NATIONAL CONSERVATION LANDS

Red Cliffs National Conservation Area

Record of Decision and Approved Resource Management Plan

Red Cliffs National Conservation Area

Record of Decision
and
Approved Resource Management Plan

Prepared by the
U. S. Department of the Interior
Bureau of Land Management
St. George Field Office
December 2016

Edwin L. Roberson
Utah State Director
Bureau of Land Management

United States Department of the Interior

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http://www.blm.gov

In reply to:
1610 (UTC03100)
DOI-BLM-UT-C030-2015-1-EIS

Dear Reader:

I am pleased to announce that after several years of hard work and collaborative efforts, the Red Cliffs National Conservation Area (NCA) Resource Management Plan (Approved RMP) is complete. This document will provide direction for the management of approximately 45,000 acres of BLM-managed public lands in Washington County, in southwestern Utah. The attached Record of Decision (ROD) and Approved RMP were prepared in accordance with the Federal Land Policy and Management Act, Omnibus Public Land Management Act of 2009, and the National Environmental Policy Act.

The Approved RMP finalizes the management goals, objectives, and decisions that were presented in the Proposed RMP/Final Environmental Impact Statement (Final EIS), released on September 2, 2016 and subject to a 30-day protest period that ended on October 3, 2016. Twenty one protest letters were received from entities that had participated in the planning process and that had interests that might be adversely affected by approval of the RMP. The protests were reviewed by the BLM Director in Washington, D.C. After careful consideration of all points raised in these protests, the Director concluded that the BLM planning team and decision makers followed all applicable laws, regulations, policies, and pertinent resource considerations in developing the Proposed RMP/Final EIS. The protest review did not result in any changes being made in the Proposed RMP.

My approval of this ROD serves as the final decision by the Department of the Interior for all land use planning level decisions included in the attached Approved RMP. Certain decisions in the Approved RMP are implementation decisions and are appealable to the Interior Board of Land Appeals. These implementation level decisions are noted in the ROD (Recreation Management Decisions REC-19 through REC-60) and are appealable under the Code of Federal Regulations (CFR) at 43 CFR, part 4. Any party adversely affected by the implementation level decisions may appeal within 30 days of publication of the Approved RMP, in accordance with the provisions of 43 CFR, part 4, subpart E. The appeal should state the specific numbered decision and the rationale for the appeal. Within 30 days of the posting of this decision (“date of service”), a Notice of Appeal must be filed in writing to: State Director-BLM Utah State Office 440 West 200 South, Suite 500 Salt Lake City, Utah 84101-1345. At the same time, a copy of the Notice of Appeal must also be sent to: Regional Solicitor- U.S. Department of the Interior, 6201 Federal Building, 1235 South State Street, Salt Lake City, Utah 84138-1180. Please consult the appropriate regulations (43 CFR, part 4, subpart E) for further appeal requirements.

The ROD/Approved RMP are available to the public online at http://bit.ly/2fhtN3P. Hard copies of the ROD and Approved RMP may be reviewed at:

Public Lands Information Center
345 East Riverside Drive
St. George, Utah 84790-6714

Color Country District Office
176 East DL Sargent Drive
Cedar City, Utah 84721-9337

Public Room
BLM Utah State Office
440 West 200 South, Suite 500
Salt Lake City, Utah 84101-1345

We greatly appreciate all who contributed to the completion of this Approved RMP, including other Federal and State agencies, and representatives from the State of Utah, Washington County, Utah, and Mojave County, Arizona, the entities that were Cooperating Agencies on this planning effort. We also appreciate the involvement by individuals, groups, and organizations, as public input informed and improved the planning documents. We look forward to working with all of you as we implement the decisions in the Approved RMP.

Sincerely,

Edwin L. Roberson
Utah State Director
Bureau of Land Management

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1.0 INTRODUCTION

This Record of Decision (ROD) culminates a six-year public planning process and documents the Bureau of Land Management's (BLM's) decision for management of the Red Cliffs National Conservation Area (NCA), as presented in the approved Resource Management Plan (Approved RMP). This document provides background information on the planning process and a rationale for the selection of the management goals, objectives, and decisions in the Approved RMP.

1.1 Purpose and Need

The purpose of this planning process has been to satisfy specific mandates from the Omnibus Public Land Management Act of 2009 (16 U.S.C 7202, Public Law 111-11), hereinafter referred to as OPLMA. Title I, Subtitle O of OPLMA concerns public lands managed by the BLM in Washington County, Utah (Appendix A). Congress established the Beaver Dam Wash NCA and the Red Cliffs NCA in Washington County when, on March 30, 2009, President Barack Obama signed OPLMA into law. Sections 1974 and 1975 of Title I, Subtitle O designated the two NCAs and directed the Secretary of the Interior (Secretary), through BLM, to develop comprehensive plans for the long-term management of each NCA. This same legislation also directed the BLM to take actions and make land use allocations on public lands in Washington County that required the *St. George Field Office Record of Decision and Resource Management Plan* (RMP approved in 1999, amended in 2001) (BLM 1999) be amended. The three planning efforts were initiated concurrently by the BLM in 2010, thereby facilitating the preparation of a single Environmental Impact Statement (EIS) to disclose the environmental consequences of implementing the new land use plans for the two NCAs and an amendment to the current St. George Field Office RMP.

Section 1974 (d) (1) identifies the following Congressionally-defined purposes for the Red Cliffs NCA:

> To conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the National Conservation Area; and
>
> To protect each species that is located in the National Conservation Area; and listed as a threatened or endangered species on the list of threatened species or the list of endangered species published under… the Endangered Species Act of 1973. (OPLMA Section 1974 (a))

Land use planning goals, objectives, and management decisions approved in the RMP for the Red Cliffs NCA must be consistent with the designation purposes, authorized uses, and other direction in OPLMA that relates to this NCA. Regarding authorized uses, OPLMA at Section 1974 (e) (2) specified that "the Secretary shall only allow uses of the National Conservation Areas that the Secretary determines would further the purpose" for which the NCA was designated. OPLMA at Section 1974 (g) (1) specifically restricts allowable uses by withdrawing the public lands of this NCA, subject to valid existing rights, from:

> All forms of entry, appropriation, and disposal under the public land laws;
>
> Location, entry, and patenting under the mining laws; and
>
> Operation of the mineral leasing, mineral materials, and geothermal leasing laws.

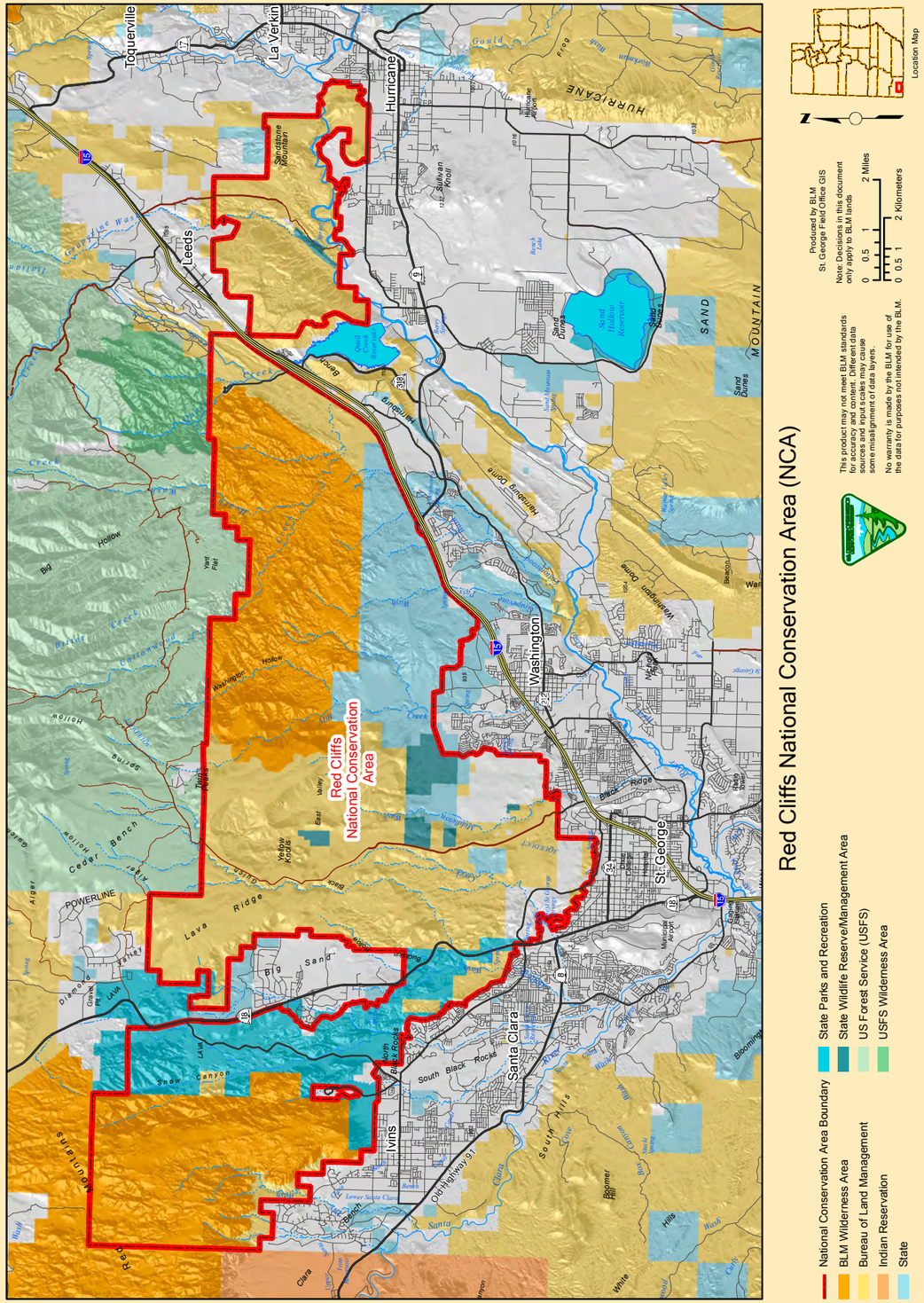
1.2 Description of the Planning Area

The Red Cliffs NCA is comprised of approximately 45,000 acres of BLM-administered surface acres in southcentral Washington County (Map 1). Within the boundaries of the NCA are state and private lands; acreage totals for all lands are shown in Table 1. Management goals, objectives, and actions approved in the RMP apply only to the BLM-administered public lands of the NCA. All acquired lands within the NCA would be managed consistent the direction in OPLMA, other relevant Federal laws, regulations, and agency policies and in conformance with the Approved RMP.

The public lands of Red Cliffs NCA are within the annexation zones of Washington County's five largest cities: Hurricane, Ivins, Santa Clara, St. George, and Washington. Residential and rural residential subdivisions, light industrial areas, commercial and retail

Table 1 Surface Acre Administration in Red Cliffs National Conservation Area

Agency or Entity	Acre
BLM	24,870
BLM Wilderness Areas	19,989
Private	2,631
State of Utah	13,735
Total	61,225



businesses, and Interstate Highway 15 (I-15) ring the southern, western and eastern boundaries of the NCA. More than 130 miles of designated hiking, mountain biking, and equestrian trails are available for public use in the Red Cliffs NCA. The Red Cliffs NCA also includes the Red Cliffs Recreation Area, a popular developed fee site recreation area that BLM has managed for camping and day use since the mid-1960s.

Two designated Wilderness areas are totally or partially within the boundaries of the Red Cliffs NCA. The 11,668 acre Cottonwood Canyon Wilderness, included in the National Wilderness Preservation System (Wilderness System) in 2009 through OPLMA, is located entirely within the Red Cliffs NCA. It shares a common boundary with a portion of the Cottonwood Forest Wilderness, managed by the Pine Valley Ranger District of the Dixie National Forest, also added to the Wilderness System by OPLMA. Approximately 8,321 acres of the 18,689 acre Red Mountain Wilderness, included in the Wilderness System in 2009, are located within the Red Cliffs NCA. Hikers, backpackers, and equestrians enjoy outstanding primitive recreation, opportunities for solitude, and natural quiet within the Cottonwood Canyon and Red Mountain Wilderness areas, just minutes from the most urbanized areas of Washington County.

The public lands of the Red Cliffs NCA comprise approximately 70% of the land base of the approximately 62,000 acre, multi-jurisdictional Red Cliffs Desert Reserve (Reserve). The Reserve was established by Washington County's multi-species *Habitat Conservation Plan* (HCP), approved by the United States Fish and Wildlife Service (USFWS) in 1995. In 1996, BLM, USFWS, the State of Utah, Washington County, and the City of Ivins signed an HCP Implementation Agreement that specified the obligations and responsibilities of the governmental entities that manage lands within the Reserve.

The Reserve's land base encompasses designated critical habitat for the federally-listed threatened Mojave desert tortoise within the Upper Virgin River Recovery Unit. This recovery unit was identified as the smallest and most at-risk recovery unit within the Mojave desert tortoise's range by the *Mojave Desert Tortoise Recovery Plan* (USFWS 1994, revised 2011). Since its establishment in 1995, the multi-agency management of the Reserve's land base has emphasized the protection of habitat and tortoise populations, through restrictions on land uses and human activities. In 1996, Washington County was issued an Incidental Take Permit (ITP) authorizing the development or "take" of approximately 12,264 acres of non-federal lands in critical habitat and the loss of 1,169 tortoises, based on the mitigation afforded by restrictive management of the Reserve and other commitments made through the HCP and Implementation Agreement.

1.3 Purpose, Significance, and Mission Statement for the NCA

Purpose, significance, and a mission statement were developed by the BLM for the Red Cliffs NCA, to clarify why these public lands were given special designation by Congress in 2009 and to guide the preparation of a new RMP.

Purpose: To conserve, protect, enhance, and restore the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the Red Cliffs NCA, for the benefit and enjoyment of present and future generations. As Congress did not specifically define the resource values that give significance to this NCA, BLM resource professionals identified a number of the natural and cultural resources within NCA that are unique and scientifically important. These are but a few of the resource values that make the public lands of the NCA worthy of inclusion in BLM's system of National Conservation Lands and include the following:

- Massive exposures of the Jurassic age Kayenta Formation and Navajo Sandstone that preserve scientifically important dinosaur tracks and trackways, bone beds, plant fossils, and silicified wood;
- Rich ecological diversity resulting from the convergence of three major ecoregions: the Mojave Desert, Colorado Plateau and Great Basin;
- Critical habitats that sustain high densities of the threatened Mojave desert tortoise and other Mojave Desert species;
- Critical habitat for the endangered Shivwits milkvetch, a small native plant that grows only in Washington County on specific soil types;
- The Virgin River, Quail, and Leeds Creeks that provide aquatic habitat for the threatened and endangered native fish of the Virgin River system; riparian zones along these streams that support diverse native species and migratory birds;
- Scenic landscapes of the Red Mountain and Cottonwood Canyon Wilderness areas that provide outstanding opportunities for solitude, natural quiet, primitive and unconfined recreation, and high quality wilderness experiences;

- Archaeological sites that preserve evidence of Archaic, Ancestral Puebloan, and Southern Paiute occupations and land uses; and
- Mid-19th century and later historic period sites and features relating to the Euro-American settlement of southern Utah, including wagon roads, irrigation systems, farmsteads, mining sites, and the early 20th century Arrowhead Trails Highway.

Significance: The Red Cliffs NCA resources are significant from a regional and national perspective because they afford:

- Opportunities for scientific study of Early and Middle Jurassic age paleo-environments;
- Opportunities for conservation, protection, restoration, scientific study, public use and interpretation of an array of Jurassic-age paleontological resources, including scientifically important plant fossils, bone beds, and track sites;
- Opportunities for restoration of critical habitats for the threatened Mojave desert tortoise and other at-risk native species of this ecoregion.
- Opportunities for restoration and protection of crucial seasonal ranges and migration corridors for mule deer;
- Opportunities to reintroduce native Desert bighorn sheep to former habitats in the Red Mountain and Cottonwood Canyon Wilderness areas;
- Opportunities for scientific research in City Creek and Paradise Canyon, where research on the Mojave desert tortoise has been ongoing since the 1950s;
- Opportunities for solitude, natural quiet, dark night skies, primitive and unconfined recreation in the Red Mountain and Cottonwood Canyon Wilderness areas, just minutes from the largest cities in Washington County;
- Opportunities for conservation, protection, restoration, scientific study, public use and interpretation of an array of prehistoric and historic period archaeological sites, documenting the broad span of human history in southwestern Utah;
- Opportunities for sustainable outdoor recreation on public lands that enhance the quality of life for local residents and visitors and help to sustain the economic health of local communities;
- Opportunities for broad-based scientific, academic, and community partnerships, volunteer programs, youth and veteran training, and employment initiatives, developed to enhance public appreciation and citizen stewardship of the NCA resources and values.

Mission: The mission for BLM management of the Red Cliffs NCA is to conserve and protect the ecological, geological, cultural, and biological resources of the public lands; to assist the recovery and delisting of federal and state-listed species; to restore native species habitats and populations; to sustain functional ecosystems that support species' resilience to climate change; and to enhance opportunities for scientific research, environmental education, sustainable recreational uses, and citizen stewardship of public lands.

2.0 OVERVIEW OF THE ALTERNATIVES

Four alternatives were presented in the Draft Red Cliffs NCA RMP and associated Draft EIS, released for public review on July 17, 2015. The four alternatives analyzed in the draft included: Alternative A (No Action), Alternative B (BLM's Preferred Alternative), Alternative C, considered the environmentally preferable alternative, offering the most intensive and protective management of the resource values within the NCA and the most restrictions on authorized uses, and Alternative D. Summaries of each alternative are found below. These alternatives contained goals, objectives, and management decisions for the NCA that were designed to address the long-term management of public land resources and land uses, while fulfilling the conservation purpose of the NCA included in OPLMA.

Implementing regulations for NEPA require the formulation of a reasonable range of alternatives to address identified resource conflicts or concerns in the development of land use plans. Each alternative must meet the purpose and need for the plan, be viable and reasonable, be responsive to issues identified in scoping, and consistent with the established planning criteria.

Public input received during the scoping process; input from Cooperating Agencies, and issues and concerns identified by BLM staff and management were considered in the development of the alternatives and their management options. A number of state agencies, including the Utah Division of Wildlife Resources (UDWR), provided data and input that assisted the development of alternatives. Other federal agencies, including the USFWS and the U.S. Forest Service (USFS) - Dixie National Forest participated in the planning process. The State of Utah; Washington County, Utah; and Mohave County, Arizona, as formal Cooperating Agencies to this planning process, and the Shivwits Band of the Paiute Indian Tribe of Utah, were directly involved in the planning process and the development of alternatives. The Cooperating Agencies reviewed and provided comments on the preliminary drafts of the RMP/Draft EIS.

2.1 Alternative A (No Action)

Alternative A (No Action) is required by NEPA and served as a baseline against which to compare the environmental consequences that could be associated with implementation of other alternatives. Under this alternative, management for the NCA would primarily be derived from management decisions in the existing 1999 *St. George Field Office Record of Decision and Resource Management Plan*, as amended. However, this alternative did reflect recent direction in OPLMA, such as the designation of the Cottonwood Canyon and Red Mountain Wilderness areas that are located within this NCA and the withdrawal of the public lands of this NCA, subject to valid existing rights, from the location, entry, and patenting under the mining laws and the operation of the mineral leasing, mineral materials, and geothermal leasing laws (OPLMA at Section 1974 (g) (1)).

Under Alternative A (No Action), the public lands of the NCA would continue to be managed to assist the recovery and de-listing of the threatened Mojave desert tortoise. A majority of the public lands would be unavailable for domestic livestock grazing and managed to restrict certain land uses, such as landfills, cross-country travel by motorized off-highway vehicles (OHVs) that result in the damage to or permanent loss of designated critical habitat for at-risk species. Outside of the two Wilderness areas, the public lands would be managed as an Avoidance area for new utility and transportation rights-of-way. However, new rights-of-way could be granted in the Avoidance area, when designated corridors or other feasible alternatives were not available.

While Alternative A (No Action) would provide considerable valid management direction for the NCA, in many instances, management decisions in the existing St. George Field Office RMP conflict with the direction in OPLMA or lacked the specificity needed for future management of the NCA

2.2 Alternative B (BLM's Preferred Alternative)

Alternative B attempted to balance resource protection and human uses of the public lands in the NCA. Management focused on protecting native vegetation communities, wildlife habitats, cultural resources, and the scenic qualities of the public lands from threats, particularly loss to or damage from wildland fires. The restoration of damaged lands was also emphasized under this alternative. Sustainable public recreation uses would be managed through zoning of the NCA, permitting, and the development of non-motorized trails, trailheads, interpretative signing, and other facilities that enhance visitor experiences. Emphasis was placed on environmental education, interpretation, and opportunities for citizen stewardship of NCA resources.

This alternative proposed to manage a majority of the NCA as an Exclusion area (41,023 acres) for new utility and transportation rights-of-way, but identified 3,652 acres to be managed as Avoidance areas for new rights-of-way. Multiple criteria were included under this alternative to avoid or minimize impacts on NCA resource values that might result from the granting of new rights-of-way and the development of new utilities or transportation facilities in the Avoidance areas. This component of Alternative B complied with OPLMA, as the legislation includes the following provision with regard to new utility developments in the NCA:

> (h) EFFECT.—Nothing in this section prohibits the authorization of the development of utilities within the National Conservation Area if the development is carried out in accordance with—(1) each utility development protocol described in the habitat conservation plan; and (2) any other applicable law (including regulations); (OPLMA Section 1974 (h)).

2.3 Alternative C (Environmentally Preferable)

This alternative represented an approach to the conservation and protection of resource values that emphasized higher levels of restrictions on certain land uses and activities, while continuing to allow for compatible public uses. Management of the NCA would also focus on protecting the ecological and scenic values of the NCA from damage or loss to natural and human-caused impacts. Restoration of damaged lands would emphasize the use of native vegetation species and the least invasive methods to accomplish goals and objectives. This alternative proposed three heritage areas where management would focus on the protection of prehistoric and history resources. Like Alternative B, this alternative emphasized environmental education outreach, interpretation, and scientific research.

Alternative C also proposed to manage 1,586 acres of the NCA identified as having wilderness characteristics to conserve, protect, and restore those values. BLM Manual 6320 states that lands with wilderness characteristics must be considered during land use planning, using a recent and comprehensive inventory. Agency policy, as

outlined in BLM Manual 6320, gives the BLM broad discretion when choosing whether to manage for wilderness characteristics or to manage areas with wilderness characteristics for other uses, through its planning process.

Under Lands and Realty Management, Alternative C proposed to manage the entire NCA as an Exclusion area to new linear and site-type ROWs. The BLM believes this alternative is not consistent with the direction in OPLMA Section 1974 (h) cited above.

2.4 Alternative D

Alternative D emphasized a broader array and higher levels of public use and access, while still meeting the NCA purposes of "conservation, protection, and enhancement" of diverse resource values and threatened and endangered species. Sustainable recreation uses of the NCA would be enhanced through the development of new, non-motorized trails and visitor facilities. Cultural and paleontological resources would be managed for conservation, scientific research, and public use. Like Alternatives B and C, this alternative identified environmental education outreach, interpretation, and scientific research as important components of BLM's long-term management of this NCA.

Since OPLMA provided for utility development within the Red Cliffs NCA under specific criteria, designated utility corridors along State Route 18 and Interstate I-15 were proposed to be retained under Alternative D. The BLM proposed to designate a new 6,534 acre utility and transportation corridor through the NCA, in response to Washington County's and other stakeholders' requests. The corridor could accommodate new utilities, as directed by Section 1974 (h) of OPLMA, and any of the conceptual highway alignments proposed by the County for a "northern transportation route", identified in OPLMA at Section 1977, under the Washington County Comprehensive Travel and Transportation Management Plan. At this section of the legislation, the Secretary of the Interior, through BLM, was directed to identify one more alternatives for a northern transportation route in the County, in consultation with appropriate Federal agencies, State, tribal, and local governmental entities (including the County and St. George City, Utah) and the public. The Comprehensive Travel and Transportation Management Plan will be development in the future, consistent with applicable laws, including appropriate public involvement.

The analysis of environmental impacts for Alternative D in the Draft EIS disclosed that the designation of this new 6,534 acre utility and transportation corridor would not satisfy the conservation purposes of the NCA for many resource values, including threatened and endangered species, cultural resources, scenic qualities, and recreation uses, as developments within the corridor would create significant impacts on these resources.

2.5 Proposed RMP

The BLM's land use planning process (described in the *Code of Federal Regulations* at 43 CFR 1600) provides the discretion to develop the proposed plan by combining components of the four alternatives that were presented in the Draft RMP and associated Draft EIS.

The Proposed Red Cliffs NCA RMP was based primarily on the management goals, objectives, and actions identified in the draft plan as BLM's Preferred Alternative, Alternative B. However, in response to public comments and input from the Cooperating Agencies, other federal and state agencies, and local governmental entities, components of the other alternatives that were analyzed in the draft plans were also selected to comprise management decisions in the proposed plan. The resulting Proposed RMP represented a compilation of planning decisions that addressed the widest range of public and agency concerns over resource management and land uses, while fulfilling the conservation purposes of the Red Cliffs NCA.

3.0 RESULTS OF PROTEST REVIEW

The BLM received a total of 37 protest letters during the 30 day protest period provided for the Proposed RMP for the Red Cliffs NCA/Final EIS, in accordance with 43 CFR Part 1610.5.2. Of that total, 16 were determined not to have standing. The 21 protesting parties determined to have standing and valid protest issues were as follows:

- Mike and Lea Anderson
- Wendy Warren
- Thomas Brown
- Paul and Cheryl Sampson
- Glenn Bigham
- Terry and Betty Adamson
- Doug and Donna Irwin
- Allen Howland
- Toni Newcomb
- Dixie Metropolitan Planning Organization
- Washington County Water Conservancy District
- Washington County
- State of Utah
- Kirk Willey
- Slade Hughes
- Veyo Culinary Water Association
- City of Ivins
- City of St. George
- City of Washington
- Western Watersheds Project
- Wildland Defense

The BLM Director resolved all protests without making changes to the Proposed RMP/Final EIS. A copy of the Director's Protest Resolution Report can be found on the web at: https://www.blm.gov/programs/planning-and-nepa/public-participation/protest-resolution-reports

4.0 THE DECISION

After considering public comments, best available scientific and technical information, and the results of consultation and coordination with other federal and state agencies, state and local governments, and tribal governments, it is the BLM's decision to approve the attached RMP for the long-term management of the Red Cliffs NCA. The Approved RMP was prepared under the authorities of OPLMA; the Federal Land Policy and Management Act (FLPMA) of 1976; in accordance with the *Code of Federal Regulations* at 43 CFR, Part 1600, that address the BLM land use planning process; as well as all other applicable laws and agency policies. An Environmental Impact Statement (EIS) was prepared for this RMP, in compliance with the National Environmental Policy Act (NEPA) of 1969.

The Approved RMP is nearly identical to the Proposed RMP/Final EIS that was issued in September 2016. All decisions in the Approved RMP are either land use planning decisions that could be protested during the September 2, 2016 to October 3, 2016 protest period or are implementation decisions that are now appealable under the federal regulations discussed later in this ROD.

The Approved RMP satisfies the legislative direction in Section 1974 (d) (1) of OPLMA that the Secretary of the Interior, through the BLM, develop a comprehensive (resource) management plan for the Red Cliffs NCA to achieve the following Congressionally-defined purposes:

> To conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the National Conservation Area; and
>
> To protect each species that is located in the National Conservation Area; and listed as a threatened or endangered species on the list of threatened species or the list of endangered species published under… the Endangered Species Act of 1973. (OPLMA Section 1974 (a))

Land use planning goals, objectives, and management decisions approved in the RMP for the Red Cliffs NCA are consistent with the Congressionally-defined purposes of conservation, protection, enhancement, and restoration of public land values. They are also consistent with the mandate from Congress that "the Secretary shall only allow uses of the National Conservation Areas that the Secretary determines would further the purpose" for which the NCA was designated (OPLMA, at Section 1974 (e) (2)). OPLMA at Section 1974 (g) (1) also specifically restricts allowable uses by withdrawing the public lands of this NCA, subject to valid existing rights, from:

> All forms of entry, appropriation, and disposal under the public land laws; Location, entry, and patenting under the mining laws; and Operation of the mineral leasing, mineral materials, and geothermal leasing laws.

4.1 What the Decision/RMP Provides

Land use plan decisions include:

- Goals
- Objectives
- Land Use Allocations
- Management Actions

Goals are the broad statements of desired outcomes, and are usually not quantifiable. Objectives are specific desired conditions, usually quantifiable and measurable, and may have timeframes for achievement. Land use allocations specify locations within the planning area that are available or unavailable for certain uses. These include decisions such as what lands are available for livestock grazing, and what lands are open, closed, or limited to motorized travel (please note that all acreages presented in the Approved RMP are estimations even when presented to the nearest acre). Management actions include those provisions that help in meeting the established goals and objectives and include measures that will be applied to guide day-to-day activities on public lands, including but not limited to stipulations, guidelines, best management practices (BMPs), and design features.

The primary RMP management decisions in the Approved RMP are to:

- Manage resources to protect and enhance water, geologic and paleontological, vegetation, wildlife, cultural, scenic resources, while providing for varied recreational opportunities.
- Manage wildfire suppression activities to support the conservation and protection of NCA resource values and comply with legal, regulatory, and agency policy requirements.
- Ensure ecological integrity of the native vegetation communities is conserved, protected, and restored.
- Manage habitats for federally listed threatened or endangered species so that they are conserved, protected, and restored to support viable populations.
- Manage heritage resources so that they are conserved, protected, and enhanced for the benefit of present and future generations.
- Manage the Red Mountain and Cottonwood Canyon Wilderness in accordance with the Wilderness Act of 1964, OPLMA, and BLM Manual 6340.
- Manage the open spaces, natural aesthetics, and scenic vistas of the NCA so that they are protected for social, economic, and environmental benefits.
- Designate the Red Cliffs Special Recreation Management Area (SRMA) and identify special recreational management zones within the SRMA.
- Designate areas as Limited or Closed to motorized off-highway vehicle use:
  - Designate 24,870 acres as Limited to Designated Routes
  - Designate 19,989 acres, in the Cottonwood Canyon and Red Mountain Wilderness areas, as Closed.
- Manage land tenure adjustments to assist the conservation, protection, and enhancement of NCA resource values.
- Manage land use authorizations that further the purposes of conservation, protection, and enhancement of resource values in the NCA.

This ROD serves as the agency's final decision, establishing the land use plan decisions outlined in the Approved RMP, and is effective on the date that it is signed by the Utah-BLM State Director. These land use plan decisions are not subject to other administrative remedies.

4.2 What the Decision/RMP Does Not Provide

- The RMP decisions only apply to BLM-administered public lands in the Red Cliffs NCA.
- The RMP decisions are subject to valid existing rights.

