

PROGRAMMATIC BIOLOGICAL OPINION

TABLE OF CONTENTS

DESCRIPTION OF THE PROPOSED ACTION	5
DESCRIPTION OF ACTIVITIES AND MANAGEMENT PRESCRIPTIONS UNDER THE RICHFIELD RMP. 9	
<i>Air Quality</i>	9
<i>Soil Resources</i>	9
<i>Water Resources Management</i>	10
<i>Vegetation Management</i>	10
<i>Cultural Resources</i>	10
<i>Paleontological Resources</i>	11
<i>Visual Resource Management</i>	12
<i>Special Status Species Management</i>	12
<i>Fish and Wildlife Resource Management</i>	12
<i>Wild Horse and Burro Management</i>	13
<i>Fire and Fuels Management</i>	13
<i>Forestry and Woodland Management</i>	14
<i>Livestock Grazing Management</i>	15
<i>Recreation Management</i>	16
<i>Travel Management</i>	16
<i>Lands and Realty Management</i>	16
<i>Minerals and Energy Resource Management</i>	17
<i>Special Management Areas Programs</i>	19
<i>Non-WSA w/ Wilderness Characteristics</i>	20
<i>Transportation Management</i>	20
<i>Health and Safety Management</i>	20
CONSERVATION MEASURES	22
SPECIES ACCOUNTS, EFFECTS, AND CONCLUSIONS	22
MEXICAN SPOTTED OWL (<i>STRIX OCCIDENTALIS LUCIDA</i>)	22
SOUTHWESTERN WILLOW FLYCATCHER (<i>EMPIDONAX TRAILLII EXTIMUS</i>)	35
UTAH PRAIRIE DOG (<i>CYNOMYS PARVIDENS</i>)	48
CALIFORNIA CONDOR (<i>GYMNOGYPS CALIFORNIANUS</i>)	60
LAST CHANCE TOWNSENDIA (<i>TOWNSENDIA APRICA</i>)	69
WRIGHT FISHHOOK CACTUS (<i>SCLEROCACTUS WRIGHTIAE</i>)	77
SAN RAFAEL CACTUS (<i>PEDIOCACTUS DESPAINII</i>).....	86
WINKLER CACTUS (<i>PEDIOCACTUS WINKLERI</i>)	94
WESTERN YELLOW-BILLED CUCKOO (<i>COCCYZUS AMERICANUS</i>)	101
INCIDENTAL TAKE STATEMENT.....	111
REASONABLE AND PRUDENT MEASURES / TERMS AND CONDITIONS.....	112
RECOMMENDED CONSERVATION MEASURES	112
RE-INITIATION STATEMENT	117

LITERATURE CITED 118
**APPENDIX A – BLM COMMITTED CONSERVATION MEASURES AND LEASE
NOTICES..... 132**

LIST OF TABLES

Table 1. Federally Protected Utah Species on BLM Lands Analyzed in this Biological Opinion
(BO) for the Proposed Resource Management Plan by Richfield BLM Field Office 7
Table 2. Survey results for Last Chance townsendia populations on BLM lands 1991-2007 70

DESCRIPTION OF THE PROPOSED ACTION

The proposed action examined in this consultation is the continuation of land management activities described by the Resource Management Plan (RMP). The Richfield RMP/EIS replaces six Land Use Plans that provided management direction for the planning area. The Richfield RMP and the accompanying Environmental Impact Statement (EIS) will provide planning guidance for public lands managed by the Richfield Field Office (RFO) in Sanpete, Sevier, Piute, Wayne, and Garfield counties in Utah for the next 15 to 20 years. RMPs are used by the BLM to guide and control future actions and set standards upon which future decisions on site-specific activities will be based. RMPs only establish general management policy on a broad scale. They are not used to make decisions that commit resources on a small scale such as on specific parcels of land. RMPs identify desired outcomes, also known as “desired future conditions”. These desired future conditions are expressed in RMPs as goals, standards, objectives, and allowable uses and actions needed to achieve desired outcomes. These are often referred to as RMP decisions or resource allocations. It is upon these RMP decisions or resource allocations that the effects determinations in this Biological Opinion are based for:

- Mexican spotted owl (*Strix occidentalis lucida*)
- Southwestern willow flycatcher (*Empidonax trailli extimus*)
- California condor (*Gymnogyps californianus*)
- Utah prairie dog (*Cynomys parvidens*)
- San Rafael cactus (*Pediocactus despainii*)
- Winkler cactus (*Pediocactus winkleri*)
- Wright fishhook cactus (*Sclerocactus wrightiae*)
- Last Chance townsendia (*Townsendia aprica*)

In addition, our Conference Opinion considers the effects for these experimental, non-essential and candidate species:

- California condor (*Gymnogyps californianus*)
- Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The action area is defined at 50 CFR 402 to mean “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action”. Federal lands administered by other agencies and State, Tribal, and private lands that adjoin BLM-administered land are also considered part of the action area. In general, these are lands immediately adjacent to, downslope from, downstream of, or downwind from BLM-administered land where effects to the watershed, post-fire floods, ash flows, and elevated sedimentation may occur. The planning area is located in south-central Utah and includes all of Sanpete, Sevier, Piute, Wayne Counties, and portions of Garfield County. This area totals approximately 5.4 million acres. Of this, the BLM manages 2.1 million acres surface and subsurface mineral estate, additional Federal mineral resources underlying the national forests (1.5 million acres) and 95,000 acres of split-estate lands where the mineral estate is held by the Federal government but the surface right belongs to the state or private parties. State lands, privately owned lands, Manti-La Sal National Forest, Fishlake National Forest, Dixie National

Forest, Capitol Reef National Park, Canyonlands National Park and Glen Canyon National Recreational Area are all located in or adjacent to the Richfield Field Office, therefore, federally listed species and habitat located on these lands could be indirectly affected by resource management decisions made in the Proposed Action area.

The Richfield RMP describes activities in a number of resource management programs. Several of the aforementioned programs have “no effect” or “not likely to adversely affect” determinations on the following species, however overall, the entire Richfield RMP is a “likely to adversely affect” determination for the listed species: Mexican spotted owl, southwestern willow flycatcher, Utah prairie dog, Wright fishhook cactus, Last Chance townsendia, San Rafael cactus, Winkler pincushion cactus and California condor. The RMP is a “not likely to adversely affect” for the species Barneby reed-mustard, bonytail, Colorado pikeminnow, humpback chub and razorback sucker. The Richfield RMP is not likely to contribute to jeopardy of the experimental, non-essential population of the California condor, and is not likely to contribute to listing of the candidate species Western Yellow-billed cuckoo.

Table 1. Federally Protected Utah Species on BLM Lands Analyzed in this Biological Opinion (BO) for the Proposed Resource Management Plan by Richfield BLM Field Office. “Likely to adversely affect” determinations (LAA) are used if a program may have any direct or indirect adverse effect to a threatened or endangered species. “May affect, not likely to adversely affect” (NLAA) determinations conclude that activities occurring under the program are either insignificant or beneficial. “No effect” (NE) determinations conclude that the species and critical habitat will be unaffected by the proposed activities under the program. “Not likely to contribute to Federal listing” (NCFL) are listed for candidate species if the program was determined not to contribute to its listing as a threatened or endangered species. “No Jeopardy” (NJ) are listed if the program was determined not to jeopardize an experimental, non-essential population.

Richfield BLM Field Office																					
Programs	Air Quality	Soil Resources	Water Resources	Vegetation Management	Cultural Resources	Paleontological Resources	Visual Resources	Special Status Species Management	Fish and Wildlife	Wild Horse and Burros	Fire and Fuels	Forestry and Woodlands	Livestock Grazing	Recreation Management	Travel Management	Lands and Realty	Minerals and Energy	Special Designation Areas	Non-WSA's with wilderness characteristics	Transportation	Health and Safety Management
Common Name (<i>Scientific Name</i>)	NE	LAA	NLAA	LAA	LAA	LAA	NLAA	LAA	LAA	NE	LAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA
Utah prairie dog (<i>Cynomys parvidens</i>)																					
California Condor (<i>Gymnogyps californianus</i>) Experimental, Non-Essential	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
California Condor (<i>Gymnogyps californianus</i>) Endangered Population	NE	LAA	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	LAA	NE	LAA	NLAA	LAA	LAA	NE	LAA	NLAA	NLAA	NE	LAA	LAA
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	NE	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	LAA	LAA	LAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA
Southwestern willow Flycatcher (<i>Empidonax traillii eximius</i>)	NE	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	LAA	NE	LAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA
Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NLAA	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL
Colorado River Fishes	NE	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NE	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA	NE	NLAA	NLAA

Programs	Air Quality	Soil Resources	Water Resources	Vegetation Management	Cultural Resources	Paleontological Resources	Visual Resources	Special Status Species Management	Fish and Wildlife	Wild Horse and Burros	Fire and Fuels	Forestry and Woodlands	Livestock Grazing	Recreation Management	Travel Management	Lands and Realty	Minerals and Energy	Special Designation Areas	Non-WSA's with wilderness characteristics	Transportation	Health and Safety Management
Common Name (Scientific Name)																					
Wright fishhook Cactus (<i>Sclerocactus wrightiae</i>)	NE	LAA	NLAA	LAA	LAA	LAA	NLAA	NLAA	NLAA	NE	NLAA	LAA	LAA	LAA	NE	LAA	LAA	LAA	NE	LAA	LAA
Barneby's reed-mustard (<i>Schoenocrambe Barnebyi</i>)	NE	NJ	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	LAA	NE	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA	NE	NLAA	NLAA
Last Chance townsendia (<i>Townsendia aprica</i>)	NE	LAA	NLAA	LAA	LAA	LAA	NLAA	NLAA	LAA	NE	LAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA
San Rafael cactus (<i>Pediocactus despainii</i>)	NE	LAA	NLAA	LAA	LAA	LAA	NLAA	NLAA	LAA	NE	NLAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA
Winkler pincushion cactus (<i>Pediocactus winkleri</i>)	NE	LAA	NLAA	LAA	LAA	LAA	NLAA	NLAA	LAA	NE	NLAA	LAA	LAA	LAA	NE	LAA	LAA	NLAA	NE	LAA	LAA

Description of Activities and Management Prescriptions under the Richfield RMP

Air Quality

The primary objective of air quality management within the Richfield planning area is to maintain air quality in accordance with standards prescribed by federal and state laws and regulations. The air quality program does not consider potential impacts to fish and wildlife resources beyond the standards set forth by EPA and the Utah Department of Environmental Quality. Air quality management practices include recommendations for dust control measures, smoke management, weather monitoring, air quality data gathering, regulatory conformity analyses, and BLM review of New Source Reviews and Prevention of Significant Deterioration (PSD) Permits. Air quality management may include recommendations for the best available control practices or restrict surface development in order to meet state and national ambient air quality standards. BLM-initiated actions or authorizations are planned in accordance with state and national air quality standards through coordination with the Division of Air Quality (UDAQ), Utah Department of Environmental Quality (UDEQ), and the U.S. Environmental Protection Agency (EPA). Laws controlling air pollutants in the United States include the Clean Air Act of 1970 and its amendments, and the 1999 Regional Haze Regulations. The concentrations of air contaminants in the BLM's planning areas need to be within limits of all state ambient air quality standards, and national ambient air quality standards (NAAQS).

Air quality in the planning area is good. This is due to low populations numbers and limited industrial development. The U.S. Environmental Protection Agency (EPA) has designated the area as a class II airshed. This classification permits moderate deterioration that normally accompanies well controlled growth. Regional concentrations of SO₂, PM₁₀, and nitrogen Oxides are generally well below the NAAQS. No major air pollution sources are found nor have polluted air shed been identified within the planning area. The main sources of air pollution within the Richfield Field Office area include: biogenic emission, agricultural activities, wildland and prescribed fire, small industry, and road mobile sources.

Soil Resources

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Many Best Management Practices (BMPs), designed to reduce sedimentation and protect water quality also benefit soil productivity by minimizing erosion. Examples of other soil protection measures implemented under this program include maintenance and restoration of appropriate biological soil crusts, and enhancement of stability and infiltration to provide for optimal plant growth. Generally, the soil management program provides information in support of other resource objectives and goals.

Under this program, management actions include implementation of BMPs reduction of soil loss by performing appropriate land treatments such as seeding and fuels reduction, reclamation of surface disturbance and temporary roads associated with other projects, and identification of fragile soils and site-specific regulations to protect these soils. Restrictions may include but are

not limited to the modification of construction design in order to accommodate the preservation of physical and biological soil integrity, timing restrictions to reduce impacts to soils, or use of sediment and salt reducing measures during construction activities. Activity plans will address site-specific problems and include monitoring for salt and sediment loading.

Water Resources Management

The objectives of water resources management are to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses. This program also aims to minimize harmful consequences of erosion and surface runoff from BLM-administered public land.

Activities authorized under water resources management may include implementation of watershed plans, identification of heavy sediment loads, monitoring and treating soil erosion, evaluating and restricting surface development, and monitoring water quality. Watershed management activities also include some of these same activities through the evaluation of projects, application of soil management practices, application of seasonal closures, monitoring of public drinking water, and completion of groundwater studies. Management of water resources may include the imposition of restrictions on activities such as development, in order to maintain water, and watershed quality. Individual site specific environmental documents outline water resource protection measures including buffer zones for springs, reservoirs, wells, and streams.

Vegetation Management

Objectives of the vegetation resource management program are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Primary goals of the vegetation management program are to monitor and improve riparian habitats, perform mitigation, support other programs and rehabilitate functioning at-risk and non-functioning areas.

Vegetation treatments, (e.g., timber harvest and sagebrush spraying, burning, chaining) will be designed to meet overall resource management objectives, which include the protection of listed plant and animal species. Control methods include chemical, biological, and mechanical, and cultural practices. Biological control can involve the use of weevils, beetles, or goats.

Mechanical methods include dozing, cutting, chopping, and pulling. Cultural controls include education and public awareness campaigns, use of weed free forage, and changes in grazing practices to increase health and vigor of plant communities so that they are more resistant to invasion. Depending on the site and circumstances, these methods can be used individually or in combination. Fire is used to improve range forage production, wildlife habitat, timber stands, sale debris disposal, and to reduce hazardous fuel buildup.

Cultural Resources

The objective of the cultural resource management program is to protect, preserve, interpret, and manage significant cultural resources for their informational, educational, recreational, and

scientific values. Site-specific inventories for cultural resources are required before the start of surface disturbance or if Richfield Field Office-administered lands were proposed for transfer out of federal ownership.

Inventories have traditionally been conducted to support site-specific surface-disturbing projects, such as mineral and energy development, to comply with the requirements of Section 106 of the National Historic Preservation Act and other cultural resource preservation laws. During these activities, cultural resources are inventoried, categorized, and preserved; in addition staff will conduct field activities, perform excavations; map and collect surface materials, research records, and photograph sites and cultural resources. Inventory data collection is used for documentation and development of mitigation plans before other resource program surface disturbance. Inventory activities commonly entail the use of hand tools, power tools, or heavy machinery. Survey intensity varies among inventories and may last from one day to several weeks. In addition, academic institutions have performed research excavations, although such scientific investigations were limited.

Cultural resource land management may further include: reduction of imminent threats and potential conflicts from natural and human-caused deterioration, including other resource uses; creation of opportunities for scientific and educational uses of cultural resource sites; interpretation and education focused on previous human occupation and land uses, provision of traditional Native American uses through permits, including collection of herbs, medicines, traditional use items, and items necessary for traditional, religious, or ceremonial purposes. These actions may involve proactive research, protection and inventories involving universities, service groups, site stewards, tribes and community outreach.

Surface disturbance is generally avoided near significant cultural resource sites and within ¼ mile or the visual horizon of significant segments of historic trails and canals. Sites listed on, or eligible for, the National Register for Historic Places are protected and would be managed for their local and national significance in compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, the American Indians Religious Freedom Act, and the Native American Graves Protection and Repatriation Act, as appropriate.

Paleontological Resources

The objective of the paleontological resource management program is to protect, preserve, interpret, inventory and manage significant paleontological resources for their informational, educational, recreational, and scientific values. On the ground paleontological inventories are required prior to surface disturbing activities in Class I areas.

During these activities, paleontological resources are inventoried, categorized, and preserved; in addition staff will conduct field activities, perform excavations; map and collect surface materials, research records, and photograph sites and resources. Inventory data collection is used for documentation and development of mitigation plans before other resource program surface disturbance. Inventory activities commonly entail the use of hand tools, power tools, or heavy machinery. Survey intensity varies among inventories and may last from one day to several weeks. In addition, academic institutions have performed research excavations.

Paleontological resource land management may further include surface collection of common invertebrate and botanical paleontological resources for non-commercial use, interpretation of paleontological resources, protection of fossil resource sites not feasible or desirable to excavate.

Visual Resource Management

The objective of visual resource management (VRM) is to manage public lands in a manner that will protect the quality of the scenic (visual) values of the landscape. To accomplish this objective, BLM establishes visual resource management priorities while giving consideration to other resource values and uses. Visual resources are managed in accordance with objective classes that have been assigned to all public lands in each Field Office.

To meet VRM objectives, the BLM designs facilities, such as power lines, oil and gas wells, wildlife guzzlers, and storage tanks to fit with their surroundings. Design considerations include location (e.g., screening or distance), color (painting), building materials, size and scale, and reclamation.

Special Status Species Management

Objectives of the special status species program include maintenance of biological diversity of plant and animal (terrestrial and aquatic) species by supporting the State Division of Wildlife Resources' strategic plans for wildlife population objectives to the extent practical and consistent with BLM multiple-use management requirements. Other objectives include the development of protective measures for federally listed species and other special status species; cooperations with other agencies in managing listed species; facilitation of scientific research of special status species and their habitats; and to the extent possible, avoidance of habitat fragmentation.

In addition, BLM's special status species management program often includes the enforcement of timing restrictions, completion of surveys, and development of conservation measures and best management practices for the mitigation of effects of development deemed to be discretionary actions of the BLM. Activities implemented under this program may include identification and enforcement of timing stipulations; completion of species surveys; implementation of Recovery Plans; implementation of Conservation Agreement and Strategy decisions to increase populations and improve habitat of special status species; and closure of areas containing sensitive species populations or habitat.

Fish and Wildlife Resource Management

The BLM works closely with the UDWR to manage habitat for fish and wildlife (including big game, upland game, waterfowl, neo-tropical migratory birds, small mammals, amphibians, and reptiles) to achieve and maintain suitable habitat for desired population levels and distribution within the decision area. The UDWR is responsible for managing fish and wildlife population levels; the BLM is responsible for managing wildlife and fisheries habitat in a condition that will support desired levels of species. The BLM works cooperatively with the UDWR to maintain and reestablish populations of native species that have used the historic range located within the planning area through habitat management and restoration.

Objectives of the fish and wildlife resource management program include maintenance of habitat quantity, quality, and connectivity to sustain diverse wildlife populations; maintenance and improvement of aquatic habitats to sustain diverse fisheries and aquatic populations; and conservation of migratory bird habitat as directed by Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) and the Migratory Bird Treaty Act and emphasize management of migratory birds listed on the USFWS current list of Birds of Conservation Concern and the Partners-in-Flight priority species. Wildlife Management actions may include surveying; habitat monitoring; habitat and species inventories, habitat improvement, habitat restoration, water developments, riparian habitat improvements, etc., as well as development of habitat management plans.

The BLM develops stipulations and conservation measures to both protect and enhance wildlife and fisheries habitats. These stipulations and conservation measures may include such things as: recommending withdrawal of some areas from mineral entry; limiting access to specific areas by OHVs and pedestrians; and minimizing the impacts of surface development. The BLM may acquire crucial wildlife habitats or easements and conduct inventories of potential habitats for occurrences of threatened, endangered, and sensitive species or their habitat.

Wild Horse and Burro Management

The objective of wild horse and burro management is the protection, management, and control of wild free-roaming horses and burros (WH&B) on public lands. Management includes maintaining viable herds that will preserve the free-roaming nature of WH&Bs in a manner that is designed to achieve and maintain thriving ecological balance on the public lands.

The Canyonlands HMA (Herd Management Area) is the only area with wild horses in the planning area. It is adjacent to Glen Canyon NRA on the east and the Horseshoe canyon unit of Canyonlands National Park on the west. The Canyonlands HMA is more than 89,000 acres, including several State of Utah parcels. It is located in eastern Wayne County, adjacent to Glen Canyon National Recreation Area on the east, and the Horseshoe Canyon unit of Canyonlands National Park on the west. Vegetation in the area is a mix of desert grasses and desert shrub, although areas with deeper soils support sagebrush and juniper. Existing planning allocates forage for less than 20 burros. However, a recent grazing use adjustment on a portion of a grazing permit and preference has resulted in additional forage for burros and has eliminated most competition with livestock for habitat such as forage and water. Current herd management includes regular inventories to monitor burro numbers. The last inventory of burros in the Canyonlands HMA identified nearly 60 burros.

Management actions under this program include managing burros for age and sex ratios, genetic viability, allow burro research, and introduce burros from other populations. Management can sometimes involve herd gathering. Helicopters are used when gathering horses and burros by hazing the animals into ground traps, set-up using portable metal panels.

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resource values from wildfire and to restore the natural role of fire in the ecosystem. The major activities involved with the fire management program include: wildfire suppression, managing natural ignitions as wildland

fire use for resource benefit, prescribed burning, non-fire fuels treatment for hazardous fuels reduction, and emergency stabilization and rehabilitation following wildfires.

Fires within the planning area are both naturally occurring and used as a management tool. Naturally occurring fires are widely distributed in terms of frequency and severity.

Wildfires are suppressed when they threaten values and resources, such as: wildland urban interface areas, developed recreation sites, areas that are unlikely to recover following fire (i.e., areas of noxious weeds or invasive species), sensitive soils, critical threatened and endangered species habitat, or fires with potential to spread to private, state, or other federal lands. Fire suppression methods vary with the intensity of the wildfire and are conducted on an emergency basis. Firelines may be constructed by hand or by heavy equipment to contain the wildfire. Water may be withdrawn from nearby sources to suppress fires. Chemical fire suppression agents and retardants may be used, if necessary. The use of aerial fire retardant is restricted near water resources. After a fire is extinguished, emergency stabilization and rehabilitation techniques, such as seeding and soil stabilization actions, may be used to restore a burned or suppressed area to its previous vegetation cover. These suppression and post-suppression activities often employ the use of off-road vehicles, hand tools, and heavy equipment such as bulldozers.

Wildland fire use fires are implemented in areas that would benefit from the reintroduction of fire. Some suppression techniques, as described above, may be used to keep the fire within pre-determined boundaries, but no emergency stabilization and rehabilitation actions are taken following wildland fire use.

Prescribed fire and non-fire fuels treatment objectives are to restore natural fire regimes, reduce hazardous fuel loading, and enhance resources, such as wildlife habitat. Prescribed fires follow a pre-determined prescription and include activities such as broadcast burning or pile burning following manual or mechanical fuel treatments. Non-fire fuel treatment actions include: tree thinning or clear-cutting (i.e., juniper) by hand or using mechanized equipment, chemical application of herbicides to reduce shrub cover, disking to remove vegetation and prepare the soil for seeding, and seeding of native and/or non-native species to prevent increase of invasive species. Since 1995, hazardous fuel reduction efforts within the planning area have treated roughly 4,000 acres per year.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The forestry and woodlands program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

The program allows the treatment of forest insect and disease infestations by spraying, cutting, and removal of tree stands. The program also ensures that timber harvest systems will be designed to avoid or minimize impacts to soils and can include tractor yarding, cable yarding, and helicopter logging. Seasonal harvest restrictions will be implemented to avoid soil damage during wet periods; and to avoid nesting periods of special status species. Slash treatments include lop and scatter, handpiling, and burning. Regeneration areas may be fenced to prevent wildlife and livestock from damaging seedlings. Forest management actions may include conducting surveys, obtaining easements, pursuing legal access, allowing road development, and installing drain culverts and water bars. Private and state land may be accessed for forest management purposes through easement acquisitions. Non-timber forest products are harvested and sold by permit. Non-timber forest products include firewood, posts, poles, Christmas trees, nuts, seeds and wildings.

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base, while improving wildlife habitat and watershed condition and meeting Utah's Rangeland Health Standards.

Not all BLM lands are open to livestock grazing due to conflicts with other resource uses. Range management activities may include vegetation treatments such as prescribed fire or mechanical and chemical control of noxious weeds, sagebrush, and other target species. Salt or mineral supplements may be approved to help manage livestock distribution. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management).

Within the planning area, BLM manages livestock grazing on public lands in Sanpete, Sevier, Wayne, and Piute counties; portions of Garfield County; and some allotments within Glen Canyon National Recreation Area and Capitol Reef National Park. Livestock grazing on public land is administered through Livestock Grazing Allotments. Through an inter-district agreement, the Price planning area manages several allotments within the Richfield planning area, and the Richfield Field Office manages several allotments within the Price Field Office. There are 194 allotments in the Richfield Field Office that were used by 143 livestock operators in 2002. The total active permitted use of all permittees in the planning area is 109,951 animal unit months (AUM). Grazing permits are usually issued for a 10-year period. Livestock grazing management includes using an interdisciplinary allotment evaluation to provide specific guidance and actions, allocation of long-term increases or decreases in forage on a case-by-case basis, analyzed through the NEPA process, use of livestock grazing to enhance ecosystem health and help accomplish resource objectives. Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities. These projects are designed and constructed to implement grazing systems that are designed to meet Rangeland Health Standards and improve watersheds conditions, wildlife habitat, riparian proper functioning conditions, and forage production.

Recreation Management

The objective of recreation resources management is to identify recreation values and resources on public lands and make decisions which will ensure that these values are maintained on a long-term sustained yield basis to meet the recreational needs of the using public. Recreation management includes allowing recreational access by the public, developing and maintaining recreation areas and facilities, issuing special recreation permits for organized groups, competitive events and commercial outfitters and guides, acquiring recreational access, providing information to the public about recreation resources and assessing effects of recreational use to the environment. The BLM monitors recreational use, develops management plans, and evaluates recreational potential.

Through the Resource Management Planning process BLM identifies and designates special recreation management areas. These include areas which require greater recreation investment, where more intensive recreation management is needed and recreation is a principal management objective. Recreational activities in the project area may include OHV use, camping, hiking, rappelling, photography, wildlife & scenery viewing, horseback riding, hunting, and mountain biking.

Travel Management

The objectives of the travel management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodation of a variety of uses while minimizing user conflicts; and coordination of OHV management.

Activities included under this program include planning and decision making for roads and road designations. This program primarily includes support for other projects.

Lands and Realty Management

The objectives of the lands and realty management program are to support multiple-use management goals of other BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights-of-way access to serve administrative and public needs.

Public land tracts that are not critical to current management objectives will be disposed of through the realty management program (reviewed on a case-by-case basis). Non-federal lands may be acquired through exchange in areas with potential for recreation development or in areas containing important wildlife, cultural, scenic, natural, open space, or other resource values. Protective withdrawals may be established to protect and preserve important resource values, but require extensive mineral investigations.

Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights-of-way. Rights-of-way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights-of-way may be temporary or extend up to 30 years, or in perpetuity.

The program pursues cooperative agreements, develops recreation site facilities, considers offsite mitigation, minimizes access in wildlife habitat, fences revegetation sites, blocks linear rights-of-way to vehicle use, considers temporary-use permits, considers new withdrawals, and identifies parcels for landfills under the Recreation & Public Purposes Act. Areas with important resource values will be avoided where possible when planning routes and installation of new facilities. Effects will be mitigated if it becomes necessary to place facilities within avoidance areas.

Minerals and Energy Resource Management

Objectives of the minerals and energy program are to provide opportunities for mineral exploration, development and reclamation under leasing laws subject to legal requirements to protection other resources. Mineral development is subject to leasing, location, or sale based on the Federal mineral law covering that particular commodity. The planning area will be open to consideration for exploration, leasing, and development of leasable minerals including oil, gas, coal, oil shale, and geothermal. BLM minerals program is divided into the three categories of salable, leasable, or locatable minerals.

Salable Minerals

Salable minerals include sand, gravel, clay, stone and humate. Before issuing contracts or free use permits for salable minerals, appropriate environmental analyses are conducted, including special studies or inventories of cultural resource values, threatened or endangered plant and wildlife species, and other resources. Stipulations or conditions may be included in the terms of the contract to ensure protection of the natural resources and reclamation of the land following project completion. Site reclamation is required following any surface-disturbing activity by mining for salable minerals. Reclamation includes removing surface debris, recontouring, reducing steep slopes, and planting vegetation. All reclamation proposals must conform to federal and state agency requirements.

Leasable Minerals

Leasable minerals include fluid (oil, gas, geothermal, coal bed methane, tar sands) and solid minerals such as coal and sodium. In Utah, coal is generally extracted using underground mining methods although surface coal mine operations and methods are likely to be proposed for some future operations. Surface facilities include truck/train loadouts, offices, maintenance facilities, change house, electrical substations, and roads. Total surface disturbance is usually less than 20 acres.

Surface coal mining involves the use of draglines, shovels, and haul trucks and results in large areas of surface disturbance from road construction; topsoil and overburden removal; and stock piling of these materials. Reclamation includes recontouring as closely to the original landscape as possible, reconstruction of drainages, reseeding, and monitoring.

Fluid leasable minerals include oil, gas, and geothermal steam. In areas where development of oil and gas resources would conflict with the protection or management of other resources or public land uses, mitigation measures are identified and may appear on the leases as either stipulations to uses, or as restrictions on surface occupancy. Once the parcel is sold, it matures

into a lease and is authorized for a 10 year period. Under the proposed action, oil and gas leasing in the Richfield FO would contain 608,700 acres that are open with standard conditions, 154,500 acres open with seasonal limitations controlling surface use, 83,400 acres open under the condition of no surface occupancy, and 447,300 acres are closed.

Initial geophysical exploration involves use of ATVs and vehicles to lay the geophones and drill the shot holes for charges, or “thumpers” to create the sound waves. Exploration for oil and coal bed natural gas may also include drilling more than one well. Surface disturbance during the exploration phase of drilling includes the construction of roads, well pads, reserve pits, and other facilities.

Development of oil and gas fields includes construction pads, storage tanks, storage tank batteries, oil and gas processing facilities and necessary pipeline, compressor engines and power lines right-of-ways. Generally, each drill site includes a 3 acre pad, 1 mile of road, and 1 mile of pipeline. Directional drilling requires a larger pad size and is dependent on the number of wells drilled from each pad.

Methods to dispose of residual water from oil and gas production include: subsurface re-injection, direct surface discharge, and discharge into a containment pond or pit. Chemically polluted water may be treated before surface discharge or may be reinjected. Geothermal resources are available for exploration, development, and production and are subject to the same surface disturbance restrictions and other stipulations applied to oil and gas exploration, development, and production.

Locatable Minerals

Locatable minerals in the project area include uranium, molybdenum, gold, copper, manganese, gypsum and limestone. Minerals that are normally locatable may be leasable on acquired lands. Minerals are locatable under the 1872 Mining Law. Most public lands are open to location with the exception of withdrawn lands. The Mining Law of 1872 sets the requirements for lode claims, placer claims, and mill sites as well as discovery, location, annual filings, assessment work, and mineral examinations to establish validity. Mining law allows for individuals and corporations to prospect for minerals on public domain lands, and upon making a discovery, to stake (or “locate”) a claim on that deposit. A claim gives the holder the right to develop the minerals and may be “patented” to convey full title to the claimant. This law is under constant scrutiny, and a continuing issue is whether this law should be reformed, and if so, how to balance mineral development with competing land uses.

Surface disturbance for uranium extraction includes processing plants, evaporation ponds, equipment maintenance buildings and offices, or other various extraction support facilities disturbing approximately 5-15 acres. Potential impacts of locatable mineral developments include increased soil erosion resulting in increased sedimentation, some potential for release or exposure to toxic chemicals and wastes, individual mortality, localized population mortality, habitat loss/fragmentation, and reduction of reproductive success.

Potential impacts of locatable mineral developments include increased soil erosion resulting in increased sedimentation, some potential for release or exposure to toxic chemicals and wastes,

individual mortality, localized population mortality, habitat loss/fragmentation, and reduction of reproductive success.

Special Management Areas Programs

The following describes special management areas, including Areas of Critical Environmental Concern (ACEC); Wild and Scenic Rivers (WSR); and Wilderness Study Areas (WSAs).

Areas of Critical Environmental Concern (ACECs) - An ACEC is the principal BLM designation for public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. Management actions include limitation of OHV use to designated routes, lease for oil and gas under NSO stipulations, no allocation of livestock grazing, and regular monitoring.

Wild and Scenic Rivers - Congress designates rivers into the National Wild and Scenic Rivers system. These can include scenic, wildlife, fish, cultural and recreational values among others. Eligible/suitable rivers are given a tentative classification of wild, scenic, or recreational based upon the amount of disturbance within the river corridor. Both congressionally designated rivers and eligible/suitable segments are managed to protect the free-flowing nature of the river, the tentative classification, and the outstandingly remarkable values. Currently no wild and scenic rivers have been designated within the decision area. As part of the wild and scenic river review process, twelve river segments have been determined eligible for inclusion into the National Wild and Scenic Rivers System. With the implementation of the Proposed RMP, one eligible segment totaling 5 river miles will be managed as suitable for inclusion into the National Wild and Scenic Rivers System. Management actions include preventing modifications such as impoundments, diversions, channelization, and other actions that could alter the values of these areas.

Wilderness Study Areas - In general this means that there can be no new permanent structures or new disturbance that would require reclamation in order for the area to appear natural. The lands are closed to mineral leasing. With very few exceptions, there can be no new permanent structures or new disturbance, and no motorized or mechanized transport. The lands are closed to mineral leasing and mineral location under the mining laws. In the planning area, there are 11 designated wilderness study areas (WSAs) within what is now the RFO. These WSAs total 446,900 acres, about 21% of the RFO. A discussion of the current resource values and uses in each WSA, established in 1980 under the authority of Section 603(c) of FLPMA, can be found in the Utah BLM Statewide Wilderness Final Environmental Impact Statement (BLM 1990). Management actions in WSA's include designating open routes for motorized uses if it will not impair the area's wilderness suitability, or in this case, the BLM would take appropriate steps including use of restrictions or closures, installation of additional signs and barricades, and restoration of affected areas. In addition, non-WSA areas that retain wilderness characteristics are often managed similarly to official WSA's. In the planning area, these areas comprise at least 5,000 acres.

