from all counties within the planning area. Found mostly in forested habitat but can also be found at lower elevation sites. The spotted bat was audibly detected once in the planning area and once on the Jicarilla Ranger District.

**Table 3-5. BLM Sensitive and FFO Special Management Status Species that Occur in the Planning Area**

Species	Status <sup>1</sup>		Comments
	BLM	State of NM	
Townsend's big-eared bat <i>Plecotus townsendii pallescens</i>	Sensitive		Occurs in the western US, including the western half of New Mexico. Found in a variety of habitats and is closely tied to caves and mine shafts where it roosts and hibernates. Captured at two locations in the planning area.

Source: BLM 2003, 2008

Notes: (1) E= endangered, T= threatened, SMS = BLM Special Management Species, SOC=State of New Mexico Species of Concern

Ten species known to occur in the planning area receive special management and are referred to as "Special Management Species": beautiful gilia, also known as Aztec gilia (*Aliciella formosa*), Brack's fishhook cactus (*Sclerocactus cloveriae* var. *brackii*), American peregrine falcon (*Falco peregrinus anatum*), ferruginous hawk, yellow-billed cuckoo (*Coccygus americanus*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), and mountain plover (*Charadrius montanus*). Limitations on the timing and nature of construction activities are applied on a seasonal basis within habitat areas for each of these species. For Special Management plants, well pads or pipelines may be relocated to avoid the plants; directional drilling may be used; or the plants may be transplanted to a suitable habitat area by a biologist.

The BLM also monitors raptor nesting and applies special stipulations as outlined in the Special Management Species Policy Update (2008) to protect nesting ferruginous hawk, golden eagle, bald eagle, peregrine falcon, and prairie falcon. Other nesting raptors observed during proposed project biological surveys are also protected by site-specific stipulations.

The BLM also monitors nesting of special status raptors, including golden eagle, ferruginous hawk, and prairie falcon (HawksAloft 1998, 1999, 2006; Animas 2013) as well as burrowing owl. BLM Special Management Species policy provides for 1/3-mile nest buffers from construction, drilling or completion activities for active or historic golden eagle nests during the breeding season. Nest buffers are currently enforced from February 1 through June 30 annually (BLM 2008).

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