In addition, many decisions are not appropriate at this level of planning and are not included in the ROD. Examples of these types of decisions include:

- *Statutory requirements.* The decision will not change the BLM's responsibility to comply with applicable laws, rules, and regulations.
- *National policy.* The decision will not change BLM's obligation to conform to current or future National policy.
- *Funding levels and budget allocations.* These are determined annually by Congress and are outside of the control of the BLM.

4.3 Implementation Decisions

Unlike land use plan decisions, implementation decisions cannot be protested to the BLM Director, pursuant to the planning regulations at 43 CFR 1600. Instead, implementation decisions are subject to various administrative remedies, particularly appeals to the Interior Board of Land Appeals, under 43 CFR 4.410. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review, as prescribed by the specific resource program regulations. Some of the recreation decisions in the Approved RMP, (REC-19 through REC-60) are implementation decisions which are appealable under the Department of Interior's appeal regulations (43 CFR Part 4). These procedures are summarized in the Dear Reader Letter that accompanies this ROD.

These decisions are effective upon the signing of this ROD, unless a stay of the decision is granted. In accordance with 43 CFR Part 8342.3(b), public notice has been provided with publication of a Notice of Availability of the Proposed RMP/Final EIS in the *Federal Register* on September 2, 2016, and with publication of the Federal Register Notice of Availability for this Record of Decision and Approved RMP for the Red Cliffs National Conservation Area.

4.4 Supplementary Rules

In some instances, decisions from the Approved RMP could restrict or prohibit an activity on public lands. Often the restriction or prohibition is already standard on public land and there is no requirement for

supplementary rule-making to enforce the decision from the approved RMP. However, to make some decisions enforceable, a public process is required, as outlined in 43 CFR 8365.1-6. This process requires that specific steps be taken to ensure that interest groups and public land users are adequately informed of newly-proposed rules before they go into effect. The first step of the process is the publication of a proposed set of rules in the Federal Register, public notification through media releases, and a 60 day public review and comment period. Following the public review and comment period, a Notice of Final Supplementary Rules is published in the *Federal Register* that establishes the final supplementary rules and identifies the date when these rules go into effect.

5.0 MANAGEMENT CONSIDERATIONS IN SELECTING THE APPROVED RMP

The Proposed RMP was based primarily on the management goals, objectives, and actions identified in the draft plan as BLM's Preferred Alternative, Alternative B. However, in response to public comments and input from the Cooperating Agencies, other federal and state agencies, and local governmental entities, components of the other alternatives that were analyzed in the draft plans were also selected to comprise management decisions in the proposed plan. The resulting Proposed NCA RMP represents a compilation of planning decisions that address the widest range of public and agency concerns over resource management and land uses, while fulfilling the purpose and direction for the Red Cliffs NCA in OPLMA. The Approved RMP will allow the BLM to manage the Red Cliffs NCA to conserve, protect, and enhance the diverse ecological, biological, scenic, cultural, recreational, scientific and educational values of the public lands over the long term, for the benefit of current and future generations. The following management decisions for resource values are included in the Approved RMP.

5.1 Water Resources

The Approved RMP will apply BMPs and other site-specific mitigation measures to maintain soil stability, minimize wind and water erosion, and ensure that surface disturbances do not cause accelerated sedimentation in surface water sources. The Approved RMP commits to monitoring water quality in Leeds Creek and to manage water resources consistent with Utah State law.

5.2 Geologic and Paleontological Resources

The Approved RMP protects these resources by prohibiting the sale of petrified wood and collection of common invertebrate fossils. Paleontological surveys will be conducted in areas with high potential for scientifically important fossil localities to increase the knowledge of these resources consistent with the mandates of OPLMA and the legislative purposes for which the Red Cliffs NCA was Congressionally-designated.

5.3 Soil Resources

The Approved RMP will apply BMPs and other site-specific mitigation measures to ensure that salinity and sediment contributions from public lands into the Colorado River system, via Quail Creek, Leeds Creek, and the Virgin River, are minimized through appropriate land use management. The Approved RMP also sets the framework for research that increases the understanding of ecosystem processes, cycles, and anthropogenic factors that affect soil and vegetation resources (e.g., fire return, nutrient cycles) and that may influence climate change.

5.4 Native Vegetation Communities

The Approved RMP incorporates resource management actions that help insure that the biodiversity, ecological integrity, and ecosystem resilience are conserved, protected, and restored in the unique native vegetation communities created by the convergence of the Mojave Desert, Great Basin, and Colorado Plateau ecoregions. These actions will also manage riparian areas to sustain productive and diverse ecosystems and properly functioning watersheds.

5.5 Special Status Species–including Threatened, Endangered, Candidate, and Species Proposed for Listing under Endangered Species Act

Management of Special Status Species in the Approved RMP has the following key goals: habitats for listed species are conserved, protected, and restored to support viable populations that no longer require listing protection under the Endangered Species Act (ESA) and habitats for species proposed for listing under the ESA are conserved, protected, and restored to support viable populations, precluding the need to list these species.

5.6 Fish and Wildlife Habitat

The Approved RMP will manage fish and wildlife habitat to provide high quality forage or a high quality prey base, as well as water, space, cover, and breeding areas, thereby sustaining viable populations and overall ecosystem biodiversity and resilience. Multi-species habitat connectivity, migration routes, and movement corridors are conserved and protected between ecological zones to facilitate species persistence, adaptation, and overall biodiversity under predicted climate change scenarios.

5.7 Heritage Resources

The Approved RMP will manage heritage resources to ensure that they are conserved, protected, and enhanced for the benefit of present and future generations, consistent with the Congressional direction in OPLMA at Section 1974 and other federal heritage preservation laws and regulations, and agency policies.

5.8 Recreation and Visitor Services

The Approved RMP will provide high quality sustainable recreation opportunities and visitor services. Those opportunities support the quality of life of NCA visitors as well as local communities, regional economies and the resource values of the NCA. The Red Cliffs SRMA will be established with four management zones to assist in setting priorities for facilities development, maintenance, and law enforcement. The Approved RMP provides additional guidance and criteria for issuance of Special Recreation Permits (SRPs). These criteria will help reduce user conflicts, enhance recreation experiences, and protect resource values.

5.9 Comprehensive Travel and Transportation Management

In compliance with BLM regulations, policy, and guidelines, OHV area designations of the Approved RMP were developed to meet the needs and demands for motorized travel and recreation throughout the NCA while also complying with the direction in OPLMA.

5.10 Lands and Realty Management

The Approved RMP allows for the BLM to work with willing land owners or administrators to acquire inholdings and edge-holdings that are in the public interest through purchase, exchange of public lands targeted for disposal outside of the NCA boundaries, donation, or conservation easement. It also designates ROW exclusion and avoidances areas in order to meet the direction in OPLMA at Section 1974 (e) (2) which specifies that "The Secretary shall only allow uses of the National Conservation Areas that the Secretary determines would further the purpose" for which the NCA was designated.

6.0 CONSISTENCY AND CONSULTATION REVIEW

Consistency of the Approved RMP with other federal, state, tribal, and local government plans was also considered as a factor in selection of the Approved RMP. The Approved RMP is consistent with officially approved or adopted plans and policies of state and local governments to the extent that the guidance and local plans are also consistent with the purposes, policies, and programs of federal law and regulation applicable to public lands, including OPLMA. Chapter 3 of the Proposed RMP/Final EIS provided a full discussion of consistency with all involved entities.

6.1 Governor's Consistency

The 60-day Governor's Consistency Review of the Proposed Red Cliffs RMP and Final EIS was initiated on August 26, 2016 and concluded on October 25, 2016, in accordance with planning regulations at 43 CFR Part 1610.3-2(e). In a letter dated October 25, 2016, Utah Governor Gary Herbert identified one management decision included in the Proposed RMP for the Red Cliffs NCA that the State of Utah asserted is inconsistent with state or local plans, policies, and programs.

For the Red Cliffs NCA, the State supported Alternative D for Lands and Reality Management in the Draft RMP, which would have designated a new utility and transportation corridor through the NCA that would have allowed the granting a future right-of-way for the "northern transportation route" highway requested by Washington County, the City of St. George, and the Dixie Metropolitan Planning Organization. The State expressed its position that the Proposed RMP for the Red Cliffs NCA should have included a new utility and transportation corridor, similar to that included in Alternative D for the Draft RMP, based on the legislative direction provided under Section 1977[b] [2]. This section concerns the preparation of the Washington County Travel and Transportation Management Plan and required the BLM to identify one or more alternatives for a "northern transportation route" in the County. The BLM provided a response to the Governor's letter; however, no changes to the Approved RMP were made.

6.2 Consultation under the National Historic Preservation Act

The BLM has conducted Section 106 consultation with the Utah State Historic Preservation Officer (SHPO) related to this planning process, pursuant to the requirements of the National Historic Preservation Act and its' implementing federal regulations. In written correspondence dated September 20, 2016, the Deputy SHPO concurred with BLM's finding that approval of an RMP that included the goals, objectives, and management decisions contained in the Proposed RMP and Final EIS for the Red Cliffs NCA, would not result in adverse effects to National Register of Historic Places-listed or eligible sites (also known as historic properties); (Appendix B).

6.3 Consultations with American Indian Tribes

Consultations with federally-recognized American Indian Tribes that claim cultural affiliation with the public lands of the Red Cliffs NCA have been ongoing since 2010 related to the development of a new RMP for this NCA. The reader is referred to Chapter 3 of the Proposed RMP and Final EIS for more specific details on these consultations. No federally-recognized American Indian Tribes submitted formal comments on the Draft RMP and Draft EIS and no protests were filed by Tribes on the Proposed RMP and Final EIS for the Red Cliffs NCA.

6.4 Section 7 Consultation under the Endangered Species Act

Consultation under Section 7(a) of the ESA was conducted with the USFWS during the development of the RMP. A Biological Assessment (BA) was prepared to evaluate the potential impacts on populations and habitats of threatened and endangered species, as well as for species proposed for listing and populations managed as 10 (j) non-essential experimental populations, that could result from implementing the management goals, objectives, and decisions identified in the Proposed RMP for the Red Cliffs NCA and Final EIS. The BA was submitted to the USFWS on September 13, 2016. The USFWS prepared a Biological Opinion (BO) that was provided to the BLM on December 12, 2016 and is included in Appendix C. In the BO, the USFWS determined that implementation of the management decisions described in the Proposed RMP, with the recommended conservation measures provided by the USFWS in the BO, would not jeopardize the continued existence of any federally-listed species or result in the adverse modification of critical habitats.

7.0 MITIGATION MEASURES

No mitigation measures were included in the Approved RMP, as all management goals, objectives, and decisions were designed to conserve, protect, and enhance resource values, rather than result in environmental harm.

8.0 APPROVED RMP MONITORING AND EVALUATION

Monitoring is the repeated measurement of activities and conditions over time. Evaluation is a process in which the plan and monitoring data are reviewed to see if management goals and objectives are being met and if management direction is sound. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives. The two types of monitoring that are tied to the planning process include implementation and effectiveness monitoring. Land use plan monitoring is the process of (1) tracking the implementation of land use planning decisions and (2) collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions. The two types of monitoring are described below.

Implementation Monitoring: Implementation monitoring is the most basic type of monitoring and simply determines whether planned activities have been implemented in the manner prescribed by the plan. Some agencies call this compliance monitoring. This monitoring documents BLM's progress toward full implementation of the land use plan decision. There are no specific thresholds or indicators required for this type of monitoring.

Effectiveness Monitoring: Effectiveness monitoring is aimed at determining if the implementation of activities has achieved the desired goals and objectives. Effectiveness monitoring asks the question: Was the specified activity successful in achieving the objective? This requires knowledge of the objectives established in the RMP as well as indicators that can be measured. Indicators are established by technical specialists in order to address specific questions, and thus avoid collection of unnecessary data. Success is measured against the benchmark of achieving desired future conditions established by the plan.

Progress in meeting the plan objectives and adherence to the management framework established by the plan is reviewed periodically. CEQ regulations implementing NEPA state that agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases (40 CFR 1505.2 (c)). To meet these requirements, the BLM will review the plan on a regular schedule in order to provide consistent tracking of accomplishments and provide information that can be used to develop annual budget requests to continue implementation.

Land use plan evaluations will be used by BLM to determine if the decisions in the RMP, supported by the accompanying NEPA analysis, are still valid. Evaluation of the RMP will generally be conducted every five years per BLM policy, unless unexpected actions, new information, or significant changes in other plans, legislation, or litigation triggers an evaluation. Land use plan evaluations determine if decisions are being implemented,

whether mitigation measures are satisfactory, whether there are significant changes in the related plans of other entities, whether there is new data of significance to the plan, and if decisions should be changed through amendment or revision. Evaluations will follow the protocols established by the BLM Land Use Planning Handbook H-1601-1 in effect at the time the evaluation is initiated. Specific monitoring and evaluation needs are identified by resource/uses throughout the Approved RMP.

9.0 PUBLIC INVOLVEMENT

One of BLM's primary objectives during development of the RMP for the Red Cliffs NCA was to seek input from the public, by providing opportunities for participation in the resource management planning process. These efforts are described included in the Scoping Report, the Draft RMP/EIS, and the Proposed RMP/Final EIS in Chapter 3, Consultation and Coordination. Below is a summary of these public involvement efforts.

The planning process formally began with the publication of the Notice of Intent (NOI) to initiate a land use planning process in the *Federal Register* on May 10, 2010. This NOI described the BLM's intention to prepare new resource management plans for the Beaver Dam Wash NCA and the Red Cliffs NCA and to amend the approved St. George Field Office RMP (1999) to address specific mandates from OPLMA. A formal public scoping period was initiated with the publication of the NOI in May of 2010 and ended on July 19, 2010. Public scoping meetings were held in four locations with 269 participants. A total of 724 written public scoping comments were received during the scoping period.

Opportunities for public input in the planning process were provided in February 2011, when an Economic Strategies Workshop was hosted by the BLM in St. George, Utah (facilitated by a USDA TEAMS Enterprise Unit) to identify management opportunities involving public lands that would further the social and economic goals of area communities. Members of the public and representatives of local municipalities and county government attended the workshop. Participants explored the role of public lands in the socioeconomic sector of local communities and helped to identify those activities and uses on public lands that should be considered during the planning process.

On July 17, 2015, the BLM and EPA each published a Notice of Availability (NOA) in the *Federal Register*, announcing the availability of the Draft RMP for the Red Cliffs NCA and Draft EIS for a 90-day public review and comment period. The Utah BLM Acting State Director extended the comment period for an additional 30 days, based on written requests from Washington County, the State of Utah, and members of the public. The review and comment period closed on November 16, 2015, during which time the BLM held three public workshops (in St. George, Hurricane, and Salt Lake City, Utah, during September, 2016). An estimated 176 members of the public attended the three workshops.

During implementation of the Approved RMP, the BLM will continue to actively seek the views of the public, using techniques such as news releases and web-site information to ask for participation and inform the public of new and ongoing project proposals, site-specific planning, and opportunities and timeframes for comment. The BLM will also continue to provide opportunities for involvement to other federal and state agencies, Tribal governments, and local government entities and elected officials on the management of public lands.

10.0 AVAILABILITY OF THE PLAN

The ROD/Approved RMP are available to the public online at http://bit.ly/2fhtN3P. Hard copies of the ROD and Approved RMP may be reviewed at:

Public Lands Information Center
345 East Riverside Drive
St. George, Utah 84790-6714

Color Country District Office
176 East DL Sargent Drive
Cedar City, Utah 84721-9337

Public Room
BLM Utah State Office
440 West 200 South, Suite 500
Salt Lake City, Utah 84101-1345

In consideration of the foregoing, I approve the Record of Decision for the Red Cliffs National Conservation Area Resource Management Plan.

December 21, 2016

Edwin L. Roberson
Utah State Director

Approved Resource Management Plan

Approved Resource Management Plan

1.0 INTRODUCTION

The Approved RMP is now the land use plan for public lands administered by the BLM within the Red Cliffs National Conservation Area. The Approved RMP adopts the management goals, objectives, and decisions presented in the Red Cliffs National Conservation Area Proposed RMP and analyzed in the Final EIS (BLM 2016).

2.0 CONSIDERATION OF OTHER PLANS

At Section 202 (b) (9), FLPMA directs the BLM to involve state, tribal, and local government officials in the land use planning process and consider the provisions of approved or adopted state, tribal, and local plans that are relevant to BLM planning areas. The Cooperating Agencies (Washington County, Mohave County [AZ] and the State of Utah) were provided opportunities to provide input throughout the planning process. The BLM attempts to resolve inconsistencies between federal and non-federal government plans, in the development of land use decisions for public lands, to the extent that those plans are consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands and the purposes of FLPMA. As part of this planning effort, the following approved plans were reviewed for consistency: Washington County Resource Management Plan (2009); Washington County General Management Plan (2010, amended 2012).

3.0 PLAN IMPLEMENTATION

Decisions in this plan will be implemented over a period of years, depending on budget and staff availability. After issuing the ROD/Approved RMP, BLM will prepare an Implementation Plan that establishes tentative timeframes for completion of actions identified in the Approved RMP.

Some of these actions require additional analysis and site specific activity planning. This schedule does not include the decisions which are effective immediately upon approval of the plan (usually allocations), or the actions which describe the ongoing management that will be incorporated and applied as site-specific proposals are analyzed on an ongoing basis. This schedule will assist BLM managers and staff in preparing budget requests and in scheduling work. However, the proposed schedule must be considered tentative and will be affected by future funding, changing program priorities, non-discretionary workloads, and cooperation by partners and external publics. Periodic review of the plan will provide consistent tracking of accomplishments and provide information that can be used to develop annual budget requests to continue implementation.

3.1 Maintaining the Plan

Land use plan decisions and supporting information can be maintained to reflect minor changes in data, but maintenance is limited to refining, documenting, and/or clarifying previously approved decisions. Some examples of maintenance actions include:

- Correcting minor data, typographical, mapping, or tabular data errors
- Refining baseline information as a result of new inventory data (e.g., changing the boundary of an archaeological district, refining the known habitat of special status species or big game crucial winter ranges, or adjusting the boundary of a fire management unit based on updated fire regime condition class inventory, fire occurrence, monitoring data, and/or demographic changes).

The BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data and/or support new management techniques, best management practices (Appendix D), and scientific principles. Adaptive management strategies may be used when monitoring data is available as long as the goals and objectives of the plan are met (see the Adaptive Management section). Where monitoring shows land use plan actions or best management practices are not effective, modifications or adjustments may occur without amendment or revision of the plan as long as assumptions and impacts disclosed in the analysis remain valid and broad-scale goals and objectives are not changed.

Plan maintenance will be documented in supporting records. Plan maintenance does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new land use plan decisions.

3.2 Changing the Plan

The Approved RMP may be changed, should conditions warrant, through a plan amendment or plan revision process. A plan amendment may become necessary if major changes are needed or to consider a proposal or action that is not in conformance with the plan. The results of monitoring, evaluation of new data, or policy

changes and changing public needs might also provide the impetus for an amendment. Generally, an amendment is issue-specific. If several areas of the plan become outdated or otherwise obsolete, a plan revision may become necessary. Plan amendments and revisions are accomplished with public input and the appropriate level of environmental analysis.

4.0 PLAN EVALUATION

Evaluation is a process in which the plan and monitoring data are reviewed to see if management goals and objectives are being met and if management direction is sound. Land use plan evaluations determine if decisions are being implemented, whether mitigation measures are satisfactory, whether there are significant changes in the related plans of other entities, whether there is new data of significance to the plan, and if decisions should be changed through amendment or revision. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or to identify what changes need to be made in management practices to meet objectives.

BLM will use land use plan evaluations to determine if the decisions in the RMP, supported by the accompanying NEPA analysis, are still valid in light of new information and monitoring data. Evaluation of the RMP will generally be conducted every five years, unless unexpected actions, new information, or significant changes in other plans, legislation, or litigation triggers an evaluation. The following estimated evaluation schedule will be followed for the Red Cliffs NCA RMP:

- September 2021
- September 2026
- September 2031
- September 2036

Evaluations will follow the protocols established by the BLM Land Use Planning Handbook (H-1601-1) or other appropriate guidance in effect at the time the evaluation is initiated.

5.0 ADAPTIVE MANAGEMENT

Adaptive management Adaptive management is a formal, systematic, and rigorous approach to learning from the results of management actions, accommodating change, and improving management. It involves synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about their results. Management actions and monitoring programs are carefully designed to generate reliable feedback and clarify the reasons underlying results. Actions and objectives are then adjusted based on this feedback and improved understanding to continue to try to achieve the desired future conditions. In addition, decisions, actions, and results are carefully documented and communicated to others, so that knowledge gained through experience is passed on, rather than lost when individuals move or leave the organization.

Secretary of the Interior Order Number 3270 calls for BLM and other Department of the Interior bureaus to incorporate adaptive management principles into management plans and programs. The Department of the Interior Adaptive Management Policy (USDOI 2008) serves as a guide for implementing adaptive management programs. The Secretarial Order also directs that Adaptive Management: The U.S. Department of the Interior Technical Guide (Williams, Szaro, and Shapiro 2009) serve as the technical basis for implementing adaptive management programs.

Adaptive management recognizes that ecosystems are very complex and understanding of their processes and responses to management actions is limited. Thus, the greatest hurdle to overcome in implementing effective restoration and other management actions is uncertainty regarding their effectiveness. Adaptive management acknowledges that there are incomplete data when dealing with natural resources and that through continued research and monitoring of management practices, new information will be collected. This new information is evaluated, and a determination is made whether to adjust the strategy accordingly to improve success in meeting plan objectives.

Adaptive management is only warranted when all of the following criteria can be met:

- There is a need to take action in the face of uncertainty;
- There is an opportunity to apply learning;
- The objectives of management are clear;
- The value of reducing uncertainty is high;
- Uncertainty can be expressed in a set of competing testable models;
- A monitoring program design can be put in place with a reasonable expectation of reducing uncertainty.

The ecosystems of the NCA meets all of the above-listed criteria, as they are complex and highly variable systems whose natural conditions have been altered by past land uses. Although some research has been conducted, and monitoring of resource values is ongoing, there is still a relatively high level of uncertainty about the effects of various management treatments for increasing native plant cover or restoring at risk species habitats, as examples. In the Approved RMP, the objectives or "desired future conditions" for various natural resource values are identified, as well as management actions intended to conserve, protect, enhance, and restore ecosystems to meet those objectives. Monitoring is an important component of RMP implementation and will be used to gauge the effectiveness of actions at achieving the objectives. The RMP also call for continued support of scientific research that furthers the understanding of natural processes and complex ecosystems.

6.0 MANAGEMENT DECISIONS

This section of the Approved RMP presents the goals and objectives, land use allocations, and management actions established for the Red Cliffs NCA. These management decisions are presented by program area.

Data used in development of the Approved RMP are dynamic. The data and maps used throughout the Approved RMP are for land use planning purposes and will be refined as site-specific planning and on-the-ground implementation occurs. Updating data is considered plan maintenance which will occur over time as the RMP is implemented (see the section on Plan Implementation). Please note that all acreages presented in the Approved RMP Plan are estimations, even when presented to the nearest acre.

This section is organized by program area with the following titles. For ease of identification into the future, each program area has an identified abbreviation (see below) and each decision in that program is numbered in coordination with the abbreviation:

- Air Quality – AQ
- Water Resources – WAT
- Geologic and Paleontological Resources – GEO
- Cave and Karst Resources – CAV
- Soil Resources – SOL
- Native Vegetation Communities – VEG
- Riparian Vegetation – RIP
- Fire and Fuels Management – FIR
- ES&R and Other Vegetation Community Restoration – ESR
- Noxious Weeds and Invasive Species – WED
- Vegetation Resource Uses: Livestock Grazing – LIV
- Vegetation Resource Uses: Plant Materials – PLA
- Special Status Species – including Threatened, Endangered, Candidate, and Species Proposed for Listing under ESA – SSS
- Special Status Wildlife Species – Including Threatened, Endangered, Candidate, and Species Proposed for Listing under ESA – SSW
- Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow-Billed Cuckoo, and Other Riparian-Dependent Special Status Species – SSB
- Special Status Bird Species: California Condor – SSC
- Special Status Species: Mojave desert tortoise – SST
- Special Status Fish Species: Woundfin Minnow and Virgin River Chub – SSF
- BLM Sensitive Species – BSS
- BLM Sensitive Native Fish Species – BSF
- BLM Sensitive Raptor Species – BSR
- Migratory Birds and Birds of Conservation Concern – BCC
- BLM Sensitive Mammal Species – BSM
- Sensitive Reptile and Amphibian Species – SRA
- Other Fish and Wildlife Habitat – FWH
- Wildland Fire Ecology – FIRE
- Heritage Resources – HER
- Wilderness (Red Mountain and Cottonwood Canyon) – WIL
- Area of Critical Environmental Concern – ACE
- Visual Resource Management – VRM
- Natural Soundscapes – NAT
- Recreation – REC
- Comprehensive Travel and Transportation Management – CTT
- Lands and Realty – LAR

6.1 Air Quality

Goal

Federal and state air quality standards are met in the NCA.

Objectives

Air quality is improved by reducing windblown dust levels from motorized vehicle travel on unpaved roads and from the loss of vegetative cover to wildfires.

Short-term air quality impacts (e.g., smoke, haze, windblown dust) that result from wildfires are minimized

through appropriate fire suppression responses and through proactive management to minimize the potential for future wildfires.

Research that increases the understanding of ecosystem processes, cycles, and anthropogenic factors that affect air resources and climate change is supported.

Management Actions – General

AQ-1: Apply BMPs and other site-specific mitigation measures to maintain soil stability, protect physical and biological (cryptogamic) soil crusts, and minimize wind erosion of soils.

AQ-2: Reclaim closed routes that are not required for administrative purposes, non-motorized recreational uses, or as fire breaks. Use appropriate methods on reclaimed routes (e.g., soil binders, vertical mulching) to minimize windblown dust until vegetative cover has been restored.

AQ-3: Use aggregate, gravel base, or other environmentally-acceptable soil binders, as needed, at major trailheads, waysides, and high-use recreation sites, and on BLM-maintained roads to minimize windblown dust.

AQ-4: Coordinate with Washington County Public Works Department to post speed limits on unpaved roads, as needed, to lessen windblown dust created by motorized vehicle travel.

AQ-5: Implement post-wildfire Emergency Stabilization and Rehabilitation (ES&R) actions that will stabilize soils and re-establish vegetative cover to minimize windblown dust levels.

Management Action – Public Education and Interpretation

AQ-6: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public land use etiquette to minimize new surface disturbances that would contribute to increased soil erosion and windblown dust.

Management Action – Scientific Research

AQ-7: Pursue opportunities to install air quality monitoring equipment and collect data on ozone levels, visibility (haze) and other appropriate air quality indicators through federal and non-federal grants; partnerships with other federal agencies, state, tribal and local governmental entities, academic institutions, and private entities; and through cooperative agreements or other appropriate methods.

Management Actions – Climate Change Monitoring

AQ-8: Pursue opportunities to install one or more solar-powered weather stations in the NCA to collect data on temperature, precipitation, wind speed, humidity, soil moisture, solar radiation, and other variables that could signal changing climatic conditions.

AQ-9: Pursue opportunities for scientific studies to determine the carbon sequestration value of intact desert shrub-lands and the potential of degraded desert shrubland restoration to mitigate increasing atmospheric carbon dioxide levels that are contributing to global warming.

6.2 Water Resources

Goal

Water resources are conserved and protected to fulfill the purposes of the NCA and sustain ecosystem resiliency under changing climatic conditions.

Objectives

Surface water quality is suitable for appropriate beneficial uses, complies with approved federal and state standards, and meets or exceeds the applicable Utah Standards and Guides (Appendix E).

Salinity and sediment loads in the Virgin River do not increase as a result of land uses and authorized activities on public lands in the NCA.

Research is supported that increases the understanding of ecosystem processes, cycles, and anthropogenic factors that affect water resources (e.g., fire cycles, vegetation succession) and that may influence climate change.

Management Actions – General

WAT-1: Apply BMPs and other site-specific mitigation measures to maintain soil stability, minimize wind and water erosion, and ensure that surface disturbances do not cause accelerated sedimentation in surface water sources.

WAT-2: Implement post-fire ES&R actions to restore riparian vegetation and minimize soil erosion that could impair water quality in springs, seeps, Leeds Creek, Quail Creek, and the Virgin River.

WAT-3: In planning re-vegetation projects for disturbed or fire-damaged riparian areas, identify specific resource and management objectives, desired plant communities, and methods that are ecologically sustainable, likely to achieve desired outcomes, and that minimize new surface disturbances and impacts on other resource values of the NCA.

WAT-4: Establish monitoring plots and use desired plant species frequency, density, and distribution data to evaluate the effectiveness of the treatments in meeting management objectives. Conduct monitoring, as determined by the project-specific monitoring plans, to evaluate effectiveness of re-vegetation and ES&R actions.

WAT-5: Monitor water quality in Leeds Creek to determine if the designation standard for beneficial uses established by the UDWQ is being met.

WAT-6: Monitor fecal coliform levels in natural water catchments along the Red Reef Trail during high visitor use periods.

WAT-7: Pursue acquisition of non-federal lands from willing sellers within the NCA that would benefit the conservation and protection of surface and groundwater resources.

WAT-8: Pursue acquisition of surface and/or groundwater rights from willing sellers for use in campgrounds, visitor facilities, and for other administrative uses where, consistent with Utah State law.

Management Action – Public Education and Interpretation

WAT-9: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public land use etiquette to protect water quality in streams, springs, seeps, and associated riparian areas.

Management Action – Scientific Research

WAT-10: Inventory the NCA to locate all springs and seeps, map the areal extent of associated riparian vegetation, evaluate water quality and flow rates, and document all spring developments.

Management Actions – Climate Change Monitoring

WAT-11: Pursue opportunities to develop a conceptual groundwater model of quantity recharge of springs, seeps, and surface flows within and adjacent to the NCA.

WAT-12: Pursue opportunities to collect data and monitor changes in precipitation patterns (e.g., timing, frequency, intensity of events) that are predicted to alter surface and ground water quantity and availability.

6.3 Geologic and Paleontological Resources

Goal

Paleontological resources, unique geologic features, and examples of geologic processes are conserved and protected for the benefit and enjoyment of present and future generations, consistent with the mandates of OPLMA and the legislative purposes for which the Red Cliffs NCA was Congressionally-designated.

Objectives

Scientifically important paleontological and geological resources are identified, managed, and allocated to appropriate uses that increase knowledge about geological processes and the history of life on Earth.

Designate paleontological resources currently documented or projected to occur in the NCA to Use Allocations (as defined by BLM Manual Section 8110.42 and Land Use Planning Handbook H-1601-1). Focus on the Use Allocations that are consistent with the legislative mandate from OPLMA for the NCA: Scientific Use, Conservation for Future Use, and Public Use. Do not allocate resources of scientific interest to Traditional Use, Experimental Use, or Discharged from Management, as these would not be consistent. See Table 2 for descriptions of each Use Allocation category.