Non-WSA w/ Wilderness Characteristics

Non Wilderness Study Areas(WSA) with wilderness characteristics are those that have the appearance of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation, and comprise of an area of 5,000 acres or more. Non-WSA lands with wilderness characteristics were inventoried by the BLM in 1999. Based on the inventories and subsequent public comments the current non wilderness study areas with wilderness characteristics is estimated to include 551,770 acres.

12 areas identified as non-WSA lands with wilderness characteristics (78,600 acres) would be managed specifically to maintain their wilderness characteristics. Management prescriptions are: designate as VRM Class II; limit motorized use to designated routes; retain lands in public ownership; designate as an avoidance area for ROWs; designate leasing category as NSO with no exceptions, waivers, or modifications; close to mineral material sales; designate as unavailable for further consideration of coal leasing; continue maintenance and use of existing facilities; prohibit private or commercial woodland harvest or seed collection; and consider no coal leasing proposals. Healthy Lands Initiative projects may be considered where they help achieve overall goals and objectives for managing wilderness characteristics.

Transportation Management

The objective of the transportation management program is to provide a safe and effective transportation system across public lands.

Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Health and Safety Management

The primary objective of health and safety materials management is to ensure that human health and safety concerns, such as hazardous materials, wastes, abandoned mine & well sites are mitigated or eliminated. The potential for intentional or accidental releases of hazardous materials onto public lands will also be minimized to protect public and environmental health and safety on lands administered by BLM.

State office and field office contingency plans specify how personnel are supposed to respond to a hazardous substance incident, such as hazard recognition, retreating procedures, record keeping, and reporting. Contingency plans recommend using signs, fencing, and/or barricades for site security, unless such actions would create an attractive nuisance. Emergency spill response may necessitate containment measures such as building dikes, or overland vehicle and equipment travel.

Management of hazardous materials, substances, and waste (including storage, transportation, and spills) will be conducted in compliance with 29 CFR 1910, 49 CFR 100-185, 40 CFR 100-400, Comprehensive Environmental Response Compensation and Liability Act, Resource Conservation and Recovery Act, Superfund Amendment Reauthorization Act, Toxic Substances Control Act, Clean Water Act, and other federal and state regulations and policies regarding

hazardous materials management. Databases of previous mining operations exist for the decision area, but no formal inventories for abandoned mine lands have occurred. Because of previous mining operations throughout the decision area, there is a potential for physical safety hazards and/or environmental issues.

Conservation Measures

As part of the proposed action, in order to minimize the effects of the above management programs, the Richfield BLM Field Office has committed to a variety of species-specific conservation measures and, in conjunction with USFWS, developed species-specific lease notices for leases permitted under the Minerals and Energy Program. For a complete listing of the BLM committed conservation measures, lease notices, and Best Management Practices (BMPs), please refer to Appendix A.

SPECIES ACCOUNTS, EFFECTS, AND CONCLUSIONS

The following section includes species-specific information pertaining to the status and distribution of each species, the environmental baseline, and programmatic-level effects of the proposed action.

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed State or Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

“Effects of the action” refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, which will be added to the environmental baseline. Direct effects encompass the immediate, often obvious effect of the proposed action on a species or its habitat. Indirect effects are caused by, or result from the proposed action, are later in time, and are reasonably certain to occur. In contrast to direct effects, indirect effects may be more subtle, and may affect species’ populations and habitat quality over an extended period of time, long after RMP activities have been completed.

Interrelated actions are those that are part of a larger action and depend upon the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consultation.

Mexican spotted owl (*Strix occidentalis lucida*)

Status of the Species

Species / Critical Habitat Description

The Mexican spotted owl (*Strix occidentalis lucida*) is one of three subspecies of spotted owl recognized by the American Ornithologists’ Union (AOU 1957:285). The other two subspecies are the northern (*S. o. caurina*) and the California spotted owl (*S. o. occidentalis*). The Mexican subspecies is geographically isolated from both the California and northern subspecies.

The spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back and head. Several thin white bands mark an otherwise brown tail. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a

lighter appearance. *Strix occidentalis* translates as "owl of the west"; *lucida* means "light" or "bright." Unlike most owls, spotted owls have dark eyes.

Adult male and female spotted owls have similar plumage. However, the sexes can be identified by voice and size differentiation. Juveniles, subadults, and adults can be distinguished by plumage characteristics (Forsman 1981; Moen et al. 1991). Juvenile spotted owls (hatchling to approximately five months) have a downy appearance. Subadults (5 to 26 months) have pointed rectrices with white tips (Forsman 1981, Moen et al. 1991). Rectrices of adult (>27 months) feathers have rounded, mottled tips.

Although the spotted owl is often referred to as a medium-sized owl, it ranks among the largest owls in North America. Of the 19 species of owls that occur in North America, only 4 are larger than the spotted owl (Johnsgard 1988). As a species, the spotted owl averages 41-48 cm (16-19 inches) long (Earhart and Johnson 1970), 107-114 cm (42-45 inches) across the spread wings (Walker 1974), and weighs 547-647 grams (19.5-23 ounces). These measures are expressed as ranges because, similar to other owl species, spotted owls exhibit reversed sexual dimorphism (i.e., females are larger than males).

Life history and Population dynamics

Spotted owls have one of the lowest clutch sizes among North American owls (Johnsgard 1988); females lay one to three eggs, two being the most common. Mexican spotted owls breed sporadically and do not nest every year (Ganey 1988). In good years, most of the population will nest, whereas in other years only a small proportion of pairs will nest successfully (Fletcher and Hollis 1994).

Courtship begins in March and eggs are laid in late March or, more typically, early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female. Female spotted owls generally incubate for approximately 30 days. During incubation, the female leaves the nest only to defecate, regurgitate pellets, or receive prey delivered by the male, who does most or all of the foraging. The eggs usually hatch in early May (Ganey 1988). Females brood their young almost constantly, leaving their nests for only brief periods during the night. Nestling owls fledge from four to five weeks after hatching, from early to mid-June in most cases (Ganey 1988). Owlets often leave the nest before they can fly, simply jumping from the nest onto surrounding tree branches or the ground. Within a week after leaving the nest, most owlets can make short, clumsy flights. Three weeks after leaving the nest owlets can hold and tear up prey on their own, and by late July most have become proficient at pouncing on crawling insects (Forsman et al. 1984). The young depend on their parents for food during the summer and will eventually disperse out of the natal area in the fall. Reproductive output varies both spatially and temporally (White et al. 1995), but may be higher than the California and the Northern spotted owl (Verner et al. 1992, Thomas et al. 1993).

Forsman et al. (1976) described spotted owls as "perch and pounce" predators. They typically locate prey from an elevated perch by sight or sound, then pounce on the prey and capture it with their talons. Spotted owls have also been observed capturing flying prey such as birds and insects (Verner et al. 1992). Specific prey groups include: woodrats, mice, voles, rabbits,

gophers, bats, birds, reptiles, and arthropods. Spotted owls dwelling in canyons of the Colorado Plateau take more woodrats, and fewer birds, than do spotted owls from other areas.

Mortality factors include predation, starvation, and accidents. Little is known about how disease and parasites contribute to mortality of spotted owls. Avian predators include great horned owls, northern goshawks, red-tailed hawks, and golden eagles. The extent of predation is unknown; however both juveniles and adults are preyed upon (Willey 1993). Starvation may result from low abundance or availability of prey. Most instances of starvation occurred from late fall through winter when prey resources were reduced in abundance and availability (Willey 1993, Block and Ganey, unpub. data). Starvation may also predispose individuals to increased predation. Little data is available on frequency of accidents, and subsequent mortality. Instances of spotted owls being hit by cars have been documented. Owls may also collide with power lines or other obstacles (USFWS 1995).

Based on limited study information, annual survival rates of adult Mexican spotted owls is 0.8-0.9 and juvenile survival is 0.06-0.29 (USFWS 1995). Survival estimates may be biased low, but conclude higher survival of adults than juveniles. Available data is either insufficient or has not been analyzed to estimate population trends.

Status and Distribution

The Mexican spotted owl (*Strix occidentalis lucida*) was listed as a threatened species on March 16, 1993 (58 FR 14248). The primary threats to the species were cited as even-aged timber harvest and catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the Mexican spotted owl population. The Fish and Wildlife Service appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USFWS 1995).

On August 31, 2004, the USFWS designated approximately 8.6 million acres of critical habitat for the Mexican spotted owl in Arizona, Colorado, New Mexico, and Utah, on Federal lands (69 FR 53181). There are approximately 161,000 acres of designated critical habitat in the planning area including habitat in or near the Dirty Devil River drainage and the Waterpocket Fold. However, not all of these acres contain the primary constituent characteristics essential to the conservation of the species. Some of the primary constituent elements for the Mexican spotted owl include: (1) cooler and often more humid conditions than the surrounding area, (2) clumps or stringers of trees and/or canyon walls with crevices, ledges or caves, (3) high percent of ground litter and woody debris, and (4) riparian or woody vegetation. The primary constituent elements related to forest structure include (1) a range of tree species, (2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and (3) large dead trees with a trunk diameter of at least 12 inches (69 Federal Register 53181-5398).

The primary constituent elements of the critical habitat designation include those physical and biological features that support nesting, roosting, and foraging. Vegetation communities and structural attributes used by the owl vary across the range of the subspecies, but consist primarily of mixed conifer forests or canyons. The mixed-conifer, pine-oak communities and canyon habitat appear to be the most frequently used communities throughout most portions of the

subspecies' range (Skaggs and Raitt 1988; Ganey and Balda 1989, 1994; Gutierrez and Rinkevich 1991; USFWS 1995). In Utah, owls utilize canyon habitats (Willey 1998).

Primary constituent elements related to critical habitat in Utah include one or more of the following: (1) presence of water (often providing cooler temperatures and higher humidity than the surrounding areas); (2) clumps or stringers of mixed conifer, pine-oak, pinyon-juniper, and/or riparian vegetation; (3) canyon walls containing crevices, ledges, or caves; and (4) high percent of ground litter and woody debris. The primary constituent elements provide a qualitative description of those physical and biological features necessary to ensure the conservation of the owl in Utah (69 FR 53181).

Although the Mexican spotted owl's entire range covers a broad area of the southwestern United States and Mexico, the Mexican spotted owl does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older uneven-aged forests but also is known to inhabit a physically diverse landscape in the southwestern United States and Mexico. Owls can be found in forested mountains and canyons from southern Utah and Colorado to the mountains of Arizona, New Mexico, western Texas, and into the mountains of northern and central Mexico.

Steep-walled rocky canyonlands provide typical owl habitat within the Utah portion of the Colorado Plateau Recovery Unit. Canyon habitat is used by owls for nesting, roosting, and foraging and includes landscapes dominated by vertical walled rocky cliffs within complex watersheds, including many tributary side canyons. Rock walls must include caves, ledges, and fracture zones that provide protection for nesting and roosting sites. Breeding sites are located below canyon rims; however, it is known that owls use areas outside of the canyons (i.e., rims and mesa tops). Owls nest and roost primarily on cliff faces using protected caves and ledges, and forage in canyon bottoms, on cliff faces and benches, and along canyon rims and adjacent lands. Although it is difficult to rely upon vegetation alone to identify canyon habitat, these areas frequently contain small clumps or stringers of mixed-conifer, ponderosa pine, pine-oak, pinyon-juniper, and/or riparian vegetation (69 FR 53181). Little is known about patterns of habitat use by foraging owls. Willey (1998) documented owl use in Utah to include canyon bottoms and adjacent rims.

Colorado Plateau canyon habitats in Utah are naturally discontinuous and may explain the patchy locations of owls in the region. A study conducted in Zion National Park found owls nesting and roosting in humid, narrow canyons with dense understories (Rinkevich 1991). These canyons provide large cliffs with escape cover to avoid predation, shaded roost sites to avoid high summer temperatures, patches of forest vegetation, and availability of suitable prey.

Historic population size estimates and range of the Mexican spotted owl are unknown; however present population size and distribution are thought to be similar (USFWS 1995). Ninety-one percent of known owls in 1990-1993 occurred on U.S. Forest Service lands, primarily in Arizona and New Mexico. It is unknown why there are fewer owls in Utah and Colorado, but that may be a function of habitat type. Total range wide population estimates are 1,176 to 2,352 owls (69FR 53181, August 31, 2004). Seamans et al. 1999 reported 10 percent or greater population declines and low survival rates in central Arizona and west-central New Mexico. Gutierrez et al.

(2003) documented that the decline in New Mexico was continuing, whereas the decline in Arizona appeared to have stabilized. Wide population fluctuations may be common for Mexican spotted owls (Gutierrez et al. 2003).

Environmental Baseline

Status of the Species within the Action Area

Dr. David Willey and Dan Spotskey modeled Mexican spotted owl habitat based on vegetation type, slope, elevation, aspect, and other factors in 1997 and 2000 (Willey and Spotskey 1997, 2000). Both the 1997 model and the 2000 model are used within Utah to identify potential habitat. Any projects that occur within the modeled potential habitat should be field-verified for actual habitat suitability and, if appropriate, surveys according to protocol should be conducted to determine if Mexican spotted owls occupy the area. The Mexican spotted owl occurs in the eastern and southern thirds of Utah, including Garfield and Kane counties (UDWR 2003).

The Mexican Spotted Owl Recovery Plan was finalized in 1995. Six Recovery Units in the United States were identified based on similarities, or obvious dividing lines, between the following: physiographic provinces, biotic regimes, perceived threats to habitat or individual birds, administrative boundaries, and owl distribution. Suitable habitat and designated critical habitat on public lands managed by the BLM in Utah are within the Colorado Plateau Recovery Unit (USFWS 1995). Five critical habitat units have been delineated in Utah, including the following units which are located in or adjacent to the planning area:

Unit CP-11. This unit is located in Iron, Washington, and Kane Counties in southwest Utah, approximately 22 mi (35 km) northeast of St. George. About half of the unit is on BLM owned lands; Zion National Park is the other land owner.

Unit CP-12. This Unit is in the vicinity of the Kaiparowits Plateau and the Cockscomb, in Kane and Garfield Counties. This unit is primarily on the Grand Staircase-Escalante National Monument, which is owned and managed by the BLM. The other land owner is the Forest Service (Dixie National Forest).

Unit CP-13. This unit occurs in Wayne, Garfield, Kane, and San Juan Counties, Utah. It is primarily in the Waterpocket Fold landform extending to Lake Powell. The primary land owner in this Unit is the National Park Service (Capitol Reef National Park and Glen Canyon National Recreation Area). The BLM owns and manages lands within this unit primarily on the Grand Staircase-Escalante National Monument and along the eastern edge of the Unit. The Forest Service (Fishlake National Forest) also owns land, but to a much lesser extent.

Unit CP-14. This Unit lies in Wayne, Garfield, San Juan, and Grand Counties, Utah. It includes the Dark Canyon Primitive and Wilderness areas of the BLM and FS, respectively. This Unit has lands owned and managed by the National Park Service (Canyonlands National Park and Glen Canyon National Recreation Area), the BLM, and the Forest Service (Manti La-Sal National Forest).

Unit CP-15. This unit is located approximately 30 mi (48 km) east of Price, in Carbon and Emery Counties. Situated in the West Tavaputs Plateau, it is located largely along the Desolation Canyon area of the Green River. The BLM is the primary owner and manager of land within this unit.

It is important to note that critical habitat is not the only suitable or occupied habitat available for owls. Critical habitat is only a regulatory delineation of habitat meeting primary constituent elements, and was defined based largely on known localities of nest sites (Protected Activity Centers; PACs) at the time of designation. There is substantial suitable habitat that occurs outside of the designated critical habitat boundaries and these should be assessed using the models and field evaluations as previously described.

Designated critical habitat, suitable habitat, and PACs occur within the Richfield BLM Field Office. Approximately, 161,000 acres of designated critical habitat in Units CP-13 and -14 exist within the Richfield planning area. In addition, 7 PACs occur within the planning area, and 178,416 acres have been known to support Mexican spotted owls within the Richfield planning area.

Factors Affecting Species Environment within the Action Area

Threats to this species and its habitat include recreation, grazing, oil and gas exploration and development, and road improvement and development within canyons; loss, fragmentation, or modification of habitat from catastrophic fire and timber harvest within upland forests potentially used for foraging, dispersal, and wintering; and increased predation associated with habitat fragmentation (USFWS 1995).

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Potential adverse impacts to Mexican spotted owl suitable and designated critical habitat may result from land treatments occurring within watersheds. Many of these activities are meant to benefit soil resources and watersheds by reducing soil loss and reclaiming surface disturbances or unnecessary roads. However, activities occurring under this program may also increase human presence; equipment and vehicle use; vegetation manipulation; and surface disturbance in Mexican spotted owl habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); decreased nesting habitat; and decreased prey habitat. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival.

Water Resources Management

Program objectives are to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards. Potential activities occurring under this program include monitoring and treating soil erosion, evaluating and restricting surface development, monitoring water quality, applying soil management practices, and applying seasonal closures. Field activities may involve use of heavy machinery and hand tools to develop (closely linked management with Riparian Resources Program Management) riparian/wetland exclosures; stream crossings to allow for appropriate sediment and flow passage; and other stream improvements.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation manipulation; and surface disturbance in Mexican spotted owl habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); decreased cover from predators and increased predation; decreased nesting habitat; and decreased prey habitat. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey species habitat. As a result, there may be site-specific decreases in nest initiation or nesting success, and decreased owl fitness. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival.

Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise

disturbances may adversely affect the behavior of spotted owls during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of spotted owls during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with paleontological resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

Fish and Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and habitat for prey species. Short-term adverse impacts may include, but not be limited to: fragmentation of prey habitat; decreased nest initiation or nesting success; decreased adult and owlet fitness; and alterations of water distribution within occupied habitat of the Mexican spotted owl. In general, long-term efforts to improve the health of riparian habitats may benefit Mexican spotted owls by increasing prey abundance.

Wild Horse and Burro Management

The objective of wild horse and burro management is the protection, management, and control of wild free-roaming horses and burros (WH&B) on public lands. Management includes maintaining viable herds that will preserve the free-roaming nature of WH&Bs in a manner that is designed to achieve and maintain thriving ecological balance on the public lands.

Activities occurring under this program may increase human presence; equipment, helicopter, and vehicle use; vegetation treatment or disturbance; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and habitat for prey species. Short-term adverse impacts may include, but not be limited to: fragmented prey habitat; decreases in nest initiation or nesting success; and decreased adult and owlet fitness.

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance; and decrease local air quality in Mexican spotted owl habitats. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, roosting, or foraging activities. Vegetation disturbances or vegetation removal may decrease prey habitat and prey abundance. Soil disturbances and increased erosion may indirectly decrease abundance of prey. Localized effects from smoke may adversely affect owlets or displace owls. As a result of these impacts, there may be site-specific decreases in nest initiation or nesting success, increased potential for displacement, and increased owlet and adult mortality.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats. Negative short term impacts include harassment or displacement; or immediate post-project alteration of key prey habitat components from surface disturbance. Fire management activities could benefit prey populations of Mexican spotted owls in the long-term due to improved forage quality and quantity.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The Forestry and Woodlands Management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forest resources support activities such as road construction that may occur in or near existing or suitable Mexican spotted owl habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance near or in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation may adversely affect prey habitat and prey availability, and therefore, adversely affect Mexican spotted owls and their young. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat and prey abundance. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation disturbance; and minor surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation, more invasive plant species, fragmented prey habitat and adverse affects to availability of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. As a result, there may be decreases in nest initiation or nesting success, and increased adult and owlet mortality.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Construction of power lines or other infrastructure may result in electrocutions, entanglements, or collisions with flying birds, resulting in possible mortality. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

Minerals and Energy Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities.

Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

These occurrences may increase human presence; equipment and vehicle use; vegetation disturbance or removal; soil disturbances; invasive plant species; and pollutants in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Some ancillary equipment associated with energy development (e.g., transmission lines, oil pits) may result in direct mortality of owls if they become impinged on the lines or caught in the pits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. Pollutants in the area may affect Mexican spotted owls through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult or owlet fitness.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness. There is some potential for owls to be killed in vehicle collisions on roadways.

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, and roads occur within all of the planning areas analyzed in this document, and have some potential to occur in Mexican spotted owl habitat. Activities occurring under this program may increase human presence; equipment and vehicle use;

vegetation treatment or disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely impact prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owllet fitness.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the Mexican spotted owl and designated critical habitat under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.
- Encroachment of human development into a species' critical, suitable, or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

Mexican spotted owls occur throughout much of the action area, generally as year-around residents (Ganey and Block 2005). In these areas, Mexican spotted owl locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Mexican spotted owls are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads) development, research, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within the Mexican spotted owl's range. Contributing as cumulative effects to the proposed action, these activities will continue to affect Mexican spotted owls' productivity with disturbances to breeding, nesting, and foraging behaviors and further fragmenting habitat of prey populations.

Conclusion

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the Mexican spotted owl and its critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the USFWS's biological opinion that the Richfield BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Mexican spotted owl, and is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Status of Species

Species/Critical Habitat Description

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small passerine bird associated with riparian habitats and a subspecies of *Empidonax traillii*. This species was listed as endangered under the Endangered Species Act of 1973, as amended (ESA), on February 27, 1995 (USFWS 1995). On October 19, 2005, 120,824 acres of critical habitat were designated for southwestern willow flycatchers across Arizona, New Mexico, California, Nevada, and Utah (USFWS 2005). Within Utah, critical habitat was only designated along the Virgin River in Washington County, an area not part of this consultation. Therefore, there will not be any further mention of critical habitat for southwestern willow flycatchers in this consultation.

The southwestern willow flycatcher is a small bird, approximately 15 centimeters (cm) (5.75 inches) long. It has a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. Two wing bars are visible; the eye ring is faint or absent. The upper mandible is dark, the lower is light. The southwestern willow flycatcher is one of four currently recognized subspecies of the willow flycatcher (*E. trailli*) (Hubbard 1987; Unitt 1987; Sogge 2000; USFWS 2001 and 2002). The *E. t. extimus* subspecies was first described by Phillips (1948) and later re-evaluated and accepted as a subspecies by Unitt (1987) and Browning (1993).

The *E. t. extimus* is paler than the other willow flycatcher subspecies and also differs in morphological characteristics: e.g., wing: tail ratio, wing formula; and bill length (Unitt 1987 and 1997; Browning 1993; USFWS 2001 and 2002). These differences are difficult to distinguish and are not reliable characteristics for field identification. The characteristic song of willow flycatcher species is often referred to as a "fitz-bew". Travis (1996) and Sedgwick (1998 and 2001) suggest that clinal variations in willow flycatcher songs also serve to distinguish between subspecies, but this too is unreliable as a definitive field identification tool. In southern Utah, southwestern Colorado, and perhaps New Mexico, clinal gradations of the *E. t. extimus* and Great Basin/Rocky Mountain willow flycatcher (*E. t. adastus*) are thought to occur (USFWS

2002). Phillips et al. (1964) suggested that the *E. t. extimus* may be typical of lower elevations, and in northern parts of its range (including Utah), clinal gradation with the Great Basin subspecies may exist with increasing elevation and latitude. Recent research (Paxton 2000) concluded that the *E. t. extimus* is genetically distinct from the other willow flycatcher species. However, clinal gradation increases the difficulty of subspecies identification without genetic testing.

Life history and Population dynamics

Male southwestern willow flycatchers generally arrive at breeding grounds first, with females typically arriving a week or two later. Males are usually monogamous, but polygamy has been recorded (Sogge et al. 1997). Nests are usually built within a week of pair formation. Egg-laying begins as early as May but typically occurs in mid-June. The female provides initial care of the nestlings, the role of the male increases with the age and size of the young. Young typically fledge at 12 to 15 days of age, usually between June and mid-August. Second clutches are common if the first attempt is unsuccessful. Territory size varies among the southwestern willow flycatcher, probably due to differences in population density, habitat quality, and nesting stage.

Open, cup-shaped nests are typically constructed in the fork of a branch. Historically, most southwestern willow flycatcher nests (75-80%) were constructed in willows. Currently, the species nests in a variety of plant species, including exotic species such as tamarisk.

Information on breeding site fidelity and persistence is limited. Studies of banded birds (Whitfield and Strong 1995; Whitfield and Enos 1996) report varying rates of nestlings returning to study sites to breed. Sogge and Tibbits (1994) reported the return of breeding populations to sites that had been unoccupied for several years, indicating that a habitat cannot be assumed unsuitable or unoccupied in the long term based on absence of southwestern willow flycatchers during a single year.

The southwestern willow flycatcher breeds in different types of dense riparian habitats across a large elevational and geographic area. Although the other willow flycatcher subspecies may breed in shrubby habitats away from water, the southwestern willow flycatcher breeds in patchy to dense riparian habitats along streams or other wetlands, near or adjacent to surface water or underlain by saturated soil. Occupied southwestern willow flycatcher sites consist of dense vegetation in the patch interior that is generally 3 to 4 m (10 to 13 ft) above ground, or in aggregates of dense patches interspersed with openings. Saturated soil is present at or near the breeding site during wet or non-drought years (Sogge et al. 1997, Sogge and Marshall 2000, USFWS 2001 and 2002). Rangewide, common tree and shrub species comprising nesting habitat include willows (*Salix* spp.), seepwillow or mulefat (*Baccharis* spp.), box elder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.) cottonwood (*Populus* spp.) arrowweed (*Tessaria sericea*), tamarisk or saltcedar (*Tamarix ramosissima*), and Russian olive (*Elaeagnus angustifolia*). Dominant plant species, size and shape of habitat patch, canopy structure, vegetation height, etc., vary widely across the *E. t. extimus*'s range. In Utah, the southwestern willow flycatcher is typically found in mixed native and exotic riparian species habitats, generally dominated by coyote willow, tamarisk and Russian olive (Johnson et al. 1999a and 1999b).

Little specific information is known about migration and wintering ecology of the southwestern willow flycatcher (Yong and Finch 1997, Finch et al. 2000). Willow flycatchers (all subspecies) breed in North America, but winter in Mexico, Central America, and possibly northern South America (Phillips 1948, Stiles and Skutch 1989, Ridgely and Tudor 1994, Howell and Webb 1995, Sogge et al. 1997).

Status and distribution

The historical breeding range of the southwestern willow flycatcher included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico (Hubbard 1987; Unitt 1987; Browning 1993; USFWS 2002). The flycatcher's current range is similar to the historical range, but the quantity of suitable habitat within that range is much reduced from historical levels. The flycatcher occurs from near sea level to over 2600 m (8500 ft), but is primarily found in lower elevation riparian habitats (USFWS 2002). Throughout its range, the flycatcher's distribution follows that of its riparian habitat; relatively small, isolated, widely dispersed locales in a vast arid region (USFWS 2002). Surveys for the southwestern willow flycatcher have been conducted by the UDWR.

The Recovery Plan (USFWS 2002) divides the southwestern willow flycatcher's breeding range into six Recovery Units, which are subdivided into Management Units. Recovery Units are defined based on large watershed and hydrologic units; standardized boundaries of river basin units within the U.S. Within each of the six Recovery Units, multiple Management Units are delineated based on a geographic area representing all or part of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. The outer limits of both the Recovery Unit and Management Unit boundaries are defined by the southwestern willow flycatchers' range (USFWS 2001 and 2002).

The State of Utah falls within the Lower Colorado and Upper Colorado Recovery Units. The Upper Colorado Recovery Unit covers much of the four-corners area of southern Utah, southwestern Colorado, northeastern Arizona, and northwestern New Mexico. The northern boundary of the Upper Colorado Recovery Unit is delineated by the northern range boundary of the southwestern willow flycatcher. Ecologically, this region may be an area of clinal gradation between the southwestern willow flycatcher and the Great Basin willow flycatcher. The Lower Colorado Recovery Unit is a geographically large and ecologically diverse Recovery Unit, encompassing the Colorado River and its major tributaries, from Glen Canyon Dam downstream to the Mexico border (USFWS 2001 and 2002).

As previously discussed, recent genetic work (Paxton 2000) verified *E. t. extimus* genetic stock in the San Luis Valley of south-central Colorado and the Virgin River in Utah. Paxton's (2000; as cited in USFWS 2002) research showed that the northern boundary for southwestern willow flycatchers was generally consistent with that proposed by Unitt (1987) and Browning (1993), and subsequently used in the Final Recovery Plan (USFWS 2002). Paxton's (2000) research further illustrated that the willow flycatcher in central Utah does not have the genetic markers of *E. t. extimus* and is more closely related to *E. t. adastus*. However, because of the absence of flycatchers in the lower- to mid-elevations of the Colorado Plateau in southern Utah and southwestern Colorado, Paxton (2000; as cited in USFWS 2002) did not address potential sub-

specific differences resulting from elevation or habitat differences and watershed boundaries. Analysis of willow flycatcher vocalizations in central Utah also suggests association with *E. t. adastus*. The Final Recovery Plan (USFWS 2002) adopts a range boundary that reflects Paxton's (2000) and Sedgwick's (2001) results; the northern extent of southwestern willow flycatchers is confined to the southern portions of Utah. In the Recovery Plan, the USFWS acknowledges that new data may result in refinements to the northern range boundary currently recognized (USFWS 2002). This is based on the limited genetic information in portions of central and eastern Utah, particularly along major drainages including the Colorado and Green Rivers. Therefore, the USFWS Utah Field Office considers potential distribution for southwestern willow flycatchers to possibly extend further north than the Recovery Plan boundary.

The reasons for the decline of the southwestern willow flycatcher and current threats to its conservation are numerous, complex and inter-related (USFWS 2001, 2002). The major factors threatening the species include habitat loss and modification; invasion of breeding habitats by exotic plant species; brood parasitism by brown-headed cowbirds; the vulnerability of small southwestern willow flycatcher population numbers; and stresses that occur to the species during migration and in wintering habitats. These factors vary in severity over the southwestern willow flycatcher's range, and several are likely to have cumulative and synergistic effects (USFWS 1997).

For more information regarding the life history and population dynamics, see the Final Recovery Plan for the Southwestern Willow Flycatcher (USFWS 2002).

Environmental Baseline

Status of the Species within the Action Area

E. t. extimus may have always been rare in southern Utah (Behle pers. comm. cited in Unitt 1987). However where habitat existed along the Colorado River and its tributaries in southeastern Utah, it was thought to be a locally common breeding and migratory resident (Behle and Higgins 1959). Few data are available on population trends in southern Utah. There is a lack of genetic information to draw a definitive range boundary, particularly as it pertains to the central and eastern portions of the State (USFWS 2002), including the planning area. However, there is the potential for the flycatcher to occur within the planning boundary, and thus it is analyzed in this biological opinion.

Factors Affecting Species Environment within the Action Area

The main threats to the species have been attributed to loss, modification, and fragmentation of riparian breeding habitat, loss of wintering habitat, and brood parasitism by the brown-headed cowbird (Whitfield 1990; Sferra et al. 1995; Sogge et al. 1997; McCarthy et al. 1998; USFWS 2002). The southwestern willow flycatcher and its habitat are threatened by urban, recreational, and agricultural development, water diversion and groundwater pumping, channelization, dams, and livestock grazing (USFWS 2002). Fire is an increasing threat to southwestern willow flycatcher habitat (Paxton et al. 1996), especially in monotypic salt cedar vegetation (DeLoach 1991) and where water diversions and/or groundwater pumping desiccates riparian vegetation (Sogge et al. 1997).

Floodplains and associated riparian vegetation were once dominated by a wide band of trees, principally cottonwood and willows (Horton 1977). Arrowweed and mesquite were dominant in many upland areas (Horton 1977). Graf (1982) reports that tamarisk was introduced into the United States in the early 1800s and into the American Southwest by 1856. From 1925 through 1960, tamarisk rapidly spread throughout Utah with the greatest degree of invasion occurring from 1935 to 1955 (Christensen 1962). Tamarisk changes channel morphology from braided, shallow systems to ones that are constrained, centralized, and deeper. Dense tamarisk vegetation reduces the channel capacities of normal flow events and has been cited as the cause of disastrous flooding (Graf 1982). Southwestern willow flycatcher habitat may be very vulnerable to the changes tamarisk invasion brings about in stream morphology and ecology. The effects of tamarisk to breeding southwestern willow flycatchers may not be as apparent as the effects to their habitat. Owen and Sogge (2002) studied 12 parameters of physiological condition of 130 southwestern willow flycatchers in native vegetation and tamarisk and found no evidence that flycatchers breeding in tamarisk exhibit poorer nutritional condition or are suffering negative physiological affects. However, breeding success and the number of species supported within a tamarisk stand is reduced (Anderson et al. 1977).

Effects of the Action

Soil Resources

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation manipulation; stream alteration; and minor surface disturbance in southwestern willow flycatcher habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, and foraging behaviors (associated with noise and visual disturbances); decreased nesting habitat; decreased cover from predators and increased predation; insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers. There is some potential that work in riparian areas could result in mortality of nestlings; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

Water Resources

Program objectives are to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards. Potential activities occurring under this program include monitoring and treating soil erosion, evaluating and restricting surface development, monitoring water quality, applying soil management practices, and applying seasonal closures. Field activities may involve use of heavy machinery and hand tools to develop (closely linked management with Riparian Resources Program Management) riparian/wetland exclosures; stream crossings to allow for appropriate sediment and flow passage; and other stream improvements.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation manipulation, stream alteration, and minor surface disturbance in southwestern willow flycatcher habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); decreased nesting habitat; decreased cover from predators and increased predation; decreased insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers. There is some potential that work in riparian areas could result in mortality of nestlings; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

Vegetation Resources

Program objectives are to maintain or improve the diversity of plant communities to support livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease insect prey populations. Release of biological control agents may have site-specific and wide ranging effects that may need to be further considered (refer to the Reinitiation Section of this BO) dependent in part on the release organism, e.g., salt cedar leaf beetle. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

Cultural Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during

breeding, nesting, or foraging efforts. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. As a result, there may be decreases in nest initiation or nesting success. There is some potential for vegetation removal to result in nestling mortality.