Management Actions - General

GEO-1: Regular monitoring patrols and condition assessments are conducted at fossil localities in the NCA by BLM staff and trained volunteer Site Stewards.

GEO-2: No commercial sale or use of petrified wood is permitted in the NCA.

Table 2 Use Allocation Categories

Use Allocation Categories	Management Action	Desired Management Outcome
Scientific Use	Permit appropriate research	Resource preserved until research potential or data recovery potential realized
Conservation for Future Use	Protective measures; special administrative designations	Resource preserved until conditions for use are met
Public Use	Determine appropriate public uses	Resource preserved long term, with on-site interpretation
Traditional Use	Determine limitations on uses, in consultation with culturally affiliated American Indian Tribes	Resource preserved long term

GEO-3: Conduct paleontological surveys in areas with high potential for scientifically important fossil localities (Potential Fossil Yield Classifications 3, 4, and 5).

GEO-4: Allocate and manage 100% of trackways, vertebrate, and paleo-botanical fossil localities for Scientific Use, Conservation for Future Use, or Public Use.

GEO-5: Allocate and manage 100% of invertebrate fossil localities for Scientific Use, Conservation for Future Use, or Public Use.

GEO-6: Authorize the use of hand tools by researchers holding valid NCA Scientific Research Permits and BLM Paleontological Resource Use Permits to conduct site-specific paleontological field studies and specimen collections at localities allocated to Scientific Use and Conservation for Future Use.

GEO-7: Authorize the use of mechanized equipment on a case-by-case basis by researchers holding valid NCA Scientific Research Permits or BLM Paleontological Resources Excavation Permits to conduct site-specific paleontological field studies and specimen collections at localities allocated to Scientific Use and Conservation for Future Use.

GEO-8: Prohibit the collection of common invertebrate fossils for commercial or personal use.

GEO-9: Prohibit the collection of petrified wood for personal use (as defined by federal regulations in 43 CFR 3622).

GEO-10: Monitor high significance (scientific or interpretive) sites with fossil resources that are not feasible or desirable to excavate or collect to document their condition. The frequency of monitoring action for identified sites would be determined by the physical nature of the resource and potential threats. When monitoring indicates the need, management actions would be taken to conserve and protect these resources through physical measures and land use restrictions.

GEO-11: Authorize surface collection and excavation of unique and scientifically important fossil specimens by researchers holding valid NCA Scientific Research Permits and BLM Paleontological Resource Use Permits.

GEO-12: Only authorize surface collection of unique and scientifically important fossil specimens by researchers holding valid NCA Scientific Research Permits and BLM Paleontological Resource Use Permits if specimens are at risk of theft, vandalism, or loss to natural erosion and if feasible methods for in-situ protection are not available.

GEO-13: Monitor localities allocated to Conservation for Future Use on a regular basis, with monitoring frequency to be determined by the nature of the resource and potential threats.

GEO-14: Prior to developing a locality for public use ensure the paleontological resources at the site and in the surrounding area have been fully documented.

GEO-15: Install informational signing and kiosks on site etiquette and PRPA at Public Use sites (e.g., trails, trailheads) where appropriate.

Management Actions – Public Education and Interpretation

GEO-16: Develop on and off-site interpretation for significant paleontological sites and specimens, and geological features to foster an appreciation for the unique nature of these resources.

GEO-17: Develop on and off-site interpretation for areas within the NCA where the geologic history of southwestern Utah can be observed and appreciated.

GEO-18: Support education outreach programs, activities, and volunteer opportunities that focus on paleontological resources and the geologic history of Earth.

GEO-19: Promote opportunities for volunteer involvement in Site Stewardship that increase public awareness of the need to conserve and protect at-risk fossil resources.

GEO-20: Promote opportunities for volunteer involvement in inventory and data recovery projects that enhance public understanding of the geologic and paleo-environmental history of the NCA.

Management Actions – Scientific Research

GEO-21: Pursue opportunities to conduct field inventories and increase the fossil locality database for the NCA in partnership with the Utah Geological Survey, natural history museums, academic institutions, avocational groups, and trained volunteers.

GEO-22: Recruit and train youth and veteran groups, citizen stewards, and other volunteers to participate in inventory and data recovery projects that enhance public understanding of the earth history of the NCA.

Management Action – Climate Change Monitoring

GEO-23: Pursue opportunities for scientific research studies at sites allocated to Scientific Use that collect paleo-environmental data that could serve as a baseline for comparison with modern climate trends.

6.4 Cave and Karst Resources

Goal

Cave and karst resources are conserved and protected for the benefit of present and future generations.

Objective

Caves and karst resources are evaluated for significance, pursuant to the Federal Cave Resources Protection Act, and managed for appropriate uses such as conservation, scientific, recreational, and educational uses.

Management Actions – General

CAV-1: As needed, implement National White Nose Syndrome Decontamination Protocol and BLM IM 2010-18 in the management of cave resources that support bat populations.

CAV-2: Initiate systematic inventories in areas of the NCA with high potential for cave and karst resources.

CAV-3: Evaluate newly identified cave and karst resources for significance under the criteria defined in the Federal Cave Resources Protection Act and 43 CFR Part 37. Propose significant caves and karst resources for inclusion in the National Cave System.

CAV-4: Manage cave and karst resources evaluated as significant for Conservation for Future Use, Scientific Use, and Public Use.

CAV-5: Develop implementation-level Cave Management Plans for significant cave and karst resources that are identified for Public Use, to identify appropriate management objectives and actions needed to protect resource values.

Management Action – Public Education and Interpretation

CAV-6: Develop on-site interpretation for significant cave and karst resources that are managed for Public Use.

Management Action – Scientific Research

CAV-7: Authorize scientific research in cave and karst resources that do not contain cultural or paleontological resources through NCA Scientific Research Permits. Where cultural or paleontological resources are present, authorize scientific research through permits issued under the legal authorities of PRPA and ARPA.

Management Action – Climate Change Monitoring

CAV-8: Pursue opportunities for scientific research studies to collect data on cave biota and geologic processes that could serve as a baseline for comparison with modern climate trends.

6.5 Soil Resources

Goal

Soil resources function to sustain the ecological health, species biodiversity, and resilience of native vegetation communities and watersheds.

Objectives

Native vegetation communities provide sufficient plant cover and litter accumulation to protect soils from wind and water erosion.

Soils exhibit infiltration and permeability rates that are appropriate to specific soil types, land forms, and climatic variables.

Soil crusts are conserved, protected, and restored to perform vital functions such as enhancing infiltration, maintaining soil stability, and facilitating plant growth or re-establishment.

Salinity and sediment contributions from public lands into the Colorado River system, via Quail Creek, Leeds Creek, and the Virgin River, are minimized through appropriate land use management.

Research is supported that increases the understanding of ecosystem processes, cycles, and anthropogenic factors that affect soil and vegetation resources (e.g., fire return, nutrient cycles) and that may influence climate change.

Management Actions - General

SOL-1: Apply BMPs and other site-specific mitigation measures to maintain soil stability, minimize wind and water erosion, and ensure that surface disturbances do not cause accelerated wind or water erosion.

SOL-2: Implement post-fire ES&R actions designed to minimize soil erosion and facilitate re-vegetation of desired native plant communities.

SOL-3: Minimize damage to or loss of top soil and soil crusts through project design, permit stipulations, and public education.

SOL-4: Locate new trails, trailheads, or other facilities on soils suitable for development, such as areas less prone to wind and water erosion and previously disturbed areas.

Management Action – Public Education and Interpretation

SOL-5: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public land use etiquette to protect soils and soil crusts.

Management Actions – Scientific Research

SOL-6: Pursue opportunities to complete detailed soil surveys and ecological site inventories in the NCA.

SOL-7: Pursue opportunities for scientific studies relating to soil crust function and regeneration in disturbed and fire-altered desert ecosystems.

SOL-8: Pursue opportunities for scientific studies that focus on developing cost-effective methods to restore biological (cryptogamic) soil crusts in disturbed and fire-altered desert ecosystems.

Management Action – Climate Change Monitoring

SOL-9: Pursue opportunities to collect data and monitor changes in the timing, frequency, and intensity of storms, flood events, and droughts and the effects of these climatic changes on soil crust function and regeneration.

6.6 Native Vegetation Communities

Goal

Biodiversity, ecological integrity, and ecosystem resilience are conserved, protected, and restored in the unique native vegetation communities created by the convergence of the Mojave Desert, Great Basin, and Colorado Plateau ecoregions.

Objectives

Native perennial and annual communities exhibit species diversity, suitable canopy cover, plant density, and age class diversification appropriate to each specific ecological site type.

Desired plant communities provide sufficient plant cover and litter accumulation to protect soils from wind and water erosion and to enhance nutrient cycling.

Loss of late-successional desert shrublands (e.g., creosote-bursage, blackbrush communities), perennial understory vegetation, and soil crusts to wildfires is minimized through management actions to prevent and suppress wildfires, and control or eradicate non-native invasive annual grass species (*Bromus* spp.).

Resilience of native plant communities to climate change is maintained by re-introducing native species that have been lost or by introducing other appropriate native species.

Connectivity of native plant communities is maintained by restoring closed roads and other linear features that interrupt species dispersal.

Genetic integrity of native communities is protected by using source-identified seed and other plant materials for restoration and re-vegetation projects.

Research is supported that increases the understanding of ecosystem processes (e.g., vegetation succession), cycles (e.g., fire return, nutrient cycles), and anthropogenic factors (e.g., recreation) that affect vegetation communities and that may influence climate change.

Manage land uses and authorized activities to ensure that ecological systems meet or exceed management objectives identified in the Utah Standards and Guides (Appendix E).

Management Actions – General

VEG-1: Apply BMPs and other management techniques designed to minimize impacts on native vegetation communities for all land uses and authorized activities.

VEG-2: Implement a program to strategically collect, store, and increase native seeds, cuttings, biological soil crust communities and species for conservation and for use in future restoration projects. Seed collection will follow the Seeds of Success Protocol, in partnership with the Great Basin and Mojave Desert Native Plant Programs. Collection of cuttings and biological soil crust communities will follow the best available protocols.

VEG-3: Develop partnerships with appropriate BLM Seed Warehouses for storage and management of seed collections and with other federal and non-federal entities for propagation of seedlings and cuttings.

VEG-4: Implement landscape-level fuel breaks and hazard fuel reduction projects in partnership with adjacent federal and state land managing agencies.

VEG-5: Design fuel breaks and hazard fuel reduction projects to conserve and protect unburned native vegetation communities, evaluating factors such as vegetation types, seasonal wind direction, and expected fire behavior in project planning.

VEG-6: Design fuel breaks to incorporate topographic features, water courses, major ephemeral drainages, road networks, and utility corridors, to minimize new surface disturbances and the loss of native vegetation.

VEG-7: Design fuel breaks and hazard fuel reduction projects to utilize those methods that are environmentally sensitive and minimize new surface disturbances.

VEG-8: Employ appropriate wildfire suppression tactics to minimize loss of unburned and once-burned native vegetation communities, particularly late-successional desert shrublands.

VEG-9: Authorize the use of biological controls, targeted grazing, flaming, hand removal, herbicides, mechanical methods, or a combination of methods to develop fuel breaks and hazard fuel reduction projects (see Table 3 for descriptions of each method).

Management Action – Public Education and Interpretation

VEG-10: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public land use etiquette to protect native vegetation communities and prevent wildfires.

Management Actions – Scientific Research

VEG-11: Pursue opportunities to scientifically assess (i.e., through rigorous and statistically valid study design) the short and long-term effectiveness of seed/seedlings/cuttings by source in areas to be re-vegetated. Incorporate local ecotypes (locally collected and increased seed) into vegetation studies where plant materials are used for vegetation restoration.

VEG-12: Pursue opportunities to collaborate with researchers and other federal and non-federal partners to assess the variability in the genetic diversity of plant species to assist in the development of species' Seed Transfer Zones and inform the development of plant materials and seed purchase for large scale restoration and re-vegetation projects.

VEG-13: Pursue opportunities for scientific studies that evaluate the long term effectiveness of herbicidal treatments for exotic invasive annual grasses in arid ecosystems.

VEG-14: Pursue opportunities for scientific studies to develop ecologically sustainable and cost-effective biological treatments to control and eradicate noxious weeds and non-native invasive annual grasses in arid ecosystems.

Management Actions – Climate Change Monitoring

VEG-15: Monitor the timing, frequency, and intensity of fall precipitation events in the NCA, as these events can be used to predict high invasive annual grass production in the following spring that will fuel catastrophic wildfires during the summer months.

VEG-16: Resample vegetation study plots and monitoring transects established in the 1970s to determine if native plant species are shifting their elevational distribution in response to climate change.

6.7 Riparian Vegetation

Goal

Riparian areas sustain productive and diverse ecosystems and properly functioning watersheds.

Objectives

Healthy riparian areas are conserved and protected through land use restrictions, protective measures, and other management actions.

Healthy riparian areas exhibit appropriate species composition and structural diversity to provide suitable forage, nesting or breeding habitats, and cover for diverse terrestrial and aquatic wildlife.

Degraded riparian areas are restored to proper functioning condition or better, ensuring that stream channel morphology and functions are appropriate to the local soil type, climate, and landform.

Employ the best available science relating to natural recovery patterns of riparian communities in arid lands.

Research is supported that increases the understanding of ecosystem processes (e.g., vegetation succession), cycles (e.g., fire return, nutrient cycles), and anthropogenic factors (e.g., livestock grazing, recreation) that affect riparian vegetation communities and that may influence climate change.

Manage land uses and authorized activities to ensure that riparian areas meet or exceed management objectives identified in the Utah Standards and Guides (Appendix E).

Management Actions - General

RIP-1: Employ appropriate wildfire suppression tactics to minimize impacts on riparian areas, while protecting firefighter and public safety and private property as first priorities.

RIP-2: Apply BMPs and other management techniques designed to minimize impacts on riparian areas that may result from land uses and authorized activities.

RIP-3: Inventory riparian areas to establish baseline data on functioning conditions, trends in native plant composition, and infestations of noxious weeds and invasive species.

RIP-4: Pursue acquisition of non-federal lands within the NCA that would benefit the conservation, protection, and restoration of riparian areas.

RIP-5: Implement a program to strategically collect, store, and increase native seeds, cuttings, biological soil

Table 3 Vegetation Management Toolbox

Tool	Methodology/Rationale	Possible Uses
Hand Removal	Hand pulling, hoeing, and digging out targeted individuals or groups of plants.	Hand treatment to eliminate small weed populations, to control specific weed species, and to promote restoration.
Mechanical	Mowing, weed-whipping, cutting (chainsaw), and brush removal. Good for small to medium-scale targets, possible negative impacts to habitat by equipment (such as soil compaction, creation of disturbed soils, burrow collapse).	Treatment of hazard fuels for fire control. Removal of invasive species as pretreatment before restoration seeding. Cutting to remove exotic tree species.
Flaming	Use of small, hand-held torches or flame-emitting devices to burn individual noxious weed plants or small weed infestations.	Flaming specific weed targets, as a general weed treatment.
Targeted Grazing	Use of contracted grazing animals in specific settings, such as along roadways, at trailheads, to reduce hazardous fuels and weed infestations. Variables include type of livestock, timing and duration of treatment, stocking rates, and frequency. Applicable for small to medium target areas, can be targeted on specific weed species, and is relatively cost-effective. Possible negative impacts to native species, biological soil crusts, and to habitat (such as soil compaction, creation of disturbed soils, burrow collapse). Contracted domestic sheep and goats herds would not be used for targeted grazing projects where appropriate separation distances from desert bighorn herds could not be maintained. Domestic sheep and goat herds would be contained within the target area, through temporary fencing, herding, etc., and removed immediately upon completion of the contracted work.	As a hazard fuel reduction method, specific weed treatments, and pretreatment for restoration seeding.
Herbicides	Spraying individual plants or populations, sometimes in conjunction with stump-cutting. Spraying specific project areas. Good for small to large scale projects, cost-effective weed control, essential for eradication of some problematical species. Negative impacts related to potential human and ecological exposures to chemicals.	Target spraying to eradicate or control exotic annuals for hazard fuel reduction or as a means to prepare areas for restoration seeding and/or outplantings with native species.
Seeding/ Outplanting	Hand-seeding, seeding by aerial applications and small seed drills, hand planting of plugs or individual plants, inoculation with cryptogamic crust species or mycorrhizae. Good for small to large-scale projects.	Hand-seeding and outplantings for small restoration projects or to introduce seed source islands within partially restored native habitat. Aerial seed applications and seeding with small drills for larger scale projects. Inoculation to restore cryptogamic crusts or help plant establishment.
Watering	Supplemental water, artificial water.	Supply water to increase success of restoration efforts, to enhance seed production and outplanting survival.
Biological Control	Release of specific organisms on target populations. Good for large-scale targets. Possible impacts if organism shifts to new host.	Release of biological control organisms to control widespread and relatively common non-native species.

crust communities and species for conservation and for use in future restoration projects. Seed collection will follow the Seeds of Success Protocol, in partnership with the Great Basin and Mojave Desert Native Plant Programs. Collection of cuttings and biological soil crust communities will follow the best available protocols.

RIP-6: Develop partnerships with appropriate BLM Seed Warehouses for storage and management of seed collections and with other federal and non-federal entities for propagation of seedlings and cuttings.

RIP-7: Develop and implement re-vegetation plans for damaged riparian areas to minimize soil erosion and re-establish desired plant communities. Plans will specify seed/plant sources, seed/plant mixes, and soil preparation. Utilize salvage vegetation from the project area to the extent possible.

RIP-8: Establish monitoring plots and use desired plant species frequency, density, and distribution data to evaluate the effectiveness of the treatments in meeting management objectives.

RIP-9: Conduct monitoring, as determined by project-specific monitoring plan, to evaluate effectiveness of restoration and ES&R treatments.

RIP-10: Treat non-native woody species (e.g., tamarisk, Russian olive) in a phased approach using biological controls, flaming, hand removal, herbicides, mechanical methods, or a combination of methods, depending on target species, infestation level, site characteristics, and project size (see Table 3 for descriptions of each method).

RIP-11: Allow adequate time between treatments for native woody species to establish in a treated area before treating adjacent patches.

RIP-12: Prohibit new surface disturbing projects or activities within 100 meters (330 feet) of the edge of the riparian zone, except when the project would improve riparian resource conditions.

Management Actions – Public Education and Interpretation

RIP-13: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about the ecological values of riparian areas and appropriate public land use etiquette to protect these areas.

RIP-14: Involve volunteers, schools, youth groups, veterans, and partner organizations in riparian resource monitoring and restoration projects to increase public awareness and foster citizen stewardship of NCA resources.

Management Actions – Scientific Research

RIP-15: Pursue opportunities to scientifically assess (i.e., through rigorous and statistically valid study design) the short and long-term effectiveness of seed/seedlings/cuttings by source in areas to be re-vegetated. Incorporate local ecotypes (locally collected and increased seed) into vegetation studies where plant materials are used for vegetation restoration.

RIP-16: Pursue opportunities to collaborate with researchers and other federal and non-federal partners to assess the variability in the genetic diversity of plant species to assist in the development of species' Seed Transfer Zones and inform the development of plant materials and seed purchase for large scale restoration and re-vegetation projects.

RIP-17: Collect and maintain baseline data on riparian vegetation species composition, noxious weeds, and non-native species infestations.

RIP-18: Pursue opportunities to develop and maintain baseline data on the terrestrial, avian, and aquatic wildlife that utilize these areas.

RIP-19: Pursue opportunities to develop baseline data on taxa found in the riparian areas that are not well studied, such as amphibians, insects, other invertebrates, fungi, and lichens.

Management Actions – Climate Change Monitoring

RIP-20: Pursue opportunities to monitor the areal extent and species composition of riparian vegetation communities as a possible predictor of decreased precipitation and changes in seasonal precipitation patterns in the Mojave Desert.

RIP-241 Pursue opportunities to identify key riparian features within and adjacent to the NCA that must be protected to allow multi-species habitat connectivity and wildlife migration corridors under changing climate conditions.

6.8 Fire and Fuels Management

Goal

Wildfire suppression activities support the conservation and protection of NCA resource values and comply with legal, regulatory, and agency policy requirements.

Objectives

Suppression activities prioritize firefighter and public safety, protect private property, conserve and protect

NCA resource values, and minimize overall suppression costs through planning and efficient management of tactical and human resources.

Suppression efforts are coordinated to the extent possible with other federal, Tribal, and state agencies, and local governmental entities.

Research is supported that increases the understanding of ecosystem processes, natural cycles, and anthropogenic factors that affect the fire return intervals that influence climate change.

Management Actions – General

FIR-1: Employ rapid and appropriate suppression responses to minimize fire size and duration in the NCA.

FIR-2: Conserve and protect unburned areas through appropriate fire suppression responses, while prioritizing firefighter and public safety and the protection of private property.

FIR-3: Utilize Resource Advisors to guide suppression actions for all fires to help ensure that ecological systems and resource values are conserved and protected to the maximum extent possible.

FIR-4: Evaluate the use of "backfiring" as a fire suppression tactic in late successional shrublands, including Joshua tree woodlands and blackbrush communities, on a case-by-case basis. Require NCA Manager approval prior to employing this tactic.

FIR-5: Naturally ignited wildfires are not authorized to accomplish a resource objective in the NCA as there are no fire-adapted vegetative communities present in which fire has historically played an important role in ecosystem function.

FIR-6: Do not authorize the use of management-ignited (prescriptive) fire in any of the ecological systems of the NCA for hazard fuel reduction or vegetation type conversions, as these are not fire-adapted communities in which fire has historically played an important role in ecosystem function.

FIR-7: Prescriptive fire could be authorized as part of scientific studies, as described below under Scientific Research.

Management Actions – Public Education and Interpretation

FIR-8: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about fire prevention and reporting wildfires.

FIR-9: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about native vegetation communities and why fire did not historically play an important role in ecosystem function for these communities.

Management Actions – Scientific Research

FIR-10: Pursue opportunities for scientific studies that will develop reliable methods to forecast catastrophic wildfire seasons using the timing of fall and winter precipitation events.

FIR-11: Only authorize the use of prescriptive fire for research purposes as part of scientific studies authorized under an NCA Research Permit and other required permits.

FIR-12: Do not authorize prescriptive fires for research purposes within designated critical habitat for the Mojave desert tortoise or other federally-listed species.

FIR-13: Do not authorize prescriptive fires for research purposes in unburned late successional shrublands, including mesic and thermic blackbrush communities and Joshua tree woodlands.

FIR-14: Limit the size of prescriptive fires for research purposes to no more than one acre for all studies proposed under an NCA Research Permit.

Management Action – Climate Change Monitoring

FIR-15: Pursue opportunities to install one or more solar-powered weather stations in the NCA to collect data on temperature, precipitation, wind speed, humidity, soil moisture, solar radiation, and other variables that could signal changing climatic conditions that influence wildfire frequency and severity.

6.9 ES&R and Other Native Vegetation Community Restoration

Goal

Biodiversity, ecological integrity, and ecosystem resilience are restored in disturbed and fire-damaged native vegetation communities.

Objectives

Species richness and landscape heterogeneity are reestablished in disturbed and fire-damaged vegetation communities through restoration projects and post-fire ES&R actions.

Progress is made toward restoration of late successional shrublands.

Genetic integrity of native communities is protected by using source-identified seeds and other plant materials for restoration and re-vegetation projects.

Restoration methods employ the best available science relating to natural recovery patterns of native vegetation communities.

Research is supported that increases the understanding of ecosystem processes (e.g., role of soil crusts, gramnivores, herbivores), cycles (e.g., fire return, nutrient cycles), and anthropogenic factors (e.g., recreation) that affect the re-establishment of native vegetation communities and that may influence climate change.

Management Actions – General

ESR-1: Apply BMPs and other management techniques designed to minimize loss of top soil and soil crusts during restoration projects and ES&R actions.

ESR-2: In planning re-vegetation projects for disturbed and fire-damaged areas, identify desired plant communities and use ecologically sustainable methods that minimize new surface disturbances and impacts on other resource values of the NCA.

ESR-3: Establish monitoring plots and use desired plant species frequency, density, and distribution data to evaluate the effectiveness of the treatments.

ESR-4: Conduct monitoring to evaluate effectiveness of re-vegetation and ES&R actions, as determined by the project-specific monitoring plans.

ESR-5: Implement a program to strategically collect, store, and increase native seeds, cuttings, biological soil crust communities and species for conservation and for use in future restoration projects. Seed collection will follow the Seeds of Success Protocol, in partnership with the Great Basin and Mojave Desert Native Plant Programs. Collection of cuttings and biological soil crust communities will follow the best available protocols.

ESR-6: Develop partnerships with appropriate BLM Seed Warehouses for storage and management of seed collections and with other federal and non-federal entities for propagation of seedlings and cuttings.

ESR-7: Maximize the use of microsites of fertile soils ("fertile islands") and areas where biological soil crusts are regenerating.

ESR-8: Authorize the use of artificial water, carbon sequestration soil treatments, or other methods that have been shown to increase success of restoration efforts in desert ecosystems.

ESR-9: Authorize the inoculation of cryptogamic soil crust species or mycorrhizae to restore biological soil crusts and assist plant establishment.

ESR-10: Authorize use of native seeds, plant materials, and native plant cultivars for re-vegetation efforts, in the following order of preference:

1. Locally derived sources;
2. Regionally derived sources.

Only authorize use of non-native plant species when all the following criteria are met:

a) Desired native species are not available;

b) The natural biological diversity of the treatment area would not be diminished;

c) Exotic and naturalized species can be confined within the treatment area;

d) Restoration of native vegetation species would be facilitated by use of the non-native species;

e) Use of non-native species would benefit threatened and endangered species, including the Mojave desert tortoise.

ESR-11: Include a high proportion of early colonizing (early successional) native annual and perennial species in seed mixes or plantings to quickly re-establish soil cover, minimize invasive species establishment, and facilitate the re-establishment of late successional species.

ESR-12: Include species in seed mixes or plantings that will function as "nurse" plants to facilitate the re-establishment of species (e.g., Joshua trees) that require shade during initial growth stages.

ESR-13: To implement seeding restoration, authorize the use of non-invasive (e.g., aerial applications, hand scattering, surface distribution of encapsulated seeds, mulching) and minimally invasive seeding (e.g., small seed drills, hand raking) methods, as well as plug plants, containerized plants, and other plant materials.

ESR-14: To protect seeds from rodents, birds, and other gramnivores, authorize the use of non-invasive (e.g., seed encapsulation, mulching) and minimally invasive (e.g., small seed drills, hand raking) seed protection methods.

ESR-15: Evaluate the use of invasive seed protection methods (e.g., harrowing, chaining) outside of designated critical habitats on a case-by-case basis.

ESR-16: Authorize the use of such methods only when scientific research demonstrates that the benefits would clearly outweigh the negative effects on listed species, habitats, and other resource values.

ESR-17: Authorize hand planting of plugs, other plant materials, and containerized plants for vegetation restoration and ES&R treatments.

Management Actions – Public Education and Interpretation

ESR-18: Provide educational materials through various media and venues (e.g., trailhead kiosks, exhibits, demonstration treatment areas, websites) that inform visitors about vegetation/habitat restoration projects and ES&R actions.

ESR-19: Involve volunteers, school, youth and veterans groups, academic institutions, and partner organizations in restoration projects whenever feasible to increase public awareness and foster increased citizen stewardship of NCA lands and resources.

Management Actions – Scientific Research

ESR-20: Pursue opportunities to scientifically assess (i.e., through rigorous and statistically valid study design) the short and long-term effectiveness of seed/seedlings/cuttings by source in areas to be re-vegetated. Incorporate local ecotypes (locally collected and increased seed) into vegetation studies where plant materials are used for vegetation restoration.

ESR-21: Pursue opportunities to collaborate with researchers and other federal and non-federal partners to assess the variability in the genetic diversity of plant species to assist in the development of species' Seed Transfer Zones and inform the development of plant materials and seed purchase for large scale restoration and re-vegetation projects.

ESR-22: Pursue opportunities for scientific studies of the insect and avian pollinators that occur in the NCA and their role in the persistence and/or recovery of native species.

ESR-23: Pursue opportunities for scientific studies designed to better understand the role of gramnivores (e.g., ants, birds, rodents, other small mammals) and herbivores in the persistence and/or recovery of native species.

ESR-24: Pursue opportunities for scientific studies designed to improve the success of re-vegetation techniques for late successional species in disturbed and fire-damaged vegetation communities.

ESR-25: Pursue opportunities for scientific studies to develop native plant materials and native plant cultivars that can quickly re-establish in fire-damaged arid lands and prevent infestations of noxious weeds and non-native invasive species.

ESR-26: Pursue opportunities for scientific studies to develop cost effective and ecologically sustainable biological methods to control or eradicate noxious weeds and invasive species.

Management Actions – Climate Change Monitoring

ESR-27: Monitor the timing, frequency, and intensity of fall precipitation events in the NCA, as these events can be used to predict high invasive annual grass production in the following spring that will fuel catastrophic wildfires during the summer months.

ESR-28: Pursue opportunities for scientific studies to determine the carbon sequestration value of intact desert shrublands and the potential for restoration of degraded desert shrublands to be used to mitigate increasing atmospheric carbon dioxide levels.

6.10 Noxious Weeds and Invasive Species

Goal

Ecological integrity of the native vegetation communities is conserved, protected, and restored.

Objectives

Infestations of noxious weeds and exotic invasive species are controlled and ultimately eradicated using Integrated Weed Management (IWM), in cooperation with other federal and state agencies, local governmental entities, and adjacent private landowners.

New infestations of noxious weeds and exotic invasive species are prevented through management actions and project design.

Ecologically sustainable and cost effective methods are employed for all IWM treatments.

Research is supported that increases the understanding of ecosystem processes, natural cycles (e.g., seasonal precipitation), and anthropogenic factors (e.g., recreation) that affect the establishment and proliferation of noxious weeds and invasive species, and alter the historic fire regime.

Management Actions – General

WED-1: Employ weed prevention BMPs (Appendix D) as appropriate for surface-disturbing projects and activities.

WED-2: Require the use of certified weed-free hay or other feed for recreational pack stock.

WED-3: Require the use of certified weed-free mulch and seed for reclamation, restoration, and re-vegetation projects.

WED-4: Complete a systematic inventory of noxious weeds on public lands in the NCA.

WED-5: Develop and maintain a Geographic Information System (GIS) database of all noxious weed and invasive species treatment projects conducted in the NCA.

WED-6: Authorize the use of biological controls, flaming, targeted grazing, hand removal, herbicide, mechanical methods, or a combination of methods for weed treatments, depending on target species, infestation level, site characteristics, and project scale (see Table 3 for descriptions of each method).

WED-7: Conduct monitoring and treat all weed infestations for a minimum of five years or until target species is eradicated.

Management Actions – Public Education and Interpretation

WED-7: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public land use etiquette to prevent the introduction and spread of noxious weeds and non-native invasive species.

WED-8: Involve volunteers, youth and veterans groups, and diverse partner organizations in the identification and mapping of noxious weed and exotic invasive species infestations and in weed treatment projects that employ hand removal and hand tool methods.