Paleontological Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging efforts. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. As a result, there may be decreases in nest initiation or nesting success. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Special Status Species Management

Objectives of the special status species program include maintenance of biological diversity of plant and animal (terrestrial and aquatic) species by supporting the State Division of Wildlife Resources' strategic plans for wildlife population objectives to the extent practical and consistent with BLM multiple-use management requirements. Other objectives include the development of protective measures for federally listed species and other special status species; cooperations with other agencies in managing listed species; facilitation of scientific research of special status species and their habitats; and to the extent possible, avoidance of habitat fragmentation.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

Fish and Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of nesting habitat, cover from predators, and insect prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors; decreased nesting habitat; decreased cover from predators and increased predation; decreased insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. In some cases, management activities beneficial for one species may be detrimental to another species. In general, long-term efforts to improve the health of riparian habitats may benefit southwestern willow flycatchers by increasing nesting success, increasing insect prey abundance, and decreasing predation.

Wild Horse and Burro Management

The objective of wild horse and burro management is the protection, management, and control of wild free-roaming horses and burros (WH&B) on public lands. Management includes maintaining viable herds that will preserve the free-roaming nature of WH&Bs in a manner that is designed to achieve and maintain thriving ecological balance on the public lands.

Activities occurring under this program may increase human presence; equipment, helicopter and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of nesting habitat, cover from predators, and insect prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors; decreased nesting habitat; decreased cover from predators and increased predation; decreased insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers.

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation

following wildfires. Fire suppression methods may involve fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal decrease availability of nesting habitat; decrease cover from predators and increase predation; and decrease prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for fire management activities to result in adult or nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats. Negative impacts include harassment or displacement; or immediate post-project alteration of adjacent habitat from surface disturbance.

Long-term benefits of this program, as vegetation is reestablished, may include increased nesting success, increased insect prey abundance, and decreased predation.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The Forestry and Woodlands Management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forest resources support activities such as road construction may occur in or near existing or suitable southwestern willow flycatcher habitat. Impacts associated with these activities are described under the Lands and Realty Program effects analysis.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation decrease availability of nesting habitat; decrease cover from predators and increase predation; and decrease prey populations and prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers

and their prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder some wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; vegetation disturbance; and minor surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation; an increase in invasive plant species; increased fragmented habitat; reduced availability of nesting habitat; decreased cover from predators and increased predation; and decreased availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal, particularly prescribed fire, to result in nestling or adult mortality; however implementation of the applicant committed conservation measures should minimize this potential.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in southwestern

willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers and their prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in southwestern willow flycatcher habitat. Associated noise disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers and their prey species. Exchange or sales of lands may lead to fragmentation and loss of the species suitable habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and nestling fitness. There is some potential for activities authorized under this program to result in bird mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Minerals and Energy Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility

construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence; equipment and vehicle use; surface disturbance; and increased occurrence of chemical leaks in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatcher and their prey species. Pollutants in the area may affect southwestern willow flycatchers, prey populations, and vegetation. As a result of these impacts, there may be decreases in nest initiation or nesting success and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. Ancillary facilities such as oil pits may result in direct mortality of birds if they forage over or become trapped in the pits.

Travel Management

The objectives of the travel management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human presence; equipment and vehicle use; surface disturbance; and increased occurrence of chemical leaks in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatcher and their prey species. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, roads, and railroad transportation systems occur within all of the planning areas analyzed in this document, and have the potential to occur in southwestern willow flycatcher habitat. Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to federally protected southwestern willow flycatchers under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' suitable or potential habitat.
- Encroachment of human development into a species' suitable or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

Few southwestern willow flycatcher breeding sites and territories have been found in Utah. In these areas, southwestern willow flycatcher habitat is surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Southwestern willow flycatchers are susceptible to activities on State and private lands. Many of these activities, such as urban growth and development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation; road construction; fuels-reduction treatments; research; grazing activities (including alteration or clearing of native habitats for domestic animals); oil and gas exploration and development; introduction of non-native plant or wildlife species (which can alter native habitats and alter prey populations); and other associated actions. Increases or changes in cowbird foraging areas (construction of corrals, grazing of domestic stock, placement of bird feeders) and habitat fragmentation may increase the parasitism rate and decrease southwestern willow flycatcher

reproduction. Continued and future conversion of floodplain and near shore lands will likely eliminate opportunities to restore floodplains to develop willow flycatcher habitat. Increased recreation, camping, off-road vehicle use, and river trips may harass and disturb breeding birds or impact nesting habitats. Contributing as cumulative effects to the proposed action, these activities will continue to affect southwestern willow flycatcher productivity with disturbances to breeding, nesting, and foraging behaviors and habitat (including areas of designated critical habitat), and further fragmenting habitat.

Conclusion

The conclusions of this biological opinion are based on full implementation of the programs as described in the “Description of the Proposed Action” section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the status of the southwestern willow flycatcher, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the USFWS’s biological opinion that the Richfield BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the southwestern willow flycatcher, and is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Utah prairie dog (*Cynomys parvidens*)

Status of Species

Species/Critical Habitat Description

The Utah prairie dog (*Cynomys parvidens*) is part of the most social genus in the squirrel family. The Utah prairie dog is the smallest of the five prairie dog species and is endemic to Utah. This species was listed as an endangered species on June 4, 1973 (38 FR 14678), pursuant to the Endangered Species Conservation Act of 1969. In 1979, because of the improved status of the species and population increases on private lands in the Cedar and Parowan Valleys, the UDWR petitioned the USFWS to remove the Utah prairie dog from the U.S. List of Endangered and Threatened Wildlife. The UDWR also petitioned the USFWS to develop a special rule under section 4(d) of the Endangered Species Act to allow “take” of 5000 animals annually between June 1 and December 31 on agricultural lands in Cedar and Parowan Valleys in Iron County. Upon reviewing all pertinent biological data, the USFWS determined that the Utah prairie dog was not currently in danger of extinction and published the Final Rule reclassifying the species to threatened with a 4(d) rule on May 29, 1984 (49 FR 22330). In June of 1991, the 4(d) special

rule was revised to include all agriculture land throughout the range of the species and to increase the take from 5000 to 6000 animals annually (USFWS 1991b).

A burrowing member of the squirrel family, the Utah prairie dog is one of three species of prairie dogs that live in Utah, all of which are in the subgenera *Leucocrossuromys* or white-tailed prairie dogs. Utah prairie dogs range in color from cinnamon to clay, with dark markings above the eyes and white on the tip of the tail (Pizzimenti, 1975). Adult Utah prairie dogs measure from 12 to 14 inches in length.

Utah prairie dogs forage primarily on grasses and forbs, and tend to select those with higher moisture content (Crocker-Bedford 1976). They often select colony sites in swales where the vegetation can remain moist even in drought conditions (Collier 1975, Crocker-Bedford and Spillet 1981). Vegetation must be short stature to allow the prairie dogs to see approaching predators as well as have visual contact with other prairie dogs in the colony (Collier 1975, Crocker-Bedford and Spillet 1981). Soils need to be well drained for burrow sites. Burrows must be deep enough to protect the prairie dogs from predators as well as environmental and temperature extremes. Utah prairie dogs are found in elevations from 5,400 feet on valley floors up to 9,500 feet in mountain habitats.

Life History and Population Dynamics

Prairie dogs hibernate, ceasing surface activity during the harsh winter months. Adult males usually cease surface activity in September, followed by adult females several weeks later. Juvenile prairie dogs remain active as late as November. It is thought that adult females and juveniles go into hibernation later than males because they require additional time to build the necessary fat stores to maintain them through the winter. Utah prairie dogs are not totally dormant in winter and have been observed above ground during all months of the year. Emergence from hibernation usually occurs in March, and is thought to be triggered by temperature. Mating occurs soon after emergence.

Generally, females give birth to one litter per year, with an average of four young which are born in April after a gestation period of 30 days (Pizzimenti and Collier 1975, Wright-Smith 1978, Mackley et al. 1988). However, Mackley et al. (1988) report that 3% of adult females do not bring a litter above ground each year. Young appear above ground at five to seven weeks of age, are full grown by October of their first year and reach sexual maturity at one year. One half to two thirds of the adult population of the Utah prairie dog is female (Mackley et al. 1988); the skewed sex ratio is attributed to higher mortality rate in young males due to conflicts with adult males (USFWS 1991a).

Utah prairie dogs are organized into social groups consisting of an adult male, several females, and their young (Wright-Smith 1978). The clans are loosely organized with no observable dominance hierarchy. Similar to *C. gunnisoni*, adult female Utah prairie dogs play the major role in caring for young and warning of danger (Wright-Smith 1978). Geographic boundaries of clans remain fairly constant within a colony, and young prairie dogs are the only ones to regularly cross boundaries. Utah prairie dogs will use common feeding grounds, but still maintain elements of territoriality in those areas (Wright-Smith 1978). Social behaviors,

especially socially facilitated vigilance and subsequent warning vocalizations, are extremely important to survival of individuals in colonies and to the overall well-being of the colony, itself.

Predators of Utah prairie dogs include: badgers, coyotes, raptors, fox, and weasels. In an established prairie dog colony, predators do not make a significant impact; conversely they have a huge impact on translocation sites where an established social system or burrow system is not present.

Utah prairie dog populations are susceptible to sylvatic plague (*Yersinia pestis*), a bacterium introduced to the North American continent in the late 1800's (Cully 1993). There is a limited understanding of the variables that determine when sylvatic plague will impact prairie dog populations. Fleas are the vectors that spread the disease and can be brought into the vicinity of a prairie dog colony by a suite of mammals. Plague outbreaks generally occur when populations increase to high densities causing increased stress among individuals and easier transmission of disease between individuals.

Status and Distribution

The species' range, which is limited to the southwestern quarter of Utah, is the most restricted of all four prairie dog species in the United States. As ascertained by Collier (1975), the species distribution was much broader prior to control programs and in the past, extended across the desert almost to the Nevada-Utah state line. At one time, the species was known to occur in approximately 700 sections in 10 areas of southwestern Utah. The total species population was estimated to be 95,000 animals prior to control programs in the 1920's (Turner 1979).

By the 1960's, distribution of the Utah prairie dog was greatly reduced due to a non-native disease (sylvatic plague), poisoning, drought, and human-related habitat alteration resulting from cultivation and poor grazing practices. Studies by Collier and Spillett (1972) indicated that the Utah prairie dog had declined or been eliminated from major portions of its estimated historical range. By 1972, they estimated that there were 3,300 Utah prairie dogs in 37 separate Utah prairie dog colonies.

The decreasing trend in Utah prairie dog counts prior to 1972 appears to have stabilized (Heggen and Hasenyager 1977), though numbers have vacillated greatly (McDonald 1993). Total counts have been as high as 7,400 in the 1989 spring census count (Coffeen 1989) with a low count of 3,500 animals in 1992, largely due to climatic and disease factors (McDonald 1993). Census counts most likely underestimated the total number of adult animals because only 40 to 60 percent of individual prairie dogs are above ground at any one time (Crocker-Bedford 1975). Significant concentrations of Utah prairie dogs presently occur in only three areas: the Awapa Recovery Area, the Paunsaugunt Recovery Area, and the West Desert Recovery Area.

Reestablishment of Utah prairie dog populations on public lands is identified in the Recovery Plan to ensure the continued existence of the species (USFWS 1991). Thus, in 1972, the Utah Division of Wildlife Resources (UDWR) initiated a transplant program to move animals from private agricultural lands to areas of historical occupancy on public lands. Over a 31-year period from 1972 to 2002, over 19,561 Utah prairie dogs were translocated to public land sites (Bonzo and Day 2003). Although initial survival has been limited, the number of Utah prairie dog colonies on public lands has increased. Increases in the known number of active colonies on

public land can be attributed to a combination of factors including the translocation program, natural increases, dispersal from existing sites, and discovery of previously unrecorded colonies.

In 1994, the Recovery Implementation Team (RIT) was formed, due in large part to the cooperative efforts of federal and state agencies. In 1997, the RIT developed an Interim Conservation Strategy (ICS) to direct recovery activities including habitat improvement and translocation efforts, as well as direct research activities to further improve conservation and recovery measures. The ICS was intended to supplement the existing Recovery Plan and eventually provide additional data to facilitate a Recovery Plan revision. Federal agencies involved in management of the Utah prairie dog have worked to recover and conserve the Utah prairie dog and its' habitat using the best available information and adaptive management practices.

Rangewide spring survey counts conducted by the UDWR in the spring of 2004 reported 4022 adult Utah prairie dogs (unpublished data, UDWR). Despite the aforementioned public land efforts of establishing new Utah prairie dog colonies and supplementing existing ones, approximately 68% of Utah prairie dogs still occur on private and other non-federal lands (unpublished data, UDWR).

Environmental Baseline

Status of the Species within the Action Area

Utah prairie dog populations and/or suitable habitat occur within the administrative boundaries of BLM's Richfield Field Office. The Utah prairie dog presently occurs in principal concentrations in three recovery areas (Pizzimenti and Collier 1975, USFWS 1991). The project area encompasses the Awapa Plateau recovery area in Sevier, Piute, Wayne, and Garfield counties. The Awapa Plateau Recovery Area contains 11% of all Utah prairie dogs (UDWR unpublished, 2005). The Awapa Plateau Recovery Area is currently the furthest from meeting the recovery goals identified in the Recovery Plan due to few and sparsely distributed colonies. However, this area has been experiencing an overall upward population trend since 1990 to present. From 1990 through 2005 spring counts on all lands including private and public, increased from 367 to 571 prairie dogs (Division unpublished 2005).

Factors Affecting Species Environment within the Action Area

Utah prairie dog populations are susceptible to sylvatic plague (*Yersinia pestis*) (Cully 1993). Fleas are the vectors that spread the disease and can be brought into the vicinity of a prairie dog colony by a suite of mammals. Plague outbreaks generally occur when populations increase to high densities causing increased stress among individuals and easier transmission of disease between individuals (USFWS 2007).

Threats to the species include intentional poisoning, shooting, urban development, diseases such as plague, habitat loss and degraded habitat quality, and environmental conditions such as vegetation changes and drought (Crocker-Bedford 1975; Stoddart *et al.* 1975; Collier and Spillett 1975; USFWS 1991). Factors leading to degraded habitat quality arise from land ownership and management practices, including overgrazing and fire suppression. Overgrazing has lead to vegetation changes from grass to shrub; erosion of the swales that were historically

occupied by Utah prairie dogs; and lowered water tables which in turn reduce the amount of moisture available for palatable grasses and forbs that supply summer food for Utah prairie dogs (Crocker-Bedford 1975). Habitat loss and poor habitat quality are immediate concerns for the remaining Utah prairie dogs. Most of the species distribution occurs on private lands which are or will be largely developed for agricultural production or housing (USFWS 1991).

Effects of the Action

Soil Resources

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Soil resource management actions, such as land treatments and reclamation may provide both beneficial and negative effects to the species. Beneficial effects may be realized in the form of improved soil conditions and improved vegetation. The reclamation of roads and other projects would help reduce the potential for vehicle collisions and reduce the spread of noxious and invasive weeds carried by vehicles and equipment traveling the roads.

Negative effects would be largely short term in nature. Damage to burrows may occur as a result of using heavy equipment for land treatments and rehabilitation projects. Increased human presence may alter Utah prairie dogs behavior reducing the amount of time available for the species to forage and causing an unnecessary expenditure of energy in fleeing and alerting others.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Vegetation management activities have the potential to occur in or near suitable or occupied habitat of the Utah prairie dog. These activities may positively and/or negatively impact Utah prairie dogs and their habitat. Beneficial impacts may include improvements to forage from treatments and reseeded or reduction of grazing or OHV disturbance as a result of fencing.

Potential adverse impacts may include direct mortality of individuals from chemical treatments, increased human presence, and damage to burrows. Chemical treatments and weed spraying have the potential to cause direct mortality and indirect effects to fitness due to poisoning from overspray or chemical drift. Increased human presence (and associated noise and visual stimulation) due to vegetation management activities may result in disturbance and displacement of individuals from occupied habitats, affecting typical activity patterns, foraging and

reproductive behavior, and leading to physical distress, decreased health, and/or mortality. Damage to burrows may occur as a result of using heavy equipment for reseeding or mechanical removal of undesirable vegetation. Additionally, surface disturbance activities may result in erosion or degradation of habitat and lead to reduced Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation.

Cultural Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Cultural resource surveys and related activities have the potential to occur in Utah prairie dog habitat and affect the species. Activities occurring under this program may increase human presence in Utah prairie dog habitat during resource surveys and cultural or fossil resource excavations. Associated noise and visual stimulation may lead to disturbance and displacement of individuals from occupied habitats and change foraging and reproductive behavior. Excavation-related surface disturbance activities may lead to erosion or degradation of habitat due to vegetation removal, and thereby reduce Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation. Other potential direct or indirect impacts may include mortality due to excavation activities, and/or due to increased human presence near prairie dog towns that can alter typical activity patterns and lead to physical distress and decreased health.

Paleontological Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Paleontological resource surveys and related activities have the potential to occur in Utah prairie dog habitat and affect the species. Activities occurring under this program may increase human presence in Utah prairie dog habitat during resource surveys and cultural or fossil resource excavations. Associated noise and visual stimulation may lead to disturbance and displacement of individuals from occupied habitats and change foraging and reproductive behavior. Excavation-related surface disturbance activities may lead to erosion or degradation of habitat due to vegetation removal, and thereby reduce Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation. Other potential direct or indirect impacts may include mortality due to excavation activities, and/or due to increased human presence near prairie dog towns that can alter typical activity patterns and lead to physical distress and decreased health.

Special Status Species Management

The management objectives of this program are to maintain and improve forage production and quality of rangelands, fisheries, and wildlife habitat, and provide habitat for threatened and

endangered and other special status plant and animal species on all public lands in compliance with ESA, BLM policy, and approved recovery plans. Management activities may benefit species through the provision of guidance, monitoring, and conservation measures.

Surface disturbing activities necessary for habitat improvements could destroy existing colony structure and cause direct mortality of individuals. Additionally, surface disturbance may result in erosion or degradation of habitat and lead to reduced Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation. However, if activities were established to promote new-growth vegetation including native grasses and forbs (i.e., prescribed burns), these activities would likely benefit Utah prairie dogs overtime, even though short-term impacts could be adverse. If vegetation alterations were aimed at establishing a shrub component, Utah prairie dog habitat may be lost or degraded. Increased human presence may alter Utah prairie dogs behavior reducing the amount of time available for the species to forage and causing an unnecessary expenditure of energy in fleeing and alerting others. An activity conducted under the threatened and endangered species program that could result in short-term and long-term impacts to Utah prairie dogs is the translocation program. Utah prairie dog translocations have the potential to result in direct mortality of individuals during capture, release, and the acclimation period in their new environments. Transplanted Utah prairie dogs may be stressed and more sensitive to the effects of grazing and experience increased mortality rates, since they often face high predation risks following transplantation and forage widely and less vigilantly in response to low food availability at the translocation sites. However, long-term impacts are generally beneficial and include the establishment of new populations and preservation of genetic stock.

Fish and Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species. Due to the generality of activities under this program, they also occur under other programs. Due to the many different species in the Field Office area, BLM is likely to encounter management situations where there are species' with conflicting habitat requirements. Therefore, it is likely that a management activity beneficial for one species may not be beneficial for other species.

Activities from the fish and wildlife management program that may impact Utah prairie dogs include habitat improvements that require surface or vegetation disturbances, prescribed burns, fencing, and developing water sources. These activities could have both positive and negative impacts to Utah prairie dogs depending upon their goals and the overall proximity to the species and/or suitable habitat.

Surface disturbing activities could destroy existing colony structure and cause direct mortality of individuals. Additionally, surface disturbance may result in erosion or degradation of habitat and lead to reduced Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation. However, if activities were established to promote new-growth vegetation including native grasses and forbs (i.e., prescribed burns), these activities would likely benefit Utah prairie dogs overtime, even though short-term impacts could be adverse. If vegetation alterations were aimed at establishing a shrub component (i.e., big game and sage-grouse habitat improvements), Utah prairie dog habitat may be lost or degraded. Increased human presence

may alter Utah prairie dogs behavior reducing the amount of time available for the species to forage and causing an unnecessary expenditure of energy in fleeing and alerting others. Development of water resources in and around Utah prairie dog colonies would provide the species with increased access to available water; however other wildlife would also utilize this resource, increasing potential negative impacts (i.e., colony trampling and increased grazing pressures).

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Utah prairie dogs and suitable habitat occur in grassland and sagebrush habitats. All components of fire management could be utilized within potentially suitable or occupied habitat for the Utah prairie dog. Wildland fire suppression may have direct, negative effects on Utah prairie dogs and damage or destroy occupied or suitable habitat. Suppression operations may harass, displace, injure, or kill prairie dogs from smoke or fire during backfires, surface disturbance, or human-caused disturbance. Wildland fire suppression operations may adversely affect prairie dogs or colonies if they are unintentionally sprayed with fire retardant. Following a fire, short-term adverse impacts may occur from a reduction in food supplies, loss of surface cover, an increased potential for colonization by invasive plant species, and increased predation. Despite the immediate, direct loss of forage and shrub cover following wildland fire and wildland fire suppression operations, the long-term impacts may be beneficial because fire rehabilitation activities will include reseeded according to the Utah Prairie Dog Recovery Plan and there would be a decreased risk for large fire events.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats suitable for Utah prairie dogs. Negative impacts include harassment, displacement, injury, or mortality; or immediate post-project alteration of key habitat components or prairie dog colonies from surface disturbance. Additionally, these fire management activities could benefit Utah prairie dogs due to improved forage quality and quantity, as well as greater visibility for detecting predators.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The Forestry and Woodlands Management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial

thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forestry and woodland support activities, such as road construction may be conducted in or near existing or suitable Utah prairie dog habitat. Associated noise and visual stimulation may lead to disturbance and displacement of individuals from occupied habitats and change alarm, foraging and reproductive behavior. Increased vehicular traffic could lead to mortality from vehicle collisions, collapse of burrows, or potential poaching. Surface disturbance activities may result in erosion or degradation of habitat due to vegetation removal, leading to reduced Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation.

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder some wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Livestock grazing has the potential to result in impacts to Utah prairie dogs. Overgrazing by livestock may result in a vegetation shift from grass to shrub forage, weed infestations, and erosion, leading to lower quality Utah prairie dog habitat and/or potential removal/destruction of prairie dog colonies. However, certain grazing regimes, such as rotational grazing, may provide beneficial impacts such as improvements to forage quality and positive changes in vegetative composition.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to result in negative impacts to Utah prairie dogs and/or their habitat. Increased human presence (and associated noise and visual stimulation) due to recreation activities may result in disturbance and displacement of individuals

from occupied habitats, affecting typical activity patterns, foraging and reproductive behavior, and leading to physical distress, decreased health, and mortality. Increased vehicular traffic could lead to mortality from vehicle collisions, collapse of burrows, or potential poaching. Surface disturbance activities may result in erosion or degradation of habitat due to vegetation removal, leading to reduced Utah prairie dog habitat components for burrowing, foraging, or cover and increased predation.

Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Increased vehicular traffic and human presence and construction activities associated with the lands and realty program could directly and indirectly impact Utah prairie dogs. Increased vehicular traffic could lead to mortality from vehicle collisions or potential poaching. Increased human presence (and associated noise and visual stimulation) may result in disturbance and displacement of individuals from occupied habitats, affecting typical activity patterns, foraging and reproductive behavior, and leading to physical distress, decreased health, and/or mortality. Exchange or sales of lands may lead to habitat fragmentation and loss.

Surface disturbance resulting from construction activities may result in erosion or degradation of habitat due to vegetation removal and increased potential for invasive species, leading to reduced Utah prairie dog habitat components for burrowing, foraging, or cover, and increased predation. Additional negative impacts include direct loss of habitat and direct mortality due to displacement, habitat fragmentation and modification, and increased potential of plague transmittance.

Minerals and Energy Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Geological and mining activities on BLM lands have the potential to affect Utah prairie dogs. General direct and indirect effects resulting from this program would include increased human presence and vehicle traffic in Utah prairie dog habitat and increased surface disturbance. Increased human presence may alter Utah prairie dogs behavior reducing the amount of time

available for the species to forage and causing an unnecessary expenditure of energy in fleeing and alerting other prairie dogs. Specific negative impacts include decreased availability/use of suitable habitat, direct loss of habitat, and disturbance due to: displacement, habitat fragmentation and modification, increased construction activities, exposure to toxic substances, greater exposure to predators, crushing of burrows, and potential increases in recreational shooting. This could result in reduced fitness from fleeing and warning behavior, indirect and direct mortality.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Increased vehicular traffic and human presence and construction activities associated with the lands and realty program could directly and indirectly impact Utah prairie dogs. Increased vehicular traffic could lead to mortality from vehicle collisions or potential poaching. Increased human presence (and associated noise and visual stimulation) may result in disturbance and displacement of individuals from occupied habitats, affecting typical activity patterns, foraging and reproductive behavior, and leading to physical distress, decreased health, and/or mortality. Exchange or sales of lands may lead to habitat fragmentation and loss.

Surface disturbance resulting from construction activities may result in erosion or degradation of habitat due to vegetation removal and increased potential for invasive species, leading to reduced Utah prairie dog habitat components for burrowing, foraging, or cover, and increased predation. Additional negative impacts include direct loss of habitat and direct mortality due to: displacement, habitat fragmentation and modification, and increased potential of plague transmittance.

Health and Safety Management

The primary objective of health and safety management is to ensure that human Health and Safety Management concerns, such as hazardous materials, wastes, abandoned mine & well sites are mitigated or eliminated. The potential for intentional or accidental releases of hazardous materials onto public lands will also be minimized to protect public and environmental health and safety on lands administered by BLM.

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, roads, and railroad transportation systems associated with the health and safety program may occur within all of the planning areas analyzed in this document, and therefore have the potential to occur in Utah prairie dog habitat. Direct and indirect effects

on Utah prairie dogs resulting from this program would include increased human presence in Utah prairie dog habitat, surface disturbance, and soil compaction.

Increased human presence (and associated noise and visual stimulation) may result in disturbance and displacement of individuals from occupied habitats and may affect foraging and reproductive behavior. Surface disturbance activities may result in erosion or degradation of habitat due to vegetation removal, leading to reduced Utah prairie dog habitat components for burrowing, foraging, or cover, and increased predation. Other potential direct or indirect impacts may include mortality from crushing or burying individuals during excavation activities, and/or due to increased human presence near prairie dog towns that can alter typical activity patterns and lead to physical distress and decreased health.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the Utah prairie dog and its habitat under the Proposed Actions would include, but not be limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' suitable or potential habitat.
- Encroachment of human development into suitable habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

Particularly in the Awapa Plateau region, Utah prairie dog locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Utah prairie dogs are susceptible to activities on State and private lands. Many of these activities, such as human population expansion and associated infrastructure (increased roads); oil and gas exploration and development; research; unregulated recreation activities (e.g. off-highway vehicles); and control of prairie dogs as pests on state and private lands within the action area may contribute to negative cumulative effects to the Utah prairie dog through human-caused injury or mortality, elimination of or disturbance to colonies, tunnels, and den sites, destruction or degradation of native grassland or sagebrush habitats, and spreading disease, such as distemper. Contributing as cumulative effects to the proposed action, these activities will continue to affect Utah prairie dog population persistence by contributing to loss and fragmentation of small, isolated colonies.

Conclusion

The conclusions of this biological opinion are based on full implementation of the project as described in the “Description of the Proposed Action” section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the current status of the Utah prairie dog, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS’s biological opinion that the Richfield BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Utah prairie dog. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

California condor (*Gymnogyps californianus*)

Status of the Species

Species / Critical Habitat Description

The California condor is a member of the family *Cathartidae*, the New World vultures, a family of seven species, including the closely related Andean condor (*Vultur gryphus*) and the sympatric turkey vulture (*Cathartes aura*) (61 FR 54043). California condors are among the largest flying birds in the world (USFWS 1996; 61 FR 54043). Adults weigh approximately 10 kilograms (22 pounds) and have a wing span up to 2.9 meters (9.5 feet) (61 FR 54043). Adults are black except for prominent white underwing linings and edges of the upper secondary coverts. The head and neck are mostly naked, and the bare skin is gray, grading into various shades of yellow, red, and orange. Males and females cannot be distinguished by size or plumage characteristics. The heads of juveniles up to 3 years old are grayish black, and their wing linings are variously mottled or completely dark. During the third year the head develops yellow coloration, and the wing linings become gradually whiter (N.J. Schmitt in litt. 1995; 61 FR 54043). By the time individuals are 5 or 6 years of age, they are essentially indistinguishable from adults (Koford 1953; Wilbur 1975; Snyder et al. 1987; 61 FR 54043), but full development of the adult wing patterns may not be completed until 7 or 8 years of age (N.J. Schmitt in litt. 1995; 61 FR 54043). Habitat includes caves, cliffs and steep slopes.

Life history and Population dynamics

Condors reach sexual maturity by 5 to 6 years of age and breeding occurs between 6 and 8 years of age. Courtship and nest site selection occurs from December through the spring (USFWS

1996). Nest sites include: caves, cliffs, or a crevice among boulders on a steep slope. Breeding California condors normally lay a single egg between late January and early April, every other year (USFWS 1996). The condor provides an extensive amount of parental care and the average incubation period for a condor egg is about 56 days (USFWS 1996). Both parents share responsibilities for feeding the nestling. Fledging occurs at six months of age; however, juvenile condors may be dependant on their parents for more than a year (Peregrine Fund, Calif. Condor 2005). The California condor life span is unknown, but may possibly extend up to 60 years (San Diego Zoo 2005).

Condors are strict scavengers. Unlike turkey vultures, condors do not have an exceptional sense of smell (National Park Service 2005). They locate their food visually, often by investigating the activity of ravens, coyotes, eagles, and other scavengers. Without the guidance of their parents, young inexperienced juvenile condors may also investigate the activity of humans. As young condors learn and mature this human directed curiosity diminishes (National Park Service 2005).

Status and Distribution

The California condor (*Gymnogyps californianus*) was listed as endangered on March 11, 1967 (32 FR 4001). California condors remain one of the world's rarest and most imperiled vertebrate species (Cooper 1890; Koford 1953; Wilbur 1978) with California being listed as the only critical habitat. Fossil records indicate that California condors once ranged over much of the southern United States. The main reason for the decline of the condors is an unsustainable mortality rate of free-flying birds combined with a naturally low reproductive rate.

Despite intensive conservation efforts, the wild California condor population declined steadily until 1987, when the last free-flying individual was captured. During the 1980s, captive condor flocks were established at the San Diego Wild Animal Park and the Los Angeles Zoo, and the first successful captive breeding was accomplished at the former facility in 1988. Following several years of increasingly successful captive breeding, captive-produced condors were first released back to the wild in California in early 1992.

On October 6, 1996, the USFWS announced its intention to reintroduce California condors into northern Arizona and southern Utah, and designate the released birds as a nonessential, experimental population (NEP) under Section 10(j) of the ESA (61 FR 54043). On October 29, 1996, six California condors were released at the Vermilion Cliffs in Coconino County of northern Arizona. Since then, additional birds have been released. The designated experimental population area (ExPA) includes remote federal (BLM, USFS, and NPS) and Native American Reservation lands, and some private lands in northern Arizona, southern Utah and southeastern Nevada (61 FR 54043). The primary release site and current nesting sites occur at Grand Canyon National Park and Vermillion Cliffs, Arizona.

Environmental Baseline

Status of the Species within the Action Area

The California condor is expanding its range from northern Arizona and may soon include the planning area. Although California condors have not been specifically identified within the planning area, California condors have been identified as far north as Flaming Gorge for

foraging and traveling. When it is determined that the California condor is established or nesting in the planning area, additional analysis may be needed; however, we have evaluated potential effects to nesting below. Because the planning area includes habitat that contains both the experimental, non-essential population (Areas South of I-70), and habitat that could be occupied by California condors in non-experimental areas (North of I-70), two determinations are made to address both populations.

Factors Affecting Species Environment within the Action Area

Most California condor deaths in recent years have been directly or indirectly related to human activity. Shootings, poisoning, lead poisoning, and collisions with power lines are considered the condors' major threats. In addition, illegal collection of eggs and birds, poisoning from predator control and an increase in roads and houses throughout the open country needed by condors for foraging have contributed to their decline. Their slow rate of reproduction and high number of years spent reaching breeding maturity make the condor population as a whole more vulnerable to these threats.

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Potential adverse impacts to California condor may result from land treatments occurring within watersheds. Many of these activities are meant to benefit soil resources and watersheds by reducing soil loss and reclaiming surface disturbances or unnecessary roads. However, activities occurring under this program may also increase human presence; equipment and vehicle use; vegetation manipulation; and surface disturbance in condor habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); and decreased prey habitat. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival due to maintenance and improvement of soil resources.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface

disturbance in condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey species habitat. As a result, there may be site-specific decreases in nest initiation or nesting success.

Cultural Resources Management

This BLM program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment use; and surface disturbance in potential California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

Paleontological Resources Management

This BLM program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment use; and surface disturbance in potential California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with paleontological resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

Fish and Wildlife Species Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may

adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and habitat for prey species. Short-term adverse impacts may include, but not be limited to: fragmented prey habitat; decreases in nest initiation or nesting success; and decreased adult and nestling/juvenile fitness; and alterations of water distribution within occupied habitat of the California condor. In general, long-term efforts to improve the health of riparian habitats may benefit California condors by increasing prey abundance.

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment; and surface disturbance; and decrease local air quality in California condor habitats. Associated noise and visual disturbances may adversely affect the behavior of California condor, and result in displacement during breeding, nesting, roosting, or foraging activities. Vegetation disturbances or vegetation removal may decrease roosting sites, prey habitat, and prey abundance. Soil disturbances and increased erosion may indirectly decrease abundance of prey. Smoke could interfere with visually based flight and foraging, and increased air traffic could result in collisions. As a result of these impacts, there may be site-specific decreases in nest initiation or nesting success, and possible mortality.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats. Negative impacts include harassment or displacement; or immediate post-project alteration of key prey habitat components from surface disturbance. Additionally, these fire management activities could benefit prey populations of California condors in the long-term due to improved forage quality and quantity.

Forestry and Woodland Management

The forestry and woodlands program permits commercial timber harvest in order to promote forest health, and manages the commercial, non-commercial, and Native American harvest of woodland products including posts, Christmas trees and fuel wood.

Forest resources support activities such as road construction that may occur in or near existing or suitable California condor habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors

during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation may adversely affect prey habitat and prey availability, and therefore, adversely affect California condors and their young. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat and prey abundance. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased fitness.

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation, more invasive plant species, fragmented prey habitat and adverse affects to availability of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased fitness.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat.

Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Increased human presence, particularly during hunting seasons may indirectly result in increased exposure of condors to carcasses with lead fragments, with the potential for injury or mortality related to lead poisoning. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for California condor prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness.

Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Construction of power lines or other infrastructure may result in electrocutions, entanglements, or collisions with flying birds, resulting in possible mortality. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for California condor prey species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be decreases in nest initiation or nesting success, and increased adult nestling/juvenile fitness.

Minerals and Energy Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; surface disturbance; and pollutants in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California

condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for prey species. Pollutants in the area may affect California condor through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult fitness.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; surface disturbance; and pollutants in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for prey species. Pollutants in the area may affect California condor through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult fitness.

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, and roads occur within all of the planning areas analyzed in this document, and have some potential to occur in California condor habitat. Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely impact prey habitat. As a result, there may be decreases in nest initiation or nesting success, and increased mortality.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological and conference opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the California condor under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.
- Encroachment of human development into a species' critical, suitable, or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

California condors have the capability to occur throughout the action area. The action area is surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. California condors are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads) development, research, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within the California Condor's range. Contributing as cumulative effects to the proposed action, these activities will continue to affect California condor productivity with disturbances to breeding, nesting, and foraging behaviors and further fragmenting habitat of prey populations.

Conclusions

The conclusions of this biological and conference opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the California condor, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological and conference opinion that the Richfield BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the California Condor. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design

can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.

2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Last Chance townsendia (*Townsendia aprica*)

Status of the Species

Species Description

Last Chance townsendia (*Townsendia aprica*) is a member of the sunflower family; this species is a stemless perennial herb with yellow flower heads submersed in its ground-level leaves (UDWR 2005). Endemic to the Colorado Plateau in Utah, Last Chance townsendia was discovered in Sevier County in 1966 by Stanley L. Welsh and James L. Reveal.

Last Chance townsendia is described as pulvinate-caespitose acaulescent perennial herb from a caudex, 1.5-2.5 cm tall; leaves 7-13 (16) mm long, 1-3.5 mm wide spatulate to oblanceolate, stringose; heads sessile, submersed in leaves; involucre 4-8 mm high, 7-13mm wide; bracts in 3-4 series, lanceolate, fimbriate, red scarious, hyaline-ciliate, the outermost sparsly stringose; rays 13-21, the corollas yellow to golden ventrally, purplish dorsally and grandular, 4-7mm long; disk corollas yellow, 3.7-.5mm long; achene's 2-2.5mm long, 2 ribbed, the hairs glochidiate; ray pappus 0.7-1 mm long; pappus of disk flowers 4-5 mm long.

Life history and Population dynamics

Last Chance townsendia reproduction is sexual. Flowering occurs from April to May and fruiting occurs May to June (USFWS 1993). The factors which govern the distribution of Last Chance townsendia are not well known, nor are the long-term population dynamics (USFWS 1993).

Self-pollination is virtually non-existent in Last Chance townsendia (USFWS 1993). Pollination is accomplished by several species of solitary bees: eight species of metallic blue and green megachilid bees in the genus *Osmia*, and the anthophorid bee *Tetralonia fulvitaris* (USFWS 1993). A few species of flies (not yet identified) also visit the flowers (USFWS 1993). Seed set seems frequently to be pollinator-limited (USFWS 1993). Lack of pollination may be due to various reasons including low pollinator numbers, inclement weather affecting pollinator flight activity, and possibly other unidentified factors (Tepedino and Griswold, USDA-ARS Bee Biology and Systematics Laboratory, Logan, Utah, pers. comm., 1991; USFWS 1993).

Status and Distribution

The Last Chance townsendia was listed throughout its range on August 21, 1985 as threatened under the Endangered Species Act of 1973, as amended (ESA). Last Chance townsendia is found at elevations of 6,000 to 8,000 feet (1680 to 2560 meters) within clay, clay-silt, or gravelly clay soils derived from the Blue Gate Shale, and Ferron sandstone members of the Mancos

formation, Salt Wash and Brushy Basin members of the Morrison formation and the Carmel formation. The species co-occurs in salt brush and pinyon-juniper communities, commonly on clay or clay silt exposures of the Mancos Shale (Blue Gate Member) at 1860- 2440 meters elevation in western Emery and adjacent eastern Sevier (Welsh et al. 1993). Soils are often densely covered with biological soil crusts (UDWR 2005). The average soil pH of occupied habitats is 7.42 (Armstrong et al. 1991).

Last Chance townsendia is currently known from a series of small populations most of which are in a band less than 5 miles (8 km) wide and 30 miles (48 km) long in Emery, Sevier, and Wayne counties, Utah (USFWS 1993). Most population sites have been found on the Southwest edges of the San Rafael Swell. Populations appear to be isolated. Approximately 29 populations, comprising 70% of the entire species range, have been known to exist on BLM lands; most species sites within these populations are less than an acre in size (USFWS 1993). The remainder of the populations occurs on National Forest and National Park Service lands.

Field surveys have been conducted for all Utah BLM *Townsendia aprica* population sites for the years 1991 and 2002-2007 (Robinson 2007) (Table 2).

Table 2. Survey results for Last Chance townsendia populations on BLM lands 1991-2007

Survey Year	Estimated Population Numbers on BLM Lands
1991	447-1,930
2002	794
2003	536
2004	834
2005	1,098
2006	1,233
2007	1,613

*(Robinson 2007)

Environmental Baseline

Status of the Species within the Action Area

Approximately 29 populations of Last Chance townsendia have previously occurred on lands administered by the Bureau of Land Management Richfield and Price field offices, with approximately 80 % of these locations found in the action area. Other populations are located on land managed by the U.S. Forest Service of Richfield (Fishlake National Forest), Capitol Reef National Park, Private and State School Trust Lands. Overall, the number of known locations of Last Chance townsendia appears to be decreasing, however, the number of individual plants on locations in the action area are maintaining or slightly increasing.

Factors Affecting Species Environment Within the Action Area

Because Last Chance townsendia is so restricted in its distribution, any event that could result in loss of individuals or habitat within one or more populations is a potential threat to the species survival. Threats to Last Chance townsendia come primarily from mineral and energy

development, road building, and livestock trampling and grazing (USFWS 1993). In addition, off-road vehicles within suitable habitat have been cited as a potential localized threat (USFWS 1993, CPC 2005). For more information regarding threats to this species, see the U.S. Fish and Wildlife Service's 1993 Last Chance townsendia Recovery Plan (USFWS 1993).

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Last Chance townsendia habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance, erosion, and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment and increased plant damage or individual mortality.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Management activities occurring under this program may increase foot traffic, motorized vehicle use, and vegetation treatments in Last Chance townsendia suitable habitat. Associated impacts include: trampling or crushing of individuals; impact to individuals or populations from herbicides; loss, modification or degradation of suitable habitat; seed bank impacts and reductions; reduced pollinator populations; and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance from cultural resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Last Chance townsendia habitats. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance, compaction, and erosion; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment and increased plant damage or individual mortality.

Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance from fossil resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Last Chance townsendia habitats. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance, compaction, or erosion; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment and increased plant damage or individual mortality.

Fish and Wildlife Resource Management

This program aims to maintain biological diversity, support UDWR Herd Management Plans, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase foot traffic, motorized traffic, and/or significant soil disturbance in Last Chance townsendia suitable habitat. Associated impacts include: trampling or crushing of individuals; increased soil disturbance; compaction or erosion; removal of suitable habitat; loss, modification or degradation of suitable habitat; reduced seed banks; reduced pollinator populations; and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Fire and Fuels Management

Major activities associated with the fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Although the BLM does not propose to carry out prescribed fire or non-fire treatments (mechanical and chemical) within suitable habitat for the Last Chance townsendia, wildland fire suppression activities could adversely affect the Last Chance townsendia. Activities under this

program may increase foot or motorized traffic and application of chemicals (fire retardants, pesticides, insecticides) in suitable Last Chance townsendia habitats. Associated impacts include: trampling or crushing of individuals; increased soil disturbance; compaction or erosion; removal or degradation of suitable habitat; reduction of the seed bank; reduced pollinator populations; and increase the occurrence of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Forestry and Woodlands Management

The forestry and woodlands management program implements silvicultural practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest. The program allows the treatment of forest insect and disease infestations by spraying, cutting, and removal; and herbicidal spraying of grasses and shrubs. Forest management actions may also include conducting surveys, obtaining easements, pursuing legal access, allowing road development, and installing drain culverts and water bars. Wood collection is also authorized under this program.

Forest resources support activities such as road construction that may occur in or near existing or suitable Last Chance townsendia habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Although activities authorized under this program are not likely to occur in Last Chance townsendia habitat, there is some potential for individuals to trample Last Chance townsendia plants while harvesting wood products. Known populations of Last Chance townsendia, and potential habitats, have not been specifically protected from fuel wood, Christmas tree, and post and pole harvesting. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Livestock Grazing

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder other species within the habitat: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of

selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase and concentrate domestic ungulates, increase motorized traffic, and increase surface disturbance from fence and livestock pond construction in Last Chance townsendia suitable habitat. Associated impacts include: trampling or crushing of individuals; increased soil disturbance, compaction or erosion; loss, modification or degradation of suitable habitat; and removal of suitable habitat. As a result, there may be decreased recruitment and increased occurrence of plant damage or individual mortality.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human, horse, and motorized traffic in Last Chance townsendia suitable habitat. Associated impacts include: trampling or crushing of individuals; illegal collection of individuals; increased soil disturbance, compaction, or erosion; loss, modification or degradation of suitable habitat; reduced seed banks; and increased occurrences of invasive plant species. As a result, there may be decreased recruitment, and increased occurrence of plant damage or individual mortality.

Lands and Realty

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities authorized under this program may adversely impact Last Chance townsendia with human- and equipment-related soil disturbances. Associated impacts include: trampling or crushing of individuals; illegal collection of individuals due to increased human access; increased soil disturbance, compaction, or erosion; loss, modification or degradation of suitable habitat; and removal of suitable habitat. Land exchanges and sales may contribute to loss, fragmentation, and degradation of suitable Last Chance townsendia habitat. As a result, there may be increased loss of individuals or populations, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Minerals and Energy Resources

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase foot traffic, motorized traffic, significant soil disturbance, and surface development in Last Chance townsendia habitat. Associated impacts include: trampling or crushing of individuals, illegal collection of individuals due to increased human access; removal of suitable habitat, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, increased occurrences of invasive plant species, increased competition from seeded species, and increased erosion. As a result, there may be increased loss of individuals or populations, decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Last Chance townsendia habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; illegal collection of individuals due to increased human access; increased soil disturbance, erosion, and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment and increased plant damage or individual mortality.

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Activities occurring under this program may increase foot traffic, motorized traffic, and significant soil disturbance in Last Chance townsendia suitable habitat. Associated impacts include: trampling or crushing of individuals; removal of suitable habitat; contamination, loss,

modification or degradation of suitable habitat; reduced seed banks, reduction of pollinator populations; and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the Last Chance townsendia under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.
- Program management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

Last Chance townsendia occur primarily within BLM management boundaries. In these areas, Last Chance townsendia locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Last Chance townsendia are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, increased road densities, research, and recreation activities (e.g. off-road vehicles), are expected to continue on State and private lands within the Last Chance townsendia's range. Contributing as cumulative effects to the proposed action, all these activities will continue to affect Last Chance townsendia populations by increasing mortalities, injuring plants, and further adversely impacting limited occupied and suitable habitat.

Conclusions

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the Last Chance townsendia, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological opinion that the Richfield Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Last Chance townsendia. Critical habitat has not been designated for this species. We base our conclusion on the following:

The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.

All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Wright fishhook cactus (*Sclerocactus wrightiae*)

Status of the Species

Species Description

The Wright fishhook cactus is one of ten recognized species within the *Sclerocactus* genus in the southwest. Mrs. Dorde Wright Woodruff discovered *S. wrightiae* Benson in 1961 "near San Rafael Ridge" in Emery County (Benson 1982). The species occurs in Utah's Emery, Sevier, and Wayne Counties.

Wright fishhook is a small, perennial cactus, generally growing as a single plant with a branched taproot. If damaged, the cactus will form clumps of stems. Stems are mostly pale green and are depressed globose in shape. The stems are 1 to 8 cm long and 4 to 8 cm in diameter. Tubercles are well developed with 1 to 4 central spines, the lower one being hooked. Eight to 11 radial spines spread out from the areole. The flower is 3 to 4 cm in diameter, 3 to 4 cm long, and fragrant. Outer petals have reddish white to brown midstripes and white to cream or pinkish margins. The inner petals are white to pink. The stamens have magenta filaments with anthers that are yellow. The magenta filaments are the best character to distinguish Wright fishhook cactus from other species of *Sclerocactus*. Flowering occurs from early April through May and fruits are set in June. The fruits are barrel shaped and 9 to 12 mm long and thick. Seeds are black, 2 mm long and 3.5 mm broad (modified from Clark 2001, Heil and Porter 1994).

Life history and Population dynamics

Observations of the species indicate that plants less than 2 cm in diameter are seedlings and do not flower, while plants greater than 2 cm but less than 4 cm in diameter flower occasionally but seldom set fruit. Plants with diameters between 4 and 9 cm are mature and reproductive, but at slightly lower rates than plants greater than 9 cm in diameter (Intermountain Ecosystems 1999). The Wright fishhook cactus is known to be a difficult cactus to grow and natural recruitment is apparently rare and episodic (Kass [no date]). A monitoring study conducted by Dr. Kass between 1993 and 2000 at the Giles, Hanksville, and Mesa Butte study sites, concluded that the combination of these and other sources of mortality to the Wright fishhook cactus has resulted in a mortality to recruitment ratio of approximately 2.5 to 1 (i.e., on average, 2.5 plants are lost from the population for every new plant added or "recruited") (Kass 2001).

The plant is almost completely self-incompatible. Pollination is accomplished mostly by native sweat bees (*Halictidae*) (Tepedino 2000). Grafted specimens are not easily cultivated (Mathew 1994). Asexual reproduction is rare, although damaged plants form clumps of stems.

Insects and small mammals are known to forage on Wright fishhook cactus. In the Giles and Mesa Butte populations, the *Opuntia* borer beetle (*Moneilema semipunctatum*), a large, black, nocturnal, flightless beetle has been observed foraging on the cactus. There was a 23% mortality rate at the study areas due to beetle foraging, with a disproportionate loss of larger individuals with greater reproductive rates; long-term effects to cactus population levels, if any, are unknown. At the Kass' Hanksville study site, no new plants were recorded by the study after 1995. Other significant sources of natural mortality are the Ord's kangaroo rat (*Dipodomys ordii*) and the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*) (Kass 2001).

Status and Distribution

Wright fishhook cactus was listed as endangered under the Endangered Species Act of 1973, as amended (ESA), on October 11, 1979 (44 FR 58868). No critical habitat has been designated for the species as discussed under Section 4(a)(3) of the ESA. On August 3, 2005, a 90-Day Finding to delist *Sclerocactus wrightiae* was initiated along with the initiation of a 5-Year Review (50 FR 44544).

The Wright fishhook cactus is found on semi-barren sites in salt desert shrub, pinyon/juniper woodland-low shrub, pinyon/juniper woodland-grassland, pinyon/juniper woodland-big sage phase, mixed grassland, and mixed desert shrub communities. The cactus is most commonly found between the elevations of 4200 and 7600 feet (1280-2315 meters).

The Wright fishhook cactus is found on a variety of geologic formations. Neese Investigations (1987) found Wright fishhook cactus most commonly on Curtis Sandstone and least commonly on Mancos Shale. The study conducted by Kass (1990) in the San Rafael Swell found the cacti to occur most frequently on the Tununk member of the Mancos Shale Formation. Out of 33 sites studied by Clark (2002), the cacti were most abundant on the Summerville formation (eight sites) and the Curtis Formation (six sites). Other geologic formations where the Wright fishhook cactus is found include Morrison, Carmel, Entrada, Dakota, Ferron, and Moenkopi. It appears the Wright fishhook cactus does not solely occur on any particular formation but is most commonly found on the Curtis, Mancos Shale and Summerville Formations.

Soils where the species are found have an overlying layer of fine and medium sized gravels or a cryptobiotic soil surface crust (USFWS 1985, Kass 1990). Soils include a broad range of textures, including clays, sandy silts, fine sands, loam and loamy sand. The pH of occupied soils ranged from 7.85 to 8.6 when tested at three monitoring sites for the cactus (Intermountain Ecosystems 1999). According to Kass (1990) and Neese Investigations (1987), the following physiographic factors are important for the establishment and growth of the Wright fishhook cactus: 1) soils derived from contact of mudstone or siltstone with sandstone; 2) pebbles and/or gravels that litter the soil surface; 3) saline or sodic content of soil; and 4) slopes not exceeding 10 degrees. All of the criteria do not need to be present for the species to occur. Kass (1990) reported at least three of the above factors were present for the populations found in 1988.

The Wright fishhook cactus is known from Emery, Sevier, Wayne, and Garfield counties in south-central Utah. The species occurs in the Canyonlands section of the Intermountain region (Cronquist et al. 1972). Populations of Wright fishhook cactus occur primarily on lands managed by the BLM out of the Price and Richfield Field Offices and by the National Park

Service (NPS) at CARE. The species is found from the San Rafael Swell in Emery County to the north and extends south to the Waterpocket Fold in Garfield County (Neese Investigations 1987, Kass 1990, Clark 2002). As of April 2005, the cactus has been documented at 264 sites, and recent population estimates for the species range from 4,500 to 21,000 individuals (USFWS 2005).

The majority of the documented populations of the Wright fishhook cactus occur within Richfield Field Office lands. Over 100 known populations of the Wright fishhook cactus, as well as additional potential habitat, have been documented within the Richfield Field Office lands, as well as within the boundaries of Capitol Reef National Park (CARE), which lies directly to the west of the Henry Mountains. ("Known populations" consist of documented findings of one or more members of the plant species.) Several populations have been documented in the area between the San Rafael Swell to the north and the Henry Mountains to the south, and within the northern reaches of CARE and the Waterpocket Fold. A few populations have also been documented in the southern reaches of the Waterpocket Fold.

Within the jurisdiction of the Price Field Office Resource Management Area, thirty-four known populations of the Wright fishhook cactus, as well as additional potential habitat, have been documented. The Mussentuchit population and the Wild Horse Mesa population, the main populations of the *S. wrightiae* within the Price Field Office lands, are encompassed within an area of about 144,227 acres of the western portion and 58,370 acres of the southeastern portion of the planning area. Other scattered populations have been documented from the San Rafael Swell in Emery County to the north, to the southeast corner of Sevier County on the west, and extending south to the southern reaches of the Waterpocket Fold in Garfield County.

Potential habitat is widely available in the vicinity of known populations of the species in both planning areas, and because the species is a relative generalist, abundance of habitat is not currently a limiting factor in the conservation or survival of the species. Much of this additional potential habitat has yet to be searched for populations of the Wright fishhook cactus.

Extensive surveys were conducted by Clark (2002) from 1999 to 2004. Sites surveyed by Neese Investigations in 1987 were revisited. Ninety-seven of the Neese Investigation sites on BLM land reported by were relocated and plants were documented. At sixteen of these sites where cacti were reported by Neese Investigations (1987), plants of the Wright fishhook cactus were not rediscovered (Clark 2002, Clark and Groebner 2003, Groebner et. al. 2004). As a result of those surveys, twenty new sites supporting Wright fishhook cactus have been documented. Eleven sites were found on CARE and nine on BLM land. About 480 cacti were found at the new sites. For more recent data, please refer to Clark 2008.

Environmental Baseline

Status of the Species within the Action Area

As stated above, the majority of the documented populations of the Wright fishhook cactus occur within the Richfield Field Office planning area. Based on recent actual counts of individual cacti and recent population estimates, the population total may range from 4,500 to 21,000 individuals (Clark 2001, 2002, 2002; Clark and Groebner 2003; Clark et al. 2004; Kass 1990; Neese 1987).

Factors Affecting Species Environment within the Action Area

Potential human threats to the Wright fishhook cactus populations and suitable habitat include: recreation, including off-highway vehicle (OHV) use; energy and mineral exploration and development, including associated ancillary facilities and disturbances; infrastructure development; and illegal collection (USFWS 1985). BLM has also documented impacts to the species from trampling, due to livestock grazing. Livestock grazing is a major threat to this species. Illegal collection and removal of individuals and populations also constitutes a significant threat to the species (USFWS 1979, Christiansen 1991, BLM 1979).

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Wright fishhook cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; reduced pollinator populations; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment and increased plant damage or individual mortality.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Management activities occurring under this program may increase foot traffic, motorized presence, and vegetation treatments in Wright fishhook cactus suitable habitat. These activities may cause trampling or crushing of individuals, increased soil disturbance; soil erosion and compaction; impacts from herbicides; loss, modification or degradation of suitable habitat; reduced seed banks; reduced pollinator populations; and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance for cultural resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Wright fishhook cactus habitats. These activities may result in: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; reduced pollinator populations; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment, and increased plant damage or individual mortality.

Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance for fossil resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Wright fishhook cactus habitats. These activities may result in: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; reduced pollinator populations; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment, and increased plant damage or individual mortality.

Fish and Wildlife Resource Management

This program aims to maintain biological diversity, support UDWR Herd Management Plans, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase foot traffic, motorized traffic, and/or significant soil disturbance in Wright fishhook cactus suitable habitat. These activities may cause trampling or crushing of individuals, increased soil disturbance, erosion, and compaction; removal of suitable habitat; loss, modification or degradation of suitable habitat; reduced seed banks; reduced pollinator populations; and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a

balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The forest management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forest resources support activities such as road construction that may occur in or near existing or suitable Wright fishhook cactus habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Although activities authorized under this program are not likely to occur in Wright fishhook cactus habitat, there is some potential for private individuals to trample Wright fishhook cactus individuals while harvesting wood products. Known populations of Wright fishhook cactus, and potential habitats have not been specifically protected from fuel wood, Christmas tree, and post and pole harvesting. As a result, there may be decreased seed production; decreased recruitment; increased illegal collection of individuals due to increased human access; and increased occurrence of plant damage or individual mortality.

Livestock Grazing

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder other species within the habitat: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase and concentrate domestic ungulate presence, increase motorized traffic, and cause surface disturbance from fence and livestock pond construction in Wright fishhook cactus suitable habitat. These activities may increase the occurrence of trampling, uprooting or crushing of individuals; increase soil disturbance; increase soil erosion and compaction; increase occurrence of exotic plant species; reduce pollinator populations; and modify or degrade suitable habitat. As a result, there may be increased occurrence of plant damage or individual mortality and loss of habitat.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human, horse, and motorized traffic in Wright fishhook cactus suitable habitat. These activities may cause trampling or crushing of individuals; collection of individuals due to increased human access; increased soil disturbance, erosion, and compaction; loss, modification or degradation of suitable habitat; reduced seed banks; and increased occurrences of invasive plant species. As a result, there may be decreased recruitment, and increased occurrence of plant damage or individual mortality.

Lands and Realty

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities authorized under this program may adversely impact Wright fishhook cactus with human- and equipment-related soil disturbances. Soil disturbance, erosion, and compaction may impact individual plants, modify or degrade suitable habitat, reduce pollinator populations, and reduce the seed bank. Land exchanges and sales may result in fragmentation or degradation of potential Wright fishhook cactus habitat. As a result, there may be loss or degradation of cactus populations; decreased recruitment; and increased occurrence of plant damage and individual mortality.

Minerals and Energy Resources

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase foot traffic, motorized traffic, and significant soil disturbance. These activities may cause trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; loss, modification, or degradation of

suitable habitat; reduced seed banks; loss of pollinator populations; increased occurrences of invasive plant species; and increased occurrence of illegal collection due to increased human access. As a result, there may be loss or degradation of cactus populations; decreased Wright fishhook cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Wright fishhook cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance, erosion, and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; reduced pollinator populations; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Wright fishhook cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Activities occurring under this program in Wright fishhook cactus suitable habitat may increase foot traffic, motorized traffic, and significant soil disturbance. These activities may cause trampling or crushing of individuals, increased soil disturbance; soil erosion and compaction, removal of suitable habitat, contamination, loss, modification or degradation of suitable habitat, reduced seed banks, loss of pollinators, and increased occurrences of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Wright fishhook cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the Wright fishhook cactus under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat;
- Encroachment of human development into a species' critical, suitable, or potential habitat; and
- Management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah;
 - County Governments in Utah;
 - Local Governments in Utah; and
 - Private landholders in Utah.

Wright fishhook cacti occur primarily within BLM management boundaries. In these areas, Wright fishhook cactus locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Wright fishhook cacti are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads), research, and recreation activities (e.g. off-road vehicles), are expected to continue on State and private lands within the Wright fishhook cactus' range. In addition, illegal collection is reasonably certain to occur. Contributing as cumulative effects to the proposed action, all these activities will continue to affect Wright fishhook cactus populations by decreasing abundance, injuring plants, adversely affecting pollinators, and further adversely impacting occupied and suitable habitat.

Conclusions

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the Wright fishhook cactus, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological opinion that the Richfield Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Wright fishhook cactus. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

San Rafael cactus (*Pediocactus despainii*)

Status of the Species

Species Description

The San Rafael cactus (*Pediocactus despainii*) was first discovered by Kim Despain in 1978 on an anticline in the San Rafael Swell. The San Rafael cactus is usually solitary stemmed, 3.8 to 6.0 centimeters (cm) tall, with a diameter of 3.0 to 9.5 cm. The stem apex is even with the ground level to 5 cm above. Stems are ribbed with tubercles 0.6 to 1.0 cm in length. Spine-bearing areoles are borne at the apex of the tubercle. The areoles are elliptic with moderate spines partially obscuring the stem. Central spines are lacking; 9 to 13 white radial spines are commonly 2 to 6 millimeters (mm) long. Flowers are borne on the end of the tubercle near the apex of the stem, are 1.5 to 2.5 cm in length, and are yellow bronze, peach bronze, or pink with a purple midstripe. Stamens are yellow and stigmas are green. Fruit is 0.9 to 1.1 cm long with a smooth surface, initially green turning reddish-brown with age and dehiscent with a vertical slit along the ovary wall. Seeds are shiny black and kidney shaped with papillate mounds that coalesce into large irregular ridges (Welsh and Goodrich 1980, Welsh et al. 1993).

Life history and Population dynamics

San Rafael cacti are seasonal. When temperatures increase in mid-February or early March and rainfall is adequate, cacti emerge from just below the surface to flower. Flowering occurs from mid-April through mid-May and fruits are set in mid-May to June. After flowering, the plants shrink into the ground during the hot season and remain underground until the following spring when they resurface with sufficient rains.

Reproduction is sexual (USFWS 1995b) and the specific pollination mechanism and vectors are believed to be wild bees of the Halictidae family (USFWS 1995b). Seedling ecology is unknown (Heil 1984).

Status and Distribution

Due to the rarity of this species and collection pressures, the *P. despainii* was listed as endangered under the Endangered Species Act of 1973, as amended (ESA), on September 16, 1987 (USFWS 1987). No critical habitat has been designated for this species. Identified threats to *P. despainii* have been deemed to be primarily human-related. The primary threat to this species is collection. Other threats include impacts from off-road vehicles, mineral exploration and development, mining activities, and trampling, crushing and uprooting from livestock grazing. Some instances of insect larvae infestations have also been observed (USFWS 1987, 1998).

The San Rafael cactus is found on benches, hill tops, and gentle slopes in desert shrub and juniper woodland communities between the elevations of 4,550 and 6,400 feet (1450 to 2080 meters). It is found on a variety of geologic formations, including Morrison-Brushy Basin, Morrison-Salt Wash, Dakota Sandstone, Moenkopi, Summerville, Morrison-Brushy Basin/Entrada, Summerville/Morrison-Brushy Basin, Carmel Formation, Mancos Shale Formation, Cedar Mountain Shale, and Dakota Sandstone Formations. The San Rafael cactus is

known to occur primarily on the Carmel Formation, the Sinbad member of the Moenkopi formation, and the Brushy Basin member of the Morrison Formations. It grows on hills, benches, and flats of the Colorado plateau's semiarid grasslands. This habitat is savannah-like and contains scattered junipers, pinyon pines, low shrubs, and annual and perennial herbs (USFWS 1987).

The San Rafael cactus is known from Wayne and Emery Counties in south central Utah primarily on lands administered by BLM. This species occurs in the Canyon Lands section of the Colorado Plateau Floristic Region (Cronquist et al. 1972). Populations of the species occur primarily on lands managed by the Utah BLM through the Price and Richfield Field Offices, and by the National Park Service (NPS) at Capitol Reef National Park (CARE).

Environmental Baseline

Status of the Species within the Action Area

The entire range of the species occurs within Utah, mostly on lands managed by the Bureau of Land Management (USFWS 1995), with one section owned by the State of Utah (52 FR 34914). By 1998, the species had been reduced to only two populations with a total of about 6,000 individuals (TNC 1998). With its diminutive size and peculiar habit of shrinking underground for several months a year during dry or cold seasons, it is not surprising that *Pediocactus despainii* was only recently discovered (52 FR 34914). Only one population has been found within the Richfield Field Office planning area, in Wayne county east of Capitol Reef National Park.

Factors Affecting Species Environment within the Action Area

The San Rafael cactus is considered a vulnerable plant species due to low numbers of individuals, the scattered and isolated nature of their occurrence, and their restriction to a limited geographic area due to the specificity of their soil and geologic habitat requirements (USDA et al. 1998). Known threats to the species include collection by cactus collectors; one population was heavily impacted by recreational use of off-road vehicles; and approximately half of each population occurred in areas covered by oil and gas leases and mining claims for gypsum or other minerals (USFWS 1987, TNC 1998). Cattle grazing can be a threat to San Rafael cactus (Walter and Gillett 1998, Clark 2008). The San Rafael cactus forms buds in the fall that overwinter to become the next spring's flowers (Heil et al. 1981). These flowering buds at ground level may be vulnerable to surface disturbance, increasing the portion of the year that the species' reproductive capacity is vulnerable (USFWS 1987). USFWS botanists have observed that the species is susceptible to infestation of insect larvae (USFWS 1987). The habitat in which San Rafael cactus occurs is fragile and vulnerable to invasion by aggressive native shrub and tree species or exotic weedy species when the soils are mechanically disrupted or when native grass species are removed (USFWS 1987).

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable San Rafael cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Management activities occurring under this program may increase foot traffic, motorized presence, and vegetation treatments in San Rafael cactus suitable habitat. These activities may cause trampling or crushing of individuals, increased soil disturbance; soil erosion and compaction; effects from herbicides, loss, modification or degradation of suitable habitat, seed bank impacts and reductions, reduced pollinator populations, and increased invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase minor surface disturbance for cultural resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable San Rafael cactus habitats. These activities may cause: trampling or crushing of individuals; increased soil disturbance; soil erosion and

compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase minor surface disturbance for fossil resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable San Rafael cactus habitats. These activities may cause: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Fish and Wildlife Resource Management

This program aims to maintain biological diversity, support UDWR Herd Management Plans, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase foot traffic, motorized traffic, and/or significant soil disturbance in San Rafael cactus suitable habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, and increased occurrences of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The forest management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forest resources support activities such as road construction that may occur in or near existing or suitable San Rafael cactus habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Although activities authorized under this program are not likely to occur in San Rafael cactus habitat, there is some potential for private individuals to trample San Rafael cactus individuals while harvesting wood products. Known populations of San Rafael cactus, and potential habitats, have not been specifically protected from fuel wood, Christmas tree, and post and pole harvesting. As a result, there may be decreased seed production; decreased recruitment; increased illegal collection of individuals due to increased human access; and increased occurrence of plant damage or individual mortality.

Livestock Grazing

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder other species within the habitat: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase crushing and modification of suitable habitat from concentrated domestic ungulate presence, increase motorized traffic, and increase surface disturbance, erosion and compaction from fence and livestock pond construction in San Rafael cactus habitat. Grazing may increase the occurrence of trampling, uprooting or crushing of individuals; increase soil disturbance; increase soil erosion and compaction; increase occurrence of exotic plant species; reduce pollinator populations; and modify or degrade suitable habitat. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the

natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human, horse, and motorized traffic in San Rafael cactus suitable habitat. These may cause trampling or crushing of individuals, collection of individuals, increased soil disturbance; soil erosion and compaction; loss, modifications or degradation of suitable habitat, reduced seed banks, and increased occurrences of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Lands and Realty

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities authorized under this program may adversely impact San Rafael cactus with human- and equipment-related soil disturbances. Soil disturbance will impact individual plants, increased soil disturbance; soil erosion and compaction, modify or degrade suitable habitat, and reduce the seed bank. Land exchanges or sales may increase fragmentation or degradation of suitable San Rafael cactus habitat. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Minerals and Energy Resources

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase foot traffic, motorized traffic, significant soil disturbance; soil erosion and compaction, and surface development in San Rafael cactus habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, increases the occurrence of invasive plant species, and increased loss of individuals to illegal collection. As a result, there may be loss or degradation of cactus

populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable San Rafael cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Health and Safety Management

Activities conducted under the BLM's health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Activities occurring under this program may increase foot traffic, motorized traffic, and significant soil disturbance in San Rafael cactus suitable habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, increased soil disturbance; soil erosion and compaction, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, and increased invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in San Rafael cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the San Rafael cactus under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat;
- Encroachment of human development into a species' critical, suitable, or potential habitat; and
- Management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah;
 - County Governments in Utah;
 - Local Governments in Utah; and
 - Private landholders in Utah.