Management Actions – Scientific Research

WED-9: Pursue opportunities for scientific studies to develop ecologically sustainable and cost-effective biological controls for noxious weeds and non-native invasive species.

WED-10: Pursue opportunities for scientific studies to test the effectiveness of herbicides approved for use on public lands in the reduction of exotic invasive annual grasses in Mojave Desert and transitional communities.

Management Actions – Climate Change Monitoring

WED-11: Pursue opportunities for scientific studies that evaluate the effects of changing precipitation patterns and increased atmospheric carbon dioxide levels on the spread and dominance of non-native invasive annual grasses in Mojave Desert and transitional communities.

6.11 Vegetation Resource Uses: Livestock Grazing

Goal

Livestock grazing is managed in conformance with the mandates of OPLMA Section 1975 (e) (4) and in a manner that conserves, protects, and enhances the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the NCA.

Objectives

Manage livestock grazing to ensure the long-term sustainability of Mojave Desert and Great Basin ecosystems and to promote the resilience and survival of native vegetation communities under predicted climate change scenarios.

Manage livestock grazing to achieve Utah Standards and Guides (Appendix E) for upland and riparian vegetation communities, by adjusting use levels, timing and intensity of grazing, and by developing improvement and restoration projects.

Management Actions – General

LIV-1: Conversions of types of livestock from cattle to sheep or other kind of livestock will not be authorized.

LIV-2: Continue to make public lands within the following allotments unavailable to livestock grazing over the life of the RMP:

a) Alger Hollow;
b) Red Cliffs;
c) Yellow Knolls;
d) Washington;
e) Leeds;
f) Sandstone Mountain;
g) Sand Hill.

LIV-3: Public lands within the Diamond Valley allotment are unavailable to livestock grazing over the life of the RMP (1,780 acres and 80 AUMs).

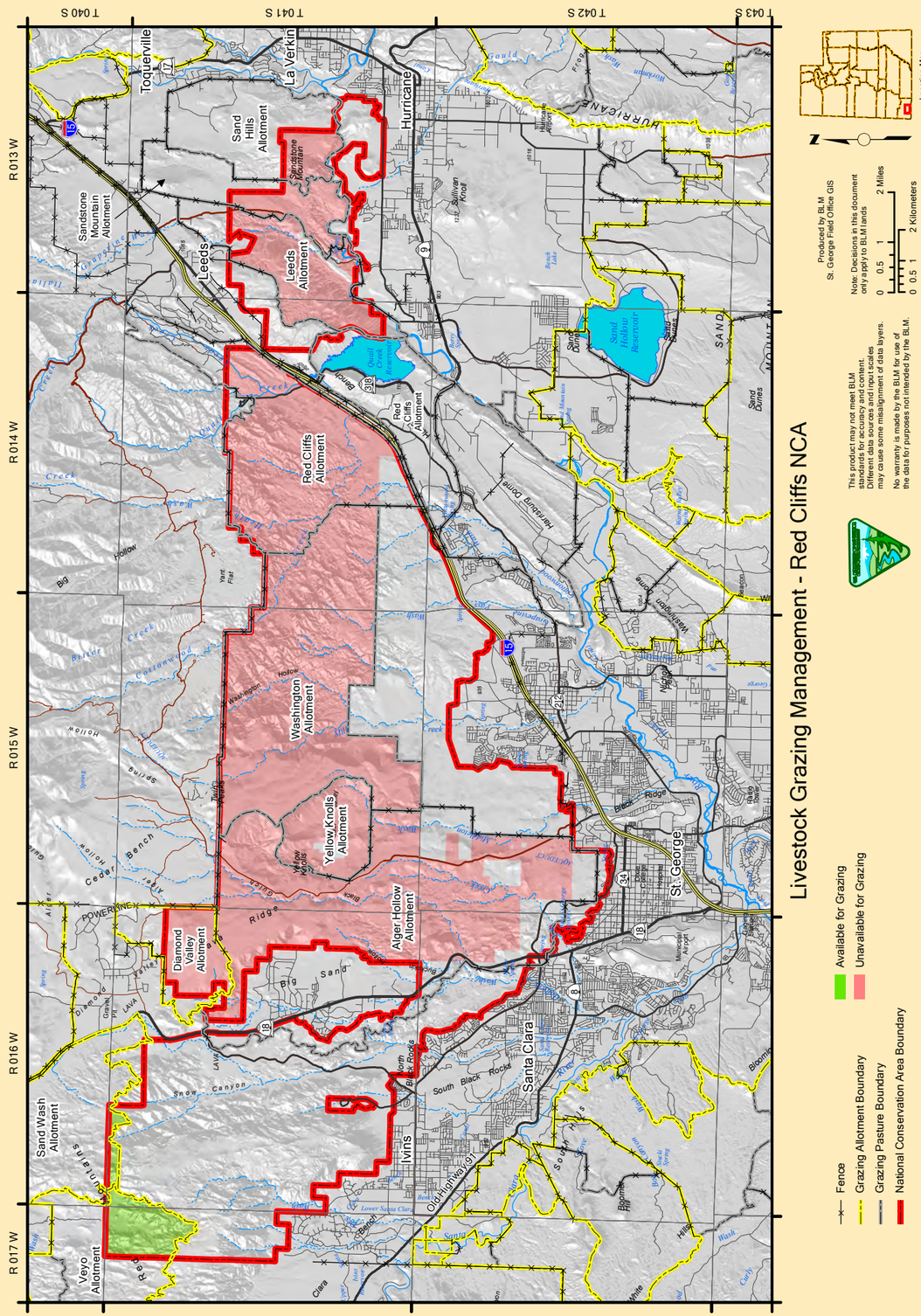
LIV-4: Public lands within the Sand Wash and Veyo allotments are available for grazing over the life of the RMP. (Map 2)

Management Action – Public Education and Interpretation

LIV-5: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites, educational programs, school curriculum) focused on increasing public understanding of the history of livestock grazing in the NCA.

Management Action – Scientific Research

LIV-6: Pursue opportunities for scientific studies to determine changes in species composition and vigor of native vegetation communities in areas of the NCA where domestic livestock grazing was discontinued in the



1990s, when compared to historically collected baseline data.

6.12 Vegetation Resource Uses: Plant Materials

Goal

A biologically diverse landscape is conserved, protected, and restored to support a variety of habitats and native plant and animal species.

Objective

Manage harvesting and use of woodland products, native plants, and plant materials to conserve biological diversity and further restoration goals for native vegetation communities and species habitats.

Management Actions – General

PLA-1: Fees or permits would not be required for the collection of small quantities of pinyon pine seeds (pine nuts) for non-commercial personal use.

PLA-2: Do not authorize commercial and non-commercial fuelwood or post harvesting in the NCA.

PLA-3: Do not authorize commercial or non-commercial Christmas tree harvesting in the NCA.

PLA-4: Do not allow on-site use of dead and down materials for campfires.

PLA-5: Require that visitors provide fuelwood for use in campfires.

PLA-6: The collection of dead and down materials for campfires is not authorized in the Red Cliffs Recreation Area; visitors must provide firewood for use in campfires in the campground and day use area.

PLA-7: Do not authorize native seed harvesting for commercial or non-commercial purposes in the NCA.

PLA-8: Do not authorize the commercial or non-commercial harvesting, removal, salvage, and/or sale of native desert vegetation (e.g., cacti, succulents, other native species) in the NCA.

PLA-9: Authorize the individual collection of native plant materials (excluding all federally-listed native plant species) by Native Americans for religious, ceremonial, and traditional purposes.

PLA-10: Authorize collection of native seeds, seedlings, plants, cuttings, biological soil crusts and species for scientific research through an NCA Scientific Research Permit and Utah BLM Specimen Collection Permit, where required.

PLA-11: Authorize the collection of native seeds, seedlings, cuttings, biological soil crust communities and species for conservation and future use in restoration projects. Seed collection will follow the Seeds for Success Protocol, in partnership with the Great Basin and Mojave Desert Native Plant Programs. Collection of cuttings and biological soil crust communities will follow the best available protocols.

PLA-12: Develop partnerships with appropriate BLM Seed Warehouses for storage and management of seed collections and with other federal and non-federal entities for propagation of seedlings and cuttings.

PLA-13: Authorize hand method seed collection for scientific research and for restoration projects on public lands within the NCA and adjacent areas within the northeast Mojave Desert of southwestern Utah, Arizona, and Nevada.

PLA-14: Authorize the collection of native seedlings, plants, cuttings, and biological soil crust restoration projects on public lands within the NCA and adjacent areas within the northeast Mojave Desert of southwestern Utah, Arizona, and Nevada.

Management Action – Public Education and Interpretation

PLA-15: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites, educational programs, school curriculum) that focus on increasing public understanding of research related to the development of improved plant materials and restoration techniques for arid lands.

Management Actions – Scientific Research

PLA-16: Pursue opportunities for scientific studies designed to improve the success of re-vegetation techniques for late successional species in disturbed and fire damaged vegetation communities.

PLA-17: Pursue opportunities for scientific studies to develop native plant materials and native plant cultivars that can quickly re-establish in fire-damaged arid lands and prevent infestations of noxious weeds and non-native invasive species.

6.13 Special Status Species – Including Threatened, Endangered, Candidate, and Species Proposed for Listing under ESA

Goals

Shivwits milkvetch (*Astragalus ampullarioides*) populations in the NCA are stable or increasing, helping to assist the recovery and delisting of this endemic Washington County native plant species.

Critical habitat and suitable habitat are conserved, protected, and restored to support species expansion and persistence that will sustain viable populations.

Objectives

Implement management actions to conserve, protect, and restore habitat for the Shivwits milkvetch.

Protect, and restore habitats for Shivwits milkvetch, to control detrimental non-native species, and to re-establish extirpated populations or augment declining populations, as necessary, to sustain viable populations in the NCA.

Management Actions - General

SSS-1: Implement the goals, objectives, and management recommendations identified in the approved *Recovery Plan for Astragalus holmgreniorum (Holmgren milk-vetch) and Astragalus ampullarioides (Shivwits milk-vetch);* (USFWS 2006).

SSS-2: Monitor identified populations of Shivwits milkvetch populations within the NCA in coordination with USFWS.

SSS-3: Evaluate the effectiveness of management actions through monitoring and scientific research studies.

SSS-4: Conduct botanical inventories of areas within the NCA where appropriate soil types are present that comprise suitable Shivwits milkvetch habitat.

SSS-5: Use protective measures such as natural barriers, fencing, signing, and trail designation to protect populations of and habitat for Shivwits milkvetch.

Management Actions – Public Education and Interpretation

SSS-6: Provide educational materials through various media and venues (e.g., trailhead kiosks, brochures, websites) that inform visitors about the endemic and at-risk native plants that grow in the NCA and appropriate public land etiquette to protect these species.

Management Action – Scientific Research

SSS-7: Pursue opportunities to complete detailed soil surveys in the NCA to assist in the identification of areas that could support populations of Shivwits milkvetch.

SSS-8: Pursue opportunities to collect data on the timing, frequency, and duration of precipitation events and how these influence persistence and expansion of Shivwits milkvetch populations.

SSS-9: Pursue opportunities for scientific research that focuses on the species of native bees or other pollinators that help to ensure reproduction within Shivwits milkvetch populations and gene flow between populations.

SSS-10: Research is supported that increases the knowledge of this species and the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence population trends and predicted climate change scenarios.

6.14 Special Status Wildlife Species – Including Threatened, Endangered, Candidate, and Species Proposed for Listing under ESA

Goals

Habitats for listed species are conserved, protected, and restored to support viable populations that no longer require listing protection under the ESA.

Habitats for species proposed for listing under the ESA are conserved, protected, and restored to support viable populations, precluding the need to list species that are candidates or proposed for listing under the protection of the ESA.

Objectives

Upland vegetation communities provide high quality forage or a high quality prey base, as well as cover, shade, and breeding areas that will sustain viable populations of biologically diverse terrestrial and aquatic species.

Riparian areas and natural water sources provide high quality habitat, thereby sustaining viable populations of biologically diverse terrestrial and aquatic species.

Habitat connectivity, migration routes, and movement corridors are conserved, protected, and restored to support species persistence, adaptation, and overall biodiversity under changing climate conditions.

Management of discretionary activities does not contribute to the need to list candidate or proposed species under the ESA.

Public awareness of special status species is enhanced through education, interpretation, and volunteer opportunities that further species conservation and habitat restoration.

Research is supported that increases the knowledge of threatened and endangered species that inhabit the NCA and the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence predicted climate change scenarios.

Management Actions - General

SSW-1: Implement the goals, objectives, and management recommendations that apply to public lands from USFWS approved Recovery Plans and Biological Opinions issued under Section 7 of the ESA. Evaluate the effectiveness of management actions through monitoring and scientific research studies.

SSW-2: Continue active management programs to inventory, monitor, protect, and restore habitats for special status species, to control detrimental non-native species, and to re-establish extirpated populations, as necessary, to maintain the unique ecosystem biodiversity of the NCA.

SSW-3: Apply BMPs and other management techniques designed to minimize impacts on critical habitats and listed species populations that may result from land uses and authorized activities.

SSW-4: Allow the reintroduction, translocation, and population augmentation of special status species populations into current or historic habitats in the NCA, in coordination with USFWS, and UDWR, and local governments, subject to guidance provided by BLM's 6840 policy and by existing or future MOU, to assist recovery and delisting of threatened or endangered species and preclude the need to list other at-risk species.

SSW-5: Monitor the long term success of population management actions and use Adaptive Management Strategies to improve desired outcomes.

SSW-6: Collaborate with USFWS, UDWR, and appropriate USDA agencies on predator control, if other management actions have not been successful in reducing documented predation levels that have been shown to be measurably impacting the recovery of viable populations of listed species. Require the development of target species-specific predator control plans supported by NEPA analyses that identify the purpose of and need for action, designate specific goals to be met, and evaluate the least invasive and most ecologically sensitive methods to accomplish those goals.

SSW-7: Suppress wildfires in special status species' habitats using tactics that minimize fire size and impacts on species' populations, native vegetation communities, and other ecosystem components, while ensuring that firefighter safety and private property are given highest priority.

SSW-8: Prioritize habitat restoration projects and post-fire ES&R treatments as follows:

1. Designated critical habitats for federally-listed threatened and endangered species;
2. Habitats for candidate and proposed species for listing under ESA.

SSW-9: Do not authorize recreational activities or uses in areas where special status species habitats may be degraded by these authorizations.

SSW-10: Only authorize new land uses in special status species habitats if reasonable alternative locations outside of these habitats do not exist and impacts to habitats can be avoided or appropriately mitigated.

SSW-11: Maintain habitat connectivity, migration routes, and movement corridors through project placement, design, and permit stipulations to support special status species persistence, adaptation, and overall biodiversity under changing climate conditions.

Management Actions – Public Education and Interpretation

SSW-12: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate land use etiquette and the need to protect populations and habitats for terrestrial and aquatic species that are listed or proposed for listing under the protection of the ESA.

SSW-13: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about terrestrial and aquatic special status species, their evolutionary adaptations to an arid landscape where surface water is limited, and the factors that have contributed to the need to list these species under the ESA.

SSW-14: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about the rich biodiversity created by the convergence of the Mojave Desert, Great Basin, and Colorado Plateau ecosystems that can be experienced in the NCA.

Management Action – Scientific Research

SSW-15: Pursue opportunities for scientific studies to determine the habitat value of native vegetation communities of different successional stages for diverse wildlife species to improve habitat protection and restoration project planning for special status species.

6.15 Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow-Billed Cuckoo, and Other Riparian-Dependent Special Status Species

Goal

Southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and other riparian dependent special status bird species populations that utilize habitats in the NCA would be stable or increasing, helping to meet recovery and delisting goals for each species.

Objectives

Riparian habitats along Leeds Creek, the Virgin River, and elsewhere in the NCA would include the vegetative species diversity, density, and canopy cover required to provide suitable habitat for southwestern willow flycatchers.

Potentially suitable habitat in the NCA would be improved to provide suitable habitat for western yellow-billed cuckoos.

Riparian areas would be in proper functioning condition and provide adequate foraging, roosting, and nesting sites for riparian-obligate special status avian species.

Research is supported that increases baseline data related to riparian-obligate avian species that utilize the NCA.

Research is supported that increases the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence predicted climate change scenarios.

Management Actions - General

SSB-1: Management of riparian habitat would be consistent with the *Final Recovery Plan: Southwestern Willow Flycatcher (Empidonax traillii extimus);* (USFWS 2002) and future final recovery plans for the western yellow-billed cuckoos.

SSB-2: Maintain a database of observations of southwestern willow flycatchers and western yellow-billed cuckoos.

SSB-3: Develop maps of potential habitats for southwestern willow flycatcher and western yellow-billed cuckoo that include location, size, shape, spacing, and condition of habitat areas.

SSB-4: Manage potential habitat for southwestern willow flycatcher and western yellow-billed cuckoos to allow natural regeneration into suitable habitat as rapidly as natural conditions allow.

SSB-5: Manage suitable habitat for southwestern willow flycatcher and western yellow-billed cuckoos to conserve and protect its suitability for nesting, foraging, and occupancy.

SSB-6: Monitor changes in the relative abundance, health, reproductive success, and distribution of populations, in partnership with USFWS and UDWR.

SSB-7: Allow the reintroduction, translocation, and population augmentation of southwestern willow flycatcher and western yellow-billed cuckoos into current or historic habitats in the NCA, in coordination with USFWS, UDWR, and local governments, subject to guidance provided by BLM's 6840 policy and by existing or future memoranda of understanding.

SSB-8: Suitable habitat for western yellow-billed cuckoo will be identified according to *Guidelines for the identification of suitable habitat for western yellow-billed cuckoo in Utah* (USFWS 2015a).

SSB-9: Surveys for western yellow-billed cuckoo will be conducted according to *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: U.S. Fish and Wildlife Techniques and Methods* (Halterman et al. 2015).

Management Action – Public Education and Interpretation

SSB-10: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about the riparian areas and the diverse avian species that depend upon this habitat.

Management Action – Scientific Research

SSB-11: Develop new volunteer opportunities for partners, youth groups, and citizen scientists to assist with collecting observations of southwestern willow flycatcher, western yellow-billed cuckoo, and other riparian-obligate avian species in the NCA along Quail Creek, Leeds Creeks, and the Virgin River.

6.16 Special Status Bird Species: California Condor

Goal

Designated nonessential experimental populations of California condor (*Gymnogyps californianus*) that may utilize habitats in the NCA would be stable or increasing, helping to meet recovery and delisting goals for this species.

Objectives

Environmental hazards that may affect California condors are reduced or eliminated.

Management Actions - General

SSC-1: Management of habitat would be consistent with the Recovery Plan for the California Condor (USFWS 1996) and Biological Opinions issued by USFWS.

SSC-2: Allow the reintroduction, translocation, and population augmentation of California condors into current or historic habitats in the NCA, in coordination with USFWS, UDWR, Southwest Condor Working Group, American Indian Tribes and local governments, subject to guidance provided by BLM's 6840 policy and current Memorandum of Understanding among the USFWS (Regions 2, 6, 8) and Cooperators (USFWS 2015b) or future MOUs.

SSC-3: Maintain a database of observations of California condors and their prey, should they be observed using the NCA.

SSC-4: Coordinate with partners (e.g., UDWR, National Audubon Society, National Wildlife Federation, The Peregrine Fund) to promote the use of non-lead ammunition in the NCA.

Management Actions – Public Education and Interpretation

SSC-5: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about California condors and the captive breeding and release programs ongoing on public lands on the Arizona Strip.

SSC-6: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform hunters about the need to use non-lead ammunition to minimize impacts on California condors and other predators and scavengers.

SSC-7: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about the need to pack out food wastes and litter that may cause choking and death when consumed by condors.

Management Action – Scientific Research

SSC-8: Develop new volunteer opportunities for partners, youth groups, and citizen scientists to assist with collecting observations of California condors in the NCA.

Management Action – Climate Change Monitoring

SSC-9: Pursue opportunities for research that increases the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence the prey base of condors under predicted climate change scenarios.

6.17 Special Status Species: Mojave Desert Tortoise

Goal

Mojave desert tortoise (*Gopherus agassizii*) populations in the NCA have made measurable progress toward meeting the recovery goals, objectives, and identified criteria for viable populations established by *Recovery Plan for the Mojave Desert Tortoise* (USFWS 1994) and the *Revised Recovery Plan for the Mojave Desert Tortoise* (USFWS 2011).

Objectives

Land uses and authorized activities are managed to conserve, protect, and restore habitats to meet the nutritional, metabolic (shade/cover), reproductive, and home range requirements of viable Mojave desert tortoise populations.

Ecologically intact core areas of designated critical habitat are conserved and protected from fragmentation and loss of native vegetation communities, through appropriate land use allocations and management actions across BLM programs.

Ecological integrity of damage native vegetation communities is restored through appropriate re-vegetation methods and the control and eradication of noxious weeds and non-native invasive species.

Land uses and authorized activities are managed so that habitats provide ecological diversity and connectivity to create genetic resilience for Mojave desert tortoise populations under changing climatic conditions.

Research is supported that increases the knowledge of Mojave desert tortoise life histories and population dynamics in the NCA.

Research is supported that increases the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence predicted climate change scenarios.

BLM will work collaboratively with local, state, and federal partners to accomplish the goals and the objectives of the Washington County HCP and its implementation agreement.

Management Actions – General

SST-1: Implement the goals, objectives, and management recommendations identified in the *Revised Recovery Plan for the Mojave Desert Tortoise* (USFWS 2011) or future revisions, as well as the terms and conditions from relevant Biological Opinions issued by USFWS to assist recovery and delisting of the Mojave desert tortoise in the Upper Virgin River Recovery Unit. Evaluate the effectiveness of management actions through monitoring and scientific research studies.

SST-2: Install tortoise barrier fencing along heavily traveled public use roadways in the NCA to minimize tortoise injuries and mortalities caused by motorized vehicles.

SST-3: Coordinate with Washington County Public Works Department to post speed limits on heavily traveled public use roads where tortoise barrier fencing has not been installed to minimize tortoise injuries and mortalities caused by motorized vehicles.

SST-4: Allow the reintroduction, translocation, and population augmentation of Mojave desert tortoises into current or historic habitats in the NCA, in coordination with USFWS, UDWR, and local governments, subject to guidance provided by BLM's 6840 policy and by existing or future MOU.

SST-5: Monitor changes in the relative abundance, health, reproductive success, and distribution of tortoise populations, in partnership with USFWS and UDWR.

SST-6: Collaborate with USFWS, UDWR, and appropriate USDA agencies on predator control, if other management actions have not been successful in reducing documented predation levels that have been shown to be measurably impacting the recovery of viable Mojave desert tortoise populations. Require the development of target species-specific predator control plans supported by NEPA analyses that identify the purpose of and need for action, designate specific goals to be met, and evaluate the least invasive and most ecologically sensitive methods to accomplish those goals.

SST-7: Prioritize the acquisition of non-federal lands or interests in critical tortoise habitat within the NCA boundaries from willing land owners through purchase, exchange of public lands identified for disposal outside of the NCA boundaries, donation, or conservation easement.

SST-8: Whenever possible, acquire both surface and subsurface rights to avoid the creation of split estates.

SST-9: Acquire conservation easements when such interest would further the goals of recovery and delisting of the Mojave desert tortoise or other at-risk species.

SST-10: Prioritize conservation and protection of critical habitat through firebreaks, appropriate wildfire suppression responses, and control or eradication of noxious weeds and invasive species.

SST-11: Establish monitoring plots and conduct long-term monitoring using desired plant species frequency, density, and distribution data to evaluate the effectiveness of the vegetation restoration projects

Management Actions – Public Education and Interpretation

SST-12: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about Mojave Desert species, their evolutionary adaptations to an arid landscape where surface water is limited, and the factors that have contributed to the need to list these species under the ESA.

SST-13: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate land use etiquette and the need to protect populations and habitats for Mojave desert tortoises and other Mojave Desert wildlife. Encourage public land users to pack out food scraps and litter that will attract predators that prey on tortoises, particularly juveniles.

SST-14: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about the rich biodiversity of the NCA created by the convergence of the Mojave Desert, Great Basin, and Colorado Plateau ecosystems.

Management Actions – Scientific Research

SST-15: Pursue opportunities for scientific studies to determine the level and effects of predation on Mojave desert tortoise populations in the NCA.

SST-16: Pursue opportunities for scientific studies to determine the effects of intensive non-motorized recreation on Mojave desert tortoise populations in the NCA.

SST-17: Pursue opportunities for scientific studies to determine the relative abundance of Mojave desert tortoise populations in the NCA.

SST-18: Pursue opportunities for scientific studies to determine age classes, gender ratios, and the health of Mojave desert tortoise populations in the NCA.

SST-19: Pursue opportunities for scientific studies to determine changes in species composition and vigor of native vegetation communities in areas of the NCA where domestic livestock grazing was discontinued in the 1990s, when compared to historically collected baseline data.

Management Action – Climate Change Monitoring

SST-20: Pursue opportunities for scientific studies to determine the effects of predicted higher winter temperatures on Mojave desert tortoise hibernation patterns, using observed changes as an indicator to monitor climate change.

6.18 Special Status Fish Species: Woundfin Minnow and Virgin River Chub

Goal

Woundfin minnow (*Plagopterus argentissimus*) and Virgin River chub (*Gila seminuda*) populations that utilize the Virgin River through the NCA would be stable or increasing, helping to assist the recovery and delisting of these species across their range.

Objectives

Suitable aquatic habitats for woundfin minnow and Virgin River chub in the NCA would be managed to support viable populations.

Research is supported that increases baseline data related to Virgin River native fish in the NCA.

Research is encouraged that informs the management of aquatic habitats for at-risk species under predicted climate change scenarios.

Management Actions – General

SSF-1: Management actions will be guided by the *Virgin River Fishes Recovery Plan* (USFWS 1995), *Virgin River Resource Management Plan and Recovery Program* (USFWS 2000), and *Fish and Wildlife 2000: Special Status Fish Habitat Management* (BLM 1991).

SSF-2: Assist with monitoring efforts for woundfin minnow and Virgin River chub in cooperation with USFWS, UDWR, and the partners of the Virgin River Program.

SSF-3: Allow the reintroduction, translocation, and population augmentation of woundfin minnow and Virgin River chub into current or historic habitats in the NCA, in coordination with USFWS and UDWR, subject to guidance provided by BLM's 6840 policy and by existing or future MOUs.

SSF-4: Monitor land uses and authorized activities that have the potential to degrade water quality, damage riparian vegetation, and collapse stream banks that provide shade and cover for aquatic species.

SSF-5: Restrict, modify, or eliminate land uses and authorized activities that are shown to degrade aquatic habitats that support native Virgin River fish species.

SSF-6: Prioritize the acquisition of non-federal inholdings within the NCA that would benefit the conservation, protection, and restoration of the Virgin River and its tributaries.

Management Actions – Public Education and Interpretation

SSF-7: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about the Virgin River, its tributaries, and the unique native fish and aquatic species that evolved in this system.

SSF-8: Involve partners and volunteers in clean-up and restoration projects that improve aquatic habitat conditions along the Virgin River through the NCA.

Management Action – Scientific Research

SSF-9: Pursue opportunities to increase baseline data and the general understanding of population dynamics and habitat needs of native Virgin River fish through scientific research.

6.19 BLM Sensitive Species

Goal

Habitats for aquatic and terrestrial BLM sensitive species support viable, self-sustaining populations that do not require listing under the ESA.

Objectives

Land uses and authorized activities on public lands are managed to conserve, protect, and restore habitats to meet the nutritional, metabolic (shade/cover), reproductive, and home range requirements of sensitive species populations in the NCA.

Ecologically intact core areas of sensitive species habitats are conserved and protected from fragmentation and loss of native vegetation communities, through appropriate management actions across all BLM programs.

Ecological integrity of damaged native vegetation communities is restored, through appropriate re-vegetation methods and control and eradication of noxious weeds and invasive non-native species.

Land uses and authorized activities on public lands are managed so that habitats provide ecological diversity

and connectivity to create resiliency for sensitive species populations under changing climate conditions.

Research is supported that increases the amount of baseline data related to sensitive species that occupy and/or utilize the NCA.

Research is encouraged that informs the management of habitats for at-risk species under predicted climate change scenarios.

Management Actions - General

BSS-1: Implement the goals, objectives, and management recommendations that apply to public lands from Executive Orders, Conservation Agreements and Strategies, and BLM policies. Evaluate the effectiveness of management actions through monitoring and scientific research studies.

BSS-2: Continue active management programs to inventory, monitor, protect, and restore habitats for sensitive species, control detrimental non-native species, and re-establish extirpated populations, as necessary, to maintain biodiversity.

BSS-3: Apply BMPs and other management techniques designed to minimize impacts on critical habitats as a result of land uses, authorized activities, and habitat restoration actions.

BSS-4: Allow the reintroduction, translocation, and population augmentation of native sensitive species into historical and current habitats, in consultation with UDWR, to restore populations and enhance or maintain current populations, distributions, and genetic diversity.

BSS-5: Monitor the long term success of the population actions and use Adaptive Management Strategies to improve desired outcomes.

BSS-6: Monitor changes in relative abundance and distribution of sensitive species populations in the NCA, in partnership with UDWR.

BSS-7: Collaborate with UDWR and appropriate USDA agencies on predator control, if other management actions have not been successful in reducing documented predation levels that have been shown to be measurably impacting the recovery of viable populations of sensitive species. Require the development of target species-specific predator control plans, supported by NEPA analyses that identify the purpose of and need for action, designate specific goals to be met, and evaluate the least invasive and most ecologically sensitive methods to accomplish those goals.

BSS-8: Only authorize new land uses in sensitive species' habitats if reasonable alternative locations outside of these habitats do not exist and impacts to species populations and habitats can be mitigated.

BSS-9: Maintain habitat connectivity, migration routes, and movement corridors through project placement, design, and permit stipulations to support sensitive species persistence, adaptation, and overall biodiversity under changing climate conditions.

Management Action – Public Education and Interpretation

BSS-10: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about sensitive species, their evolutionary adaptations, and the factors that have contributed to declining populations.

Management Actions – Scientific Research

BSS-11: Pursue opportunities for scientific studies to determine the relative abundance of sensitive species populations in the NCA.

BSS-12: Pursue opportunities for scientific studies to determine age classes, gender ratios, and the health of sensitive species populations in the NCA.

BSS-13: Pursue opportunities for scientific studies to determine the level and effects of predation on sensitive species populations in the NCA.

Management Action – Climate Change Monitoring

BSS-14: Pursue opportunities to establish a long-term monitoring program to detect changes in seasonal migration patterns (arrival and departure dates) of selected migratory bird species as potential indicators of climate change.

6.20 BLM Sensitive Native Fish Species

Goal

Aquatic habitats in Leeds Creek and the Virgin River support stable or increasing populations of BLM sensitive fish species including Virgin spinedace (*Lepidomeda mollispinis*), desert sucker (*Catostomus clarki*), and flannelmouth sucker (*Catostomus latipinnis*), helping to ensure that none of these species requires listing under the ESA.

Objectives

Aquatic habitat in the Virgin River on public lands provides interspersed pools, runs, and riffles of clear, cool water of sufficient quality and quantity to support viable populations of Virgin spinedace, desert sucker, and flannelmouth sucker.

Non-native invasive fish species are eradicated in the reach of the Virgin River through the NCA.

Research is supported that increases baseline data related to Virgin River native fish in the NCA.

Research is encouraged that informs the management of aquatic habitats for at-risk species under predicted climate change scenarios.

Management Actions - General

BSF-1: Management actions will be guided by the *Virgin RiverFishes Recovery Plan* (USFWS 1995), V*irgin River Resource Management Plan and Recovery Program* (USFWS 2000) and *Fish and Wildlife 2000: Special Status Fish Habitat Management* (BLM 1991), the *1995 Virgin River Fishes Recovery Plan*, and the 1995 Virgin Spinedace Conservation Agreement and Strategy.

BSF-2: BLM will provide appropriate support to active partners in the Virgin River Fishes Recovery Team.

BSF-3: Assist with monitoring efforts for Virgin spinedace, desert sucker, and flannelmouth sucker populations in cooperation with UDWR and the partners of the Virgin River Recovery Program.

BSF-4: Allow the reintroduction, translocation, and population augmentation of Virgin spinedace, desert sucker, and flannelmouth sucker into suitable habitats in the NCA.

BSF-5: Assist with eradication of non-native invasive fish species in cooperation with UDWR and the partners of the Virgin River Recovery Program.

BSF-6: Pursue acquisition of non-federal lands within the NCA that would benefit the conservation, protection, and restoration of aquatic habitats.

BSF-7: Monitor land uses and authorized activities along the Virgin River in the NCA that have the potential to degrade water quality, damage riparian vegetation, and collapse stream banks that provide shade and cover for aquatic species.

BSF-8: Restrict, modify, or eliminate any land uses and authorized activities in the NCA that are shown to degrade aquatic habitat in the Virgin River or its tributaries, Quail and Leeds Creeks.

Management Action – Public Education and Interpretation

BSF-9: Provide educational materials through various media and venues both off-site and along Leeds Creek and the Virgin River within the NCA (e.g., trailhead kiosks) that educate visitors about Virgin spinedace, desert sucker, and flannelmouth sucker, their evolutionary adaptations, and the factors that are contributing to declining populations.

Management Action – Scientific Research

BSF-10: Pursue opportunities to increase the amount of baseline data and scientific knowledge related to the specific habitat requirements of native fish of the Virgin River system.

Management Action – Climate Change Monitoring

BSF-11: Pursue opportunities to collect data on changing precipitation patterns in the Virgin River watershed that have the potential to impact aquatic habitats under predicted climate change scenarios.

6.21 BLM Sensitive Raptor Species

Goal

Diverse raptor populations that utilize the NCA are viable or increasing and do not require listing under the ESA. BLM sensitive raptor species present in the NCA include: bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentilis*), and short eared owl (*Asio flammeus*).

Objectives

Land uses and authorized activities on public lands are managed to conserve, protect, and restore habitats to meet the nutritional, metabolic (shade/cover/perching), reproductive, and home range requirements of diverse species of raptors.

Habitats for raptors provide high quality roosting and nesting sites and diverse prey base, thereby sustaining viable populations of these species.

Environmental hazards that could impact raptors are minimized.

Research is supported that increases the amount of baseline data related to all species of raptors and the prey base that they utilize in the NCA.

Management Actions - General

BSR-1: Allow the reintroduction, transplantation, and population augmentation of bald eagles, ferruginous hawks, northern goshawks, and short eared owls where doing so would not be detrimental to the viability of other native species.

BSR-2: Actions that may adversely impact breeding, nesting, and roosting raptors will be subject to seasonal restrictions and spatial buffers, based on guidance found

in Utah Field Office Guidance for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002).

BSR-3: Allow the population augmentation of burrowing owls and the installation of artificial nest burrows where doing so would not be detrimental to the viability of other native species.

BSR-4: Maintain a geospatially linked database of observations of diverse raptors and their prey.

BSR-5: Coordinate with partners (e.g., UDWR, National Audubon Society, National Wildlife Federation) to promote the use of non-lead ammunition in the NCA.

Management Actions – Public Education and Interpretation

BSR-6: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate the public about raptors and their role in the ecosystems of the NCA.

BSR-7: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform hunters about the need to use non-lead ammunition to minimize impacts on raptors.

Management Actions – Scientific Research

BSR-8: Pursue opportunities to collect baseline observational data on raptor species that occur in the NCA and develop location maps of nesting and roosting sites, as well as information on the prey base for each species.

BSR-9: Pursue opportunities for scientific studies related to the diversity, abundance, and distribution of small mammals that comprise the prey base for raptors, carnivores, and other predatory species, including rodents, desert cottontails (*Sylvilagus audubonii)*, and black-tailed jackrabbits (*Lepus californicus*).

BSR-10: Develop new volunteer opportunities for partners, special interest groups, birding enthusiasts, and citizen scientists to assist with observational data collection and habitat mapping for eagles, hawks, falcons, and owls that utilize the NCA.

Management Action – Climate Change Monitoring

BSR-11: Pursue opportunities for monitoring and research that increases the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence the prey base of raptors under predicted climate change scenarios.

6.22 Migratory Birds and Birds of Conservation Concern

Goal

Migratory bird species and Birds of Conservation Concern that utilize the NCA do not require listing under the protection of the ESA (see Appendix F for species list).

Objectives

Biologically diverse habitats that provide essential breeding, nesting and roosting sites, space, cover, and food for migratory birds would be conserved, protected, and restored.

Research is supported that increases the amount of baseline data related to all species of migratory birds and their diverse habitat requirements.

Research is encouraged that identifies changes in migration patterns as a potential indicator of climate change.

Management Actions – General

BCC-1: Only authorize actions that would not adversely impact nesting migratory birds.

BCC-2: Minimize disturbances or adverse effects on breeding bird populations that might result from authorized activities through seasonal restrictions, special permit stipulations, or other appropriate mitigation measures.

Management Actions – Public Education and Interpretation

BCC-3: Provide educational materials through various media and at on-site venues along Quail and Leeds Creeks and the Virgin River that educate the public about migratory bird species, the causes for declining populations, and the need to protect riparian habitats and seasonal migration routes.

BCC-4: Promote opportunities for viewing and photographing diverse species of migratory birds through interpretive materials, recreation trails, and special outreach activities such as guided birding hikes along Quail and Leeds Creeks and the Virgin River.

BCC-5: In partnership with the National Audubon Society and others, recruit and train youth groups, citizen stewards, and other volunteers to participate in annual migratory bird counts in Quail and Leeds Creeks, the Virgin River, and elsewhere in the NCA.

Management Actions – Scientific Research

BCC-6: Pursue opportunities to conduct field inventories of riparian areas along Quail and Leeds Creeks and the Virgin River to identify avian species that utilize the NCA.

BCC-7: Pursue opportunities to collect baseline observational data on migratory birds and other avian species and develop location maps of occupied habitats and nesting sites.

BCC-8: Pursue opportunities to conduct systematic inventories of migratory birds that utilize the NCA and evaluate the condition of the preferred habitats for each species.

BCC-9: Develop new volunteer opportunities for partners, special interest groups, birding enthusiasts, and citizen scientists to assist with observational data collection and habitat mapping for migratory birds, Birds of Conservation Concern and Partners in Flight species.

Management Action – Climate Change Monitoring

BCC-10: Pursue research opportunities that focus on changes in the seasonal migration patterns of selected migratory bird species as potential indicators of climate change.

6.23 BLM Sensitive Mammal Species

Goal

Habitats for BLM Sensitive mammal species support viable populations that do not require listing under the ESA. Sensitive mammals present in the NCA include: kit fox (*Vulpes macrotis*), Allen's big-eared bat (*Idionycteris phyllotis*), big free-tailed bat (*Nyctinomops macrotis*), fringed myotis (*Myotis thysanodes*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*).

Objectives

Habitats for the kit fox provide for a diverse and healthy prey base, as well as sufficient reproductive and home range requirements.

Habitats for sensitive bat species provide high quality maternity and roosting sites, winter hibernacula, and a diverse prey base, thereby sustaining viable populations of these species.

Caves, karst resources, and abandoned mines allow for unimpeded ingress and egress by diverse bat species.

Research is supported that increases the baseline data related to sensitive mammal species and the habitats that they utilize in the NCA.

Management Actions – General

BSM-1: As needed, implement National White Nose Syndrome Decontamination Protocol and BLM IM 2010-18 in the management of habitats that support sensitive species bat populations.

BSM-2: Allow the reintroduction, transplantation, and population augmentation of sensitive mammal species where doing so would not be detrimental to the viability of other native species.

BSM-3: Do not authorize the use of herbicides, pesticides, or poisons that are injurious or toxic to sensitive mammal species, will damage native vegetation communities, or will reduce the quality and quantity of species that comprise their prey base.

BSM-4: Manage caves, karst resources, and abandoned mines to protect bat habitat (e.g., foraging, roosting, maternity sites, winter hibernacula) and reduce the potential spread of contagious diseases, such as White Nose syndrome, in bat populations.

BSM-5: Require the installation of bat-friendly gates in caves and karst features that require access restrictions or closure.

BSM-6: Where appropriate, limit abandoned mine closure methods to the installation of bat-friendly gates for those abandoned mines that provide habitat (e.g., foraging, roosting, maternity sites, winter hibernacula) for bats.

BSM-7: Install bat friendly escape ramps in troughs or other artificial water sources.

BSM-8: Do not authorize activities that have the potential to disturb bats within a 0.25 mile radius of maternity roost sites and winter hibernacula, including all entrances to caves, karst features, and abandoned mines as recommended by the USFWS (USFWS 2015c).

Management Action – Public Education and Interpretation

BSM-9: Provide educational materials through various media and venues both off-site and on to inform visitors about the many sensitive mammal species found in the NCA, as well as their diverse habitats and prey.

Management Actions – Scientific Research

BSM-10: Pursue opportunities for scientific studies to collect population and life history data on the kit fox in the NCA.

BSM-11: Pursue opportunities for scientific studies related to the diversity, abundance, and distribution of small mammals that comprise the prey base for the kit fox.

BSM-12: Pursue opportunities to conduct field inventories of caves, abandoned mines, cliffs, and other suitable habitats to identify all of the bat species that utilize the NCA.

BSM-13: Pursue opportunities to collect baseline observational data on bat species and develop location maps of occupied habitats, hibernacula, and maternity roost sites.

BSM-14: Develop new volunteer opportunities for partners, special interest groups, cave enthusiasts, and citizen scientists to assist with observational data collection and habitat mapping for sensitive mammal species.

6.24 Sensitive Reptile and Amphibian Species

Goal

Reptiles and amphibians identified as BLM sensitive species do not require listing under the ESA. Sensitive reptiles and amphibians present in the NCA include the common chuckwalla (*Sauromalus ater*), Gila monster (*Heloderma suspectum*), sidewinder (*Crotalus cerastes*), western banded gecko (*Coleonyx variegatus*), western thread-snake (*Leptotyphlops humilis*), zebra-tailed lizard (*Callisaurus draconoides*), and Arizona toad (*Bufo microscaphus*).

Objectives

Introduced populations would increase to the point of being viable, self-sustaining populations of native endemic reptile and amphibian species.

Biologically suitable habitats would be conserved and protected.

Research is supported that increases the baseline data related to reptiles and amphibians in the NCA.

Research is encouraged that informs the management of reptile and amphibian habitats under predicted climate change scenarios.

Management Actions – General

SRA-1: Allow the reintroduction, transplantation, and population augmentation of Arizona toad, northern leopard frog (*Rana pipiens*), lowland leopard frogs (*Rana yavapaiensis*), and relict leopard frogs (*Rana onca*) to suitable habitat locations, where doing so would not be detrimental to the viability of other native species.

SRA-2: Allow the reintroduction, transplantation, and population augmentation of sensitive reptile species, where doing so would not be detrimental to the viability of other native species.

SRA-3: Do not authorize the use of herbicides, pesticides, or poisons that are injurious or toxic to sensitive reptile or amphibian species, will damage native vegetation communities, or will reduce the quality and quantity of species that comprise their prey base.

Management Actions- Public Education and Interpretation

SRA-4: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate the public about reptiles and amphibians in the ecosystems of the NCA.

SRA-5: Provide educational materials through various media and venues both off-site and along Leeds Creek and the Virgin River to inform visitors about the diverse species that occupy these habitats.

Management Actions – Scientific Research

SRA-6: Pursue opportunities to conduct field inventories to identify amphibians and reptiles that are found in springs/ seeps, and along Quail and Leeds Creeks and the Virgin River through the NCA.

SRA-7: Pursue opportunities to increase the amount of baseline data and scientific knowledge related to the life histories, population trends, habitat requirements, and threats to amphibians and reptiles in the NCA to inform the management of aquatic habitats.

6.25 Other Fish and Wildlife Habitat

Goal

Aquatic and terrestrial habitats support viable populations of diverse native wildlife species and provide for biological diversity, ecological resilience, and species persistence under predicted climate change scenarios.

Objectives

Crucial and substantial habitats for diverse native wildlife species on public lands provide high quality forage or a high quality prey base, as well as water, space, cover, and breeding areas, thereby sustaining viable populations and overall ecosystem biodiversity and resilience.

Multi-species habitat connectivity, migration routes, and movement corridors are conserved and protected between ecological zones to facilitate species persistence, adaptation, and overall biodiversity under predicted climate change scenarios.

Research is supported that increases the amount of baseline data related to all species of wildlife and their diverse habitat requirements.

Research is encouraged that increases general understanding of ecosystem processes and anthropogenic influences on changing climatic conditions.

Management Actions - General

FWH-1: Develop new wildlife waters in collaboration with UDWR in areas where field studies reveal the need for such to maintain healthy, viable populations of mule deer or other game and nongame species. Such waters will be developed in accordance with the objectives and guidelines of applicable game, nongame, and habitat management plans.

FWH-2: Ensure that all existing and proposed artificial wildlife waters include escape ladders or are designed to allow safe access by wildlife.

FWH-3: Ensure that all new or replacement range-type fencing conforms to BLM specifications that allow safe passage for game and nongame wildlife species.

FWH-4: Allow the reintroduction, transplantation, and augmentation of priority native wildlife species populations (as defined in BLM Manual 1745 or subsequent guidance) into current or historic habitats in the NCA, in coordination with UDWR in order to: (a) maintain current population numbers, distributions, and genetic diversity, and (b) restore or enhance native species populations.

FWH-5: Manage mule deer habitat to assist UDWR in achieving long-term herd population goals and objectives.

FWH-6: Restrict dispersed camping to designated sites that do not impede wildlife access to water sources.

FWH-7: Remove unnecessary range-type fencing within the NCA to lessen potential for injuries and entanglement by mule deer, particularly fawns.

FWH-8: Include native vegetation species that benefit mule deer in upland habitat restoration and ES&R projects.

FWH-9: Include native vegetation species that provide forage, cover, and nesting opportunities for quail and other game birds in habitat restoration and ES&R projects.

Management Actions – Public Education and Interpretation

FWH-10: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that educate visitors about the diverse fish and wildlife species of the NCA.

FWH-11: Enhance opportunities for public viewing and photographing of mule deer, game birds, and other wildlife through special outreach activities such as guided wildlife photography hikes.

FWH-12: Authorize documentary and educational filming of wildlife through film permits, consistent with the Congressionally-defined purposes of conservation, protection, and restoration of resource values on public lands in the NCA.

Management Actions – Scientific Research

FWH-13: Pursue opportunities for scientific studies to collect population and life history data on carnivore species, such as mountain lion and bobcat, in the NCA.

FWH-14: Pursue opportunities for scientific studies related to the diversity, abundance, and distribution of small mammals that comprise the prey base for raptors, carnivores, and other predatory species, including rodents, desert cottontails, and black-tailed jackrabbits.

Management Actions – Climate Change Monitoring

FWH-15: Pursue opportunities to identify key riparian connectivity zones within and outside the NCA that will facilitate wildlife movement under predicted changes in seasonal precipitation patterns and increased ambient temperatures.

6.26 Heritage Resources

Goal

Heritage resources are conserved, protected, and enhanced for the benefit of present and future generations, consistent with the Congressional mandates from OPLMA Section 1974.

Objectives

Heritage resources currently documented or that may be documented in the NCA are allocated and managed to the Use Allocations (as defined by BLM Manual Section 8110.42 and Land Use Planning Handbook H-1601-1) that are consistent with the legislative mandates from OPLMA for the NCA: Scientific Use, Conservation for Future Use, Public Use, and Traditional Use.

Heritage resources of scientific interest currently documented or that may be documented in the future within

the NCA are not allocated to Experimental Use or Discharged from Management, as these would not be consistent with the Congressionally-designated purposes for the NCA, as they relate to cultural and historical resources. See Table 2 for descriptions of each Use Allocation category.

Public awareness and appreciation of heritage resources is enhanced through education and volunteer stewardship opportunities.

Appropriate heritage resource sites or groups of sites are nominated for inclusion in the National Register of Historic Places (NRHP), whenever warranted.

The integrity of setting is conserved, protected, and restored in areas where natural and cultural resources combine to form an important heritage landscape.

Management Actions – General

HER-1: As required by federal historic preservation laws, continue consultations among the BLM, the Advisory Council on Historic Preservation, the Utah SHPO, American Indian Tribes, applicants for federal assistance, permits, licenses or other approvals, representatives of local governments, and other interested parties to inform management decisions related to heritage resources. Manage properties recommended as "potentially eligible" for inclusion in the NRHP as "eligible properties" until evaluative testing determines the status of that resource.

HER-2: Complete implementation-level Cultural Resource Project Plans whenever warranted, in consultation with Utah SHPO, American Indian Tribes, and other interested parties.

HER-3: Conduct regular site monitoring and site condition assessments utilizing BLM staff and trained volunteer Site Stewards.

6.26.1 Prehistoric Habitation Sites, Campsites, or Specialized Activity Area

HER-4: Allocate and manage 100% of these NRHP-eligible site types for Scientific Use, Conservation for Future Use, Public Use, or Traditional Use.

Management Actions – General

HER-5: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-6: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-7: Install informational signing on site etiquette and ARPA where evidence of public use exists.

HER-8: Evaluate risks at fire-susceptible sites and remove hazardous fuels where threat of site damage or loss to wildfire exists.

HER-9: Prohibit geocaching in all Prehistoric Habitation Sites, Campsites, and Specialized Activity Areas.

Scientific Use

HER-10: Authorize data recovery excavations under appropriate research designs that emphasize conservation of site resources for future use, as well as Native American and public involvement in the research.

Conservation for Future Use

HER-11: Do not authorize activities or research studies that will directly impact the integrity and information potential of sites.

Public Use

HER-12: Complete implementation-level plans (e.g., Cultural Resource Project Plans, Recreation Management Plans, Interpretation Plans) to direct management of Public Use sites that may contain one or more of actions listed below:

a) Develop on and off-site interpretation for intensively visited Public Use sites;

b) Install visitor registers at intensively visited Public Use sites;

c) Install on-site informational signing on site etiquette and ARPA;

d) Perform surface collection of artifacts on all sites allocated to Public Use;

e) Prioritize Class III inventory in areas adjacent to Public Use sites.

Traditional Use

HER-13: Complete implementation-level Cultural Resource Project Plans, in consultation with culturally-affiliated American Indian Tribes to direct management of Traditional Use sites.

6.26.2 Rock Shelters, Alcoves, and Caves with Cultural Material

HER-14: Allocate and manage 100% of NRHP-eligible sites for Scientific Use, Conservation for Future Use, or Traditional Use.

HER-15: Allocate and manage rock shelters, alcoves, and caves identified as Sacred Sites for Conservation for Future Use or Traditional Use.

HER-16: Allocate and manage identified Traditional Cultural Properties for Traditional Use.

Management Actions – General

HER-17: Prioritize Class III inventory in areas with high potential for this site type to occur.

HER-18: Conduct regular site monitoring, utilizing BLM staff and trained volunteer Site Stewards.

HER-19: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-20: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-21: Install informational signing on site etiquette and ARPA where evidence of public use exists.

HER-22: Prohibit geocaching in all Rock Shelters, Alcoves, and Caves with Cultural Materials.

Scientific Use

HER-23: Authorize data recovery excavation with appropriate research design which maximizes conservation of the site resources for future use and Native American and public involvement in the research.

HER-24: Complete NRHP nominations for Scientific Use sites on a priority basis as identified in Cultural Resource Project Plans.

Conservation for Future Use

HER-25: Do not authorize activities or research studies that will directly impact the integrity and information potential of sites.

Traditional Use

HER-26: Complete implementation-level Cultural Resource Project Plans, in consultation with culturally-affiliated American Indian Tribes.

6.26.3 Toolstone Sources or Quarries

HER-27: Allocate and manage 100% of NRHP-eligible sites for Scientific Use, Conservation for Future Use, or Public Use.

Management Actions - General

HER-28: Install informational signing on site etiquette and ARPA where evidence of public use exists.

HER-29: Prioritize Class III inventory in areas with high potential for this type of site to occur.

HER-30: Develop Cultural Resource Project Plans that include management direction related to the collection of non-artifact geologic materials from source/quarry locations.

Scientific Use

HER-31: Authorize data recovery excavations under appropriate research designs that emphasize conservation of site resources for future use, as well as Native American and public involvement in the research.

Conservation for Future Use

HER-32: Do not authorize activities or research studies that will directly impact the integrity and information potential of sites.

Public Use

HER-33: Complete implementation-level plans (e.g., Cultural Resource Project Plans, Recreation Management Plans, Interpretation Plans) to direct management of Public Use sites that may contain one or more of actions listed below:

a) Develop on and off-site interpretation for intensively visited Public Use sites;

b) Install visitor registers at intensively visited Public Use sites;

c) Install on-site informational signing on site etiquette and ARPA;

d) Perform surface collection of artifacts on all sites allocated to Public Use;

e) Prioritize Class III inventory in areas adjacent to Public Use sites.

6.26.4 Rock Art Sites

HER-34: Allocate and manage 100% of NRHP-eligible sites for Scientific Use, Conservation for Future Use, Public Use, or Traditional Use.

HER-35: Allocate and manage rock art sites with evidence of public visitation for Scientific Use, Public Use, or Traditional Use.

HER-36: Allocate and manage rock art sites with no evidence of public visitation for Conservation for Future Use or Traditional Use.

HER-37: Allocate and manage rock art sites identified as Sacred Sites for Conservation for Future Use or Traditional Use.

Management Actions – General

HER-38: Prioritize Class III inventory in areas with high potential for this site type to occur.

HER-39: Conduct regular site monitoring, utilizing BLM staff and trained volunteer Site Stewards.

HER-40: Professionally document all rock art sites by photographing, mapping, and developing detailed measured drawings of all elements and cultural materials using the best available technology.

HER-41: Manage all rock art sites as "eligible properties" for inclusion in the NRHP.

HER-42: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-43: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-44: Install informational signing on site etiquette and ARPA where evidence of public use exists.

HER-45: Evaluate risks at fire-susceptible sites and remove hazardous fuels where threat of site damage or loss to wildfire exists.

HER-46: Prohibit geocaching in all Rock Art Sites.

Scientific Use

HER-47: Authorize surface collection of artifacts under the authority of ARPA if warranted by threats of loss or destruction.

Conservation for Future Use

HER-48: Do not authorize activities or research studies that will directly impact the integrity and information potential of sites.

Public Use

HER-49: Complete implementation-level plans (e.g., Cultural Resource Project Plans, Recreation Management Plans, Interpretation Plans) to direct management of Public Use sites that may contain one or more of actions listed below:

a) Develop on and off-site interpretation for intensively visited Public Use sites;

b) Install visitor registers at intensively visited Public Use sites;

c) Install on-site informational signing on site etiquette and ARPA;

d) Perform surface collection of artifacts on all sites allocated to Public Use;

e) Prioritize Class III inventory in areas adjacent to Public Use sites;

f) Develop trails, viewing platforms, passive barriers, or other facilities to manage visitor uses and protect resource values at intensively visited Public Use sites.

Traditional Use

HER-50: Complete implementation-level Cultural Resource Project Plans, in consultation with culturally-affiliated American Indian Tribes.

6.26.5 Ethno-historic Sites, Sacred Sites, Traditional Cultural Properties, Traditional Use Areas

HER-51: Allocate and manage 100% of these NRHP-eligible ethno-historic sites for Scientific Use, Conservation for Future Use or Traditional Use.

HER-52: Allocate and manage Traditional Cultural Properties and Traditional Use Areas identified by the Agency Official for Traditional Use.

HER-53: Allocate and manage sites identified as Sacred Sites for Conservation for Future Use and/or Traditional Use.

Management Actions – General

HER-54: Develop detailed site records of all identified ethno-historic sites, Sacred Sites, Traditional Cultural Properties, and Traditional Use Areas.

HER-55: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-56: Conduct regular monitoring patrols, utilizing BLM staff and trained volunteer Site Stewards.

HER-57: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-58: Install informational signing on site etiquette and ARPA where evidence of public use exists.

HER-59: Evaluate risks at fire-susceptible sites and remove hazardous fuels where threat of site damage or loss to wildfire exists.

HER-60: Prohibit geocaching at all Ethno-historic sites, Sacred Sites, Traditional Cultural Properties, and Traditional Use Areas.

Scientific Use

HER-61: Authorize data recovery excavations under appropriate research designs that emphasize conservation of site resources for future use, as well as Native American and public involvement in the research.

HER-62: Authorize surface collection of artifacts under the authority of ARPA, if warranted by threats of loss or destruction.

Conservation for Future Use

HER-63: Do not authorize activities or research studies that will directly impact the integrity and traditional heritage values of sites.

Traditional Use

HER-64: Complete implementation-level Cultural Resource Project Plans, in consultation with culturally-affiliated American Indian Tribes.

6.26.6 Historic Roads, Trails, Highways, and Associated Travel-related Sites and Features

HER-65: Allocate and manage 100% of NRHP-eligible properties for Scientific Use, Conservation for Future Use, or Public Use.

Management Actions – General

HER-66: Complete Class III level inventory of the travel corridor for each site to establish baseline data on linear heritage resources and associated travel-related sites and features.

HER-67: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-68: Conduct regular monitoring patrols, utilizing BLM staff and trained volunteer Site Stewards.

HER-69: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-70: Prohibit geocaching at all associated travel-related sites and features.

Scientific Use

HER-71: Authorize surface collection of artifacts under the authority of ARPA if warranted by threats of loss or destruction.

HER-72: Prepare an historic context for each resource as prioritized by Cultural Resource Project Plans.

Conservation for Future Use

HER-73: Do not authorize activities or research studies that will directly impact the integrity and information potential of sites.

HER-74: Emphasize conservation of setting in management actions identified in Cultural Resource Project Plans.

Public Use

HER-75: Complete implementation-level plans (e.g., Cultural Resource Project Plans, Recreation Management Plans, Interpretation Plans) to direct management of Public Use sites that may contain one or more of actions listed below:

a) Develop on and off-site interpretation for intensively visited Public Use sites;

b) Install visitor registers at intensively visited Public Use sites;

c) Install on-site informational signing on site etiquette and ARPA;

d) Install roadside markers and directional signing;

e) Prepare visitor use maps and driving, biking, and hiking guides;

f) Construct pullouts and wayside exhibits with visitor amenities (e.g., restrooms, information kiosks), where appropriate.

6.26.7 Historic Mining, Ranching/Farming/Livestock Grazing Sites, Buildings, Standing Structures, and Landscapes

HER-76: Allocate and manage 100% of NRHP-eligible sites for Scientific Use, Conservation for Future Use, or Public Use.

Management Actions – General

HER-77: Complete appropriate scale Class III level inventory to identify all associated sites, features, and structures.

HER-78: Protect sites from impacts related to authorized uses and unauthorized activities (e.g., vandalism) through installations of physical barriers (e.g., fencing, plantings) or other management actions.

HER-79: Conduct regular monitoring patrols, utilizing BLM staff and trained volunteer Site Stewards.

HER-80: Stabilize sites where erosion and/or vandalism threaten loss of site integrity and data.

HER-81: Conduct regular site monitoring, utilizing BLM staff and trained volunteer Trail Stewards.

HER-82: Evaluate risks at fire-susceptible sites and remove hazardous fuels where threat of site damage or loss to wildfire exists.

Scientific Use

HER-83: Authorize surface collection of artifacts under the authority of ARPA if warranted by threats of loss or destruction.

As prioritized by Cultural Resource Project Plans:

a) Complete an intensive archaeological inventory of the resources to collect baseline data;

b) Collect oral histories;

c) Prepare an historic context for each site;

d) Develop photo documentation of historic buildings, structures, features, and landscapes;

e) Complete Level 1 Historic American Building Survey (HABS) documentation, including elevations, plans, measured drawings, photos;

f) Complete appropriate level Historic American Landscape Survey (HALS) documentation, where warranted.

Conservation for Future Use

HER-84: Emphasize conservation of setting in management actions identified in Cultural Resource Project Plans.

Public Use

HER-85: Complete implementation-level plans (e.g., Cultural Resource Project Plans, Recreation Management Plans, Interpretation Plans) to direct management of Public Use sites that may contain one or more of actions listed below:

a) Develop on and off-site interpretation for intensively visited Public Use sites to increase public awareness and appreciation of historic period mining, ranching and agricultural activities in the NCA;

b) Install visitor registers at intensively visited Public Use sites;

c) Install on-site informational signing on site etiquette and ARPA;

d) Perform surface collection of artifacts on all sites allocated to Public Use;

e) Prioritize Class III inventory in areas adjacent to Public Use sites.

Yellow Knolls Heritage Area

HER-86: Manage approximately 1,196 acres of public land as the Yellow Knolls Heritage Area to maintain and protect the integrity of setting with a focus on prehistoric rock art, subsistence strategies, and resource procurement (Map 3).

HER-87: Develop off-site interpretation at wayside exhibits along the non-motorized Yellow Knolls Trail system.

HER-88: Manage for non-motorized recreation (hiking, mountain biking, equestrian use) on designated trails.

HER-89: Manage for day use only.

HER-90: Prohibit geocaching in all archaeological sites in the Yellow Knolls Heritage Area

White Reef Heritage Area

HER-91: Manage approximately 787 acres of public land as the White Reef Heritage Area to maintain and protect the integrity of setting with a focus on the historic roads, structures, and features related to mid-19th Mormon settlement at Harrisburg and silver mining in the Harrisburg/Silver Reef District (Map 3).

HER-92: Develop on and off-site interpretation at wayside exhibits along the non-motorized White Reef trail system.

HER-93: Manage Heritage Area as VRM Class II.

HER-94: Manage for non-motorized recreation (hiking, mountain biking, equestrian use) on designated trails.

HER-95: Manage for day use only.