San Rafael cacti occur primarily within BLM management boundaries. In these areas, San Rafael cactus locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. San Rafael cacti are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, research, human population expansion and associated infrastructure (increased trails and roads), and recreation activities (e.g. off-road vehicles), are expected to continue on State and private lands within the San Rafael cactus' range. In addition, illegal collection is reasonably certain to occur. Contributing as cumulative effects to the proposed action, all these activities will continue to affect San Rafael cactus populations by decreasing abundance, injuring plants, adversely affecting pollinators, and further adversely impacting occupied and suitable habitat.

Conclusions

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the current status of the San Rafael cactus, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological opinion that the Richfield Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the San Rafael cactus. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Winkler cactus (*Pediocactus winkleri*)

Status of the Species

Species Description

Winkler cactus (*Pediocactus winkleri*) was first discovered by Agnes Winkler in the late 1960's. The Winkler cactus is a small, subglobose, leafless cactus. The species' stems are solitary or clumped, 3.9 to 6.8 cm tall, with a diameter of 2.7 to 5.0 cm. The stem apex is even with ground level to 5 cm above. Stems are ribbed with tubercles 0.4-0.7 cm long. Spine-bearing areoles are borne at the apex of the tubercles. The areoles are elliptic and densely wooly pubescent with spines obscuring or partially obscuring the stem. Central spines are lacking; radial spines commonly number 9 to 11. The spines, 1.5-4mm long, spread downward with tips tapering from bulbous bases. Flowers are 1.7 to 2.2 cm in length with peach to pink color. Stamens are yellow and stigmas are green. The fruit is 0.7 to 1.0 cm long with a smooth surface, initially green turning reddish-brown with age and dehiscing with a vertical slit along the ovary wall. Seeds are shiny black with papillate mounds that coalesce into large irregular ridges (Heil 1979, Welsh et al. 1993).

Life history and Population dynamics

Winkler cacti are seasonal. When temperatures increase in mid-February or early March and rainfall is adequate, cacti emerge from just below the surface to flower. Flowering occurs from mid-April through mid-May and fruits are set in mid-May to June. After flowering, the plants shrink into the ground during the hot season and remain underground until the following spring when they resurface with sufficient rains. No studies have been completed on pollination of the Winkler cactus. Reproduction is presumed to be sexual.

Status and Distribution

Due to the rarity of this species and collection pressures, Winkler cactus was designated as a threatened species on August 20, 1998 (63 FR 44587). No critical habitat is designated for this species.

The Winkler cactus is endemic to specific, fine textured soils derived from the Dakota Formation and the Brushy Basin Member of the Morrison Formation in the lower Fremont River and Muddy Creek drainages. It occurs on rocky, alkaline hill tops and benches, and gentle slopes on barren, open sites in salt desert shrub communities. Soils are characterized as silty or clay-like primarily derived from Dakota geologic formation (Neese 1987). *P. winkleri* is found at elevations ranging between 1490 to 2010 meters (4890 to 6595 feet).

The Winkler cacti are known in Wayne and Emery Counties in south central Utah. Populations of the species occur primarily on lands managed by the Utah BLM through the Price and Richfield Field Offices, and by the National Park Service (NPS) at Capitol Reef National Park (CARE). The range of *P. winkleri* occurs across the landscape in a narrow arc extending from Notom in central Wayne County to Hartnet Draw in southwestern Emery County, Utah. This area extends about 48 km (30 miles) but plants are estimated to occupy about 80 hectares (200 acres). The majority of the known populations occur on lands managed by BLM.

Prior to 1999, approximately 5,000 individuals of the Winkler cactus were documented (USFWS 1995a). Due to a general lack of knowledge on this species, approximating the current population status relative to when it was listed is not possible. For recent monitoring data, please refer to Clark 2008.

Environmental Baseline

Status of the Species within the Action Area

In the planning area, *Pediocactus winkleri* is known from four populations including Notom, North Fremont, Hartnet, and Cathedral Valley. The species range includes north central Wayne County along the eastern boundary of Capitol Reef National Park from the vicinity of Highway 24 north to extreme southwest Emery County. Population locations in the planning area represent the majority of the species' range.

Factors Affecting Species Environment within the Action Area

The Winkler cactus is considered a vulnerable plant species due to low numbers of individuals, the scattered and isolated nature of their occurrence, and their restriction to a limited geographic area due to the specificity of their soil and geologic habitat requirements (USDA et al. 1998). These characteristics make the species vulnerable to human-caused disturbances and exacerbate the effects of natural disturbances on the species. The species may also be vulnerable to a loss of genetic viability due to the small size and isolation of most populations (USFWS 1995a).

Potential human threats to the Winkler cactus populations and suitable habitat include: livestock grazing; recreation, including off-highway vehicle (OHV) use; energy and mineral development, including associated auxiliary disturbances; infrastructure development; paleontological operations; and illegal collection. Illegal collection poses the largest threat to species survival and recovery. Winkler cactus populations near Notom are particularly at risk for collection and vandalism, due to ease of accessibility and the high concentration of the recreating public in that location. As a result, collection has impacted that population and remains a continuing threat (USFWS 1998, England 1997, USDA et al. 1998). The Hartnet population has also been impacted by unauthorized collection, including cacti removed from a grazing enclosure constructed for a monitoring project (USDA et al. 1998).

The habitats of this species are also susceptible to invasion by aggressive native shrubs and non-native weeds when the surface area is disturbed by grazing, OHVs, road building, and other surface-disturbing activities. The potential for human related threats to the species from BLM-authorized activities is recognized by the BLM, and will be considered during future project specific consultations, and appropriate measures will be taken to avoid adverse effects to the species where possible.

Populations of the cacti are also vulnerable to predation by insect larvae (USFWS 1987 and 1998). Natural threats, including insect predation, illegal collection and other illegal or malicious activities, cannot be evaluated in the same manner as BLM-authorized activities in this Biological Opinion because these are not BLM-authorized actions.

Effects of the Action

Soil Resources Management

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Winkler cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Management activities occurring under this program may increase foot traffic, motorized presence, and vegetation treatments in Winkler cactus suitable habitat. These activities may cause trampling or crushing of individuals, increased soil disturbance; soil erosion and compaction; effects from herbicides, loss, modification or degradation of suitable habitat, seed bank impacts and reductions, reduced pollinator populations, and increased invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance for cultural resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Winkler cactus habitats. These activities may cause: trampling or crushing of individuals; increased soil disturbance; soil erosion and

compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase minor surface disturbance for fossil resource excavations. Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools in suitable Winkler cactus habitats. These activities may cause: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Fish and Wildlife Resource Management

This program aims to maintain biological diversity, support UDWR Herd Management Plans, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase foot traffic, motorized traffic, and/or significant soil disturbance in Winkler cactus suitable habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, and increased occurrences of invasive plant species. As a result, there may be decreased seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality.

Forestry and Woodland Management

Forest management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities for commercial and non-commercial harvest of forest and woodland products on a sustainable basis. Forests are managed for multiple uses, such as recreation, livestock grazing, and wildlife habitat. The forest management program also implements silviculture practices including site preparation, regeneration, stand protection, stand maintenance, pre-commercial and commercial thinning for density management, fertilization, pruning, forest and woodland condition restoration treatments, and salvage harvest.

Forest resources support activities such as road construction that may occur in or near existing or suitable Winkler cactus habitat. However, the impacts of these activities are analyzed and authorized by the lands and realty program.

Although activities authorized under this program are not likely to occur in Winkler cactus habitat, there is some potential for private individuals to trample Winkler cactus individuals while harvesting wood products. Known populations of Winkler cactus, and potential habitats, have not been specifically protected from fuel wood, Christmas tree, and post and pole harvesting. As a result, there may be decreased seed production; decreased recruitment; increased illegal collection of individuals due to increased human access; and increased occurrence of plant damage or individual mortality.

Livestock Grazing

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder other species within the habitat: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase crushing and modification of suitable habitat from concentrated domestic ungulate presence, increase motorized traffic, and increase surface disturbance, erosion and compaction from fence and livestock pond construction in Winkler cactus habitat. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human, horse, and motorized traffic in Winkler cactus suitable habitat. These may cause trampling or crushing of individuals, collection of individuals, increased soil disturbance; soil erosion and compaction; loss, modification or degradation of suitable habitat, reduced seed banks, and increased occurrences of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Lands and Realty

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities authorized under this program may adversely impact Winkler cactus with human- and equipment-related soil disturbances. Soil disturbance will impact individual plants, increased soil disturbance; soil erosion and compaction, modify or degrade suitable habitat, and reduce the seed bank. Land exchanges or sales may increase fragmentation or degradation of suitable Winkler cactus habitat. As a result, there may be loss or degradation of cactus populations; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Minerals and Energy Resources

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase foot traffic, motorized traffic, significant soil disturbance; soil erosion and compaction, and surface development in Winkler cactus habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, increases the occurrence of invasive plant species, and increased loss of individuals to illegal collection. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Transportation Management

The objectives of the transportation management program are to provide a safe and effective transportation system across public lands. Activities included under this program include maintenance of roads, support of counties and states for land access and road networks, reclamation of redundant and unused roads, management of scenic byway and backway corridors, and installation of appropriate signage.

Activities occurring under this program may increase localized foot traffic, motorized traffic, and use of tools and heavy machinery in suitable Winkler cactus habitats. Land treatments may lead to short-term increased soil erosion, and storm water runoff with heavy concentrations of sediment. Associated impacts may include: trampling or crushing of individuals; increased soil disturbance; soil erosion and compaction; removal, degradation, or alteration of key habitat; reduced seed banks; and increased occurrence of invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Health and Safety Management

Activities conducted under the BLM's health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Activities occurring under this program may increase foot traffic, motorized traffic, and significant soil disturbance in Winkler cactus suitable habitat. These activities may cause trampling or crushing of individuals, removal of suitable habitat, increased soil disturbance; soil erosion and compaction, loss, modification or degradation of suitable habitat, reduced seed banks, reduced pollinator populations, and increased invasive plant species. As a result, there may be loss or degradation of cactus populations; decreases in Winkler cactus seed production; decreased recruitment; and increased occurrence of plant damage or individual mortality.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the Winkler cactus under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat;
- Encroachment of human development into a species' critical, suitable, or potential habitat; and

- Management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah;
 - County Governments in Utah;
 - Local Governments in Utah; and
 - Private landholders in Utah.

Winkler cacti occur primarily within BLM management boundaries. In these areas, Winkler cactus locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Winkler cacti are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads), research, and recreation activities (e.g. off-road vehicles), are expected to continue on State and private lands within the Winkler cactus' range. In addition, illegal collection is reasonably certain to occur. Contributing as cumulative effects to the proposed action, all these activities will continue to affect Winkler cactus populations by decreasing abundance, injuring plants, adversely affecting pollinators, and further adversely impacting occupied and suitable habitat.

Conclusions

The conclusions of this biological opinion are based on full implementation of the project as described in the “Description of the Proposed Action” section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the Winkler cactus, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological opinion that the Richfield Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Winkler cactus. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

Western yellow-billed cuckoo (*Coccyzus americanus*)

Status of the Species

Species Description

The western yellow-billed cuckoo is one of two subspecies of the western yellow-billed cuckoo (UDWR 2003). The western yellow-billed cuckoo is approximately 12 in (31 cm) in length.

The bird is brownish above and white below; with rusty colored flight feathers. The upper mandible of the bill is black and the lower mandible is yellow. The under side of the tail has pairs of large white spots.

The western subspecies is found intermittently throughout the western United States in dense riparian vegetation, including cottonwood and willow stands, tamarisk thickets, Russian olive, and orchards. They primarily consume insects such as caterpillars, cicadas, beetles, grasshoppers, and katydids, as well as lizards, frogs, eggs of other birds, berries, and small fruits.

Life history and Population dynamics

Yellow-billed cuckoos are one of the latest migrants to arrive and breed in Utah. They arrive in extremely late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September. Yellow-billed cuckoos feed almost entirely on large insects that they glean from tree and shrub foliage. They feed primarily on caterpillars, including tent caterpillars. They also feed frequently on grasshoppers, cicadas, beetles, and katydids, occasionally on lizards, frogs, and eggs of other birds, and rarely on berries and fruits (Ehrlich et al. 1988, Kaufmann 1996).

Nesting habitat is classified as dense lowland riparian characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 100 m of water. Over story in these habitats may be either large, gallery-forming trees or developing trees, usually cottonwoods. Nesting habitats are found at low to mid-elevations (750-1820 m) in Utah. Cuckoos may require large tracts (40-80 ha) of contiguous riparian nesting habitat; however, cuckoos are not strongly territorial and home ranges may overlap during the breeding season. Nests are usually 1.2-2.4 m above the ground on the horizontal limb of a deciduous tree or shrub, but nest heights may range from 1-6 m and higher. The nest is a loosely arranged platform of twigs lined with softer materials such as grass, rootlets, and dried leaves. Nests are built in 1-3 days. The female lays 1-8 (usually 3) eggs over a period of several days; laying often begins before the nest is complete. Both males and females incubate eggs for a period of 9-11 days, beginning when the first egg is laid. Nestlings are altricial and hatch asynchronously over several days. Young are brooded by both adults for 7-8 days before leaving the nest, an unusually rapid development for a bird this size. Young climb on branches for about 2 weeks after leaving the nest until they are capable of flight at about 3 weeks of age. Both adults tend the fledglings, and in some cases early fledglings are attended by the male and later fledglings are attended by the female. It is not known whether cuckoos have more than one brood per season in Utah, but multiple brooding has been recorded in California.

Yellow-billed cuckoo nesting behavior may be closely tied to food abundance. In years of low food abundance, cuckoos may forego nesting; in years when the food supply is abundant, cuckoos may lay a large number of eggs and even parasitize the nests of other species (Nolan and Thompson 1975). Cuckoos are rarely hosts to brown-headed cowbirds.

Status and distribution

In 2001, the western subspecies of the western yellow-billed cuckoo was designated as a candidate for listing (threatened or endangered status) under the ESA (66 Federal Register 38611-38626). The USFWS has found that the species population status warrants listing but

other, higher priority listing actions prevent them from addressing the cuckoo's status at this time.

This species occurs intermittently across the state. Historically, breeding was recorded in Weber, Salt Lake, Utah, and Washington counties. Recent breeding has been confirmed in Salt Lake, Grand, and Uintah Counties. Although it is not known to breed throughout the state, it has been recorded in the riparian habitats of the following 14 counties: Wayne, Garfield, Box Elder, Cache, Davis, Salt Lake, Wasatch, Utah, Uintah, Grand, San Juan, Washington, Iron, and Juab. It is considered a candidate for listing in all of Utah's 29 counties except Rich (UDWR 2003).

Environmental Baseline

Status of the Species within the Action Area

The Western Yellow-billed Cuckoo is listed as a candidate species due to loss of riparian habitat from agricultural use, water use, road development, and urban development. This species of cuckoo is a neotropical migrant that utilizes riparian valleys throughout the state. While no known population of this species exists at present within the RFO, there is potentially suitable habitat in the larger riparian areas throughout the RFO.

Factors Affecting Species Environment within the Action Area

Threats to the western yellow-billed cuckoo are related to habitat destruction and degradation from the invasion of tamarisk, livestock use of riparian areas, water withdrawals, and human development (UDWR 2003). The availability of suitable western yellow-billed cuckoo habitats in the Richfield region is seriously limited by dry conditions, narrowness of existing riparian zones, grazing and the presence of brown headed cowbirds.

Effects of the Action

Soil Resources

The objectives for the soil resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures. Generally, the soil management program provides information in support of other resource objectives and goals. Therefore, potential impacts are deemed to be primarily beneficial.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation manipulation, stream alteration, and minor surface disturbance in western yellow-billed cuckoo habitat. Short-term adverse impacts may include, but not be limited to: decreased nesting habitat; decreased cover from predators; decreased prey habitat; and alterations of water distribution within suitable habitat for western yellow-billed cuckoos. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Water Resources

Program objectives are to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards. Potential activities occurring under this program include monitoring and treating soil erosion, evaluating and restricting surface development, monitoring water quality, applying soil management practices, and applying seasonal closures. Field activities may involve use of heavy machinery and hand tools to develop (closely linked management with Riparian Resources Program Management) riparian/wetland enclosures; stream crossings to allow for appropriate sediment and flow passage; and other stream improvements.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation manipulation, stream alteration, and minor surface disturbance in western yellow-billed cuckoo habitat. Short-term adverse impacts may include, but not be limited to: decreased nesting habitat; decreased cover from predators; decreased prey habitat; and alterations of water distribution within suitable habitat for western yellow-billed cuckoos. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Vegetation Resources

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance (mechanical, chemical, biological), and surface disturbance in western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of available habitat. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. As a result, there may be a short-term decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species. Long-term benefits of this program, as vegetation is reestablished, may include: increased insect prey abundance and increased potential habitat.

Fish and Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface

disturbance in potential western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of habitat. Vegetation disturbances or vegetation removal may adversely affect availability of nesting habitat, cover from predators, and insect prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species

Fire and Fuels Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in potential western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of these habitats. Vegetation disturbances or vegetation removal decrease availability of nesting habitat; decrease cover from predators; and decrease prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species. Long-term benefits of this program, as vegetation is reestablished, may include: increased insect prey abundance and increased potential habitat.

Cultural Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), and surface disturbance in potential western yellow-billed cuckoo habitat. Noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Paleontological Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), and surface disturbance in potential western yellow-billed cuckoo habitat. Noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Forestry and Woodland Management Resources

The Forestry and Woodlands Management program permits commercial timber harvest in order to promote forest health, and manages the commercial, non-commercial, and Native American harvest of woodland products including posts, Christmas trees and fuel wood.

Forest resources support activities such as road construction may occur in or near existing or suitable western yellow-billed cuckoo habitat. Impacts associated with these activities are described under the Lands and Realty Program effects analysis.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitat. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation decrease availability of nesting habitat and decrease prey populations and prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species

Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire and Fuels Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder some wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence (including associated noise disturbances), vegetation disturbance, and minor surface disturbance in yellow-billed cuckoo habitat. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation; an increase in invasive plant species; increased fragmented habitat; reduced availability of nesting habitat; decreased cover from predators; and decreased availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in potential yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in yellow-billed cuckoo habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey

species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Minerals and Energy Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal bed methane, tar sands), salable minerals (sand, gravel, clay, stone and humate) and locatable materials (uranium, molybdenum, gold, copper, limestone magnesium and gypsum). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), surface disturbance, and increased occurrence of chemical leaks in yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitats. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. Pollutants in the area may affect prey populations, and vegetation. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species

Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, roads, and railroad transportation systems occur within all of the planning areas analyzed in this document, and have the potential to occur in yellow-billed cuckoo habitat. Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in potential yellow-billed cuckoo habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this conference opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to candidate species western yellow-billed cuckoo under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' suitable or potential habitat.
- Encroachment of human development into a species' suitable or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
 - State of Utah
 - County Governments in Utah
 - Local Governments in Utah
 - Private landholders in Utah

Western yellow-billed cuckoo have not been found in the planning area. However, small amounts of potential and suitable habitat occur within the jurisdictional management boundaries of BLM in the Richfield Field Office area. In these areas, western yellow-billed cuckoo habitat is surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Western yellow-billed cuckoo are susceptible to activities on State and private lands. Many of these activities, such as urban growth and development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation; road construction; fuels-reduction treatments; research; grazing activities (including alteration or clearing of native habitats for domestic animals); oil and gas exploration and development; introduction of non-native plant or wildlife species (which can alter native habitats and alter prey populations); and other associated actions. Increases or changes in cowbird foraging areas (construction of corrals, grazing of domestic stock, placement of bird feeders) and habitat fragmentation may increase the parasitism rate and prevent western yellow-billed cuckoo habitat use in the planning area. Increased recreation, camping, off-road vehicle use, and river trips may harass and disturb breeding birds or impact nesting habitats. Contributing as cumulative effects to the proposed action, these activities will continue to affect western yellow-billed cuckoo presence with disturbances to breeding, nesting, and foraging behaviors and habitat (including areas of designated critical habitat), and further fragmenting habitat.

Conclusion

The conclusions of this conference opinion are based on full implementation of the programs as described in the "Description of the Proposed Action" section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the status of western yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the USFWS's conference opinion that the Richfield BLM Field Office Resource Management Plan, as proposed, is not likely to contribute to listing of western yellow-billed cuckoo. We base our conclusion on the following:

The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.

All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3).

Actual take levels are unquantifiable because the RFO BLM Resource Management Plan implementation includes all possible projects authorized on all Richfield Field Office lands in Utah and may occur within threatened or endangered species' habitats. However, although unquantifiable, take may occur through harm and harassment. Therefore, in the event that the applicant committed Conservation Measures are not completely incorporated into project-specific design, or if site-specific characteristics may lead to effects not considered in this biological opinion, section 7 consultation will be reinitiated at the project-specific level.

No exemption from Section 9 of the Act is granted in this biological opinion. BLM's implementation of Resource Management Plans is likely to adversely affect listed species. The likelihood of incidental take, and the identification of reasonable and prudent measures and terms and conditions to minimize such take, will be addressed in project-level consultations. Levels of incidental take and measures to reduce such take cannot be effectively identified at the level of proposed action because of the broad geographic scope and time frame, and the lack of site specific information. Rather, incidental take and reasonable and prudent measures may be identified adequately through subsequent actions subject to section 7 consultations at the project-specific scale.

REASONABLE AND PRUDENT MEASURES / TERMS AND CONDITIONS

BLM coordinated and developed, with the U.S. Fish and Wildlife Service, species-specific conservation measures. These conservation measures were included as part of the Resource Management Plan project description. Therefore, the USFWS believes that additional Reasonable and Prudent Measures and Terms and Conditions will not be necessary in this programmatic opinion due to the BLM's proactive initiation to minimize impacts on listed species. We commend BLM's efforts to conserve and protect threatened and endangered species. It is possible that additional reasonable and prudent measures and terms and conditions may be required on a project-specific level, in a tiered consultation to this programmatic opinion.

RECOMMENDED CONSERVATION MEASURES

The U.S. Fish and Wildlife Service recommends incorporating the following guidance into the Resource Management Plan to ensure successful management, protection, and recovery of listed species and their habitats at the landscape and site-specific levels. The USFWS understands that Recommended Measures are not always feasible or applicable for all projects. Available Recovery Plans, Conservation Agreements/Strategies, Scientific Literature, and other available information should consistently be applied to occupied, suitable, and potentially suitable habitats of listed species. The following recommendations should be used in conjunction with available species-specific plans and literature and appropriately applied at the landscape and site-specific planning levels in a manner that ensures conservation and recovery of listed and sensitive species. In general, these guidelines should apply to listed and sensitive species habitats in areas of known and likely occurrence, particularly where recovery and conservation objectives have been identified by available species-specific plans.

All Species

- Avoid land trades/disposals of listed and sensitive species habitats.
- Avoid the broad-scale use of pesticides and insecticides in habitats of listed species, during sensitive time periods such as breeding and nesting seasons.
- Avoid use of pesticides in riparian habitats and areas adjacent to riparian areas. If used, avoid drift and apply non-persistent pesticides with low bioaccumulation potential.
- Encourage management that maintains sagebrush ecological sites.
- Avoid practices that permanently convert sagebrush shrubland to nonnative grassland.
- Implement management strategies that maintain or improve degraded riparian communities; protect natural flow requirements; protect water quality; manage for stable non-eroding banks; and manage for year-round flows.

- Manage riparian areas from a watershed perspective. Ensure that riparian areas within the project are as continuous as possible along the entire drainage and are as wide as the soil and water table will allow riparian vegetation to exist.
- Manage riparian areas to ensure a multi-aged, multi-layered structure, allowing for retention of snags and diseased trees. Provide multiple layers of vegetation (vertical structure) within 10 feet of the ground.
- Enhance the protection of wetland functions by emphasizing the protection of natural wetland structure, composition, and ecological processes.
- Establish appropriate buffers between wetlands and incompatible land uses adequate to preserve the functional integrity of the wetlands.
- Discourage development of natural water sources under BLM's management.
- When considering spring development/redevelopment, evaluate springs for occurrence of flora and fauna, with particular focus on detecting rare or unique species. Maintain sufficient water to sustain native flora and fauna. Return unused or overflow water to its original drainage. Protect the spring source area from detrimental impacts, e.g. from livestock, recreationists. Protect the spring source from risk of degradation of water quality.
- Fully mitigate all unavoidable habitat losses for listed and migratory birds, at a suggested ratio of 1:1. Mitigate all unavoidable riparian losses at a suggested ratio of 2:1. This ratio may be increased if mitigation does not occur prior to disturbance, if replacement habitat is less valuable than lost habitat, if habitat fragmentation is causing broad-scale impacts to remaining available habitats, or other reasons. Both direct and indirect habitat losses will be considered and fully mitigated.
- Include native forbs and grasses in seeding mixtures where feasible.
- Monitor condition of habitat in occupied, suitable, or potentially suitable habitat for listed and sensitive species to ensure maintenance of good to excellent ecological conditions; restoration and conservation of good to excellent aquatic habitat conditions; and consistent with available species-specific habitat requirements.
- Consider wildlife use when designing spring exclosures.
- If water developments occur, divert water several hundred feet downstream of the water source to allow wildlife to benefit, hydric species to perpetuate, and water quality to remain high.
- Limit the amount of time livestock spend in pastures with riparian areas; base grazing seasons/length on condition of riparian vegetation.

- Maintain or modify existing grazing regimes to promote growth of desirable vegetation and maintain desirable understory vegetation. Temporarily remove grazing from degraded habitats and habitats recovering from fire and other disturbances.
- Manage grazing to maintain riparian habitats with all desirable vegetation structure and age classes.
- Avoid construction or expansion of recreation facilities within occupied, suitable, and potentially suitable habitat for listed and sensitive species.
- Limit the number of new roadways in project areas when possible to protect wildlife and plant resources. Decommission unnecessary roads and reclaim unauthorized illegal trails in habitats important to listed and sensitive species.
- Where appropriate at designated recreation sites, design recreation activities that are predictable for wildlife; i.e. provide well-marked trails or boardwalks to encourage controlled and predictable human use away from listed and sensitive species habitats, and discourage off-trail hiking and creation of alternate routes.
- Avoid constructing new trails along or parallel to riparian areas.
- Reduce or restrict recreational uses including, but not limited to, all-terrain vehicles, bicycles, horses, birdwatchers, and hikers in riparian areas.
- Where recreation conflicts with use by listed and sensitive species, and area closures are not practical, provide on-site monitoring to educate users and control use.
- Sponsor programs and post signs that educate users about the value of riparian habitat to listed and sensitive species.
- Provide interpretive site and literature on recognition and value of protecting biological soil crusts at major access points in areas of extensive or unique crust formation.
- Avoid building new roads and trails in riparian areas, and avoid stream crossings.
- Close affected watersheds and/or riparian areas to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to grazing will depend on site-specific characteristics.
- Avoid or restrict mineral development activities in riparian habitats.
- Disturbances of all suitable habitats for listed and sensitive species will be improved to provide adequate habitat (pre-disturbance condition or better).

Yellow-billed cuckoo

- Avoid destruction of existing native cottonwood-willow dominated riparian forests and restore riparian habitats where possible.

- Eliminate loss of dense shrub layers in existing riparian areas and restore shrub areas where absent, when ecologically appropriate.
- Closely monitor grazing, recreational, and other impacts on cottonwood and willow seedlings in riparian systems and reduce or remove sources when seedlings are being impacted.
- Avoid habitat altering activities in riparian areas.

Mexican spotted owl

- Consider seasonal (March 1 – August 31) and spatial (0.5 mile) closures for recreational activities within PAC areas and suitable owl habitats.
- Maintenance of existing facilities within occupied (including PACs) and suitable Mexican spotted owl habitats should be avoided during the breeding season (March 1 – August 31).
- Implement recreational restrictions that protect occupied (including PACs) and suitable Mexican spotted owl habitats. Include these restrictions as part of all special recreation permits. Examples include, but are not limited to group size limits, length of stay, allowed use areas.
- Avoid road or trail building within PACs.
- Assess the presence and intensity of recreational activities in PACs, and apply appropriate measures to minimize impacts to the Mexican spotted owl and its habitat, in accordance with Recovery Plan recommendation and best available scientific information.
- Limit OHV and Guided Vehicle Tour uses to designated road and trails in Mexican spotted owl habitat and PACs.
- Conduct pre- and post-monitoring of Mexican spotted owl habitat conditions in PAC areas for surface disturbing activities.

Southwestern willow flycatcher

- Provide that areas of stop over and potentially suitable habitat the southwestern willow flycatcher are protected from impacts associated with recreational use; i.e. confine camping areas, restore impacted habitats, minimize attractants to scavengers, predators, and brown-headed cowbirds as appropriate.
- Minimize noise disturbance near suitable and potentially suitable southwestern willow flycatcher habitat. Measures may include, but are not limited to, rerouting trails and day use areas away from habitats, controlling the number of visitors, and discouraging use of loud equipment near breeding locations.

- Restore or maintain perennial surface flows and shallow groundwater in suitable southwestern willow flycatcher habitats, and areas targeted for restoration of suitable habitat.
- Avoid habitat altering activities in riparian areas.
- Unavoidable disturbances of riparian habitats suitable for southwestern willow flycatchers will be restored (pre-disturbance conditions or better) to provided adequate habitat for the species.

Plants

- Avoid use of aerosol insecticides within 3 miles of listed plant populations to protect pollinators.
- Direct recreational activities away from occupied habitats of listed and sensitive plant species.

RE-INITIATION STATEMENT

This is a program-level document that does not include project specific detail for actions authorized by the Resource Management Plan. Additional consultation with USFWS will be necessary for any authorized project specific action that may impact any listed species. This concludes formal consultation on the Richfield BLM Field Office Resource Management Plan. As provided in 50 CFR §402.16, re-initiation of formal consultation is required if: 1) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, 2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion, 3) a new species is listed or critical habitat designated that may be affected by the action, or 4) a project proposing biological control measures is proposed.

Thank you for your interest in conserving threatened and endangered species. If we can be of further assistance, please contact Katherine Richardson at (801) 975-3330 ext. 125 or Laura Romin at ext. 123.

bcc: Project File
Reading File

RICHARDSON/jrc:10/23/08

File: 6-UT-08-F-023

Z:\Finalized Letters\JRC\Richardson\RichfieldBO_FINAL.doc

LITERATURE CITED

Mexican spotted owl

- American Ornithologists' Union. 1957. Checklist of North American birds. Fifth ed. Am. Ornithologists' Union, Washington, D.C. 691pp.
- Delaney, D. K., T. G. Grubb, and L. L. Pater. 1997. Effects of helicopter noise on nesting Mexican spotted owls. A report to the U.S. Air Force 49 CES/CEV, Holloman Air Force Base. Project Order No. CE P. O. 95-4. 49 pp.
- Earhart, C. M., and N. K. Johnson. 1970. Size dimorphism and food habits of North American owls. *Condor* 72:251-264.
- Fletcher, K. W. and H. E. Hollis. 1994. Habitats used, abundance, and distribution of the Mexican spotted owl (*Strix occidentalis lucida*) on National Forest System lands in the southwestern region. USDA Forest Service, Southwestern Region, Albuquerque, New Mexico.
- Forsman, E. D., E. C. Meslow, and M. J. Strub. 1976. Spotted owl abundance in second-growth versus old-growth forest. *Bulletin of the Wildlife Society of Washington*. 5(2): 43-47.
- Forsman, E. D. 1981. Molt of the Spotted Owl. *Auk* 98:735-742.
- Forsman, E. D., E. C. Meslow, and H. M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. *Wildlife Monographs* No. 87. 64 pp.
- Ganey, J. L. 1988. Distribution and habitat ecology of the Mexican spotted owls in Arizona. M.S. Thesis Northern Arizona University, Flagstaff, Arizona. 229 pp.
- Ganey, J. L., and R. P. Balda. 1989. Distribution and habitat use of Mexican spotted owls in Arizona. *Condor* 91:355-361.
- Ganey, J. L., and R. P. Balda. 1994. Habitat selection by Mexican spotted owls in northern Arizona. *Auk* 111:162-169.
- Ganey, J. L. and W. M. Block. 2005. Winter movements and range use of radio-marked Mexican spotted owls: an evaluation of current management recommendations. Gen. Tech. Rep. RMRS-GTR-148-WWW. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 9 p.
- Ganey, J. L., G. C. White, A. B. Franklin, J. P. Ward, Jr., and D. C. Bowden. 2000. A pilot study on monitoring populations of Mexican spotted owls in Arizona and New Mexico: second interim report. 41 pp.
- Gutierrez, R. J. and S. E. Rinkevich. 1991. Final Report Distribution and Abundance of Spotted Owls in Zion National Park, 1991, National Park System Order No. PX-1200-9-C820.

- Gutierrez, R. J., C. A. May, M. L. Peterson, M. E. Seamans. 2003. Temporal and spatial variation in the demographic rates of two Mexican spotted owl populations. Final Report, submitted to USDA, Rocky Mountain Research Station, Fort Collins, Colorado. 146 pp.
- Hammitt, W. E. and D. N. Cole. 1987. Wildland recreation: ecology and management. John Wiley and Sons, New York. 341 pp.
- Johnsgard, P. A. 1988. North American owls: Biology and natural history. Smithsonian Institution Press, Washington D.C.
- Moen, C. A., A. B. Franklin, and R. J. Gutierrez. 1991. Age determination of subadult northern spotted owls in northwest California. *Wildlife Society Bulletin*. 19:489-493.
- Rinkevich, S. E. 1991. Distribution and habitat characteristics of Mexican spotted owls in Zion National Park, Utah. M.S. Thesis. Humboldt State University, Arcata, California. 62pp.
- Seamans M. E., R. J. Gutiérrez, C. A. May, M.Z. Peery. 1999. Demography of two Mexican spotted owl populations. *Conservation Biology*. 13:744–754.
- Skaggs, R. W., and R. J. Raitt. 1988. A Spotted Owl inventory on the Lincoln National Forest Sacramento Division: 1988. Contract No. 5-5 16.6-76-17. New Mexico Department of Game and Fish. Santa Fe, New Mexico.
- Thomas, J. W., M. G. Raphael, R.G. Anthony, E. D. Forsman, A. G. Gunderson, R.S. Holthausen, B. G. Marcot, G. H. Reeves, J. R. Sedell, and D. M. Solis. 1993. Viability assessments and management considerations for species associated with late-successional and old-growth forests of the Pacific Northwest. USDA Forest Service, Portland, Oregon. 529 pp.
- U.S. Fish and Wildlife Service (USFWS). 1993. Endangered and Threatened Wildlife and Plants; final rule to list the Mexican spotted owl as threatened. *Federal Register* 58(49):14248-14271. March 16, 1993.
- U.S. Fish and Wildlife Service (USFWS). 1995. Recovery Plan for the Mexican Spotted Owl. Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service (USFWS). 2004. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl. *Federal Register* 69 (168): 53181-53298; August 31, 2004.
- Utah Division of Wildlife Resources (UDWR). 2003. <http://dwrcdc.nr.utah.gov/ucdc/>
- Verner, J., K. S. McKelvey, B. R. Noon, R. J. Gutierrez, G. I. Gould, Jr., and T. W. Beck, eds. 1992. The California spotted owl: a technical assessment of its current status. USDA Forest Service General Technical Report PSW-133. 285 pp.
- Walker, L. W. 1974. The book of owls. Alfred A. Knopf, New York, N.Y 255 pp.