HER-96: Prohibit geocaching in all archaeological sites and historic period sites in the White Reef Heritage Area.

Babylon Heritage Corridor

HER-97: Manage approximately 1,028 acres of public land as the Babylon Heritage Corridor to maintain and protect the integrity of setting with a focus on significant vertebrate and plant fossil resources, prehistoric rock art, historic roads, structures, and features related to late 19th century silver mining and milling in the Harrisburg/Silver Reef District (Map 3).

HER-98: Develop on and off-site interpretation at wayside exhibits along the Babylon Road.

HER-99: Manage Heritage Corridor as VRM Class II.

HER-100: OHV area designation is Limited to Designated Routes with individual routes designated through the TMP.

HER-101: Manage for day use only.

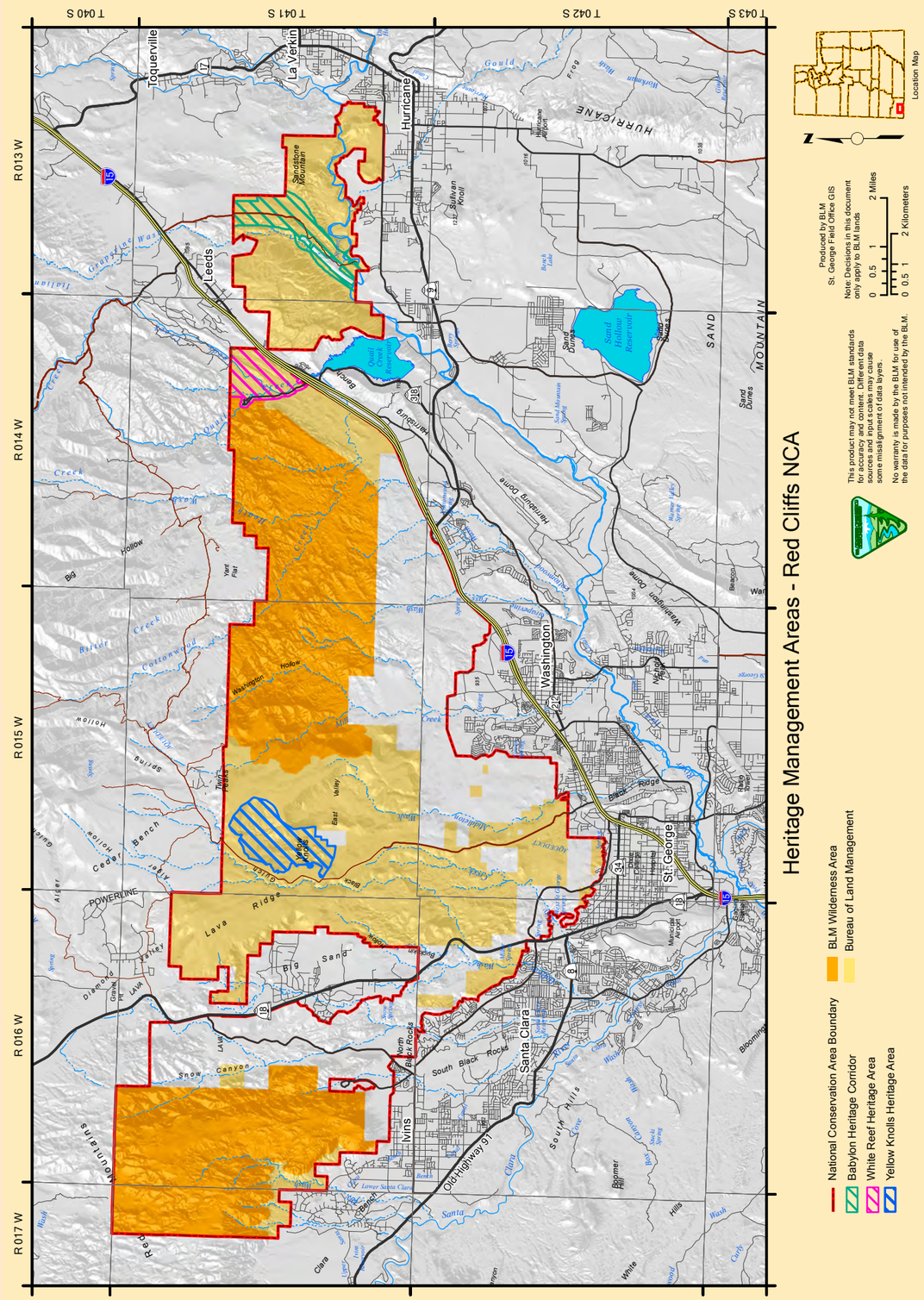
HER-102: Prohibit geocaching in all fossil localities, archaeological sites and historic period sites in the Babylon Heritage Area.

Management Actions - Public Education and Interpretation

HER-103: Develop heritage tourism sites focusing on appropriate types of sites that have been identified for Public Use.

HER-104: Sponsor educational programs for school groups, civic organizations, elected officials, and public land user groups that increase public appreciation for the unique and irreplaceable heritage resources of the NCA.

HER-105: Sponsor trainings and information dissemination to youth and scout groups, recreational user groups, and the general public about programs like “Tread



Lightly" and "Leave No Trace" that help to protect heritage resources.

HER-106: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites, educational programs, school curriculum) focused on heritage resources and appropriate site etiquette when visiting Public Use sites.

HER-107: Promote opportunities for volunteer involvement in Site Stewardship and Docent programs that increase public awareness of the need to conserve and protect heritage resources.

HER-108: Recruit and train youth and veteran groups, citizen stewards, and other volunteers to participate in site clean-up and restoration, as well as archaeological inventory and data recovery projects that enhance public understanding of regional cultural history and the heritage values of the NCA.

Management Actions - Scientific Research

HER-109: Scientific research is encouraged that increases the cultural resource inventory database and serves to improve baseline knowledge and general understanding of cultural and historical resources of the NCA.

HER-110: Research will be authorized at sites allocated to Scientific Use, as described above by the specific type of site.

Management Action - Climate Change Monitoring

HER-111: Pursue opportunities for research studies to utilize data recovered from archaeological contexts in the NCA to identify changes in native vegetation communities, faunal assemblages, and aboriginal subsistence strategies that could provide data for comparison with modern climate trends.

6.27 Wilderness (Red Mountain and Cottonwood Canyon)

Goal

Preserve wilderness character in accordance with the Wilderness Act of 1964 and OPLMA.

Objective

Manage the Red Mountain and Cottonwood Canyon Wilderness in accordance with the Wilderness Act of 1964, OPLMA, and BLM Manual 6340.

Management Action – General

WIL-1: Manage wilderness areas in the NCA in conformance with implementation-level decisions from the Wilderness Management Plan for the Red Mountain and Cottonwood Canyon Wilderness, when completed.

6.28 Areas of Critical Environmental Concern

Management Action – General

ACE-1: Revoke the administrative designation of the 4,854-acre Red Mountain ACEC, as described in the SGFO RMP (BLM 1999: Decision AC-09, page 2.68; Map 2.17, page 2-90). The ACEC is entirely located within the Red Mountain Wilderness, designated through OPLMA in 2009, and partially contained within the NCA. Manage these public lands in conformance with implementation-level decisions from the Wilderness Management Plan for the Red Mountain and Cottonwood Canyon Wilderness Areas, when completed.

6.29 Visual Resource Management

Goal

The open spaces, natural aesthetics, and scenic vistas of the NCA are protected for social, economic, and environmental benefits.

Objective

Visual quality and integrity are maintained in accordance with established Visual Resource Management (VRM) Class criteria:

Class I Objective: The existing character of the landscape is preserved. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective: The existing character of the landscape is retained. The level of change to the characteristic landscape should be low. Changes can be seen but should not attract the attention of the casual viewer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III Objective: The existing character of the landscape is partially retained. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV Objective: To provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements found in the predominant natural features of the characteristic landscape.

Management Actions - General

VRM-1: Use architectural design standards that create a unique and recognizable identity for the NCA. The standards would include, but are not limited to: fencing design, signage requirements, vegetative screening, siting requirements, and the height, shape, and color of proposed structures.

VRM-2: Incorporate visual and architectural design considerations during the project design phase for all new surface disturbing projects or activities, regardless of size or potential impact.

VRM-3: Conduct ecosystem restoration projects that meet VRM objectives for the NCA over the long-term (over the anticipated life of the restoration project). In the short term (5 years or less) or the mid-term (5-10 years), VRM objectives for restoration projects in the NCA would not have to be met.

VRM-4: Use the best available technology to minimize light emissions from all authorized facilities.

VRM-5: Retroactively prioritize and apply architectural design standards to existing structures and facilities.

VRM-6: Reduce or prevent impacts to night skies through the application of specific mitigation measures. These measures could include, but are not limited to: directing all light emissions downward, using shielded light sources, using only the minimum illumination necessary, using light sources less prone to atmospheric scattering, and using circuit timers or motion sensors.

VRM-7: Manage the NCA as follows:

VRM Class I: 19,989 acres
VRM Class II: 18,525 acres
VRM Class III: 6,160 acres
VRM Class IV: 183 acres
(Map 4)

6.30 Natural Soundscapes

Goal

Public land users can experience natural soundscapes in the NCA.

Objective

Land uses and authorized activities are managed to conserve and protect natural soundscapes.

Management Action - General

NAT-1: Identify and provide opportunities for visitors to enjoy the atmosphere of peace and tranquility afforded by the natural soundscapes of the NCA.

Management Action - Public Education and Interpretation

NAT-2: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites, educational programs, school curriculum) focused on increasing public awareness of natural quiet and the benefits of protecting natural soundscapes where they are present in the NCA.

Management Actions - Scientific Research

NAT-3: Identify appropriate acoustic monitoring locations in the NCA using established protocols.

NAT-4: Install sound level meters and supporting hardware to collect, analyze, and determine the levels and types of natural sounds in the NCA and to identify potential anthropogenic sources of soundscape impacts.

6.31 Recreation and Visitor Services

Goal

High quality sustainable recreation opportunities and visitor services are provided. Those opportunities support the quality of life of NCA visitors as well as local communities, regional economies and the resource values of the NCA.

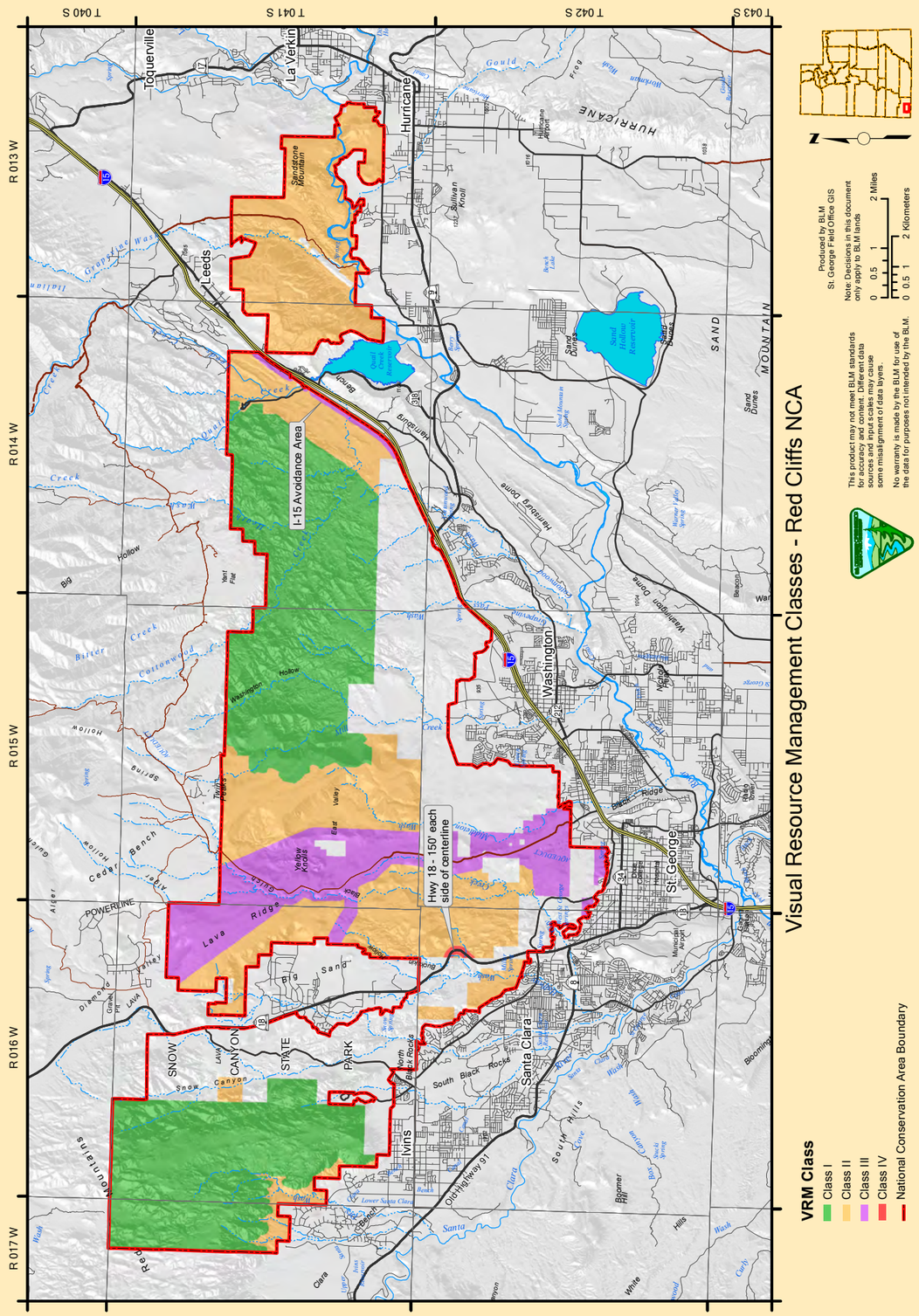
Objectives

Protect NCA resource and recreation values using the following:

a) Trail and facility design;
b) Directional, informational, regulatory, traffic control, boundary, and trail signs;
c) Maps and associated digital technology;
d) Appropriate law enforcement;
e) Interpretive materials and educational programs;
f) Citizen stewardship.

Management Actions – Recreation Management Areas

REC-1: Remove those portions of the identified Red Mountain/Santa Clara SRMA and the SGFO Extensive Recreation Management Zone administrative designations that overlap the NCA.



REC-2: Do not carry forward the Upland and Lowland Zones from the Public Use Plan (PUP).

REC-3: Establish the Red Cliffs SRMA, as shown on Map 5.

REC-4: Red Cliffs NCA SRMA, Recreation and Visitor Services Objectives:

Foster a sense of awareness and stewardship in recreational participants and local community partners to maintain recreation values in the NCA.

Provide opportunities for public land users to develop an understanding and appreciation of the NCA through on and off-site educational and interpretive materials.

Develop a nationally recognized non-motorized trail system that provides high quality opportunities for a wide range of recreational activities

Develop trailheads and waysides that share a signature design emblematic of the NCA

Establish four Recreation Management Zones (RMZs) within the Red Cliffs SRMA as management tools to assist in setting priorities for facilities development, maintenance, and law enforcement.

Each zone would have consistent management objectives across Alternative but would vary in size. See Table 4 for information about each zone and Appendix G for detailed RMZ descriptions and objectives.

REC-5: Manage the RMZs as follows:

Rural Zone: 1,224 acres

Frontcountry Zone: 14,937 acres

Backcountry Zone: 8,709 acres

Primitive Zone: 19,989 acres

(Map 5)

REC-6: Allowable uses for other resources and programs within the SRMA are defined by the NCA legislation. Allowable recreation uses have been defined by RMZ and can be found in Table 4 and Appendix G.

REC-7: Coordinate management of recreational activities and uses with adjacent federal agencies, tribal governments, and state, county, and municipal governments.

REC-8: Develop an implementation-level Recreation Area Management Plan (RAMP) to identify specific management actions for recreational activities and visitor services within the SRMA. On BLM-administered lands, the RAMP would replace the implementation-level PUP for the Red Cliffs Desert Reserve (Washingon County HCP 2001). The RAMP would include, but is not limited to:

a) Non-motorized trail system development and management;

b) Motorized route system management;

c) Rock climbing management;

d) Campground development and management;

e) Dispersed camping management;

f) Architectural design standards;

g) Recreational impact monitoring standards and procedures.

h) Commercial, competitive, and group use management.

REC-9: Develop commercial leases for recreation-related businesses, if necessary, to protect resource values, as well as provide for appropriate and sustainable recreation opportunities and visitor services.

REC-10: Manage any non-federal lands that may be acquired within the NCA in conformance with RMZ decisions for adjacent public lands.

REC-11: Do not authorize SRPs for competitive equestrian events in the NCA.

REC-12: Do not authorize SRPs for competitive motorized events in the NCA.

REC-13: Limit SRPs for motorized commercial and organized group recreation activities to roads and primitive roads authorized for use by the public.

REC-14: The discharge of firearms in the NCA is prohibited except in the act of hunting big game and upland game species by licensed hunters in accordance with current city and county ordinances, and state laws during prescribed seasons.

REC-15: Allow hunting dogs to be off-leash in the NCA when accompanied by a licensed hunter in the act of hunting during official seasons. Off-leash hunting dogs must be under the control of their owner at all times.

REC-16: Prohibit paintball activities of any kind.

Management Actions - Public Education and Interpretation

REC-17: Develop an implementation-level Interpretive Master Plan that creates a long-range vision to guide interpretive services that emphasize the values and significance of the NCA and addresses a long-term strategy for name recognition and branding. The plan will include the following:

a) Interpretive goals, objectives, and associated management actions necessary for interpreting themes to key user groups/audiences;

b) Identification of a full range of interpretive servic-

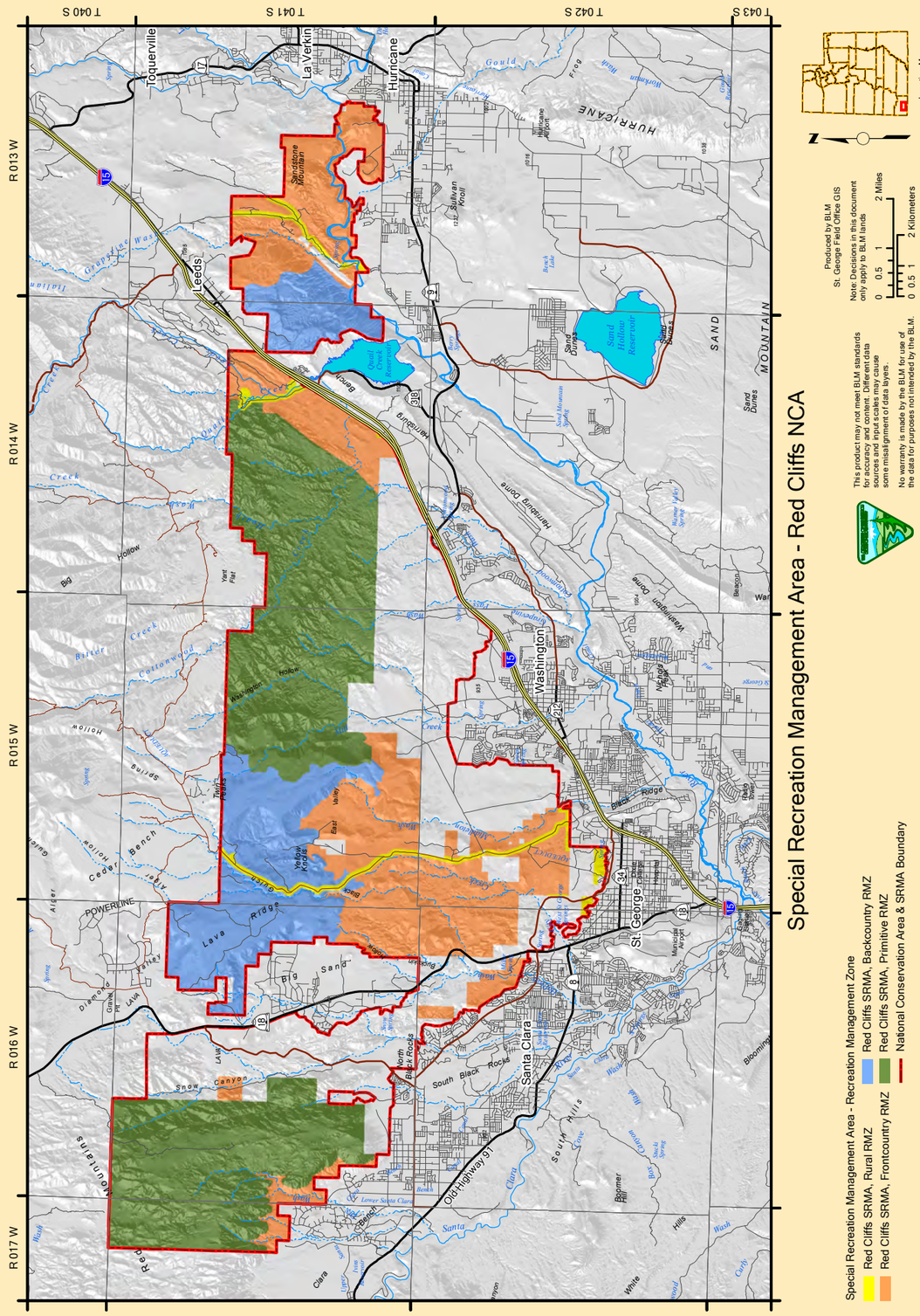


Table 4 Red Cliffs NCA Recreation Management Zone Descriptions

Recreation Management Zone Descriptions
FRONTCOUNTRY ZONE
• Accessed from Old Highway 91 and County roads. • Accommodates a large number of visitors. • Large number of management controls consisting primarily of directional, educational, and regulatory signs. • BLM staff presence is consistent. • Law enforcement patrols are irregular and often based on incident or emergency response. • Significant amount of infrastructure; includes all roads, parking, and future trailheads. • Motorized use is restricted to designated roads and trails. • Mechanized use is restricted to designated roads and trails. • Majority of zone is within critical tortoise habitat. • Outside of Congressionally designated road areas.
BACKCOUNTRY ZONE
• Accessed from the Rural Zone trailheads or Frontcountry Zone trails. • Less recreational use than the Frontcountry Zone, but still accommodates a significant number of visitors. • Fewer management controls consisting primarily of directional and regulatory signs. • BLM staff presence is infrequent and generally based on project-specific need. • Law enforcement patrols generally limited to incident and emergency response. • Motorized use is restricted to administrative purposes and emergency response. • Mechanized use is restricted to designated trails. • Portions of zone are within critical desert tortoise habitat. • Corresponds with Congressionally designated road areas.
PRIMITIVE ZONE
• Accessed from the Frontcountry or Backcountry Zones. • Accommodates the fewest number of visitors. • Limited management controls consisting primarily of directional and regulatory signs. • BLM staff presence is very low. • Law enforcement presence limited to emergency response. • Motorized use prohibited except for emergency response. • Cross-country travel is allowed. All visitors must be on foot or horseback. • No constructed or maintained trails. • Portions of zone are within critical tortoise habitat. • Corresponds with Congressionally designated road areas.

es including facilities, programs, activities, exhibits, publications/printed materials, electronic media, and audiovisuals to enhance knowledge and appreciation of natural and cultural resources, and to promote stewardship;

c) Identification of opportunities for outreach programs with user groups, local schools, universities, and special interest groups;

d) Identification of opportunities to enrich interpretation through partnerships with municipal, county, state, and national parks, educational institutions, and other organizations;

e) Identification of desired visitor experiences consistent with the RAMP and RMZs;

f) Identification of themes and sub-themes to communicate the story of place (e.g., those narratives that express the unique and compelling character of the NCA);

g) Consistency with NCA architectural design standards (e.g., color, shape, themes) that will apply to all site improvements, recreational facilities, site fixtures, structures, and associated spaces;

h) Integration of graphic elements such as logos, logo placements, color schemes, quality, and voice across all media to ensure effective recognition and branding for the NCA;

i) Training goals and objectives for staff and volunteers to ensure consistency in interpretive themes and professionalism.

Management Actions - Scientific Research

REC-18: Pursue opportunities for scientific studies that evaluate the effects of diverse recreation activities on the desert environment.

Implementation Decisions

REC-19: Develop uniform architectural design standards for all site improvements, recreational facilities, site fixtures, structures, and associated spaces developed in the NCA. These standards include construction materials, styles, colors, textures, and interpretive themes.

REC-20: Construct site improvements, recreational facilities, site fixtures, structures, and associated spaces in the Rural, Frontcountry, or Backcountry Zones to protect resource values, respond to recreational use demand, and enhance visitor experiences. Developments could include standard and/or expanded amenity fee sites.

REC-21: Issue Recreation Use Permits (RUPs) through the collection of standard or expanded amenity fees for the short-term recreational use of specialized sites or facilities (such as campgrounds and day use sites) which meet fee collection guidelines as provided for in the Federal Lands Recreation Enhancement Act of 2004 or subsequent similar authority.

REC-22: Continue to manage the Red Cliffs Recreation Area as an Expanded and Standard Amenity Fee Site for camping and day use in accordance with the approved Red Cliffs Recreation Area Business Plan.

REC-23: Maintain, improve, and enlarge facilities for camping, sanitation, or day use (e.g., increased parking, additional vault toilets, campsites) at the Red Cliffs Recreation Area, as needed, to achieve management objectives for public safety, resource protection, and quality recreational experiences.

REC-24: Continue to manage camping in the Sand Cove Primitive Camping Area under a permit system.

REC-25: Develop camping facilities at the Sand Cove Primitive Camping Area. Development would include:

a) A visible marker that clearly delineates the location as a designated campsite;

b) A metal campfire container;

c) A vault toilet;

d) Vehicle access improvements;

e) A kiosk for displaying interpretive and regulatory information.

REC-26: Limit camping at the Sand Cove Primitive Camping Area to one permit per day with a maximum group size of 20. All groups would be required to camp in designated sites and haul out all trash and human waste.

REC-27: Prohibit dispersed camping in the Rural and Frontcountry Zones (Map 5).

REC-28: Develop a limited number of designated undeveloped dispersed campsites in the Backcountry Zone and limit camping to these sites. Each campsite would include, but is not limited to:

a) A visible marker that clearly delineates the location as a designated campsite;

b) A metal campfire container.

REC-29: Allow dispersed camping in the Primitive Zone, except within 1 mile of the Red Cliffs Recreation Area developed campground and within 300 feet of water sources.

REC-30: Provide public education on minimum impact camping through a variety of on- and off-site media.

REC-31: Allow campfires within the provided metal campfire container at designated campsites and/or

developed campgrounds in the Rural, Frontcountry, and Backcountry Zones.

REC-32: Allow dispersed campfires outside of a metal campfire container in the Primitive Zone.

REC-33: Design and construct the non-motorized trail system to the professional standards outlined in Appendix I to ensure that trail design:

a) Addresses the needs of equestrians, hikers, climbers, and mountain bikers;

b) Protects diverse NCA resource values from direct or indirect recreation impacts by promoting compliance with regulatory requirements and visitor use restrictions;

c) Results in sustainable systems;

d) Provides high quality experiences;

e) Serves the abilities of non-motorized recreational users;

f) Offers opportunities for looping, varying distances, linking between geographic areas and trailheads, and connecting to heritage and other educational resources;

g) Minimizes user conflicts by separating user groups whenever feasible;

h) Limits the desire to venture off-trail.

REC-35: Where new trail development would result in a modification of the primary constituent elements of designated critical habitat for Mojave desert tortoise, restore an equivalent acreage of damaged habitat in the NCA through reclamation and revegetation (with approved species) of user-created trails, closed roads, fire-damaged lands, or other disturbed areas, in consultation with USFWS and UDWR.

REC-36: Limit commercial SRPs for recreation activities to 10% of overall visitation (overall visitation is defined as the total number of all visits: commercial and non-commercial, motorized and non-motorized).

REC-37: Limit commercial SRPs for motorized recreation activities (e.g., Motor Coach tours, OHV tours, motorcycle tours, ATV Jamborees) to roads and primitive roads authorized for use by the public.

REC-38: Set group size limits for commercial SRPs on a case-by-case basis. Factors for the determination of limits would include, but are not limited to: type of activity, type of transportation, length of stay, potential for resource impacts, potential for impacts to other visitors, and compatibility with RMZs.

REC-39: SRPs for competitive running and bicycling events could be authorized on roads in the NCA if they meet the following criteria:

a) Event staging takes place outside the NCA or takes place on designated roads and/or at trailheads inside the NCA;

b) The event causes no new surface disturbance;

c) Event scheduling complies with seasonal restrictions to protect wildlife and habitats, (e.g., restrictions on events during Mojave desert tortoise active season, generally between March 15 and October 15).

d) The event highlights NCA resource values and promotes their protection.

REC-40: Group size limits for competitive non-motorized events would be set on a case-by-case basis. Factors for the determination of limits could include, but are not limited to: type of event, length of event, number of participants, potential for resource impacts, potential for impacts to other visitors, and compatibility with RMZs.

REC-41: SRPs for competitive equestrian events would not be authorized in the NCA.

REC-42: SRPs for competitive motorized events would not be authorized in the NCA.

REC-43: Authorize SRPs for organized groups (e.g., scouting events, church events, school classes, historical reenactments) on a case-by-case basis, if the proposed event conforms to an implementation-level Interpretive Master Plan, when developed (see Public Education and Interpretation below).

REC-44: Group size for organized groups would be set on a case-by-case basis. Factors for the determination of limits could include, but are not limited to: type of activity, type of transportation, number of participants, length of stay, potential for resource impacts, potential for impacts to other visitors, and compatibility with RMZs.

REC-45: Handcarts, buggies, wagons, or other animal-drawn vehicles would be limited to travel on roads and routes designated through the approved TMP in the Rural, Frontcountry, and Backcountry Zones. All proposed activities (e.g., historical reenactments) would require an SRP or a letter of agreement from the NCA Manager.

REC-46: Continue to manage the existing climbing area within the NCA.

REC-47: Allow climbing anywhere in the Primitive Management Zone.

REC-48: Authorized one new climbing area, Sandstone Mountain (Map 6).

REC-49: Develop a Climbing Management Plan as part of the RAMP. The plan would:

a) Identify areas where climbing would be authorized;

b) Identify potential climbing restrictions such as group size limits or seasonal closures;

c) Establish monitoring protocols to identify resource impacts;

d) Establish procedures for authorizing new climbing areas.

REC-50: All authorized climbing areas would remain open until the Climbing Management Plan is complete.

REC-51: Prohibit physical geocaches in the Frontcountry and Primitive Zones.

REC-52: Allow physical geocaches in the Rural and Backcountry Zones.

REC-53: Allow virtual geocaches in all RMZs provided they are compliant with other zone restrictions.

REC-54: Written approval from the NCA Manager would be required prior to any physical geocache placement.

REC-55: Written approval from the NCA Manager would be required prior to the public posting of any virtual geocache placement.

REC-56: Prohibit the take-off and landing of powered parachutes in the NCA.

REC-57: Prohibit the take-off and landing of remote-controlled aircraft in the NCA.