- White G. C., A. B. Franklin, J. P. Ward Jr. 1995. Population biology. *In*: United States Department of Interior, Fish and Wildlife Service. Recovery Plan for the Mexican spotted owl (*Strix occidentalis lucida*), volume II. Technical supporting information. Chapter 2:1–25. United States Fish and Wildlife Service, Albuquerque, New Mexico. (Available at <http://mso.fws.gov/recovery-plan.htm>).
- Willey, D. W. 1993. Home-range characteristics and juvenile dispersal ecology of Mexican spotted owls in southern Utah. Unpublished Report. Utah Division Wildlife Resources, Salt Lake City, Utah.
- Willey, D. W. 1995. Mexican spotted owls in canyonlands of the Colorado Plateau. *Pp.* 330-331 *In*: LaRoe, E. T., Farris, G. S., Puckett, C. E., Doran, P. D. and Mac, M. J., editors. *Our living resources: A report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems*. U.S. Department of the Interior, National Biological Service, Washington, D.C.
- Willey, D. W. 1998. Movements and habitat utilization by Mexican spotted owls within the canyon lands of Utah. PhD Thesis. Northern Arizona University. 87pp.
- Willey, D. W. and D. Spotskey. 1997. Unpublished GIS model for Mexican spotted owl breeding habitat. Final Report; Arizona Heritage Program, Phoenix, Arizona.
- Willey, D. W. and D. Spotskey. 2000. Field test of a habitat model for Mexican spotted owl breeding habitat. Final Report; Arizona Heritage Program, Phoenix, Arizona.

Southwestern willow flycatcher

- Anderson, B. W., A. Higgins, and R. D. Ohmart. 1977. Avian use of saltcedar communities in the lower Colorado River Valley. *In*: Johnson RR, Jones DA (tech. coord.), Proc. Symp. The importance, preservation and management of riparian habitat, July 9, 1977, Tucson, Arizona. USDA Forest Service Rocky Mountain Forest Range Experiment Station, Fort Collins, Colorado. General Technical Report RM-43, pp. 128-136.
- Behle, W. H., Bushman, and C. M. Greenhalgh. 1958. Birds of the Richfield area and adjacent high plateaus of southern Utah. University of Utah Biological Service. 11:1-92.
- Behle, W. H. and H. G. Higgins. 1959. The birds of Glen Canyon. *In*: Ecological Studies of Flora and Fauna in Glen Canyon (A.M. Woodbury, ed.) University Utah Anthropol. Pap. 40 (Glen Canyon Series No. 7), pp 107-133.
- Behle, W. H. 1985. Utah Birds: Geographic Distribution and Systematics: Occasional Publication, no. 5. Utah Museum of Natural History, University of Utah, Salt Lake City.
- Browning, M. R. 1993. Comments on the taxonomy of *Empidonax traillii* (willow flycatcher). *Western Birds* 24:241-257.
- Christensen, E. M. 1962. The rate of naturalization of *Tamarix* in Utah. *American Midland Naturalist* 68:51-57.

- Finch, M. F., J. F. Kelly, and J. E. Cartron. 2000. Migration and Winter Ecology. Chapter 7 *In* D. Finch and S. Stoleson, eds. Status, Ecology and Conservation of the Southwestern Willow Flycatcher. USDA Forest Service General Technical Report RMRS-GTR-60.
- DeLoach, C. J. 1991. Saltcedar, an exotic weed of western North American riparian areas: A review of its taxonomy, biology, harmful and beneficial values, and its potential for biological control. Report to the Bureau of Reclamation, Boulder City, Nevada.
- Durst, S. L., M. K. Sogge, H. C. English, S. O. Williams III, B. E. Kus, S. J. Sferra. 2004. Southwestern willow flycatcher breeding site and territory summary – 2004. U. S. Geological Survey, Southwest Biological Science Center, Colorado Plateau Research Station. Flagstaff, Arizona. 18 pp.
- Graf, W. L. 1982. Tamarisk and river-channel management. *Environmental Management* 6:283-296.
- Horton, J. S. 1977. The development and perpetuation of the permanent tamarisk type in the phreatophyte zone of the southwest. Contributed paper, Symposium on the Importance, Preservation and Management of the Riparian Habitat, July 9, 1977, Tucson, Arizona. pp 124-127.
- Howell, S. N. G. and S. Webb. 1995. *A Guide to the Birds of Mexico and Northern Central America*. Oxford University Press. 851 pp.
- Hubbard, J. P. 1987. The status of the Willow flycatcher in New Mexico. Endangered Species Program, New Mexico Dept. Of Game and Fish, Santa Fe, New Mexico. 29 pp.
- Johnson, M. J. and C. O'Brien. 1998. Southwestern willow flycatcher and yellow-billed cuckoo surveys along the San Juan River, Utah (Four Corners Bridge - Mexican Hat): 1998. Final Report to the Utah Division of Wildlife Resources (Contract # 976475). Colorado Plateau Field Station/Northern Arizona University report. 45 pp.
- Johnson, M. J. 1998. Southwestern willow flycatcher surveys in the Manti-La Sal National Forest, (Moab and Monticello Districts) Utah: 1998. Final report to the Utah Division of Wildlife Resources. USGS Biological Resources Division, Forest and Rangeland Ecosystem Science Center, Colorado Plateau Field Station, Northern Arizona University report, Flagstaff, Arizona. 19 pp.
- Johnson, M. J., A. Brand, H. C. English, C. Michaud, and B. Moore. 1999a. Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo Surveys along the Colorado River (Dewey Bridge - Canyonlands National Park Northern Boundary) and Green River, UT - Canyonlands National Park Northern Boundary) 1999. U.S. Geological Survey report to the U.S. Bureau of Reclamation and the Utah Department of Natural Resources.
- Johnson, M. J., A. Brand, H. C. English, C. Michaud, and B. Moore. 1999b. Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo Surveys in the Canyonlands National Park along the Colorado and Green Rivers, 1999. U.S. Geological Survey report to the U.S. Bureau of Reclamation and the Utah Department of Wildlife Resources.

- Langridge, S. M. and M. K. Sogge. 1998. Banding and genetic sampling of willow flycatcher in Utah: 1997 and 1998. U.S.G.S. Colorado Plateau Field Station/Northern Arizona University report. 60 pp.
- McCarthy, T.D., C.E. Paradzick, J.W. Rourke, M.W. Sumner, and R.F. Davidson. 1998. Arizona Partners In Flight southwestern willow flycatcher 1997 survey and nest monitoring report. Nongame and Endangered Wildlife Program Technical Report 130. Arizona Game and Fish Department, Phoenix, Arizona.
- Owen, J. C. and M. K. Sogge. 2002. Physiological condition of southwestern willow flycatchers in native and saltcedar habitats. U.S. Geological Survey report to the Arizona Department of Transportation, Phoenix, Arizona.
- Paxton, E. H. 2000. Molecular Genetic Structuring and Demographic History of the Willow Flycatcher (*Empidonax traillii*). A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Biology. Northern Arizona University, May 2000.
- Paxton, E., J. J. Owen, and M.K. Sogge. 1996. Southwestern willow flycatcher response to catastrophic habitat loss. Colorado Plateau Research Station. U. S. Geological Survey Biological Resources Division. Northern Arizona University, Flagstaff, Arizona. 12 pp.
- Phillips, A. R. 1948. Geographic variation in *Empidonax traillii*. *Auk* 65:507-514.
- Phillips, A. R., J. Marshall, and G. Monson. 1964. *The Birds of Arizona*. University of Arizona Press, Tucson, Arizona. 212 pp.
- Ridgely, R. S. and G. Tudor. 1994. *The Birds of South America. Volume II: The Suboscine Passerines*. University of Texas Press, Austin, Texas. 814 pp.
- Schreier, W. 1996. Bryce Canyon National Park 1996 Federal Endangered Avian Species Survey Report: Southwestern Willow Flycatcher. Colorado Plateau System Support Office, Intermountain Field Area, National Park Service: Bryce Canyon, Utah.
- Sedgwick, J. A. 1998. Regional Variability in the Song of the Southwestern Willow Flycatcher. Draft report to the Arizona Game and Fish Department. USGS Biological Resources Division, Midcontinent Research Station, Fort Collins, CO. 15 pp. plus appendices.
- Sedgwick, J. A. 2001. Geographic variation in the song of willow flycatchers: differentiation between *Empidonax traillii adastus* and *E. t. extimus*. *Auk* 118(2):366-379, 2001.
- Sferra, S.J., T.E. Corman, C.E. Paradzick, J.W. Rourke, J.A. Spencer, and M.W. Sumner. 1997. Arizona Partners In Flight southwestern willow flycatcher survey: 1993-1996 summary report. Nongame and Endangered Wildlife Program Technical Report 113. Arizona Game and Fish Department, Phoenix, Arizona.
- Sogge, M. K. 2000. Breeding Season Ecology. Chapter 6 *In* D. Finch and S. Stoleson, eds. Status, Ecology and Conservation of the Southwestern Willow Flycatcher. USDA Forest Service General Technical Report RMRS-GTR-60.

- Sogge, M. K., R. M. Marshall, S. J. Sferra, and T. J. Tibbitts. 1997. A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. Technical Report NPS/NAUCPRS/NRTR-97/12.
- Sogge, M. K. and R. M. Marshall. 2000. A survey of current breeding habitats. Chapter 9 *In* D. Finch and S. Stoleson, eds. Status, Ecology and Conservation of the Southwestern Willow Flycatcher. USDA Forest Service General Technical Report RMRS-GTR-60.
- Sogge, M. K., S. J. Sferra, T. D. McCarthey, S. O. Williams, and B. E. Kus. 2003. Distribution and characteristics of Southwestern Willow Flycatcher Breeding Sites and Territories. *Studies in Avian Biology* 26:5-11.
- Sogge, M. K. and T. J. Tibbitts. 1994. Distribution and Status of the Southwestern Willow Flycatcher along the Colorado River in the Grand Canyon - 1994. Summary Report. National Biological Service Colorado Plateau Research Station/Northern Arizona University and U.S. Fish and Wildlife Service. 37 pp.
- Stiles, F. G. and A. F. Skutch. 1989. A Guide to the Birds of Costa Rica. Cornell University Press, New York.
- Travis, J. R. 1996. Song Types of Willow Flycatchers in New Mexico. Contract No. 95-516-67. Endangered Species Program, New Mexico Department of Game and Fish, Santa Fe, New Mexico. 31 pp.
- Unitt, P. 1987. *Empidonax traillii extimus*: An endangered subspecies. *Western Birds* 18:137-162.
- Unitt, P. 1997. Winter range of *Empidonax traillii extimus* as documented by existing museum collections. Report to the U.S. Bureau of Reclamation, Phoenix, Arizona.
- U.S. Fish and Wildlife Service (USFWS). 1995. Final rule determining endangered status for the southwestern willow flycatcher (*Empidonax traillii extimus*). February 27, 1995. Federal Register 60:10694.
- U.S. Fish and Wildlife Service (USFWS). 1997. Final determination of critical habitat for the southwestern willow flycatcher. July 22, 1997. Federal Register 62(140):39129-39146.
- U.S. Fish and Wildlife Service (USFWS). 2001. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. Prepared by Southwestern Willow Flycatcher Recovery Team Technical Subgroup.
- U.S. Fish and Wildlife Service (USFWS). 2002. Final Recovery Plan Southwestern Willow Flycatcher. Albuquerque, New Mexico. Prepared by Southwestern Willow Flycatcher Recovery Team Technical Subgroup.
- U.S. Fish and Wildlife Service (USFWS). 2003. Final Recovery Plan Southwestern Willow Flycatcher. Albuquerque, New Mexico. Prepared by Southwestern Willow Flycatcher Recovery Team Technical Subgroup.

- U.S. Fish and Wildlife Service (USFWS). 2005. Designation of Critical Habitat for Southwestern willow flycatcher, Final Rule. October 19, 2005. Federal Register 70(201):60886-61009.
- Wauer, R. H. and D. L. Carter. 1965. Birds of Zion National Park and vicinity. Zion Natural History Association, Springdale, Utah. 92 pp.
- Whitfield, M.J. 1990. Willow flycatcher reproductive response to brown-headed cowbird parasitism. Masters Thesis, California State University, Chico, California. 25 pp.
- Whitfield, M. J. and C. M. Strong. 1995. A Brown-headed cowbird control program and monitoring for the Southwestern Willow Flycatcher, South Fork Kern River, California, 1995. California Department of Fish and Game, Sacramento. Bird and Mammal Conservation Program Report 95-4.
- Whitfield, M. J. and K. M. Enos. 1996. A Brown-headed cowbird control program and monitoring for the Southwestern Willow Flycatcher, South Fork Kern River, California, 1996. California Department of Fish and Game, Sacramento, California. Final report for contract #FG4100WM-1.
- Yong, W. and D. M. Finch. 1997. Migration of the Willow Flycatcher along the Middle Rio Grande. Wilson Bulletin 109:253-268.

Utah prairie dog

- Bureau of Land Management. 2005. Programmatic Biological Assessment of Utah Prairie Dog on Utah Bureau of Land Management Lands.
- Bonzo, T. and K. Day. 2003. Utah Prairie Dog Recovery Efforts 2002 Annual Report. Utah Division of Wildlife Resources, Salt Lake City, Utah. Publication No. 03-47. 26 pp.
- Coffeen, M. P. 1989. Daft annual Utah prairie dog progress report to U.S. Fish and Wildlife Service by the Utah Division of Wildlife Resources. Unpublished Report Project SE-1, Job U-06. Salt Lake City, Utah. 7 pp.
- Collier, G. D., and J. J. Spillett. 1972. Status of the Utah prairie dog (*Cynomys parvidens*). Utah Acad. Sci., Arts, Lett. 49:27-39.
- Collier G. D. 1975. The Utah prairie dog: abundance, distribution and habitat requirements. Pub. No. 75-10. Salt Lake City, Utah. 94 pp.
- Crocker-Bedford, D. C. 1975. Utah prairie dog habitat evaluation. Proceedings of Utah Wildlife Technical Meeting. 7 pp.
- Crocker-Bedford, D. C. and J. J. Spillett. 1981. Habitat relationships of the Utah prairie dog. Publication No. 1981-0-677-202/4. U.S. Department of Agriculture, Forest Service, Intermountain Region, Ogden, Utah. 29pp.
- Crocker-Bedford D. C. 1976. Food interactions between Utah prairie dogs and cattle. M. S. Thesis. Utah State University, Logan, Utah.

- Cully, J. F., Jr., A. M. Barnes, T. J. Quan and G. Maupin. 1997. Dynamics of Plague In a Gunnison's Prairie Dog Colony Complex from New Mexico. *Journal of Wildlife Diseases* 33:706-719.
- Cully, Jr., J.F. and E.S. Williams. 2001. Interspecific comparisons of sylvatic plague in a Gunnison's prairie dog colony complex from New Mexico. *Journal of Mammalogy* 82: 894-905.
- Heggen, A. W., and R. H. Hasenyager. 1977. Annual Utah prairie dog progress report to U.S. Fish and Wildlife Service by the Utah Division of Wildlife Resources. Unpublished Report. Salt Lake City, Utah. 4 pp.
- Mackley, J. W., S. G. Whisenant, and J. T. Flinders. 1988. Dispersal and Life history of the Utah prairie dog (*Cynomys parvidens*) following habitat modifications. Unpublished Report, Department of Botany and Range Science, Brigham Young University, Provo, Utah. 24pp.
- McDonald, K. P. 1993. Analysis of the Utah prairie dog recovery program, 1972-1992. Publication No. 93-16. Utah Division of Wildlife Resources, Cedar City, Utah. 81 pp.
- Pizzimenti J. J. 1975. Evolution of the prairie dog genus *Cynomys*. *Occasional Papers of the Museum of Natural History, The University of Kansas*. 39:1-73.
- Pizzimenti, J. J., and G. D. Collier. 1975. *Cynomys parvidens*. *Mammal. Species* 56:1-2.
- Severson, K. E. and P. J. Urness. 1994. Livestock Grazing: A tool to improve wildlife habitat. Pages 232-249. *In: Ecological Implications of Livestock Herbivory in the West*. Society of Range Management, Denver, Colorado.
- Stoddart, L.A., A.D. Smith, and T.W. Box. 1975. Range management. McGraw-Hill Book company. New York, NY. 532 pp.
- Turner, B. 1979. An evaluation of the Utah prairie dog (*Cynomys parvidens*). Unpublished Report Prepared for the Utah Division of Wildlife Resources. 53 pp.
- Utah Division of Wildlife Resources. 2004. Unpublished data, Table 1: Spring counts of Utah prairie dogs by recovery area and land ownership. 2 pp.
- Utah Division of Wildlife Resources. 2007. Utah Species Distribution and Information. <http://dwrcdc.nr.utah.gov/rsgis2/search>.
- U.S. Fish and Wildlife Service (USFWS). 1973. Endangered and Threatened Wildlife and Plants; Final Rule to List the Utah Prairie Dog. 38 Federal Register 14678 (June 4, 1973).
- U.S. Fish and Wildlife Service (USFWS). 1991. Utah prairie dog recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado. 41 pp.
- U.S. Fish and Wildlife Service (USFWS). 1984. Endangered and Threatened Wildlife and Plants; Final Rule to Reclassify the Utah Prairie Dog as Threatened, With Special Rule To Allow Regulated Taking. 49 Federal Register 22330 (May 29, 1984).

Utah Prairie Dog Recovery Implementation Team. 1997. Utah Prairie Dog Interim Conservation Strategy. Members of team in collaboration with Dr. Mark Ritchie, Utah State University, Utah.

Wright-Smith, M.A. 1978. The ecology and social organization of *Cynomys parvidens* (Utah prairie dog) in south central Utah. MA. Thesis. Indiana University, Bloomington, Indiana. 44 pp.

California condor

California Condor Reintroduction Program. 2002. A review of the first five years of the California Condor Reintroduction Program in Northern Arizona. February 14, 2002. Prepared by the Arizona Condor Review Team for the California Condor Recovery Team and U.S. Fish and Wildlife Service, California/Nevada Operations Office, Sacramento, California.

Cooper, J.G. 1890. A doomed bird. *Zoe* 1:248-249.

Koford, C.B. 1953. The California condor. National Audubon Society Research Report 4:1-154.

National Park Service. 2005. Three Condors to be Released October 4: California condor (*Gymnogyps californianus*) <http://www.nps.gov/grca/media/2003/2-29sep03.htm>.

San Diego Zoo. 2005. Birds: California condor. <http://www.sandiegozoo.org/animalbytes/t-condor.html>.

Schmitt, N.J. 1995. In Prep. A study of the California condor molt.

Snyder, N.F.R., E.V. Johnson, and D.A. Clendenen. 1987. Primary molt of California condors. *Condor* 89:468-485.

U.S. Fish and Wildlife Service. 1996. California condor recovery plan, third revision. Portland, Oregon. 62 pp.

Wilbur, S.R. 1978. The California condor, 1966-76: a look at its past and future. U.S. Fish and Wildlife Service, North America Fauna 72:1-136.

San Rafael cactus

Clark, Debra. 2008. Summary of Repeat Inventory Monitoring and Site Visit Accounts to *Sclerocactus wrightiae*, *Pediocactus winkleri* and *P. despainii* sites. Prepared for Bureau of Land Management, Richfield Field Office, Richfield, Ut.

Cronquist, A., A.H. Holmgren, N.H. Holmgren, and L.L. Reveal. 1972. Intermountain Flora. Volume 1. New York: Hafner Publishing House.

Heil, K. 1984. Status report on *Pediocactus despainii*. U.S. Fish and Wildlife Service, Denver, Colorado. 14 pp.

Heil, K., B. Armstrong, and D. Schleser. 1981. A review of the genus *Pediocactus*. *Cactus & Succulent Journal* 53: 17-39.

- The Nature Conservancy. 1998. San Rafael Cactus (*Pediocactus despainii*). Natural Heritage Central Databases (NHCD) information provided via the Biodiversity Conservation Data Source (BioSource) website.
- USDA et al. 1998. U.S. Department of Agriculture - Forest Service, U.S. Department of Interior - Bureau of Land Management, U.S. Department of Interior - National Park Service, U.S. Department of Interior – Fish and Wildlife Service, Utah Department of Natural Resources, Emery County (Utah), and Wayne County (Utah). 1998. *Pediocactus winkleri* (Winkler Cactus) and *Pediocactus despainii* (San Rafael Cactus) Draft Conservation Agreement and Strategy. 37 pp.
- U.S. Fish and Wildlife Service (USFWS). 1987. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Pediocactus despainii* (San Rafael Cactus). Federal Register Vol. 52, (179): 34914-34917.
- U.S. Fish and Wildlife Service (USFWS). 1995. Informal Interagency Conference for Impacts to the Winkler Cactus from the Development of the Last Chance Bentonite Mine. Memo to Penelope Dunn, Area Manager, San Rafael Resource Area, Bureau of Land Management, Price, Utah. U.S. Fish and Wildlife Service, Ecological Services, Salt Lake City, Utah.
- U.S. Fish and Wildlife Service (USFWS). 1998. Endangered and Threatened Wildlife and Plants; Final Rule to Determine the Plant *Pediocactus winkleri* (Winkler Cactus) To Be a Threatened Species. Federal Register Vol. 63, (161): 44587-44595.
- Walter, K. S. and H. J. Gillett, eds. 1998. 1997 IUCN Red List of Threatened Plants. Compiled by the World Conservation Monitoring Center. IUCN - The World Conservation Union, Gland, Switzerland. Ixiv + 862 pp.
- Welsh, S. L. and S. Goodrich. 1980. Welsh, S.L. and S. Goodrich, miscellaneous plant novelties from Alaska, Nevada, and Utah. Great Basin Naturalist 40: 78-88.
- Welsh, S. L., N. D. Atwood, S. Goodrich, and L. C. Higgins, 1993. A Utah Flora, Second Edition. Brigham Young University Press, Provo, Utah. 986 + vii pp.

Winkler cactus

- Clark, Debra. 2008. Summary of Repeat Inventory Monitoring and Site Visit Accounts to *Sclerocactus wrightiae*, *Pediocactus winkleri* and *P. despainii* sites. Prepared for Bureau of Land Management, Richfield Field Office, Richfield, Ut.
- England, L. 1997. *Pediocactus winkleri*. Status Report Supplement Number 2. May 30, 1997. U.S. Fish and Wildlife Service, Salt Lake City, Utah.
- Heil, K. D. 1979. Three new species of Cactaceae from southeastern Utah. Cactus and Succulent Journal of America 51:25-30.
- Neese Investigation. 1987. Habitat inventory of *Sclerocactus wrightiae* and other associated sensitive species. Prepared for the Bureau of Land Management.

- Porter, M. J., E. H. Roalson, and K. D. Heil. 1999. Population structure in *Pediocactus winkleri* and *P. despainii* (Cactaceae), based on chloroplast haplotypes, inferred from trnL-F DAN sequences. Draft document.
- USDA et al. 1998. U.S. Department of Agriculture - Forest Service, U.S. Department of Interior - Bureau of Land Management, U.S. Department of Interior - National Park Service, U.S. Department of Interior – Fish and Wildlife Service, Utah Department of Natural Resources, Emery County (Utah), and Wayne County (Utah). 1998. *Pediocactus winkleri* (Winkler Cactus) and *Pediocactus despainii* (San Rafael Cactus) Draft Conservation Agreement and Strategy. 37 pp.
- U.S. Fish and Wildlife Service (USFWS). 1987. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Pediocactus despainii* (San Rafael Cactus). Federal Register Vol. 52, (179): 34914-34917.
- U.S. Fish and Wildlife Service (USFWS). 1995. Informal Interagency Conference for Impacts to the Winkler Cactus from the Development of the Last Chance Bentonite Mine. Memo to Penelope Dunn, Area Manager, San Rafael Resource Area, Bureau of Land Management, Price, Utah. U.S. Fish and Wildlife Service, Ecological Services, Salt Lake City, Utah.
- U.S. Fish and Wildlife Service (USFWS). 1998. Endangered and Threatened Wildlife and Plants; Final Rule to Determine the Plant *Pediocactus winkleri* (Winkler Cactus) To Be a Threatened Species. Federal Register Vol. 63, (161): 44587-44595.
- Welsh, S. L., N. D. Atwood, S. Goodrich, and L. C. Higgins, 1993. A Utah Flora, Second Edition. Brigham Young University Press, Provo, Utah. 986 pp.

Wright Fishhook Cactus

- Benson, L. 1982. The Cacti of the United States and Canada. Stanford University Press. 1044 pp.
- Bureau of Land Management. 1979. Field Records, BLM Inventory, Emery County, Utah.
- Clark, D. J. 2002. Summary of the Interagency Rare Plant Inventory Project, 1999 through 2002. Prepared by Deborah J. Clark in cooperation with: Dixie National Forest, Teasdale, Utah; Capitol Reef National Park, Torrey, Utah; Bureau of Land Management, Richfield Field Office, Richfield, Utah; and Fishlake National Forest, Richfield, Utah.
- Clark, D. J. and C. M. Groebner. 2003. Summary of Survey Results for Wright's Fishhook Cactus 2000 through 2003. (*Sclerocactus wrightiae*). Prepared for Bureau of Land Management, Richfield Field Office, Richfield, Utah. Prepared by Deborah J. Clark and Christine M. Groebner.
- Clark, Debra. 2008. Summary of Repeat Inventory Monitoring and Site Visit Accounts to *Sclerocactus wrightiae*, *Pediocactus winkleri* and *P. despainii* sites. Prepared for Bureau of Land Management, Richfield Field Office, Richfield, Ut.

- Christiansen, V. A., Jr. 1991. Staff Report, BLM, Henry Mountain Resource Area, Hanksville, Utah. Subject: Missing Wright's Fishhook Cactus (*Sclerocactus wrightiae*).
- Cronquist, A., A. H. Holmgren, N. H. Holmgren, and J. L. Reveal. 1972. Intermountain Flora: Vascular Plant of the Intermountain West, U.S.A. Volume one. New York: Hafner Publishing Co. 270 p.
- Groebner, C. M., G. L. Lenhart, and C. L. Craig. 2004. Survey results for Wright's Fishhook Cactus 2004. (*Sclerocactus wrightiae*). Prepared for Bureau of Land Management, Richfield Field Office, Richfield, Utah.
- Heil, K. D. and J. M. Porter. 1994. *Sclerocactus* (Cactaceae): A Revision. *Haseltonia: Yearbook of the Cactus and Succulent Society of America*, No. 2.
- Intermountain Ecosystems. 1999. Demographic Monitoring of Wright Fishhook Cactus (*Sclerocactus wrightiae*) Benson. 1993-1999. Prepared for Bureau of Land Management, Richfield District Office, Richfield, Utah. Prepared by Intermountain Ecosystems, LLC., Springville, Utah. Dated 13 December 1999.
- Kass, R. J. [no date]. Demographic Monitoring of Wright Fishhook Cactus (*Sclerocactus wrightiae*) Benson. Prepared by Ronald J. Kass, Intermountain Ecosystem, LLC., Springville, Utah.
- Kass, R. J. 1990. Final Report. Habitat Inventory of Threatened and Endangered and Candidate Species in the San Rafael Swell, Utah. U.S. Department of Interior, Bureau of Land Management, Salt Lake City, Utah. 87 pp.
- Kass, R. J. 2001. Mortality of the Endangered Wright Fishhook Cactus (*Sclerocactus wrightiae*) Benson. Prepared by Ronald J. Kass, Intermountain Ecosystems, LLC., Springville, Utah.
- Mathew, B. (ed). 1994. CITES Guide to Plant in Trade. CITES Department of Environment.
- Neese Investigations. 1987. Final Report, Habitat Inventory of *Sclerocactus Wrightiae* and Other Associated Sensitive Species. Volume II – Record of Area Inventoried. Prepared for BLM, Richfield District Office, Richfield, Utah. Prepared by Neese Investigations, Salt Lake City, Utah.
- Tepedino, V. J. 2000. The reproductive biology of rare rangeland plants and their vulnerability to insecticides; *In* Vol. III.5, pp1-10; Grasshopper Integrated Pest Management User Handbook, G. L. Cunningham & M. W. Sampson (Tech. Coord.) USDA APHIS Technical Bulletin No. 1809, Washington, D.C.
- U.S. Fish and Wildlife Service (USFWS). 1985. Wright Fishhook Cactus Recovery Plan. Prepared in cooperation with the Wright Fishhook Cactus Recovery Committee. USFWS, Denver, Colorado. 27 pp.

U.S. Fish and Wildlife Service (USFWS). 2005. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to Delist *Sclerocactus wrightiae* (Wright Fishhook Cactus) and Initiation of a 5-Year Status Review. Federal Register Vol. 70, No. 148, pages 44544-44547.

Last Chance townsendia

Armstrong, L. and K. H. Thorne. 1991. Challenge cost share report, target species: *Townsendia aprica* Welsh & Reveal. Unpublished report, Bureau of Land Management, Salt Lake City, Utah. 14 pp + appendices.

Center for Plant Conservation (CPC). 2005. CPC National Conservation Plant Profile: *Townsendia aprica*. Website: <http://www.centerforplantconservation.org/>

Heil, K. 1987. A vegetation study of Capitol Reef National Park. Unpublished report, National Park Service, Torrey, Utah. 37 pp.

Kass, R. J. 1990. Final report of habitat inventoried of threatened, endangered and candidate plant species in the San Rafael Swell, Utah. Unpublished report, Bureau of Land Management, Salt Lake City, Utah. 87 pp.

Neese, E. 1987. Habitat inventory of *Sclerocactus wrightiae* and other associated sensitive species. Bureau of Land Management, Richfield, Utah. 119 pp.

Tepedino, V. T. and T. L. Griswold. 1991. USDA-ARS Bee Biology and Systematics Laboratory, Logan, Utah, personal communication.

Robinson, M. 2002. Unpublished BLM Challenge Cost Share. Status Report on *Townsendia aprica*.

Robinson, M. 2007. Unpublished BLM Challenge Cost Share. Status Report on *Townsendia aprica*.

Utah Division of Wildlife Resources. 2005. Last Chance townsendia. Utah Conservation Data Center. Web Page Accessed July 21, 2005. <http://dwrcdc.nr.utah.gov/ucdc/>.

U.S. Fish and Wildlife Service (USFWS). 1993. Last Chance townsendia (*Townsendia aprica*) Recovery Plan. Denver, Colorado: U.S. Fish and Wildlife Service. p.18.

Welsh S.L., N.D. Atwood, S. Goodrich, L.C. Higgins. 1993. A Utah Flora, second edition, Brigham Young University, Provo UT, U.S.A., 264.pp

Western-yellow billed cuckoo

Johnson, M.J., A. Brand, H.C. English, C. Michaud, and B. Moore. 1999. Southwestern willow catcher and Western yellow-billed cuckoo surveys along the Colorado River (Dewey Bridge—Canyonlands National Park Northern Boundary) and Green River, Utah—Canyonlands National Park boundary) 1999. U.S. Geological Survey report to the U.S. Bureau of Reclamation and the Utah Division of Natural Resources.

Kauffman, K. 1996. Lives of North American Birds. Houghton Mifflin Company. New York, NY

U.S. Fish and Wildlife The Service. 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition To List the Yellow-billed Cuckoo (*Coccyzus americanus*) in the Western Continental United States. Fed Reg. 66 (143): 38611-38626.

APPENDIX A – BLM COMMITTED CONSERVATION MEASURES AND LEASE NOTICES

BLM-committed conservation measures, which would be incorporated into the RMP are binding species-specific measures intended to protect species, and minimize the potential for adverse impacts that may result from the implementation of BLM-authorized activities on special status species. This is not a comprehensive list, in that other modified versions of these measures may be imposed for any BLM-authorized activity following further analyses or reviews, and/or consultation and coordination with USFWS. This includes measures that have already been consulted on and that will be incorporated into any future consultation on existing land use plans (USFWS, 2007), oil and gas lease notices (USFW, 2004), and the Utah BLM fire management plan (USFWS 2005a; USFW 2005b).

Energy and Mineral Development

The BLM will continue to conduct project specific site inventories in areas that are proposed for energy and mineral developments. The inventories would include the presence/absence of special status species as well as suitable habitats. The BLM will work with the lessee to minimize the construction of new roads, pipelines, and other developments that require surface disturbing activities. This will assist in minimizing the effects of such activities on special status species that could adversely impact suitable habitats. It will also reduce the available access to remote locations of populations of special status species that occur on BLM-administered lands within the planning area. The BLM will continue to use Utah Threatened and Endangered Species Lease Notices. Lease notices include the following:

- Reduce impacts to wildlife and visual resources by applying the following, as appropriate:
 - Directional drilling of oil and gas wells
 - Drilling of multiple wells from a single pad
 - Closed drilling systems
 - Cluster development
 - Below-ground wellheads
 - Remote well monitoring
 - Piping of produced liquids to centralized tank batteries off site to reduce traffic to individual wells
 - Transportation planning (e.g., to reduce road density and traffic volumes)
 - Compensatory mitigation
 - Noise reduction techniques and designs
 - Installation of raptor anti-perch devices in Greater sage-grouse habitat
 - Monitoring of wildlife populations during drilling operations
 - Avoidance of human activity between 8 p.m. and 8 a.m. from March 1 through May 15 within one-quarter mile of the perimeter of occupied Greater sage-grouse leks
 - Onsite bioremediation of oil field wastes and spills
 - Removal of trash, junk, waste, and other materials not in current use.