REC-58: Casual rock collection, including the gathering of mineral specimens and rock hounding, would be allowed under the following criteria:

a) Collect using hand tools;

b) Only collect specimens for personal use.

REC-59: Prohibit all recreational metal detecting activities.

REC-60: Develop a comprehensive program for monitoring recreational impacts in the NCA as part of the RAMP. The program would focus primarily on the identification of illegal trails and would include a progression of appropriate management actions.

6.32 Comprehensive Travel and Transportation Management

Goals

Compatible traditional, current, and future use of the land is sustained by establishing a transportation system that contributes to protection of sensitive resources, promotes dispersed recreation, and minimizes user conflicts.

A high quality, sustainable transportation system that provides appropriate public and administrative access is developed and maintained to conserve, protect, and enhance the resource values of the NCA.

Objectives

Provide a well-maintained and functional motorized transportation system that provides public access to recreational opportunities and is consistent with goals, objectives, and recommendations of the *Revised Recovery Plan for the Mojave Desert Tortoise* (USFWS 2011).

Provide a functional motorized administrative transportation system that is consistent with goals, objectives, and recommendations of *Revised Recovery Plan for the Mojave Desert Tortoise* (USFWS 2011) and provides the minimum access necessary to authorized infrastructure and valid ROWs.

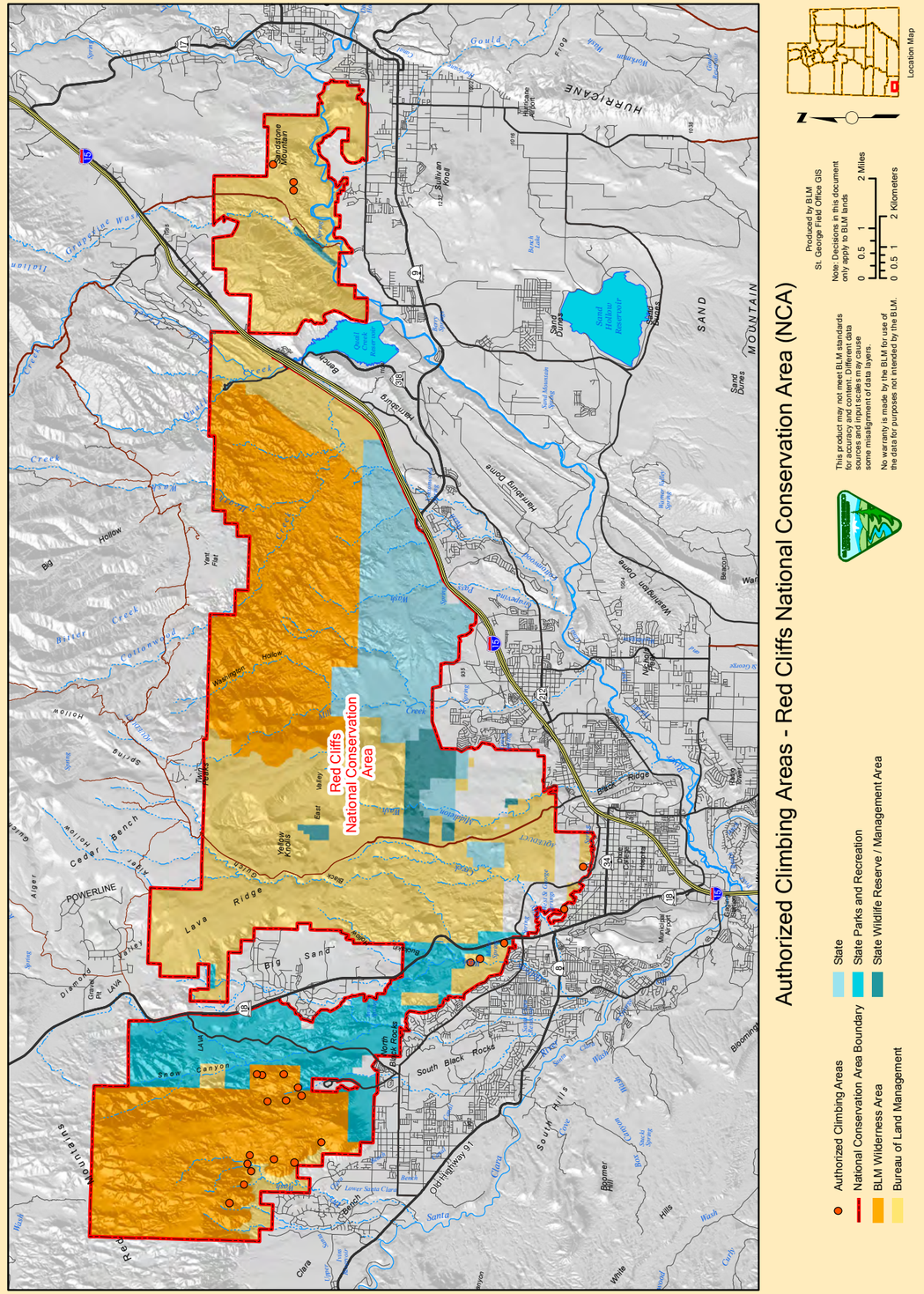
Provide a nationally recognized, professionally designed, non-motorized trail system that provides access to a wide range of recreational opportunities and is consistent with the goals, objectives, and recommendations of the *Revised Recovery Plan for the Mojave Desert Tortoise* (USFWS 2011).

The BLM shall comply with OPLMA Sec. 1977 (b)(2) which states the following: (2) SCOPE; CONTENTS.—In developing the travel management plan, the Secretary shall— (A) in consultation with appropriate Federal agencies, State, tribal, and local governmental entities (including the County and St. George City, Utah), and the public, identify 1 or more alternatives for a northern transportation route in the County; (B) ensure that the travel management plan contains a map that depicts the trail; and (C) designate a system of areas, roads, and trails for mechanical and motorized use.

Management Actions - General

CTT-1: The BLM would coordinate transportation management with adjacent federal agencies, American Indian Tribes, state and local governments, and authorized users.

CTT-2: All motorized routes identified in the PUP, subsequent implementation-level plans, and subsequent



project-specific NEPA documents are carried forward into the TMP.

OHV Area Designations

CTT-3: Open to Cross-Country OHV use: 0 acres

Limited to Designated Routes: 24,870 acres

Closed to OHV use: 19,989 acres

(Map 7)

A map of the existing transportation system can be found at the BLM ePlanning website http://bit.ly/2av3Q1i.

Non-Motorized Trails

CTT-4: Design and construct the non-motorized trail system to professional standards to ensure that trail design:

a) Addresses the needs of equestrians, hikers, climbers, and mountain bikers;

b) Protects diverse NCA resource values from direct or indirect recreation impacts by promoting compliance with regulatory requirements and visitor use restrictions;

c) Results in sustainable systems;

d) Provides high quality experiences;

e) Serves the abilities of non-motorized recreational users;

f) Offers opportunities for looping, varying distances, linking between geographic areas and trailheads, and connecting to heritage and other educational resources;

g) Minimizes user conflicts by separating user groups whenever feasible;

h) Limits the desire to venture off-trail.

CTT-5: Where new trail development would result in a modification of the primary constituent elements of designated critical habitat for Mojave desert tortoise, restore an equivalent acreage of damaged habitat in the NCA through reclamation and revegetation (with approved species) of user-created trails, closed roads, fire-damaged lands, or other disturbed areas, in consultation with USFWS and UDWR.

Management Actions - Public Education and Interpretation

CTT-6: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about appropriate public lands etiquette, including OHV etiquette.

CTT-7: Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that encourage motorized users to use existing disturbed areas for parking and camping.

6.33 Lands and Realty

Goals

Land tenure adjustments are made to assist the conservation, protection, and enhancement of NCA resource values, facilitate management, and reduce administrative costs.

Land use authorizations further the purposes of conservation, protection, and enhancement of resource values in the NCA.

Objectives

Non-federal lands are acquired from willing land owners through purchase, exchange of public lands identified for disposal outside the boundaries of the NCA, donation, or conservation easement.

Surface and subsurface rights would be acquired whenever possible to avoid creating split estates.

Conservation easements may be acquired where such interest would further the management objectives of the NCA.

Land tenure adjustments would be prioritized based on manageability, the feasibility of successful acquisition, and the ecological, cultural, recreational, and scenic values of the tract to be acquired.

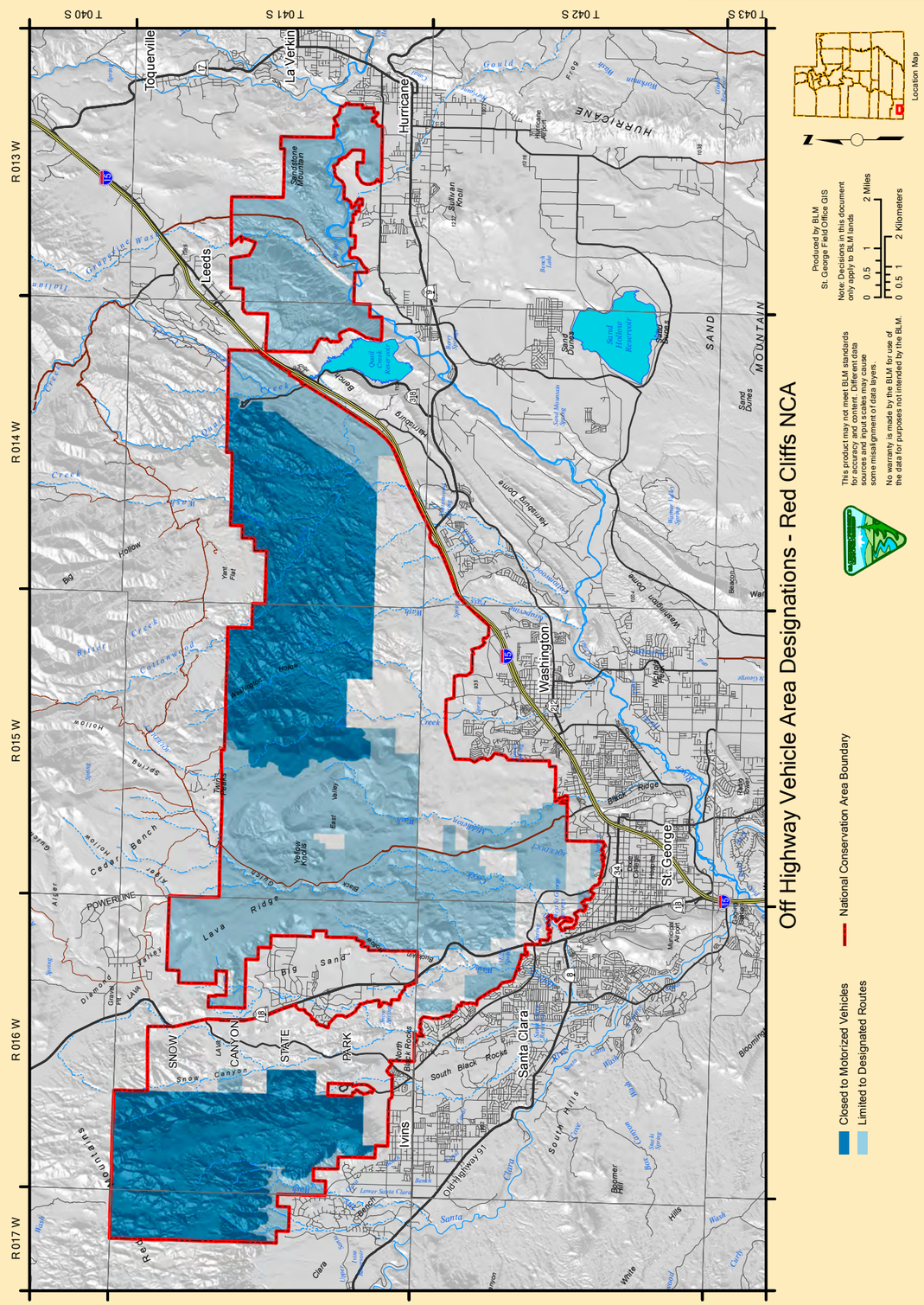
Ensure that long and short term land use authorizations are consistent with the NCA purposes of resource conservation, protection, and enhancement.

BLM will work collaboratively with local, state, and federal partners to accomplish the goals and the objectives of the Washington County HCP and its implementation agreement.

Management Actions - General

LAR-1: "Any land or interest in land that is located in the National Conservation Area that is acquired by the United States shall—(1) become part of the National Conservation Area; and (2) be managed in accordance with—(A) the Federal Land Policy and Management Act of 1976 (U.S.C. 1701 et seq.); (B) this section; and (C) any other applicable law (including regulations)" (OPLMA Section 1974 (f)).

LAR-2: "(1) In General.—Subject to valid existing rights, all Federal land located in the National Conservation Area is withdrawn from—(A) all forms of entry, appropriation, and disposal under the public land laws; (B) location, entry, and patenting under the mining laws; (C)



operation of the mineral leasing, mineral materials, and geothermal leasing laws. (2) Additional Land.—If the Secretary acquires additional land that is located in the National Conservation Area after the date of enactment of this Act, the land is withdrawn from operation of the laws referred to in paragraph (1) on the date of acquisition of the land" (OPLMA Section 1974 (g)).

LAR-3: "(h) EFFECT.—Nothing in this section prohibits the authorization of the development of utilities within the National Conservation Area if the development is carried out in accordance with—(1) each utility development protocol described in the habitat conservation plan; and (2) any other applicable law (including regulations)" (OPLMA Section 1974 (h)).

LAR-4: Manage public lands in accordance with applicable city and county zoning restrictions and municipal ordinances (to the extent that such restrictions and ordinances are consistent with the purposes for which the NCA was Congressionally-designated), as well as other federal laws, regulations, and policies, and with goals, objectives, and management decisions from the approved RMP for the NCA.

LAR-5: Do not authorize commercial renewable energy (e.g., wind, solar) leases or ROWs in the NCA.

LAR-6: Any new proposed actions must be consistent with the established purpose of the NCA as identified in OPLMA, and must be consistent with all other federal law, regulation and policy.

LAR-7: Consider allowing realty authorizations, such as ROWs and permits, outside of ROW exclusion areas, only when required for local, essential community services and when no siting alternatives exist outside the NCA.

LAR-8: Existing ROWs will be maintained in accordance with the respective ROW grant or other applicable authorization through the end of the defined term. While processing ROW renewals, in accordance with applicable law and policy, BLM will work with holders of existing ROWs to consider new, additional, or modified terms and conditions to minimize impacts to NCA resource values. Consideration will also be given to relocating ROWs and any related infrastructure to areas outside the NCA.

LAR-9: Evaluate realty authorization requests using evaluation criteria designed to protect conservation area resources and values.

Land Tenure Adjustments

LAR-10: Work with willing land owners or administrators to acquire in-holdings and edge-holdings that are in the public interest through purchase, exchange of public lands targeted for disposal outside of the NCA boundaries, donation, or conservation easement.

LAR-11: Acquire both surface and subsurface rights whenever possible to avoid the creation of split estates. Prioritize acquisition of non-federal inholdings and parcels that adjoin the NCA boundaries that meet one or more of the following criteria:

a) Further the purposes of the NCA relating to the conservation, protection, and enhancement of its ecological, scenic, wildlife, cultural, historical, recreational, natural, educational, and scientific resources;

b) Enhance public recreation experiences and benefits;

c) Provide additional access to other public lands.

LAR-12: Manage acquired lands in conformance with RMP decisions for linear ROWs, utility and transportation corridor designations, site-type leases or ROWs, commercial renewable energy leases or ROWs, and other land use authorizations.

Linear ROWs

LAR-13: Designate ROW Avoidance and Exclusion areas and retain an existing ROW corridor as follows (Map 8):

Exclusion areas: (areas that are not available for location of ROWs under any conditions, including all designated wilderness within the NCA): 38,472 acres

Avoidance areas: 6,367 acres

While considering a new proposed ROW application the BLM will:

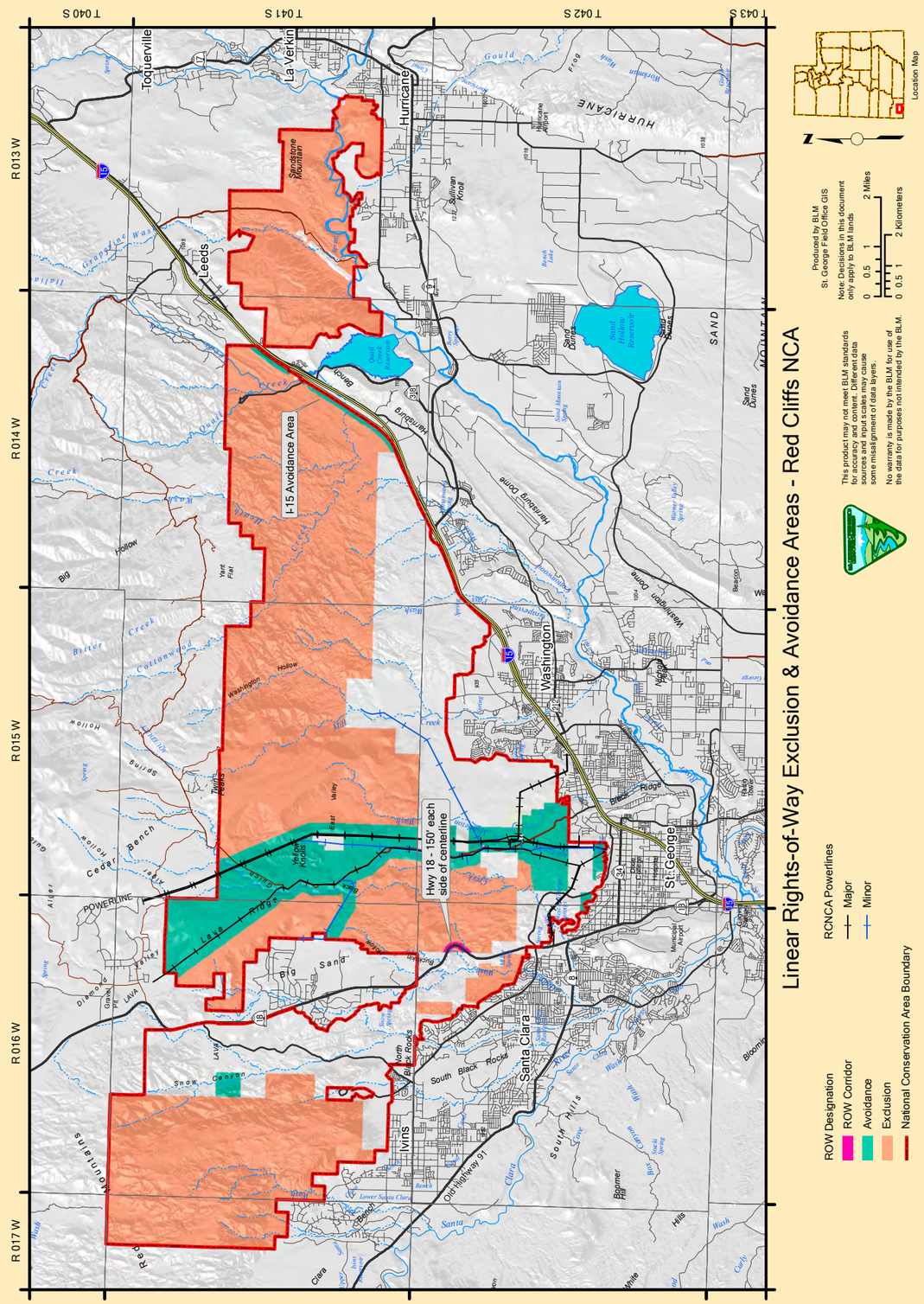
a) consider options for routing or siting the ROW outside of the NCA;

b) ensure consistency of the ROW with the established purpose of the NCA, as identified in OPLMA;

c) ensure that new ROWs share, parallel, or adjoin existing ROWs;

d) apply special stipulations and mitigation measures within avoidance areas consistent with VRM objectives and the purpose of the NCA;

e) authorize new ROWs only when the project-specific NEPA analysis indicates that the construction and operation of the facility would not result in the take of federally-listed species; the adverse modification of designated critical habitats; or adverse effects to NRHP-listed or eligible properties, and the following criteria are met:



1) construction could be accomplished through methods that minimize new surface disturbances and resource impacts;

2) new ROW access roads would not be required for construction, operation, and maintenance;

3) existing ROW access roads would not be permanently widened or upgraded for construction, operation, and maintenance; temporary enlargements or modifications to existing access routes needed during construction would be rehabilitated immediately after construction is completed; and

4) construction, operations, and maintenance would not require off-road travel by motorized vehicles.

Designated ROW Corridor: 20 acres

Retain the existing corridor along SR-18 through the NCA (150 feet either side of centerline of highway) to minimize adverse environmental impacts and the proliferation of separate right-of-ways.

Site-type Leases and ROWs

LAR-14: Exclude new site-type leases and ROWs (e.g., cell towers).

Other Land Use Authorizations

LAR-15: Do not authorize leases under the authority of the Recreation and Public Purposes Act within the NCA.

LAR-16: Only authorize commercial film permits if they further public understanding and appreciation of the NCA and its purposes. Permits may be subject to surface use and seasonal restrictions and will only be granted after applicable environmental compliance legal requirements have been satisfied, including site-specific NEPA analyses.

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Glossary & Abbreviations-Acronyms

Glossary & Abbreviations-Acronyms

GLOSSARY

A

Acquisition: Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund purchases, or donations.

Actual use: The number of animal unit months consumed by livestock, based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Adaptive Management: A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

Administrative use/access: Administrative use/access pertains to motorized travel on routes that are limited to authorized users. Such authorized users could be livestock grazing permittees, Federal or state employees, or ROW holders. These are existing routes that lead to developments that have an administrative purpose (e.g. right-of-ways, livestock grazing developments), or where the BLM or a permitted user must have access for regular maintenance or operation.

Allotment: An area of land in which one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment Management Plan (AMP): A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment. An AMP is prepared in consultation with the permittees, lessees, and other affected interests. Livestock grazing is considered in relation to other uses of the range and to renewable resources, such as watershed, vegetation, and wildlife. An AMP establishes seasons of use, the number of livestock to be permitted, the range improvements needed, and the grazing system.

Allowable uses: As defined by the Omnibus Act of 2009, allowable uses in the Beaver Dam Wash and Red Cliffs National Conservation Areas are those uses that further the purposes for which the NCAs was established. The Omnibus Act explicitly excludes operation under the mining, mineral leasing, mineral materials, and geothermal leasing laws, as well as entry, appropriation, or disposal under the public land laws. Within the Red Mountain and Cottonwood Wilderness, the Wilderness Act defines allowable uses.

Animal unit month (AUM): The amount of forage necessary for the sustenance of one cow, five sheep, or five goats for a period of one month (approximately 800 pounds of air-dried material per AUM).

Area of Critical Environmental Concern (ACEC): Special Area designation established through the BLM's land use planning process (43 CFR 1610.7-2) where special management attention is required (when such areas are developed or used or where no development 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. The level of allowable use within an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations in order to protect identified resources or values.

B

Big game: Indigenous ungulate wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn antelope.

Biodiversity (biological diversity): The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

Biological control: the use of living organisms (e.g. insects, pathogens, nematodes, mites) to achieve management objectives, such as noxious weed control.

Biological soil crust (BSC): A complex association between soil particles and cyanobacteria, algae, microfungi, lichens, and bryophytes that live within or atop the uppermost millimeters of soil. Also referred to as cryptobiotic soil and cryptogamic soil.

C

Candidate species: Plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA) but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the Federal Register (BLM Manual 6840, Special Status Species Manual).

Casual use (Mining): Activities involving practices that do not ordinarily cause appreciable disturbance or damage to the public lands, resources or improvements and, therefore, do not require a right-of-way grant or temporary use permit (43 CFR 2800). Casual use generally includes the collecting of geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and non-motorized sluicing. It also generally includes use of metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand battery-operated dry washers. Casual use does not include use of mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, motorized vehicles in areas designated as closed to off-road vehicles, chemicals, or explosives. It also does not include occupancy or operations where the cumulative effects of the activities result in more than negligible disturbance.

Climate change: Any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- ► natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- ► natural processes within the climate system (e.g. changes in ocean circulation); and
- ► human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.).

Closed: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of "closed" as it relates to off-highway vehicle use, and 43 CFR 8364 defines "closed" as it relates to closure and restriction orders (BLM 2005).

Collaboration: A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. This may or may not involve an agency as a cooperating agency.

Comprehensive travel and transportation management: The proactive interdisciplinary planning, on-the-ground management, and administration of travel networks (both motorized and non-motorized) to ensure public access, natural resources, and regulatory needs are considered. It consists of inventory, planning, designation, implementation, education, enforcement, monitoring, easement acquisition, mapping and signing, and other measures necessary to provide access to public lands for a wide variety of uses (including uses for recreational, traditional, casual, agricultural, commercial, educational, and other purposes).

Corridor: A strip of land that aids in the movement of species between disconnected core areas of their natural habitat.

Critical habitat: An area occupied by a threatened or endangered species on which are found physical and biological features that are (1) essential to the conservation of the species, and (2) may require special management considerations or protection.

Crucial winter range: That part of the overall big game range where 90 percent of the individuals are located during the average five winters out of 10 from the first heavy snowfall to spring green-up, or during a site-specific period of winter as defined for each Utah Division of Wildlife Resources Data Analysis Unit.

Cultural resource: Locations of human activity, occupation, or use. Cultural resources include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and locations of traditional cultural or religious importance to specified social or cultural groups.

Cultural resources inventory: A procedure to assess the potential presence of cultural resources. There are three classes of surveys:

- ► Class I. A literature review of prior cultural resource data collection in a study area to (1) provide a narrative overview of cultural resources by using existing information, and (2) compile existing cultural resources site record data on which to base the development of the BLM's site record system.
- ► Class II. A sampling field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites within a portion of an area so that an estimate can be made of the cultural resources for the entire area.
- ► Class III. An intensive field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites in an area.

Cultural site use allocations: BLM Manual 8110 direct that each cultural resource within the planning area should be assigned to at least one of the following:

- ► Scientific Use-applies to a cultural property determined to be available for scientific or historical study using currently available research techniques or to be preserved until the research potential is realized.
- ► Conservation for Future Use-reserved for unique cultural properties, those that are unusually scarce, have significant data that cannot be removed with current technology, have singular historic or other importance, and can be "banked" for future scientific or historic study.
- ► Traditional Use-is applied to a cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining their cultural identity, heritage, or well-being.
- ► Public Use-is applied to a cultural property that has qualities useful for on-site interpretation or for other related educational and recreational uses by the general public.
- ► Experimental Use-is applied to a cultural property determined to be suitable for controlled experimental study to improve management techniques.
- ► Discharged from Management-is assigned to a cultural property with no remaining identifiable use. No cultural resources may be removed from management before documentation, but many kinds of sites may be removed following the appropriate level of documentation and/or study.

D

Designated routes: Specific roads and trails identified by the BLM where some type of use is appropriate and allowed.

Desired future condition: For rangeland vegetation, the condition of rangeland resources on a landscape scale that meet management objectives. It is based on ecological, social, and economic considerations during the land planning process. It is usually expressed as ecological status or management status of vegetation (species composition, habitat diversity, and age and size class of species) and desired soil qualities (soil cover, erosion, and compaction). In a general context, desired future condition is a portrayal of the land or resource conditions that are expected to result if goals and objectives are fully achieved.

Dispersed camping: Camping anywhere outside of a developed campground. Dispersed camp sites do not have amenities such as toilets, picnic tables, or fire grates. Dispersed camp sites may be designated by the BLM.

Disposal: Transfer of public land out of Federal ownership to another party through sale, exchange, Recreation and Public Purposes Act, Desert Land Entry or other land law statutes.

E

Easement: A right afforded a person or agency to make limited use of another's real property for other purposes.

Emergency stabilization and rehabilitation (ES&R): Actions taken immediately following a wildfire incident and that are completed within one year. They are intended to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, and to repair/replace/construct physical improvements necessary to prevent degradation to critical biological or cultural resources.

Endangered species: Any species that is in danger of extinction throughout all or a significant portion of its range and so designated by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

Environmental Impact Statement (EIS): A detailed statement prepared by the responsible official in which a major Federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action provided, and effects analyzed.

Erosion: Detachment and movement of soil from the land by wind, water, or gravity.

Exchange: A transaction whereby the Federal Government receives land or interests in land in exchange for other land or interests in land.

Exclosure: In a grazing context, a limited area from which livestock (and sometimes wildlife) are excluded by fencing.

Existing routes: The roads, trails, or ways that are used by motorized vehicles (jeeps, all-terrain vehicles, motorized dirt bikes, etc.), mechanized uses (mountain bikes, wheelbarrows, game carts), pedestrians (hikers), and/or equestrians (horseback riders) and were, to the best of the BLM's knowledge, in existence at the time that the BLM finalized its route inventory.

Extensive Recreation Management Area (ERMA): Administrative units that require specific management consideration in order to address recreation use, demand, or Recreation and Visitor Services program investments.

F

Federal Land Policy and Management Act of 1976 (FLPMA): Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction policy and basic management guidance.

Film Permit: Special permits to use the public lands for commercial film production are issued by the BLM under Section 302(b) of the Federal Land Policy and Management Act. Regulations governing filming on public lands are covered in 43 Code of Federal Regulations (CFR) part 2920, Leases Permits, and Easements.

Firearm: A weapon, especially a portable gun or pistol, from which a projectile can be discharged by an explosion caused by igniting gunpowder.

Fire suppression: All work activities connected with fire extinguishing operations, beginning with discovery of a fire and continuing until the fire is completely out.

Forage: All browse and herbaceous foods that are available to grazing animals.

Forb: A herbaceous plant that is not a grass, sedge, or rush.

G

Goal: A broad statement of a desired outcome; usually not quantifiable and may not have established time frames for achievement. For the NCAs, goals are generally derived from the Omnibus Act of 2009 and BLM policy guidance.

Grazing allotment: An area where one or more livestock operators graze their livestock. An allotment generally consists of Federal land but may include parcels of private or state-owned land.

Grazing permit/license/lease: Official written permission to graze a specific number, kind, and class of livestock for a specified time period on a defined rangeland.

Grazing preference: A superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by a permittee or lessee.

Grazing system: Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation.

Groundwater: Water held underground in soil or permeable rock, often feeding springs and wells.

H

Habitat: An environment that meets a specific set of physical, biological, temporal or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

Hand tools: Refers to non-mechanical, non-motorized tools (e.g. brushes, trowels, shovels, hammers, and plum lines).

Heritage areas: Places where natural, cultural, and historic resources combine to form a cohesive, important landscape. Characterized by distinctive natural, cultural, historic, and scenic resources that, when linked together, tell a unique story.

Heritage tourism: Tourism that emphasizes experiencing the places, artifacts and activities that authentically represent the stories and people of the past and present.

Hibernacula: hibernation site, overwintering site, refugia or den for bats and snakes.

I

Indicator: Measure of the health of a species or vegetative/habitat type, which are often quantifiable.