- Reclaim all disturbed surface areas promptly, performing concurrent reclamation as necessary, and minimize the total amount of all surface disturbance.
- Ensure all surface soil is stripped prior to conducting operations, stockpiled, and reapplied during reclamation, regardless of soil quality. Minimize the length of time soil remains in stockpiles and the depth or thickness of stockpiles.
- Strip and separate soil surface horizons where feasible and reapply in proper sequence during reclamation.
- Establish vegetation cover on soil stockpiles that are to be in place longer than 1 year.
- Construct and rehabilitate temporary roads to minimize total surface disturbance, consistent with intended use.
- Consider temporary measures such as silt fences, straw bales, or mulching to trap sediment in sensitive areas until reclaimed areas are stabilized with vegetation.
- Reshape to the approximate original contour all areas to be permanently reclaimed, providing for proper surface drainage.

Oil and Gas Lease Notices

Lease Notice for Mexican Spotted Owl (*Strix occidentalis lucida*)

The Lessee/Operator is given notice that the lands in this lease contain suitable habitat for Mexican spotted owl, a federally listed species. The Lessee/Operator is given notice that the lands in this lease contain Designated Critical Habitat for the Mexican spotted owl, a Federally listed species. Critical habitat was designated for the Mexican spotted owl on August 31, 2004 (69 FR 53181-53298). Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the owl nesting season. A temporary action is completed prior to the following breeding season, leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to, these measures, will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations, unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s).
2. Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the conservation measures below if project activities occur within 0.5 mile of suitable owl habitat. Determine potential effects of actions to owls and their habitat.
 - a. Document type of activity, acreage and location of direct habitat impacts, type and extent of indirect impacts relative to location of suitable owl habitat.
 - b. Document if the action is temporary or permanent.

3. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
4. Water production will be managed to ensure maintenance or enhancement of riparian habitat.
5. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for Mexican spotted owl nesting.
6. For all temporary actions that may impact owls or suitable habitat:
 - a. If the action occurs entirely outside of the owl breeding season (March 1 to August 31) and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.
 - b. If the action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity must be delayed until outside of the breeding season.
 - c. Rehabilitate access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
7. For all permanent actions that may impact owls or suitable habitat:
 - a. Survey two consecutive years for owls according to accepted protocol prior to commencing activities.
 - b. If owls are found, no actions will occur within 0.5 mile of identified nest site. If nest site is unknown, no activity will occur within the designated Protected Activity Center (PAC).
 - c. Avoid drilling and permanent structures within 0.5 mile of suitable habitat unless surveyed and not occupied.
 - d. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5 mile buffer for suitable habitat, including canyon rims.
 - e. Limit disturbances to and within suitable habitat by staying on approved routes.
 - f. Limit new access routes created by the project.
8. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Lease Notice for Southwestern Willow Flycatcher (*Empidonax trailli extimus*)

The Lessee/Operator is given notice that the lands in this parcel contain riparian habitat that falls within the range for southwestern willow flycatcher, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of habitat or displaces

flycatchers through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to, these measures, will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations, unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s), and be conducted according to protocol.
2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production will be managed to ensure maintenance or enhancement of riparian habitat.
4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
5. Drilling activities will maintain a 300 ft. buffer from suitable riparian habitat year long.
6. Drilling activities within 0.25 mile of occupied breeding habitat will not occur during the breeding season of May 1 to August 15.
7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat.
8. Revegetate with native species all areas of surface disturbance within riparian areas and/or adjacent uplands.
9. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Lease Notice for Colorado River Fish

The Lessee/Operator is given notice that the lands in this parcel contain Critical Habitat for the Colorado River fish (bonytail chub, humpback chub, Colorado pike minnow, and razorback sucker, listed as endangered under the Endangered Species Act (ESA), or these parcels have watersheds that are tributary to designated habitat. Critical habitat was designated for the four endangered Colorado River fishes on March 21, 1994 (59 FR 13374-13400). Designated critical habitat for all the endangered fishes includes those portions of the 100-year floodplain that contain primary constituent elements necessary for survival of the species. Avoidance or use restrictions may be placed on portions of the lease. The following avoidance and minimization

measures have been designed to ensure activities carried out on the lease comply with the ESA. Integration of, and adherence to, these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations, unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s).
2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production will be managed to ensure maintenance or enhancement of riparian habitat.
4. Avoid loss or disturbance of riparian habitats.
5. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
6. Conduct watershed analysis for leases in designated critical habitat and overlapping major tributaries in order to determine toxicity risk from permanent facilities.
7. Implement the Utah Oil and Gas Pipeline Crossing Guidance (from BLM National Science and Technology Center).
8. Drilling will not occur within 100-year floodplains of rivers or tributaries to rivers that contain listed fish species or critical habitat.
9. In areas adjacent to 100-year flood plains, particularly in systems prone to flash floods, analyze the risk for flash floods to impact facilities, and use closed loop drilling, and pipeline burial or suspension according to the Utah Oil and Gas Pipeline Crossing Guidance, to minimize the potential for equipment damage and resulting leaks or spills. Water depletions from *any* portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect or adversely modify the critical habitat of the four resident endangered fish species, and must be evaluated with regard to the criteria described in the Upper Colorado River Endangered Fish Recovery Program. Formal consultation with U.S. Fish and Wildlife Service (USFWS) is required for all depletions. All depletion amounts must be reported to BLM.
10. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the USFWS between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Lease Notice for Utah Prairie Dog (*Cynomys parvidens*)

The Lessee/Operator is given notice that lands in this lease may contain historic and/or occupied Utah prairie dog habitat, a threatened species under the Endangered Species Act (ESA). Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs when prairie dogs are active or hibernating. A temporary action is completed prior to the following active season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one activity/hibernation season and/or causes a loss of Utah prairie dog habitat or displaces prairie dogs through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the ESA. Integration of, and adherence to, these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s).
2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in prairie dog habitat.
4. Surface occupancy or other surface disturbing activity will be avoided within 0.5 mile of active prairie dog colonies.
5. Permanent surface disturbance or facilities will be avoided within 0.5 mile of potentially suitable, unoccupied prairie dog habitat, identified and mapped by Utah Division of Wildlife Resources since 1976.
6. The lessee/operator should consider if fencing infrastructure on well pad, e.g., drill pads, tank batteries, and compressors, would be needed to protect equipment from burrowing activities. In addition, the operator should consider if future surface disturbing activities would be required at the site.
7. Within occupied habitat, set a 25 mph speed limit on operator-created and maintained roads.
8. Limit disturbances to and within suitable habitat by staying on designated routes.
9. Limit new access routes created by the project.
10. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Lease Notice for Listed Plant Species

The Lessee/Operator is given notice that the lands in this parcel contain suitable habitat for federally listed plant species under the Endangered Species Act (ESA). The following avoidance and minimization measures have been developed to facilitate review and analysis of any submitted permits under the authority of this lease:

1. Site inventories:
 - a. Must be conducted to determine habitat suitability
 - b. Are required in known or potential habitat for all areas proposed for surface disturbance before initiating project activities, at a time when the plant can be detected, and during appropriate flowering periods
 - c. Should include documentation on individual plant locations and suitable habitat distributions
 - d. Must have qualified individuals conduct all surveys.
2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Project activities must be designed to avoid direct disturbance to populations and to individual plants:
 - a. Designs will avoid concentrating water flows or sediments into plant occupied habitat.
 - b. Construction will occur downslope of plants and populations where feasible; if well pads and roads must be sited upslope, buffers of 100 feet minimum between surface disturbances and plants and populations will be incorporated.
 - c. Where populations occur within 200 feet of well pads, a buffer or fence will be established between the individuals or groups of individuals and the well pads during and post-construction.
 - d. Areas for avoidance will be visually identifiable in the field, e.g., flagging, temporary fencing, rebar.
 - e. For surface pipelines, a 10-foot buffer will be used from any plant locations:
 - f. If on a slope, stabilizing construction techniques will be used to ensure the pipelines do not move toward the population.
4. For riparian/wetland-associated species, e.g. Ute ladies'-tresses, avoid loss or disturbance of riparian habitats:
 - a. Water extraction or disposal practices will not result in change of hydrologic regime.
5. Disturbances to and within suitable habitat will be limited by staying on designated routes.
6. New access routes created by the project will be limited.
7. To limit OHV travel in sensitive areas, signing will be placed appropriately.
8. Dust abatement practices will be implemented near occupied plant habitat.

9. All disturbed areas will be revegetated with native species composed of species indigenous to the area.

10. Post-construction monitoring for invasive species will be required.

11. Where technically and economically feasible, directional drilling or multiple wells will be used from the same pad to reduce surface disturbance and eliminate drilling in plant habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.

12. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.

Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

Lease Notice for California Condor (*Gymnogyps californianus*)

The Lessee/Operator is given notice that the lands located in this parcel contain potential habitat for the California Condor, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease if the area is known or suspected to be used by condors. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving no permanent structures and resulting in no permanent habitat loss. This would include consideration for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e. creation of a permanent structure requiring repetitious maintenance, or emits disruptive levels of noise). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA, Section 7 consultation at the permit stage.

Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s) approved by the BLM, and must be conducted according to approved protocol.

2. If surveys result in positive identification of condor use, all lease activities will require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures will be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.

3. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season.

4. Temporary activities within 0.5 miles of established roosting sites or areas will not occur during the season of use, August 1 to November 31, unless the area has been surveyed according to protocol and determined to be unoccupied.
5. No permanent infrastructure will be placed within 1.0 mile of nest sites.
6. No permanent infrastructure will be placed within 0.5 miles of established roosting sites or areas.
7. Remove big game carrion to 100 feet from roadways occurring within foraging range.
8. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
9. Reinitiation of section 7 consultation with the Service will be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Lease Notice for Barneby Reed Mustard (*Schoenocrambe barnebyi*)

In order to minimize effects to the federally threatened Barneby reed-mustard, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the Endangered Species Act (ESA). For the purposes of this document, the following terms are so defined:

- *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.
- *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Barneby reed-mustard; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <<http://www.fws.gov/endangered/wildlife.html>>.
- *Occupied habitat* is defined as areas currently or historically known to support Barneby reed-mustard; synonymous with “known habitat.”

The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities (including ATV use) to determine if suitable Barneby reed-mustard habitat is present.
2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:
 - a. Must be conducted by qualified individual(s) and according to BLM and USFWS accepted survey protocols,
 - b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower),
 - c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
 - d. Will include, but not be limited to, plant species lists and habitat characteristics, and
 - e. Will be valid until April 15th the following year.
3. Design project infrastructure to minimize impacts within suitable habitat:
 - a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - b. Reduce well pad size to the minimum needed, without compromising safety,
 - c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
 - d. Limit new access routes created by the project,
 - e. Roads and utilities should share common right-of-ways where possible,
 - f. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
 - g. Place signing to limit off-road travel in sensitive areas, and
 - h. Stay on designated routes and other cleared/approved areas.
 - i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.
4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
 - a. Follow the above recommendations (#3) for project design within suitable habitats,

- b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
- d. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
- e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only,
- f. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- g. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- h. Construction activities will not occur from April 15th through June 5th within occupied habitat,
- i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Barneby reed-mustard habitats within 300' of the edge of the surface pipelines' right of ways, 300' of the edge of the roads' right of ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Barneby reed-mustard is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Lease Notice for Last Chance townsendia (*Townsendia aprica*)

In order to minimize effects to the federally threatened Last Chance townsendia, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service, has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the

Endangered Species Act (ESA). For the purposes of this document, the following terms are so defined:

- *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.
- *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain the species; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>.
- *Occupied habitat* is defined as areas currently or historically known to support the species; synonymous with “known habitat.”

The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Last Chance townsendia habitat is present.
2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:
 - a. Must be conducted by qualified individual(s) and according to BLM and USFWS accepted survey protocols,
 - b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 1st to May 30th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower),
 - c. Will occur within 300’ from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300’ from the perimeter of disturbance for the proposed well pad including the well pad,
 - d. Will include, but not be limited to, plant species lists and habitat characteristics, and
 - e. Will be valid until April 1st the following year.
3. Design project infrastructure to minimize impacts within suitable habitat:
 - a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300’ buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - b. Reduce well pad size to the minimum needed, without compromising safety,
 - c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,

- d. Limit new access routes created by the project,
 - e. Roads and utilities should share common right-of-ways where possible,
 - f. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
 - g. Place signing to limit off-road travel in sensitive areas, and
 - h. Stay on designated routes and other cleared/approved areas.
 - i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.
4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
- a. Follow the above recommendations (#3) for project design within suitable habitats,
 - b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
 - d. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
 - e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 30th (flowering period); dust abatement applications will be comprised of water only,
 - f. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - g. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - h. Construction activities will not occur from April 15th through June 30th within occupied habitat,
 - i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
 - j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
 - k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. Occupied Last Chance townsendia habitats within 300' of the edge of the surface pipelines' right of ways, 300' of the edge of the roads' right of ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Last Chance townsendia is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Lease Notice for Wright Fishhook Cactus (*Sclerocactus wrightii*)

In order to minimize effects to the federally endangered Wright fishhook cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service, has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the Endangered Species Act (ESA). For the purposes of this document, the follow terms are so defined:

- *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.
- *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain the species; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <<http://www.fws.gov/endangered/wildlife.html>>.
- *Occupied habitat* is defined as areas currently or historically known to support the species, synonymous with “known habitat.”

The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Wright fishhook cactus habitat is present.
2. Within suitable habitat, site inventories will be conducted to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Inventories:
 - a. Must be conducted by qualified individual(s) approved by BLM using accepted survey protocols,
 - b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected and during appropriate flowering periods. Inventories should be conducted between April 1st to June 15th, however, surveyors

- should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower,
- c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
 - d. Will include, but not be limited to, plant species lists and habitat characteristics, and
 - e. Will be valid until April 1st the following year.
3. Design project infrastructure to minimize impacts within suitable habitat:
- a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - b. Reduce well pad size to the minimum needed, without compromising safety,
 - c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
 - d. Limit new access routes created by the project,
 - e. Roads and utilities should share common right-of-ways where possible,
 - f. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
 - g. Place signing to limit off-road travel in sensitive areas, and
 - h. Stay on designated routes and other cleared/approved areas.
 - i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.
4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
- a. Follow the above recommendations (#3) for project design within suitable habitats,
 - b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
 - d. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
 - e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 1st to June 15th (flowering period); dust abatement applications will be comprised of water only,
 - f. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - g. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
 - h. Construction activities will not occur from April 1st through June 15th within occupied habitat,

- i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Wright fishhook cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Wright fishhook cactus is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation.

Lease Notice for Winkler Cactus (*Pediocactus winkleri*)

In order to minimize effects to the federally threatened Winkler cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service, has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the Endangered Species Act (ESA). For the purposes of this document, the following terms are so defined:

- *Potential habitat* is defined as areas that satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.
- *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain the species; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <<http://www.fws.gov/endangered/wildlife.html>>.
- *Occupied habitat* is defined as areas currently or historically known to support the species, synonymous with "known habitat."

The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Winkler cactus habitat is present.

2. Within suitable habitat, site inventories will be conducted to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Inventories:

- a. Must be conducted by qualified individual(s) approved by BLM using accepted survey protocols,
- b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods. Inventories should be conducted between March 15th to June 1st, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower,
- c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
- d. Will include, but not be limited to, plant species lists and habitat characteristics, and
- e. Will be valid until March 15th the following year.

3. Design project infrastructure to minimize impacts within suitable habitat:

- a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- b. Reduce well pad size to the minimum needed, without compromising safety,
- c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
- d. Limit new access routes created by the project,
- e. Roads and utilities should share common right-of-ways where possible,
- f. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
- g. Place signing to limit off-road travel in sensitive areas, and
- h. Stay on designated routes and other cleared/approved areas.
- i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:

- a. Follow the above recommendations (#3) for project design within suitable habitats,
- b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,

- d. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
- e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from March 15th to June 1st (flowering period); dust abatement applications will be comprised of water only,
- f. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- g. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- h. Construction activities will not occur from March 15th through June 1st within occupied habitat,
- i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Winkler cactus habitats within 300' of the edge of the surface pipelines' right-of ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Winkler pincushion cactus is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Lease Notice for the San Rafael Cactus (*Pediocactus despainii*)

In order to minimize effects to the federally endangered San Rafael cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service, have developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species

Act (ESA). The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable San Rafael cactus habitat is present.

2. Within suitable habitat, site inventories will be conducted to determine occupancy.

Inventories:

- a. Must be conducted by qualified individual(s) approved by BLM using accepted survey protocols,
- b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods. Inventories should be conducted between March 15th to June 1st, unless extended by the BLM
- c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
- d. Will include, but not be limited to, plant species lists and habitat characteristics, and
- e. Will be valid until March 15th the following year.

3. Design project infrastructure to minimize impacts within suitable habitat:

- a. Reduce well pad size to the minimum needed, without compromising safety,
- b. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
- c. Limit new access routes created by the project,
- d. Roads and utilities should share common right-of-ways where possible,
- e. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
- f. Place signing to limit off-road travel in sensitive areas,
- g. Stay on designated routes and other cleared/approved areas, and
- h. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:

- a. Follow the above (#3) recommendations for project design within suitable habitats,
- b. Buffers of 100 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,
- c. Surface pipelines will be laid such that a 100 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population,

- d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
- f. Designs will avoid concentrating water flows or sediments into occupied habitat,
- g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied San Rafael cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 100' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the San Rafael cactus is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

Resource Protection Measures Identified in the Utah Land Use Plan Amendment for Fire and Fuels Management

The project proponent commits to the following resource protection measures as identified in the March 4, 2005 Biological Assessment. These measures have been developed as part of the proposed action to provide statewide consistency in reducing the effects of fire management activities on listed, proposed, and candidate species and their habitats. Resource protection measures for fire management practices use the following codes to represent which actions fall within each of the measures:

- SUP: wildland fire suppression,
- WFU: wildland fire use for resource benefit,
- RX: prescribed fire,
- NF: non-fire fuel treatments,
- ESR: Emergency Stabilization and Rehabilitation

Measures designed to protect air quality include:

A-1 Evaluate weather conditions, including wind speed and atmospheric stability, to predict impacts from smoke from prescribed fires and wildland fire uses. Coordinate with Utah Department of Environmental Quality for prescribed fires and wildland fire use (RX, WFU).

A-2 When using chemical fuels reduction methods, follow all label requirements for herbicide application (NF).

Measures designed to protect soil and water quality include:

SW-1 Avoid heavy equipment use on highly erosive soils (soils with low soil loss tolerance), wet or boggy soils and slopes greater than 30%, unless otherwise analyzed and allowed under appropriate NEPA evaluation with implementation of additional erosion control and other soil protection mitigation measures. (SUP, WFU, RX, NF, ESR)

SW-2 There may be situations where high intensity fire will occur on sensitive and erosive soil types during wildland fire, wildland fire use or prescribed fire. If significant areas show evidence of high severity fire, then evaluate area for soil erosion potential and downstream values at risk and implement appropriate or necessary soil stabilization actions such as mulching or seeding to avoid excessive wind and water erosion. (SUP, WFU, RX)

SW-3 Complete necessary rehabilitation on fire lines or other areas of direct soil disturbance, including but not limited to water barring fire lines, covering and mulching fire lines with slash, tilling and/or sub soiling compacted areas, scarification of vehicle tracks, OHV closures, seeding and/or mulching for erosion protection. (SUP, WFU, RX)

SW-4 When using mechanical fuels reduction treatments, limit tractor and heavy equipment use to periods of low soil moisture to reduce the risk of soil compaction. If this is not practical, evaluate sites, post treatment and if necessary, implement appropriate remediation, such as sub soiling, as part of the operation. (NF)

SW-5 Treatments such as chaining, plowing and roller chopping shall be conducted as much as practical on the contour to reduce soil erosion. (NF, ESR)

SW-6 When using chemical fuel reduction treatments follow all label directions, additional mitigations identified in project NEPA evaluation and the Approved Pesticide Use Permit. At a minimum, provide a 100-foot-wide riparian buffer strip for aerial application, 25 feet for vehicle application and 10 feet for hand application. Any deviations must be accordance with the label. Herbicides would be applied to individual plants within 10 feet of water where application is critical. (NF)

SW-7 Avoid heavy equipment in riparian or wetland areas. During fire suppression or wildland fire use, consult a Resource Advisor before using heavy equipment in riparian or wetland areas. (SUP, WFU, RX, NF, ESR)

SW-8 Limit ignition within native riparian or wetland areas. Allow low-intensity fire to burn into riparian areas. (RX)

SW-9 Suppress wildfires consistently with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] water bodies. Do not use retardant within 300 feet of water bodies. (SUP, WFU)

SW-10 Plan and implement projects consistent with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] water bodies. Planned activities should take into account the potential impacts on water quality, including increased water yields that can threaten fisheries and aquatic habitat; improvements at channel crossings; channel stability; and downstream values. Of special concern are small headwaters of moderate to steep watersheds, erosive or saline soils; multiple channel crossings; at-risk fisheries, and downstream residents. (RX, NF, ESR)

Measures designed to protect vegetation include:

V-1 When restoring or rehabilitating disturbed rangelands, non-intrusive, non-native plant species are appropriate for use when native species: (1) are not available; (2) are not economically feasible; (3) cannot achieve ecological objectives as well as non-native species; and/or (4) cannot compete with already established native species. (RX, NF, ESR)

V-2 In areas known to have weed infestations, aggressive action should be taken in rehabilitating fire lines, seeding and follow-up monitoring and treatment to reduce the spread of noxious weeds. Monitor burned areas and treat as necessary. All seed used would be tested for purity and for noxious weeds. Seed with noxious weeds would be rejected. (SUP, WFU, RX, NF, ESR)

Measures designed to protect special status species (including threatened and endangered species) include:

SSS-1 Initiate emergency Section 7 consultation with United States Fish and Wildlife Service upon the determination that wildfire suppression may pose a potential threat to any listed threatened or endangered species or adverse modification of designated critical habitat. (SUP)

SSS-2 Prior to planned fire management actions, survey for listed threatened, endangered, and non-listed sensitive species. Initiate Section 7 consultation with the USFWS as necessary if a proposed project may affect any listed species. Review appropriate management, conservation and recovery plans and include recovery plan direction into project proposals. For non-listed special status plant and animal species, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves nonlisted sensitive species and their habitats and ensure that any action authorized, funded, or carried out by BLM does not contribute to the need for any species to become listed. (RX, NF, ESR)

SSS-3 Incorporate site-specific conservation measures identified in this BA. (SUP, WFU, RX, NF, ESR)

Measures designed to protect fish and wildlife resources include:

FW-1 Avoid treatments during nesting, fawning, spawning, or other critical periods for wildlife or fish. (RX, NF, ESR)

FW-2 Avoid if possible or limit the size of, wildland fires in important wildlife habitats such as, mule deer winter range, riparian and occupied sage grouse habitat. Use Resource Advisors to help prioritize resources and develop Wildland Fire Situation Analyses (WFSAs) and Wildland Fire Implementation Analyses (WFSAs) and Wildland Fire Implementation Plans (WFIPs) when important habitats may be impacted. (SUP, WFU)

FW-3 Minimize wildfire size and frequency in sagebrush communities where sage grouse habitat objectives will not be met if a fire occurs. Prioritize wildfire suppression in sagebrush habitat with an understory of invasive, annual species. Retain unburned islands and patches of sagebrush unless there are compelling safety, private property and resource protection or control objectives at risk. Minimize burn out operations (to minimize burned acres) in occupied sage-grouse habitats when there are not threats to human life and/or important resources. (SUP)

FW-4 Establish fuel treatment projects at strategic locations to minimize size of wildfires and to limit further loss of sagebrush. Fuel treatments may include green stripping to help reduce the spread of wildfires into sagebrush communities. (RX, NF)

FW-5 Use wildland fire to meet wildlife objectives. Evaluate impacts to sage grouse habitat in areas where wildland fire use for resource benefit may be implemented. (WFU, RX)

FW-6 Create small openings in continuous or dense sagebrush (>30% canopy cover) to create a mosaic of multiple-age classes and associated understory diversity across the landscape to benefit sagebrush-dependent species. (WFU, RX, NF)

FW-7 On sites that are currently occupied by forests or woodlands, but historically supported sagebrush communities, implement treatments (fire, cutting, chaining, seeding, etc.) to reestablish sagebrush communities. (RX, NF)

FW-8 Evaluate and monitor burned areas and continue management restrictions until the recovering and/or seeded plant community reflect the desired condition. (SUP, WFU, RX, ESR)

FW-9 Utilize the Emergency Stabilization and Rehabilitation program to apply appropriate post fire treatments within crucial wildlife habitats, including sage grouse habitats. Minimize seeding with non-native species that may create a continuous perennial grass cover and restrict establishment of native vegetation. Seed mixtures should be designed to reestablish important seasonal habitat components for sage grouse. Leks should not be reseeded with plants that change the vegetation heights previously found on the lek. Forbs should be stressed in early and late brood-rearing habitats. In situations of limited funds for emergency stabilization and rehabilitation actions, prioritize rehabilitation of sage grouse habitats. (ESR)

Measures designed to protect wild horses and burros include:

WHB-1 Avoid fencing that would restrict access to water. (RX, NF, ESR)

Measures designed to protect cultural resources include:

CR-1 Cultural Resource Advisors should be contacted when fires occur in areas containing sensitive cultural resources. (SUP)

CR-2 Wildland fire use is discouraged in areas containing sensitive cultural resources. A Programmatic Agreement is being prepared between the Utah State Historic Preservation Office, BLM, and the Advisory Council to cover the finding of adverse effects to cultural resources associated with wildland fire use. (WFU)

CR-3 Potential impacts of proposed treatments should be evaluated for compliance with the National Historic Preservation Act (NHPA) and the Utah Statewide Protocol. This should be conducted prior to the proposed treatment. (RX, NF, ESR)

Measures designed to protect paleontology resources include:

P-1 Planned projects should be consistent with BLM Manual and Handbook H-8270-1, Chapter III (A) and III (B) to avoid areas where significant fossils are known or predicted to occur or to provide for other mitigation of possible adverse effects. (RX, NF, ESR)

P-2 In the event that paleontological resources are discovered in the course of surface fire management activities, including fires suppression, efforts should be made to protect these resources. (SUP, WFU, RX, NF, ESR)

Measures designed to protect forestry resources include:

F-1 Planned projects should be consistent with HFRA Section 102(e)(2) to maintain or contribute to the restoration of old-growth stands to a pre-fire suppression condition and to retain large trees contributing to old-growth structure. (SUP, WFU, RX, NF)

F-2 During planning, evaluate opportunities to utilize forest and woodland products prior to implementing prescribed fire activities. Include opportunities to use forest and woodland stands, consider developing silvicultural prescriptions concurrently with fuel treatments prescriptions. (RX, NF)

Measures designed to protect livestock grazing resources include:

LG-1 Coordinate with permittees regarding the requirements for non-use or rest of treated areas. (SUP, WFU, RX, NF, ESR)

LG-2 Rangelands that have been burned by wildfire, prescribed fire, or wildland fire use, would be ungrazed for a minimum of one complete growing season following the burn. (SUP, WFU, RX)

LG-3 Rangelands that have been re-seeded or otherwise treated to alter vegetation composition, chemically or mechanically, would be ungrazed for a minimum of two complete growing seasons. (RX, NF, ESR)

Measures designed to protect recreation and visitor services include:

Rec-1 Wildland fire suppression efforts would preferentially protect Special Recreation

Management Areas and recreation site infrastructure in line with fire management goals and objectives. (SUP)

Rec-2 Vehicle tracks created off of established routes would be obliterated after fire management actions in order to reduce unauthorized OHV travel. (SUP, WFU, RX, NF,

ESR)

Measures designed to protect land and reality resources include:

LR-1 Fire management practices would be designed to avoid or otherwise ensure the protection of authorized rights-of-way and other facilities located on the public lands, including coordination with holders of major rights-of-way systems within rights-of-way corridors and communication sites. (WFU, RX, NF, ESR)

LR-2 Fire management actions must not destroy, deface, change or remove to another place any monument or witness tree of the Public Land Survey System. (SUP, WFU, RX, NF,ESR)

Measures designed to minimize impacts confounded by hazardous waste include:

HW-1 Recognize hazardous wastes and move fire personnel to a safe distance from dumped chemicals, unexploded ordnance, drug labs, wire burn sites, or any other hazardous wastes. Immediately notify BLM Field Office hazmat coordinator or state hazmat coordinator upon discovery of any hazardous materials, following the BLM hazardous materials contingency plan. (SUP, WFU, RX, NF, ESR)

Measures designed to protect mineral resources include:

M-1 A safety buffer should be maintained between fire management activities and at-risk facilities. (SUP, WFU, RX)

Measures designed to protect wilderness and wilderness study areas (WSAs) include:

Wild-1 The use of earth-moving equipment must be authorized by the field office manager. (SUP, WFU, RX, ESR)

Wild-2 Fire management actions would rely on the most effective methods of suppression that are least damaging to wilderness values, other resources and the environment, while requiring the least expenditure of public funds. (SUP, WFU)

Wild-3 A Resource Advisor should be consulted when fire occurs in Wilderness and WSAs.(SUP, WFU)

Conservation Measures from the Biological Opinion for the Utah BLM Land Use Plans Amendments BA

Mexican spotted owl (*Strix occidentalis lucida*)

1. BLM will place restrictions on all authorized (permitted) activities that may adversely affect the Mexican spotted owl in identified PACs, breeding habitat, or designated critical habitat, to reduce the potential for adverse impacts to the species. Restrictions and procedures have been adapted from guidance published in the Utah Field Office Guidelines for Raptor Protection from

Human and Land Use Disturbances (USFWS 2002b), as well as coordination between BLM and the USFWS. Measures include:

- a. Surveys, according to USFWS protocol, will be required prior to any disturbance related activities that have been identified to have the potential to impact Mexican spotted owl, unless current species occupancy and distribution information is complete and available. All surveys must be conducted by USFWS certified individuals, and approved by the BLM authorized officer.
- b. Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the appropriate conservation measures below if project activities occur within 0.5 mile of suitable owl habitat, dependent in part on if the action is temporary or permanent:

For all temporary actions that may impact owls or suitable habitat:

- If action occurs entirely outside of the owl breeding season, and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.
- If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity should be delayed until outside of the breeding season.
- Eliminate access routes created by a project through such means as raking out scars, revegetation, gating access points, etc.
- For all permanent actions that may impact owls or suitable habitat:
 - Survey two consecutive years for owls according to established protocol prior to commencing of activity.
 - If owls are found, no actions will occur within 0.5 mile of identified nest site.
 - If nest site is unknown, no activity will occur within the designated Protected Activity Center (PAC).
 - Avoid placing permanent structures within 0.5 mi of suitable habitat unless surveyed and not occupied.
 - Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims (Delaney et al. 1997). Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5 mile buffer for suitable habitat, including canyon rims.
 - Limit disturbances to and within suitable owl habitat by staying on designated routes.
 - Limit new access routes created by the project.

2. BLM will, as a condition of approval (COA) on any project proposed within identified PACs, designated critical habitat, or within spatial buffers for Mexican spotted owl nests (0.5 mile), ensure that project proponents are notified as to their responsibilities for rehabilitation of temporary access routes and other temporary surface disturbances, created by their project, according to individual BLM Field Office standards and procedures, or those determined in the project specific Section 7 Consultation.

3. BLM will require monitoring of activities in designated critical habitat, identified PACs, or breeding habitats, wherein it has been determined that there is a potential for take. If any adverse impacts are observed to occur in a manner, or to an extent that was not considered in the project-specific Section 7 Consultation, then consultation must be reinitiated.
 - Monitoring results should document what, if any, impacts to individuals or habitat occur during project construction/implementation. In addition, monitoring should document successes or failures of any impact minimization, or mitigation measures. Monitoring results would be considered an opportunity for adaptive management, and as such, would be carried forward in the design and implementation of future projects.
4. For all survey and monitoring actions:
 - Reports must be provided to affected field offices within 15 days of completion of survey or monitoring efforts.
 - Report any detection of Mexican spotted owls during survey or monitoring to the authorized officer within 48 hours.
5. BLM will, in areas of designated critical habitat, ensure that any physical or biological actors (i.e., the primary constituent elements), as identified in determining and designating such habitat, remains intact during implementation of any BLM-authorized activity.
6. For all BLM actions that “*may adversely affect*” the primary constituent elements in any suitable Mexican spotted owl habitat, BLM will implement measures as appropriate to minimize habitat loss or fragmentation, including rehabilitation of access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
7. Where technically and economically feasible, use directional drilling from single drilling pads to reduce surface disturbance, and minimize or eliminate drilling in canyon habitats suitable for Mexican spotted owl nesting.
8. Prior to surface disturbing activities in Mexican spotted owl PACs, breeding habitats, or designated critical habitat, specific principles should be considered to control erosion. These principles include:
 - Conduct long-range transportation planning for large areas to ensure that roads will serve future needs. This will result in less total surface disturbance.
 - Avoid surface disturbance in areas with high erosion hazards to the greatest extent possible. Avoid mid-slope locations, headwalls at the source of tributary drainages, inner valley gorges, and excessively wet slopes such as those near springs. In addition, avoid areas where large cuts and fills would be required.
 - Locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.
9. Project developments should be designed, and located to avoid direct or indirect loss or modification of Mexican spotted owl nesting and/or identified roosting habitats.

10. Water production associated with BLM authorized actions should be managed to ensure maintenance or enhancement of riparian habitats.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Southwestern willow flycatcher (*Empidonax traillii extimus*). This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Surveys will be required prior to operations that “*may adversely affect*” the Southwestern willow flycatcher unless species occupancy data and distribution information is complete and available. Surveys will only be conducted by BLM approved personnel. In the event species occurrence is verified, project proponents may be required to modify operational plans at the discretion of the authorized officer. Modifications may include appropriate measures for minimization of adverse effects to the Southwestern willow flycatcher and its habitat.

2. BLM will monitor and restrict, when and where necessary, authorized or casual use activities that “*may adversely affect*” the Southwestern willow flycatcher, including but not limited to, recreation, mining, and oil and gas activities. Monitoring results should be considered in the design and implementation of future projects.

3. To monitor the impacts of BLM-authorized projects determined “*likely to adversely affect*” the Southwestern willow flycatcher, BLM should prepare a short report describing progress, including success of implementation of all associated mitigation. Reports shall be submitted annually to the USFWS Utah Field Office by March 1st beginning one full year from date of implementation of the proposed action. The report shall list and describe the following items:

- Any unforeseen adverse effects resulting from activities of each site specific project (may also require reinitiation of formal Consultation);
- When, and if, any level of anticipated incidental take is approached (as allowed by separate Incidental Take Statements of site-specific Formal Section 7 Consultation efforts);
- When, or if, the level of anticipated take (as allowed by separate Incidental Take Statements from site-specific formal consultations) is exceeded; and
- Results of annual, periodic monitoring which evaluate the effectiveness of the reasonable and prudent measures or terms and conditions of the site-specific Consultation.

4. BLM should avoid granting activity permits or authorizing development actions in Southwestern willow flycatcher habitat. Unoccupied potential habitat should be protected in order to preserve them for future management actions associated with the recovery of the Southwestern willow flycatcher.

5. BLM will ensure project design incorporates measures to avoid direct disturbance to populations and suitable habitats where possible. At a minimum, project designs should include

consideration of water flows, slope, seasonal and spatial buffers, possible fencing, and pre-activity flagging of critical areas for avoidance.

6. The BLM will continue to address illegal and unauthorized OHV use and activity upon BLM administered lands. In order to protect, conserve, and recover the Southwestern willow flycatcher in areas of heavy unauthorized use, temporary closures, or use restrictions beyond those which are already in place, may be imposed. As funding allows, BLM should complete a comprehensive assessment of all OHV use areas that interface with Southwestern willow flycatcher populations. Comparison of Southwestern willow flycatcher populations and OHV use areas using GIS would give BLM personnel another tool to manage and/or minimize impacts.

7. All surface disturbing activities should be restricted within a 0.25 mile buffer from suitable riparian habitats and permanent surface disturbances should be avoided within 0.5 mile of suitable Southwestern willow flycatcher habitat.

- Unavoidable ground disturbing activities in occupied Southwestern willow flycatcher habitat should only be conducted when preceded by current year survey, should only occur between August 16 and April 30 (the period when Southwestern willow flycatcher are not likely to be breeding), and should be monitored to ensure that adverse impacts to Southwestern willow flycatcher are minimized or avoided, and to document the success of project specific mitigation/protection measures. As monitoring is relatively undefined, project specific requirements must be identified.

8. BLM will properly consider nesting periods for Southwestern willow flycatcher when conducting horse gathering operations in the vicinity of habitat.

9. BLM will ensure that plans for water extraction and disposal are designed to avoid changes in the hydrologic regime that would likely result in loss or undue degradation of riparian habitat.

10. Native species will be preferred over non-native for revegetation of habitat in disturbed areas.

11. BLM will coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may impact the Southwestern willow flycatcher and its habitats.

12. Limit disturbances within suitable habitat by staying on designated routes.

13. Ground-disturbing activities will require monitoring throughout the duration of the project to ensure that adverse impacts to Southwestern willow flycatcher are avoided. Monitoring results should document what, if any, impacts to individuals or habitat occur during project construction/implementation. In addition, monitoring should document successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management and, as such, would be carried forward in the design and implementation of future projects.

14. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in Southwestern willow flycatcher habitat.

15. Habitat disturbances (i.e., organized recreational activities requiring special use permits, drilling activities, etc.) will be avoided within 0.25 mile of suitable Southwestern willow flycatcher habitat from May 1 to August 15.

16. Grazing allotments that contain habitat for the species will be managed with consideration for recommendations provided by the Southwestern Willow Flycatcher Recovery Plan, and other applicable research.

San Rafael and Winkler cactus (*Pediocactus spp.*)

1. Prior to surface disturbing activities in habitat for the species, presence/absence surveys of potentially affected areas will be conducted in accordance with established protocols.

2. Appropriate avoidance/protection/mitigation will be used to manage potential impacts of similar subsequent projects. These measures should include, but are not be limited to:

- the stabilization of soils to minimize or avoid impacts related to soil erosion;
- marking/flagging of suitable and/or occupied habitat (including predetermined buffers) prior to development to avoid trampling by crew members or equipment during disturbance related activities; and
- require project proponents to conduct surveys and monitoring actions using BLM approved specialists to document population effects and individual impacts.

3. BLM shall continue to document new populations of San Rafael and Winkler cacti as they are encountered.

4. To assist and support recovery efforts, BLM will minimize or avoid surface disturbances in habitats that support the species.

5. BLM will encourage and assist project proponents in development and design of their proposed actions in order to avoid direct disturbance to populations or individuals where feasible. Designs should consider water flow, slope, appropriate buffer distances, possible fencing needs, and pre-activity flagging of sensitive areas that are planned for avoidance.

6. BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.

7. In areas where dispersed recreational uses are identified as threats to populations of the species, BLM will consider the development of new recreational facilities/opportunities that concentrate dispersed recreational use away from habitat, especially occupied habitat.

8. Cultural and paleontological survey/recovery technicians (i.e., archeologists and/or paleontologists), conducting work in the vicinity of known populations, will be educated in the

identification of listed species in order to avoid inadvertent trampling or removal during survey, mapping, or excavation of cultural or paleontological resources.

9. Areas of viable habitat, in the vicinity of populations considered for prescribed burning, will be surveyed according to established protocols for new or undocumented populations of the species.

10. Lands being considered for exchange or disposal that contain suitable habitat for the species will be surveyed for undocumented populations, according to established protocols, prior to approval of such disposal. Lands supporting populations shall not be disposed of unless it is determined that the action will not threaten the survival and recovery of the species in accordance with the ESA and BLM Guidance and Policy Manual 6840 – *Special Status Species Management*.

11. BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with the USFWS).

12. As additional funding becomes available, BLM should develop a travel management plan specifically for areas of occupied and potential habitat for San Rafael and Winkler cactus.

13. As additional funding becomes available, BLM will conduct or encourage monitoring studies in areas to which topsoil has been placed with the intention of transferring the seed bank from San Rafael and Winkler cactus populations, to mitigate population losses from development activities. The purpose of these studies would be to evaluate mitigation measures for effectiveness in reestablishing populations of the species.

Wright fishhook cactus (*Sclerocactus wrightiae*)

1. Prior to surface disturbing activities in habitat for the species, presence/absence surveys of potentially affected areas will be conducted in accordance with established protocols.

2. Appropriate avoidance/protection/mitigation will be used to manage potential impacts of similar subsequent projects. These measures should include, but are not be limited to:

- the stabilization of soils to minimize or avoid impacts related to soil erosion;
- marking/flagging of suitable and/or occupied habitat (including predetermined buffers) prior to development to avoid trampling by crew members or equipment during disturbance related activities; and
- require project proponents to conduct surveys and monitoring actions using BLM-approved specialists to document population effects and individual impacts.

3. BLM shall continue to document new populations of Wright fishhook cactus as they are encountered.

4. To assist and support recovery efforts, BLM will minimize or avoid surface disturbances in habitats that support the species.
5. BLM will encourage and assist project proponents in development and design of their proposed actions in order to avoid direct disturbance to populations or individuals where feasible. Designs should consider water flow, slope, appropriate buffer distances, possible fencing needs, and pre-activity flagging of sensitive areas that are planned for avoidance.
6. BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.
7. In areas where dispersed recreational uses are identified as threats to populations of the species, BLM will consider the development of new recreational facilities/opportunities that concentrate dispersed recreational use away from habitat, especially occupied habitat.
8. Cultural and paleontological survey/recovery technicians (i.e., archeologists and/or paleontologists), conducting work in the vicinity of known populations, will be educated in the identification of listed species in order to avoid inadvertent trampling or removal during survey, mapping, or excavation of cultural or paleontological resources.
9. Areas of viable habitat, in the vicinity of populations considered for prescribed burning, will be surveyed according to established protocols for new or undocumented populations of the species.
10. Lands being considered for exchange or disposal that contain suitable habitat for the species will be surveyed for undocumented populations, according to established protocols, prior to approval of such disposal. Lands supporting populations shall not be disposed of unless it is determined that the action will not threaten the survival and recovery of the species in accordance with the ESA and BLM Guidance and Policy Manual 6840 – *Special Status Species Management*.
11. BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with the USFWS).
12. As funding permits, BLM will consider research opportunities to determine whether the mortality to recruitment ratio of 2.5 to 1, observed by Kass (2001) persists within studied populations. These observed ratios have resulted in the decline and ultimate loss of some populations. Therefore, future research might study how widespread the decline may be. To accomplish this, several populations should be selected that represent a range of habitats, locations, proximity to potential threats and relative population sizes. Populations should be monitored for changes in number and overall condition to determine whether these observed mortality rates are characteristic of the species throughout its range.

13. As funding permits, monitoring will be continued on the Hebe Devil Dizzy Gypsum Mine area to assess long-term survival and viability of transplanting populations of Wright fishhook cactus.

Last Chance townsendia (*Townsendia aprica*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Last Chance townsendia (*Townsendia aprica*). This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Prior to surface disturbing activities in habitat for the species, presence/absence surveys of potentially affected areas will be conducted in accordance with established protocols.
2. Appropriate avoidance/protection/mitigation will be used to manage potential impacts of similar subsequent projects. These measures should include, but are not be limited to:
 - the stabilization of soils to minimize or avoid impacts related to soil erosion;
 - marking/flagging of suitable and/or occupied habitat (including predetermined buffers) prior to development to avoid trampling by crew members or equipment during disturbance related activities; and
 - require project proponents to conduct surveys and monitoring actions using BLM approved specialists to document population effects and individual impacts.
3. BLM shall continue to document new populations of Last Chance townsendia (*Townsendia aprica*) as they are encountered.
4. To assist and support recovery efforts, BLM will minimize or avoid surface disturbances in habitats that support the species.
5. BLM will encourage and assist project proponents in development and design of their proposed actions in order to avoid direct disturbance to populations or individuals where feasible. Designs should consider water flow, slope, appropriate buffer distances, possible fencing needs, and pre-activity flagging of sensitive areas that are planned for avoidance.
6. BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.
7. In areas where dispersed recreational uses are identified as threats to populations of the species, BLM will consider the development of new recreational facilities/opportunities that concentrate dispersed recreational use away from habitat, especially occupied habitat.
8. Cultural and paleontological survey/recovery technicians (i.e., archeologists and/or paleontologists), conducting work in the vicinity of known populations, will be educated in the identification of listed species in order to avoid inadvertent trampling or removal during survey, mapping, or excavation of cultural or paleontological resources.

9. Areas of viable habitat, in the vicinity of populations considered for prescribed burning, will be surveyed according to established protocols for new or undocumented populations of the species.

10. Lands being considered for exchange or disposal that contain suitable habitat for the species will be surveyed for undocumented populations, according to established protocols, prior to approval of such disposal. Lands supporting populations shall not be disposed of unless it is determined that the action will not threaten the survival and recovery of the species in accordance with the ESA and BLM Guidance and Policy Manual 6840 – *Special Status Species Management*.

11. BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with the USFWS).

Barneby reed-mustard (*Schoenrambe barnebyi*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Barneby reed-mustard. This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Prior to surface disturbing activities in habitat for the species, presence/absence surveys of potentially affected areas will be conducted in accordance with established protocols.
2. Appropriate avoidance/protection/mitigation will be used to manage potential impacts of similar subsequent projects. These measures should include, but are not be limited to:
 - the stabilization of soils to minimize or avoid impacts related to soil erosion;
 - marking/flagging of suitable and/or occupied habitat (including predetermined buffers) prior to development to avoid trampling by crew members or equipment during disturbance related activities; and
 - require project proponents to conduct surveys and monitoring actions using BLM approved specialists to document population effects and individual impacts.
3. BLM shall continue to document new populations of each species as they are encountered.
4. To assist and support recovery efforts, BLM will minimize or avoid surface disturbances in habitats that support the species.
5. BLM will encourage and assist project proponents in development and design of their proposed actions in order to avoid direct disturbance to suitable habitat, populations or individuals where feasible. Designs should consider water flow, slope, appropriate buffer

distances, possible fencing needs, and pre-activity flagging of sensitive areas that are planned for avoidance.

6. BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.

7. In areas where dispersed recreational uses are identified as threats to populations of the species, BLM will consider the development of new recreational facilities/opportunities that concentrate dispersed recreational use away from habitat, especially occupied habitat.

8. Cultural and paleontological survey/recovery technicians (i.e., archeologists and/or paleontologists), conducting work in the vicinity of known populations, will be educated in the identification of listed species in order to avoid inadvertent trampling or removal during survey, mapping, or excavation of cultural or paleontological resources.

9. Areas of viable habitat, in the vicinity of populations considered for prescribed burning, will be surveyed according to established protocols for new or undocumented populations of the species.

10. Lands being considered for exchange or disposal that contain suitable habitat for the species will be surveyed for undocumented populations, according to established protocols, prior to approval of such disposal. Lands supporting populations shall not be disposed of unless it is determined that the action will not threaten the survival and recovery of the species in accordance with the ESA and BLM Guidance and Policy Manual 6840 – *Special Status Species Management*.

11. BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with the USFWS).

Utah Prairie Dog (*Cynomys parvidens*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Utah prairie dog (*Cynomys parvidens*). This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Surveys according to approved protocols and procedures will be required prior to surface disturbance unless species occupancy and distribution information is complete, current, and available. Surveys would be conducted by BLM-approved biologists. In the event species occurrence is verified, the project proponent may be required to modify operational plans, at the discretion of the authorized officer, to include additional, appropriate protection measures or practices for the minimization of impacts to the Utah prairie dog and its habitat.

2. BLM will restrict surface disturbing activities within 0.5 mile of active Utah prairie dog colonies when and where necessary, upon the recommendation of BLM FO staff biologists to BLM management and as necessary in coordination or consultation with USFWS.
3. No permanent surface disturbance or facility will be allowed within 0.5 mile of potentially suitable Utah prairie dog habitat, as identified and mapped by the Utah Division of Wildlife Resources or BLM, since 1976.
4. Unavoidable surface disturbing activities in Utah prairie dog habitat should be conducted between April 1 and September 30 (the period when prairie dogs are most likely to be found above ground). BLM projects will be designed to avoid direct disturbance to Utah prairie dog populations and habitat wherever possible. Designs should consider flow of water, slope, buffers, possible fencing, and preactivity flagging of critical areas for avoidance.
5. Reclamation and restoration efforts in Utah prairie dog habitat will be conducted using native seed, unless otherwise specified in coordination with USFWS.
6. As funding allows, BLM should complete a comprehensive assessment locating and mapping OHV use areas that interface with Utah prairie dog populations. Comparison of GIS layers for Utah prairie dog populations and OHV use should give BLM personnel another tool to manage and/or minimize impacts from OHV use near known Utah prairie dog populations and habitat. Based on the information that is developed via GIS applications, appropriate actions should be taken to prevent OHV use in occupied territories.
7. BLM will consider emergency OHV closures or additional restrictions to protect, conserve, and recover the species.
8. Where technically and economically feasible, the use of directional drilling or drilling of multiple wells from a single pad will be required to reduce surface disturbance in Utah prairie dog habitat.
9. For existing facilities, BLM and facility operators, will consider if fencing infrastructure on well pads (e.g., drill pads, tank batteries, and compressors) would be needed to protect equipment from burrowing activities. In addition, BLM and project proponents should consider if future surface disturbing activities would be required at the site.
10. BLM will provide educational information for project proponents and the general public pertaining to appropriate vehicle speeds and the associated benefit of reduced vehicle collisions with wildlife, and to improve general ecological awareness of habitat disturbance.
11. Project related vehicle maintenance activities will be conducted in maintenance facilities. Should it become necessary to perform vehicle or equipment maintenance on-site, these activities will avoid identified Utah prairie dog colonies or within a 350-foot distance from colonies. Precautions shall be taken to ensure that contamination of maintenance sites by fuels, motor oils, grease, etc. does not occur and such materials are contained and properly disposed of

off-site. Inadvertent spills of petroleum based or other toxic materials shall be cleaned up and removed immediately.

13. BLM will coordinate with interested private and governmental agencies and landowners to identify voluntary opportunities to modify current land stewardship practices that may have detrimental impacts on the Utah prairie dog and its habitat.

14. BLM-authorized equipment and vehicles planned for use within Utah prairie dog habitat will be cleaned to minimize the spread of noxious weeds or other undesirable vegetation types.

Colorado River Endangered Fishes

Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Colorado pikeminnow, Humpback chub, bonytail, and razorback sucker, herein referred to as the Colorado River fishes. This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Monitoring of impacts of site-specific projects authorized by the BLM will result in the preparation of a report describing the progress of each site-specific project, including implementation of any associated reasonable and prudent measures or reasonable and prudent alternatives. This will be a requirement of project proponents and will be included as a condition of approval (COA) on future proposed actions that have been determined to have the potential for take. Reports will be submitted annually to the USFWS - Utah Field Office, beginning after the first full year of implementation of the project, and shall list and describe:

- Any unforeseen direct or indirect adverse impacts that result from activities of each site-specific project;
- Estimated levels of impact or water depletion, in relation to those described in the original project-level Consultation effort, in order to inform the USFWS of any intentions to reinstate Section 7 Consultation; and
- Results of annual, periodic monitoring which evaluates the effectiveness of any site-specific terms and conditions that are part of the formal Consultation process. This will include items such as an assessment of whether implementation of each site-specific project is consistent with that described in the BA, and whether the project has complied with terms and conditions.

2. The BLM shall notify the USFWS immediately of any unforeseen impacts detected during project implementation. Any implementation action that may be contributing to the introduction of toxic materials or other causes of fish mortality must be immediately stopped until the situation is remedied. If investigative monitoring efforts demonstrate that the source of fish

mortality is not related to the authorized activity, the action may proceed only after notification of USFWS authorities.

3. Unoccupied, suitable habitat areas should be protected in order to preserve them for future management actions associated with the recovery of the Endangered Colorado River Fish, as well as approved reintroduction, or relocation efforts.

- BLM will avoid impacts where feasible, to habitats considered most representative of prime suitable habitat for these species.
- Surface disturbing activities will be restricted within ¼ mile of the channel centerline of the Colorado, Green, Duchesne, Price, White, and San Rafael Rivers
- Surface disturbing activities proposed to occur within floodplains or riparian areas will be avoided unless there is no practical alternative or the development would enhance riparian/aquatic values. If activities must occur in these areas, construction will be designed to include mitigation efforts to maintain, restore, and/or improve riparian and aquatic conditions. If conditions could not be maintained, offsite mitigation strategies should be considered.

4. BLM will ensure project proponents are aware that designs must avoid as much direct disturbance to current populations and known habitats as is feasible. Designs should include:

- protections against toxic spills into rivers and floodplains;
- plans for sedimentation reduction;
- minimization of riparian vegetation loss or degradation;
- pre-activity flagging of critical areas for avoidance;
- design of stream-crossings for adequate passage of fish; and
- measures to avoid or minimize impacts on water quality at the 25-year frequency runoff

5. Prior to surface disturbing activities, specific principles will be considered to control erosion. These principles include:

- Conduct long-range transportation planning for large areas to ensure that roads will serve future needs. This will result in less total surface disturbance.
- Avoid, where possible, surface disturbance in areas with high erosion hazards.
- Avoid mid-slope location of drill pads, headwalls at the source of tributary drainages, inner valley gorges, excessively wet slopes such as those near springs and avoid areas where large cuts and fills would be required.
- Design and locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.

6. Where technically and economically feasible, project proponents will use directional drilling or multiple wells from a single pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such drilling does not intercept or degrade alluvial aquifers.

Drilling will not occur within 100 year floodplains that contain listed fish species or their designated critical habitats.

7. The Utah Oil and Gas Pipeline Crossing Guidance (BLM National Science and Technology Center), or other applicable guidance, will be implemented for oil and gas pipeline river/stream crossings.

8. In areas adjacent to 100-year floodplains, particularly in systems prone to flashfloods, BLM will analyze the risk for flash floods to impact facilities. Potential techniques may include the use of closed loop drilling and pipeline burial or suspension as necessary to minimize the potential for equipment damage and resultant leaks or spills.

Water depletions from any portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect and adversely modify the critical habitat of these endangered fish species. Section 7 consultation will be completed with the Service prior to any such water depletions.

Design stream-crossings for adequate passage of fish (if present), minimum impact on water quality, and at a minimum, a 25-year frequency run-off.

BLM-committed conservation measures common to all BLM actions

- BLM Field Offices would designate individuals to monitor ground disturbing activities conducted in known special status species habitat. The qualified biologist/botanist would monitor activities to ensure that project specific impact minimization measures are set in place.
- Surveys would be required prior to operations that disturb special status species habitat unless species occupancy and distribution information is current and available. Only BLM-approved personnel should conduct such surveys. In the event species occurrence is verified, the proponent may be required to modify operational plans, at the discretion of the authorized officer, to include appropriate measures for minimization of effects to the special status species and its habitats. Appropriate field office managers will determine the necessary minimization measures for non-listed species.
- To avoid collisions and electrocution of raptors and other avifauna, any power line construction would follow recommendations by the Avian Power Line Interaction Committee (APLIC) (1994, 1996). Power lines would be placed underground and/or in locations necessary to avoid impacts to T&E and special status species on a case-by-case basis (2005, APLIC and APP).
- Construction activities located within potential and/or known habitat for T&E and Special Status Species would be minimized through construction site management by preferentially utilizing previously disturbed areas, using existing ROWs, and designating limited equipment/materials storage yards and staging areas to benefit habitat for T&E and Special Status Species.
- BLM shall initiate and conduct the appropriate level of Section 7 consultation and/or coordination with the USFWS. Formal Section 7 Consultation would be required for any planned or authorized activity which is determined to likely result in adverse impacts on any federally listed species or its designated critical habitat.

- BLM will monitor and restrict, all authorized or permitted activities that may adversely impact listed species or their designated critical habitats. Monitoring results should be considered in the design and implementation of future projects.
- BLM will avoid surface disturbing treatment during nesting, fawning and other critical periods for special status species.
- BLM will monitor the impacts of site-specific implementations or projects authorized under the EIS that are determined “*likely to adversely affect*” listed species. Monitoring efforts would include:
 1. Documentation of any unforeseen adverse effects resulting from activities of site-specific projects (may also require reinitiating of formal Consultation).
 2. Results of periodic monitoring which evaluate the effectiveness of the reasonable and prudent measures or terms and conditions of the site-specific consultation.

Additional Best Management Practices

Surface disturbing activities

- Evaluate areas subject to surface disturbance for the presence of cultural resources or values. This is usually accomplished through the completion of a cultural clearance. An on-the-ground inspection by a qualified archaeologist, historian, or paleontologist is required. In cases where cultural resources are found, the preferred response would be to modify the proposed action to avoid the cultural resource (avoidance). If avoidance is not possible, actions would be taken to preserve the data or value represented by the cultural resource (mitigation).
- Evaluate areas subject to surface disturbance for the presence of threatened, endangered, or candidate animal or plant species. This is usually accomplished through the completion of a biological clearance. An on-the-ground inspection by a qualified biologist is required. In cases where threatened, endangered, or candidate species are affected, the preferred response would be to modify the proposed action to avoid species or their habitat (avoidance). If avoidance of a threatened, endangered, or candidate species or its habitat is not possible, a Section 7 consultation with USFWS would be required, and a biological assessment would be prepared to recommend actions to protect the species or its habitat.
- Consider requiring special design and reclamation measures to protect scenic and natural landscape values. These may include transplanting trees and shrubs, mulching and fertilizing disturbed areas, use of low-profile permanent facilities, and painting to minimize visual contrasts. Surface disturbing activities may be moved to avoid sensitive areas or to reduce the visual effects of the proposal.
- Design above-ground facilities requiring painting to blend in with the surrounding environment.
- Implement reclamation concurrent with construction and site operations to the extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer.
- Ensure fill material is pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds.

Road Design and Maintenance

- Keep access roads to a minimum and use to only when necessary.

- Design roads to minimize total disturbance, conform with topography, and minimize disruption of natural drainage patterns.
- Locate roads on stable terrain, such as ridgetops; natural benches; and flatter transitional slopes near ridges, valley bottoms, and moderate sideslopes, and away from slumps, slide-prone areas, concave slopes, clay beds, and where rock layers dip parallel to the slope. Locate roads on well-drained soil types; avoid wet areas.
- Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars, and/or insloping to ditches as appropriate. Maintain drain dips, waterbars, road crown, insloping, and outsloping, as appropriate, during road maintenance. Grade roads only as necessary.
- Sloping the road base to the outside edge for surface drainage is normally recommended for local spurs or minor collector roads where low traffic volume and lower traffic speeds are anticipated. This is also recommended in situations where long intervals between maintenance will occur and where minimum excavation is wanted. Outsloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep sideslopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.
- Crown and ditching is recommended for arterial and collector roads where traffic volume, speed, intensity, and user comfort are considerations. Recommended gradients range from 0 percent to 15 percent where crown and ditching may be applied, as long as adequate drainage away from the road surface and ditch lines is maintained.
- In soil types with a low sand component, construct roads when soils are dry and not frozen, if possible. When these types of soils or road surfaces become saturated to a depth of three inches, BLM-authorized activities should be limited or cease unless otherwise approved by the authorized officer.
- Retain vegetation between roads and streams to filter runoff caused by roads.
- Use culverts that pass, at a minimum, a 50-year storm event and/or have a minimum diameter of 13 inches for permanent stream crossings and a minimum diameter of 18 inches for road cross-drains.
- Strip and stockpile topsoil ahead of construction of new roads, if feasible. Reapply soil to cut and fill slopes prior to revegetation.
- Use existing roads whenever possible rather than constructing new road systems.

Noxious Weed Management

- To reduce the potential for the introduction of noxious weeds, clean off all equipment with pressure washing prior to operating on BLM lands. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts is required and may be accomplished with a pressure hose.
- Ensure all seed, hay, straw, mulch, or other vegetation material transported and used on public land weed free zones for site stability, rehabilitation, or project facilitation is free of noxious weeds and noxious weed seed as certified by a qualified federal, state, or county officer.

Right-of-Way and Utility Corridors

- Ensure rights-of-way (ROW) and utility corridors use areas adjoining or adjacent to previously disturbed areas whenever possible.

- Stabilize disturbed areas within road ROWs and utility corridors with vegetation practices designed to hold soil in place and minimize erosion. Reestablish vegetation cover to increase infiltration and provide additional protection from erosion.
- Construct sediment barriers when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms may also be employed for the removal of sediment from runoff.

Visual Resource Management Class II and III Areas

- Bury distribution powerlines and flow lines in or adjacent to access roads.
- Use repetition of elements of form, line, color, and texture to blend facilities with the surrounding landscape.
- Paint all above-ground structures not requiring safety coloration an environmental color two shades darker than the surrounding environment.
- Reclaim and recontour all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography.
- Avoid facility placement on steep slopes, ridge tops, and hilltops.
- Reclaim unused well pads within 1 year.

Developed Recreation

- Construct recreation sites and provide appropriate sanitation facilities to minimize impacts to resource values, maximize public health and safety, and minimize user conflicts related to approved activities and access within an area as appropriate.
- Use public education and/or physical barriers (such as rocks, posts, and vegetation) to direct or preclude uses and to minimize impacts to resource values.

Riparian/Wetland Areas

- Avoid locating roads, trails, and landings in wetlands.
- Locate, identify, and mark riparian management areas during design of projects that may cause adverse impacts to riparian management areas.
- Keep open water free from slash.
- Avoid equipment operation in areas of open water, seeps, and springs.
- Use low ground pressure equipment (floatation tires or tracked) as necessary to minimize rutting and compaction.

Water Developments

- Actual work in springs and stream beds will be done by hand where possible. If machinery is needed in these areas, it will be selected to minimize disturbance.
- After construction of spring head boxes, troughs, pipelines, and well sites, the areas will be cleaned up and refuse removed.
- Cuts, fills, and excavations will be dressed and seeded to blend with surroundings. Pipelines will be buried where possible.
- Original water sources will be protected, fenced if required, and an off-stream watering supply will be provided near the site.

- Size of storage tanks and troughs will be designed to accommodate expected needs of livestock and wildlife using each water source.
- Water will be left at the site for wildlife. Wells will be cased to prevent cave-ins and well sites will be fenced.
- Storage structures will be designed to provide water for wildlife. Drinking ramps will be installed and heights will not prohibit young wildlife from obtaining water.

Critical habitat

- Currently, no designated critical habitat has been identified for the California condor, Utah prairie dog, Barneby reed-mustard, Last Chance townsendia, San Rafael cactus, Winkler cactus, or Wright fishhook cactus within the Richfield planning area. If critical habitat is proposed and designated under section 4 of the ESA (CFR 50 402.02), these areas would be protected from future surface disturbing activities that would adversely modify or destroy the designated critical habitat. Currently critical habitat has only been designated for the Mexican spotted owl in the Henry mountains area.

Fire and Fuels Management

- Areas considered for prescribed burns shall be surveyed for populations of threatened and endangered species and viable habitat.
- To reduce risks and to restore ecosystems, the following fuels management tools would be allowed throughout Utah: wildland fire use, prescribed fire, and mechanical, chemical, and biological actions. As conditions allow, the BLM would employ the least intrusive method over more intrusive methods. For example, wildland fire use is the preferred method of treatment. Where wildland fire use is not feasible, prescribed burning would be the preferred method. Where prescribed burning is not feasible, non-fire fuel treatments would become the preferred method of treatment.
- Monitoring actions for special status species would be undertaken to determine results from fire management decisions and actions. Monitoring results would be used in determining the need for further LUP amendment or revisions.

Lands and Realty Management

- Areas considered for disposal that contain suitable habitat for special status species shall be surveyed for populations of the species prior to disposal. Lands should not be disposed of unless it is determined that the action would pose no threat to the conservation of special status species populations and habitat.
- Ensure rights-of-way (ROW) and utility corridors use areas adjoining or adjacent to previously disturbed areas whenever possible.
- Stabilize disturbed areas within road ROWs and utility corridors with vegetation practices designed to hold soil in place and minimize erosion. Reestablish vegetation cover to increase infiltration and provide additional protection from erosion.
- Construct sediment barriers when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms may also be employed for the removal of sediment from runoff.

Livestock Grazing Management

- The Bureau of Land Management would encourage the avoidance of suitable habitats and known populations of all special status species during herding, trailing, salting, and watering of livestock.
- BLM should (will) establish monitoring programs for all federally listed plant populations to determine the long term impacts of grazing and other factors affecting those listed species.
- BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with FWS).
- BLM will conduct intensive surveys for target species regularly and within a 6 year period, i.e. no site is unvisited in over 6 years. Surveys will be on potential habitat within the grazing allotment and will collect information on the potential impact of livestock, recreational, or other uses on the long-term viability of rare plant species.
- Each grazing allotment containing listed species should have at least one monitoring plot per listed species to collect population demographic and trend data.

Cultural and Paleontological Resource Management

- Environmental assessments should continue to be required before excavation permits are issued. The environmental assessments should include the presence or absence of threatened, endangered, or special status species and their suitable habitats.

Vegetation Management

- Riparian habitats will be maintained, improved, or restored to provide wildlife habitat, improve water quality, and enhance forage conditions.
- When planting or seeding vegetation in areas identified as T&E or Special Status Species habitat, only native species would be selected.
- Water production will be managed to ensure maintenance or enhancement of riparian habitat.

Wild Horse and Burro Management

- BLM will avoid special status species populations and habitat during the construction of catchments facilities. BLM will also make an effort to avoid special status species populations and habitat during herding activities.

Wildlife Resource Management

- The BLM will continue to conduct project specific site inventories in areas that are proposed for all management developments that occur in suitable habitat for special status species

BEST MANAGEMENT PRACTICES

Best Management Practices (BMP's) are specific measures and practices which are considered at the project-specific level, on a case by case basis. BMP's should be implemented wherever possible, to reduce possible adverse affects, advance the protection, conservation, and recovery

of special status species. Best Management practices will allow flexibility for resource managers to implement protective measures for special status species.

Cultural Resources and Paleontological Resources

- Archeologists can be educated and taught how to identify special status species in order to avoid trampling during excavations and fence construction efforts.

Energy and Mineral Development

- Surface restrictions should be placed in and around known populations of special status species.

Fire and Fuels Management

- Areas should also be analyzed when a wildfire determination is being made to either let it burn or suppress the fire.

Forestry and Woodlands Resource Management

- Individuals obtaining permits for posts, firewood, and Christmas trees would be directed to areas that do not contain known occupied habitat of special status species.

Lands and Realty Management

- Road construction, maintenance and right-of-way corridors shall be restricted in known populations of special status species.

Recreation

- OHV use should be designated as limited to existing roads and trails where known special status species populations exist.

Vegetation Resource Management

- The use of herbicides, chemical treatments and habitat manipulations should be restricted within special status species populations and habitat.
- Seeding and revegetation actions will be adjusted to the special habitat and plant community characteristics of endangered and threatened plant populations

Wild Horse and Burro Management

- The herding and trapping of wild horses and burros in special status species populations and habitat should be avoided to reduce additional trampling caused by such activities.

RE-INITIATION STATEMENT

This is a program-level document that does not include project specific detail for actions authorized by the Resource Management Plan. Additional consultation with USFWS will be necessary for any authorized project specific action that may impact any listed species. This concludes formal consultation on the Richfield BLM Field Office Resource Management Plan. As provided in 50 CFR §402.16, re-initiation of formal consultation is required if: 1) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, 2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion, 3) a new species is listed or critical habitat designated that may be affected by the action, or 4) a project proposing biological control measures is proposed.

Thank you for your interest in conserving threatened and endangered species. If we can be of further assistance, please contact Katherine Richardson at (801) 975-3330 ext. 125 or Laura Romin at ext. 123.

A handwritten signature in black ink, appearing to be 'Laura Romin', with a long horizontal flourish extending to the right.