Infiltration and permeability rate: Rate at which water penetrates the surface of the soil at any given moment, usually expressed in inches per hour. Permeability is the relative ease (or lack thereof) with which water moves downward through soil. Permeability is measured in inches per hour. Land Health Standard I is designed to ensure soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Implementation decisions: Decisions that take action to implement land use planning; generally appealable to Interior Board of Land Appeals under 43 CFR 4.410. These decisions are generally more site-specific than land-use plan decisions.

Implementation plan: An area or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

Integrated weed management (IWM): A balanced approach to weed management that includes the following processes:

- ► managing the resource to prevent weeds from invading
- ► proper identification and knowledge of invasive weed species
- ► inventory, mapping out and monitoring of weed populations and damage
- ► making control decisions based on knowledge of potential damage, cost of control method and environmental impact of the weed and control decision
- ► using control strategies that may include a combination of methods to reduce the weed population to an acceptable level
- ► evaluating the effectiveness and effects of management decisions.

Interpretive site: Site or facility for the interpretation of cultural, historical, paleontological, geological and/or biological information. Includes Internet sites, printed brochures, information kiosks and on-site presentations of information.

Invertebrate: An animal lacking a backbone or spinal column.

L

Land tenure adjustments: Ownership or jurisdictional changes are referred as "Land Tenure Adjustments". To improve the manageability of the BLM lands and improve their usefulness to the public, the BLM has numerous authorities for "repositioning" lands into a more consolidated pattern, disposing of lands, and entering into cooperative

management agreements. These land pattern improvements are completed primarily through the use of land exchanges, but also through land sales, jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

Land use allocation: The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions (BLM 2005).

Land use plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both RMPs and MFPs (BLM 2005).

Land use plan decision: Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to Interior Board of Land Appeals.

Lease: Section 302 of FLPMA provides the BLM with authority to issue leases for the use, occupancy, and development of public lands. Leases are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for the processing of these leases and permits are found in 43 CFR 2920.

Limited area: Designated areas and trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types or vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing routes, or limiting use to designated routes. Under the limited to designated routes designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year (from BLM National Management Strategy for OHV Use on Public Lands).

Long-term effect: The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more.

M

Management decision: A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Maternity roost sites: Location where female bats bear and raise their young.

Mechanized equipment: Used outside wilderness areas on archeological and paleontological digs, includes pneumatic air scribe, diamond saw, large construction drills and delicate dental drills.

Mechanical transport: Any vehicle, device, or contrivance for moving people or material in or over land, water, snow, or air that has moving parts.

Mechanical vegetation treatment: Includes mowing, chaining, chopping, drill seeding, and cutting vegetation to meet resource objective. Mechanical treatments generally occur in areas where fuel loads or invasive species need to be reduced prior to prescribed fire application; when fire risk to resources is too great to use naturally started wildland fires or prescribed fires; or where opportunities exist for biomass utilization or timber harvest.

Mitigation: in general, a combination of measures to lessen the impacts of a project or activity on an element of the natural environment or various other cultural or historic values; more specifically, as defined by the Council on Environmental Quality in its regulations for implementing NEPA, mitigation includes: (a) avoiding the impact, (b) minimizing the impact, (c) rectifying (i.e., repairing, rehabilitating, or restoring) the impact (d) reducing or eliminating the impact through operations during the life of the project, or (e) compensating by replacing or substituting resources (40 CFR Section 1508.20).

Monitoring (plan monitoring): The process of tracking the implementation of land use plan decisions and collecting and assessing data necessary to evaluate the effectiveness of land use planning decisions.

Motorized vehicles or uses: Any vehicle that is self-propelled, including but not limited to jeeps, all-terrain vehicles (such as four-wheelers and three-wheelers), snow machines or snowmobiles, and trail motorcycles or dirt bikes.

Multiple use: The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (FLPMA) (from M6840, Special Status Species Manual).

N

National Environmental Policy Act (NEPA) of 1969: A law that established a national policy to maintain conditions under which humans and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans. It established the Council on Environmental Quality for coordinating environmental matters at the Federal level and to serve as the advisor to the President on such matters. The law made all Federal actions and proposals that could have significant impact on the environment subject to review by Federal, state, and local environmental authorities.

National Historic Preservation Act as amended: 1966 legislation establishing the National Register of Historic Places and extending the national historic preservation programs to properties of State and local significance.

National Historic Trail: A Congressionally-designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a National Historic Trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail. The Old Spanish National Historic Trail is a National Historic Trail.

National Register of Historic Places (NRHP): Official inventory of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering and culture.

Native vegetation: Plant species that were found here prior to European settlement, and consequently are in balance with these ecosystems because they have well developed parasites, predators, and pollinators.

Naturalness: Refers to an area that "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (Section 2[c] of the Wilderness Act of 1964).

Natural processes: Natural, unplanned wildland fire, drought, insect and disease outbreaks, flooding, and other events that existed prior to European settlement, and shaped vegetation composition and structure.

Natural regeneration: The growth of trees (or other plants) from seeds, roots or bulbs without cultivation by humans.

Nature and purposes (as it relates to National Historic Trails): The term used to describe the character, characteristics, and congressional intent for a designated National Trail, including the resources, qualities, values, and associated settings of the areas through which such trails may pass; the primary use or uses of a National Trail; and activities promoting the preservation of, public access to, travel within, and enjoyment and appreciation of National Trails.

Noxious weeds: A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the US.

O

Objective: A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement.

Occurrence: A known location of an individual or population of individuals of a plant or animal species.

Off-highway vehicle (OHV): Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any non-amphibious registered motorboat: (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used for national defense (BLM 2005).

Off-highway vehicle area designations: BLM-administered lands in the St. George Field Office are designated as Open, Limited, or Closed for OHV use.

- Open. Designated areas where all types of motorized vehicles (jeeps, all-terrain vehicles, motorized dirt bikes, etc.) are permitted at all times, anywhere in the area, on roads or cross country, subject to the operating regulations and vehicle standards set forth in 43 CFR subparts 8341 and 8342.
- Limited. Designated areas where motorized vehicles are restricted to designated routes. Off-road, cross-country travel is prohibited in Limited areas, unless an area is specifically identified as an area where cross-country over-snow travel is allowed. Some existing routes may be closed in Limited areas.
- Closed. Designated areas where off-road motorized vehicle travel is prohibited yearlong. Emergency use of vehicles is allowed yearlong.

Off-site education and interpretation: May include website, social media, printed brochures and maps.

On-site education and interpretation: May include kiosks and information plates.

Open: Designated areas and trails where off-road vehicles may be operated, subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343, or an area where all types of vehicle use is permitted at all times, subject to the standards in BLM Manuals 8341 and 8343.

P

Paleontological resources: Any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Paleontological resources do not include any materials associated with an archaeological resource or any cultural item (16 U.S.C. 470aaa(4)).

Perennial stream: Perennial streams carry flowing water continuously throughout the year, regardless of weather conditions. It exhibits well-defined geomorphologic characteristics and in the absence of pollution, thermal modifications, or other man-made disturbances has the ability to support aquatic life.

Permitted use: In a livestock grazing context, the forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, and expressed in Animal Unit Months.

Permittee: In a livestock grazing context, a person or company permitted to graze livestock on public land.

Planning area: A geographic area for which land use and resource management plans are developed and maintained.

Planning criteria: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamlines and simplifies the resource management planning actions.

Planning issues: Concerns, conflicts, and problems with the existing management of public lands. Frequently, issues are based on how land uses affect resources. Some issues are concerned with how land uses can affect other land uses, or how the protection of resources affects land uses.

Plant materials: Materials derived from plants or vegetation, including firewood (fuelwood), posts & poles, wildings and boughs.

Potential fossil yield classification: system that aids in assessing the potential for discovery of significant paleontological resources or the impact of surface disturbing activities to these resources. Classification system was originally developed by the Forest Service's Paleontology Center of Excellence and the Region 2 (FS) Paleontology Initiative in 1996.

Prehistoric resources: Any material remains, structures, and items used or modified by people before Euroamericans established a presence in the region.

Prescribed fire treatments: A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements (where applicable) have been met prior to ignition.

Primitive road: A linear route managed for use by four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

Proper functioning condition: (1) An element of the Fundamental of Rangeland Health for watersheds, and therefore a required element of State or regional standards and guidelines under 43 CFR § 4180.2(b). (2) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in the BLM Technical Reference TR 1737-9. (3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize stream banks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. (4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation.

Public land: Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf, and lands held for the benefit of Indians, Aleuts, and Eskimos.

R

Raptor: Bird of prey with sharp talons and strongly curved beaks, e.g. hawks, owls, vultures, eagles.

Reclamation: Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with a predetermined land management plan.

Recreation experiences: Psychological outcomes realized either by recreation-tourism participants as a direct result of their on-site leisure engagements and recreation-tourism activity participation or by nonparticipating community residents as a result of their interaction with visitors and guests within their community or interaction with the BLM and other public and private recreation-tourism providers and their actions.

Recreation opportunities: Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.

Recreation setting character conditions: The distinguishing recreational qualities of any landscape, objectively defined along a continuum, ranging from primitive to urban landscapes, expressed in terms of the nature of the component parts of its physical, social, and administrative attributes. These recreational qualities can be both classified and mapped. This classification and mapping process should be based on variation that either exists (for example, setting descriptions) or is desired (for example, setting prescriptions) among component parts of the various physical, social, and administrative attributes of any landscape. The recreation opportunity spectrum is one of the tools for doing this.

Recreation settings: The collective distinguishing attributes of landscapes that influence and sometimes actually determine what kinds of recreation opportunities are produced. Recreation settings are classified both in terms of existing conditions (inventory) and desired future conditions (planned).

Recreation use permit (RUP): Authorizations for use of developed facilities that meet the fee criteria established by the Federal Lands Recreation Enhancement Act of 2004 or a subsequent authority. Recreation Use Permits are issued to ensure that United States residents receive a fair and equitable return for the use of those facilities to help recover the cost of construction, operation, maintenance, and management of the permits.

Resource Management Plan (RMP): A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Restoration: The process by which areas are brought back to a former, original or specific desired condition or appearance.

Revegetation: The process of putting vegetation back in an area where vegetation previously existed, which may or may not simulate natural conditions.

Right-of-way (ROW): An easement or permit that authorizes public land to be used for a specified purpose that is in the public interest and that requires right-of-ways over, upon, under, or through such lands (e.g. roads, power-lines, pipelines).

Right-of-way Avoidance area: An area identified through resource management planning to be avoided but may be available for ROW location with special stipulations.

Right-of-way Exclusion area: An area identified through resource management planning that is not available for ROW location under any conditions.

Riparian area: A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Riparian zone: An area one-quarter mile wide encompassing riparian and adjacent vegetation.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Rock Art: Petroglyphs (carvings) or pictographs (paintings) created on natural rock surfaces by native people and depicting their history and culture.

Routes: Multiple roads, trails and primitive roads; a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as “routes.”

S

Salinity: The presence of elevated levels of soluble salts in soils or waters.

Season of use: In a grazing context, the time during which livestock grazing is permitted on a given range area, as specified in the grazing lease.

Seeding: Seeding is a vegetation treatment that includes the application of grass, forb, or shrub seed, either aerially or from the ground. In areas of gentle terrain, ground applications of seed are often accomplished with a rangeland drill. Seeding allows the establishment of native species or placeholder species and restoration of disturbed areas to a perennial-dominated cover type, thereby decreasing the risk of subsequent invasion by exotic plant species. Seeding would be used primarily as a follow-up treatment in areas where disturbance or the previously described treatments have removed exotic plant species and their residue.

Seeps and Springs: Naturally occurring springs usually emerge from a single point, while seeps emerge over a larger area, having no well-defined origin. Unique vegetative communities often form around the discharges of seeps and springs.

Sensitive Species: Species designated as sensitive by the BLM State Director, including species that are under status review, have small or declining populations, live in unique habitats, or require special management. BLM Manual 6840 provides policy and guidance for managing special status species.

Setting Character: The condition of any recreation system, objectively defined along a continuum, ranging from primitive to urban in terms of variation of its component physical, social, and administrative attributes.

Short-term Effect: The effect occurs only during or immediately after implementation of the action or alternative.

Solitude: The state of being alone or remote from habitations; isolation. A lonely or secluded place. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

Special Recreation Management Area (SRMA): An administrative unit where the existing or proposed recreational opportunities and recreational setting characteristics are recognized for their unique value, importance or distinctiveness; especially compared to other areas used for recreation.

Special Recreation Permit (SRP): Authorizations that allow for recreational uses of public lands and related waters. Issued as a means to control visitor use, protect recreational and natural resources, and provide for the health and safety of visitors. Commercial Special Recreation Permits also are issued as a mechanism to provide a fair return for the commercial use of public lands.

Special status species: Species that are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the Endangered Species Act (ESA); those listed by a State in a category such as threatened or endangered implying potential endangerment or extinction; and those designated by each State Director as sensitive.

Split estate: Lands on which the mineral estate is owned by someone other than the surface estate owner. For example, the surface is in private ownership and the mineral resources are publicly held and managed by the Federal Government.

State Historic Preservation Office: Office in State or territorial government that administers the preservation programs under the National Historic Preservation Act.

Stipulation: A term or condition in an agreement or contract.

Succession: Succession is the process by which an ecological community undergoes changes over time following disturbances (either natural or human-caused disturbances).

Surface-disturbing activities: Human-caused disturbance resulting in direct and pronounced alteration, damage, removal, displacement, or mortality of vegetation, soil, or substrates; usually entail motorized or mechanized vehicles or tools; typically can also be described as disruptive activities (see following definition). Examples of typical surface disturbing activities include:

- ► Earth-moving and drilling;
- ► Geophysical exploration;
- ► Off-route motorized and mechanized travel;
- ► Vegetation treatments including woodland thinning with chainsaws;
- ► Pyrotechnics and explosives; and
- ► Construction of powerlines, pipelines, oil and gas wells, recreation sites, livestock improvement facilities, wildlife waters, or new roads.

Examples of casual use and other activities that would not normally be considered surface disturbing activities include:

- ► Equestrian use;

- ► Proper livestock grazing;
- ► Cross-country hiking;
- ► Hand-spraying weeds;
- ► Minimal trimming of vegetation to maintain ROWs;
- ► Motorized and mechanized travel on designated routes; and
- ► Maintenance of permitted areas under valid existing rights.

T

Threatened species: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and as further defined by the Endangered Species Act of 1973.

Traditional uses: Longstanding, socially conveyed, customary patterns of thought, cultural expression, and behavior, such as religious beliefs and practices, social customs, and land or resource uses. Traditions are shared generally within a social and/or cultural group and span generations. Usually traditional uses are reserved rights resulting from treaty and/or agreements with Native American groups.

Trail: A linear route managed for human-powered, stock or OHV travel/transportation, or for historical or heritage values; not generally managed for use by 4WD or high-clearance vehicles.

Transportation system: The sum of the BLM's recognized inventory of linear features (roads, primitive roads, and trails) formally recognized, designated, and approved as part of the BLM's transportation system.

Travel management areas: Polygons or delineated areas where areas have been classified as open, closed or limited, and have identified and/or designated a network of roads, trails, ways, and other routes that provide for public access and travel across the planning area. All designated travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or time-frames for allowable access or other limitations (BLM 2005).

U

Understory: That portion of a plant community growing underneath the taller plants on the site.

V

Valid existing rights: Any valid right that is immune from denial or extinguishment by the exercise of Secretarial discretion and was in existence within the boundaries of the Beaver Dam Wash and Red Cliffs NCAs when the NCAs were established on March 30, 2009.

Vegetation treatments: Planned alteration of vegetation communities to achieve desired resources objectives through use of mechanical and chemical treatments, seeding, release of biological controls, manual labor, timber harvest, targeted grazing, and/or prescribed fire.

Vertebrate: An animal having a backbone or spinal column.

Visitor use: Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and the management actions taken to achieve the visual resource management objectives.

Visual Resource Management Classes: Visual resource management classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. Categories assigned to public lands on the basis of scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape (BLM 2005). The four classes are described below:

- ► Class I provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.

- ► Class II areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- ► Class III includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- ► Class IV applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Visual resources: The visible physical features on a landscape, (topography, water, vegetation, animals, structures, and other features) that comprise die scenery of the area.

W

Watershed: Topographical region or area delineated by water draining to a particular watercourse or body of water.

Wetland: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

White nose syndrome: A high mortality disease affecting hibernating bats. Named for the white fungus that appears on the muzzle and other body parts of hibernating bats.

Wilderness: A congressionally designated area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness characteristics: Wilderness characteristics include size, the appearance of naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include ecological, geological, or other features of scientific, educational, scenic, or historical value. However Section 2(c) of the Wilderness Act of 1964 has been updated by IM-2003-195, dated June 20, 2003. Indicators of an area's naturalness include the extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats. Outstanding opportunities for solitude or primitive and unconfined types of recreation may be experienced when the sights, sounds, and evidence of other people are rare or infrequent, in locations where visitors can be isolated, alone or secluded from others, where the use of the area is through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered.

Wildland fire: Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared (from H-1742-1, BLM Emergency Fire Rehabilitation Handbook).

Withdrawal: An action used to preserve sensitive environmental values, protect major Federal investments in facilities, support national security, and provide for public health and safety. Withdrawal segregates a portion of public lands and suspends certain operations of the public land laws, such as mining claims. Certain stock driveways are also withdrawn. Federal policy now restricts all withdrawals to the minimum time and acreage required to serve the public interest, maximize the use of withdrawn lands consistent with their primary purpose, and eliminate all withdrawals that are no longer needed.

ABBREVIATIONS-ACRONYMS

ACECs	Areas of Critical Environmental Concern
APP	Avian Protection Plan
Approved RMP	Approved Resource Management Plan
ARPA	Archaeological Resource Protection Act
AUM	Animal Unit Month
BA	Biological Assessment
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Draft EIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ES&R	Emergency Stabilization and Restoration
Final EIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
GIS	Geographic Information System
HABS	Historic American Building Survey
HALS	Historic American Landscape Survey
HCP	Habitat Conservation Plan
I-15	Interstate Highway 15
ITP	Incidental Take Permit
IWM	Integrated Weed Management
MOU	Memorandum of Understanding
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NNL	National Natural Landmark
NOA	Notice of Availability
NOI	Notice of Intent
NPS	National Park Service
NRHP	National Register of Historic Places
OHV	Off-Highway Vehicle
OST	Old Spanish Trail
OPLMA	Omnibus Public Land Management Act
P. L.	Public Law
Proposed RMP	Proposed Resource Management Plan
PRPA	Paleontological Resource Preservation Act
PUP	Public Use Plan
RAMP	Recreation Area Management Plan
Reserve	Red Cliffs Desert Reserve

RMP	Resource Management Plan
RMZs	Recreation Management Zones
ROD	Record of Decision
ROW	Right-of-way
RUP	Recreation Use Permit
Secretary	Secretary of the Interior
SHPO	State Historic Preservation Officer
SOP	Standard Operating Procedure
spp.	Species
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
TMP	Comprehensive Travel and Transportation Management Plan
UDWR	Utah Division of Wildlife Resources
UDWQ	Utah Division of Water Quality
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
VRM	Visual Resource Management

Appendices

Appendices

APPENDIX A

Omnibus Public Lands Management Act of 2009

This appendix contains the portions of the Omnibus Public Lands Management Act of 2009 (Public Law 111-11, Title I, Subtitle O - Washington County, Utah) that created the Beaver Dam Wash and Red Cliffs National Conservation Areas.

Subtitle O—Washington County, Utah

SEC. 1971. DEFINITIONS.

In this subtitle:

(1) BEAVER DAM WASH NATIONAL CONSERVATION AREA MAP.—The term "Beaver Dam Wash National Conservation Area Map" means the map entitled "Beaver Dam Wash National Conservation Area" and dated December 18, 2008.

(2) CANAAN MOUNTAIN WILDERNESS MAP.—The term "Canaan Mountain Wilderness Map" means the map entitled "Canaan Mountain Wilderness" and dated June 21, 2008.

(3) COUNTY.—The term "County" means Washington County, Utah.

(4) NORTHEASTERN WASHINGTON COUNTY WILDERNESS MAP.— The term "Northeastern Washington County Wilderness Map" means the map entitled "Northeastern Washington County Wilderness" and dated November 12, 2008.

(5) NORTHWESTERN WASHINGTON COUNTY WILDERNESS MAP.—The term "Northwestern Washington County Wilderness Map" means the map entitled "Northwestern Washington County Wilderness" and dated June 21, 2008.

(6) RED CLIFFS NATIONAL CONSERVATION AREA MAP.—The term "Red Cliffs National Conservation Area Map" means the map entitled "Red Cliffs National Conservation Area" and dated November 12, 2008.

(7) SECRETARY.—The term "Secretary" means—

(A) with respect to land under the jurisdiction of the Secretary of Agriculture, the Secretary of Agriculture; and

(B) with respect to land under the jurisdiction of the Secretary of the Interior, the Secretary of the Interior.

(8) STATE.—The term "State" means the State of Utah.

(9) WASHINGTON COUNTY GROWTH AND CONSERVATION ACT MAP.—The term "Washington County Growth and Conservation Act Map" means the map entitled "Washington County Growth and Conservation Act Map" and dated November 13, 2008.

SEC. 1972. WILDERNESS AREAS.

(a) ADDITIONS TO NATIONAL WILDERNESS PRESERVATION SYSTEM.—

(1) ADDITIONS.—Subject to valid existing rights, the following land in the State is designated as wilderness and as components of the National Wilderness Preservation System:

(A) BEARTRAP CANYON.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 40 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Beartrap Canyon Wilderness."

(B) BLACKRIDGE.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 13,015 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Blackridge Wilderness."

(C) CANAAN MOUNTAIN.—Certain Federal land in the County managed by the Bureau of Land Management, comprising approximately 44,531 acres, as generally depicted on the Canaan Mountain Wilderness Map, which shall be known as the "Canaan Mountain Wilderness."

(D) COTTONWOOD CANYON.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 11,712 acres, as generally depicted on the Red Cliffs National Conservation Area Map, which shall be known as the "Cottonwood Canyon Wilderness."

(E) COTTONWOOD FOREST.—Certain Federal land managed by the Forest Service, comprising approximately 2,643 acres, as generally depicted on the Red Cliffs National Conservation Area Map, which shall be known as the "Cottonwood Forest Wilderness."

(F) COUGAR CANYON.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 10,409 acres, as generally depicted on the Northwestern Washington County Wilderness Map, which shall be known as the "Cougar Canyon Wilderness."

(G) DEEP CREEK.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 3,284 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Deep Creek Wilderness."

(H) DEEP CREEK NORTH.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 4,262 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Deep Creek North Wilderness."

(I) DOC'S PASS.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 17,294 acres, as generally depicted on the Northwestern
Washington County Wilderness Map, which shall be known as the "Doc's Pass Wilderness."

(J) GOOSE CREEK.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 98 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Goose Creek Wilderness."

(K) LAVERKIN CREEK.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 445 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "LaVerkin Creek Wilderness."

(L) RED BUTTE.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 1,537 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Red Butte Wilderness."

(M) RED MOUNTAIN.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 18,729 acres, as generally depicted on the Red
Cliffs National Conservation Area Map, which shall be known as the "Red Mountain Wilderness."

(N) SLAUGHTER CREEK.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 3,901 acres, as generally depicted on the
Northwestern Washington County Wilderness Map, which shall be known as the "Slaughter Creek Wilderness."

(O) TAYLOR CREEK.—Certain Federal land managed by the Bureau of Land Management, comprising approximately 32 acres, as generally depicted on the Northeastern Washington County Wilderness Map, which shall be known as the "Taylor Creek Wilderness."

(2) MAPS AND LEGAL DESCRIPTIONS.—

(A) IN GENERAL.—As soon as practicable after the date of enactment of this Act, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Natural Resources of the House of Representatives a map and legal description of each wilderness area designated by paragraph (1).

(B) FORCE AND EFFECT.—Each map and legal description submitted under subparagraph (A) shall have the same force and effect as if included in this subtitle, except that the Secretary may correct any clerical or typographical errors in the map or legal description.

(C) AVAILABILITY.—Each map and legal description submitted under subparagraph (A) shall be available in the appropriate offices of—

(i) the Bureau of Land Management; and

(ii) the Forest Service.

(b) ADMINISTRATION OF WILDERNESS AREAS.—

(1) MANAGEMENT.—Subject to valid existing rights, each area designated as wilderness by subsection (a)(1) shall be administered by the Secretary in accordance with the Wilderness Act (16 U.S.C. 1131 et seq.), except that—

(A) any reference in the Wilderness Act to the effective date of that Act shall be considered to be a reference to the date of enactment of this Act; and

(B) any reference in the Wilderness Act to the Secretary of Agriculture shall be considered to be a reference to the Secretary that has jurisdiction over the land.

(2) LIVESTOCK.—The grazing of livestock in each area designated as wilderness by subsection (a)(1), where established before the date of enactment of this Act, shall be permitted to continue—

(A) subject to such reasonable regulations, policies, and practices that the Secretary considers necessary; and

(B) in accordance with—

(i) section 4(d)(4) of the Wilderness Act (16 U.S.C. 1133(d)(4)); and

(ii) the guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress (H.Rep. 101–405) and H.R. 5487 of the 96th Congress (H. Rept. 96–617).

(3) WILDFIRE, INSECT, AND DISEASE MANAGEMENT.—In accordance with section 4(d)(1) of the Wilderness Act (16 U.S.C.1133(d)(1)), the Secretary may take such measures in each area designated as wilderness by subsection (a)(1) as the Secretary determines to be necessary for the control of fire, insects, and diseases (including, as the Secretary determines to be appropriate, the coordination of those activities with a State or local agency).

(4) BUFFER ZONES.—

(A) IN GENERAL.—Nothing in this section creates a protective perimeter or buffer zone around any area designated as wilderness by subsection (a)(1).

(B) ACTIVITIES OUTSIDE WILDERNESS.—The fact that an activity or use on land outside any area designated as wilderness by subsection (a)(1) can be seen or heard within the wilderness shall not preclude the activity or use outside the boundary of the wilderness.

(5) MILITARY OVERFLIGHTS.—Nothing in this section restricts or precludes—

(A) low-level overflights of military aircraft over any area designated as wilderness by subsection (a)(1), including military overflights that can be seen or heard within any wilderness area;

(B) flight testing and evaluation; or

(C) the designation or creation of new units of special use airspace, or the establishment of military flight training routes over any wilderness area.

(6) ACQUISITION AND INCORPORATION OF LAND AND INTERESTS IN LAND.—

(A) ACQUISITION AUTHORITY.—In accordance with applicable laws (including regulations), the Secretary may acquire any land or interest in land within the boundaries of the wilderness areas designated by subsection (a)(1) by purchase from willing sellers, donation, or exchange.

(B) INCORPORATION.—Any land or interest in land acquired by the Secretary under subparagraph (A) shall be incorporated into, and administered as a part of, the wilderness area in which the land or interest in land is located.

(7) NATIVE AMERICAN CULTURAL AND RELIGIOUS USES.— Nothing in this section diminishes—

(A) the rights of any Indian tribe; or

(B) any tribal rights regarding access to Federal land for tribal activities, including spiritual, cultural, and traditional food-gathering activities.

(8) CLIMATOLOGICAL DATA COLLECTION.—In accordance with the Wilderness Act (16 U.S.C. 1131 et seq.) and subject to such terms and conditions as the Secretary may prescribe, the Secretary may authorize the installation and maintenance of hydrologic, meteorologic, or climatological collection devices in the wilderness areas designated by subsection (a)(1) if the Secretary determines that the facilities and access to the facilities are essential to flood warning, flood control, or water reservoir operation activities.

(9) WATER RIGHTS.—

(A) STATUTORY CONSTRUCTION.—Nothing in this section—

(i) shall constitute or be construed to constitute either an express or implied reservation by the United States of any water or water rights with respect to the land designated as wilderness by subsection (a)(1);

(ii) shall affect any water rights in the State existing on the date of enactment of this Act, including any water rights held by the United States;

(iii) shall be construed as establishing a precedent with regard to any future wilderness designations;

(iv) shall affect the interpretation of, or any designation made pursuant to, any other Act; or

(v) shall be construed as limiting, altering, modifying, or amending any of the interstate compacts or equitable apportionment decrees that apportion water among and between the State and other States.

(B) STATE WATER LAW.—The Secretary shall follow the procedural and substantive requirements of the law of the State in order to obtain and hold any water rights not in existence on the date of enactment of this Act with respect to the wilderness areas designated by subsection (a)(1).

(10) FISH AND WILDLIFE.—

(A) JURISDICTION OF STATE.—Nothing in this section affects the jurisdiction of the State with respect to fish and wildlife on public land located in the State.

(B) AUTHORITY OF SECRETARY.—In furtherance of the purposes and principles of the Wilderness Act (16 U.S.C. 1131 et seq.), the Secretary may carry out management activities to maintain or restore fish and wildlife populations (including activities to maintain and restore fish and wildlife habitats to support the populations) in any wilderness area designated by subsection (a)(1) if the activities are—

(i) consistent with applicable wilderness management plans; and

(ii) carried out in accordance with—

(I) the Wilderness Act (16 U.S.C. 1131 et seq.); and

(II) applicable guidelines and policies, including applicable policies described in Appendix B of House Report 101–405.

(11) WILDLIFE WATER DEVELOPMENT PROJECTS.—Subject to paragraph (12), the Secretary may authorize structures and facilities, including existing structures and facilities, for wildlife water development projects, including guzzlers, in the wilderness areas designated by subsection (a)(1) if—

(A) the structures and facilities will, as determined by the Secretary, enhance wilderness values by promoting healthy, viable, and more naturally distributed wildlife populations; and

(B) the visual impacts of the structures and facilities on the wilderness areas can reasonably be minimized.

(12) COOPERATIVE AGREEMENT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall enter into a cooperative agreement with the State that specifies the terms and conditions under which wildlife management activities in the wilderness areas designated by subsection (a)(1) may be carried out.

(c) RELEASE OF WILDERNESS STUDY AREAS.—

(1) FINDING.—Congress finds that, for the purposes of section 603 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1782), the public land in the County administered by the Bureau of Land Management has been adequately studied for wilderness designation.

(2) RELEASE.—Any public land described in paragraph (1) that is not designated as wilderness by subsection (a)(1)—

(A) is no longer subject to section 603(c) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1782(c)); and

(B) shall be managed in accordance with applicable law and the land management plans adopted under section 202 of that Act (43 U.S.C. 1712).

(d) TRANSFER OF ADMINISTRATIVE JURISDICTION TO NATIONAL PARK SERVICE.—Administrative jurisdiction over the land identified as the Watchman Wilderness on the Northeastern Washington County Wilderness Map is hereby transferred to the National Park Service, to be included in, and administered as part of Zion National Park.

SEC. 1973. ZION NATIONAL PARK WILDERNESS.

(a) DEFINITIONS.—In this section:

(1) FEDERAL LAND.—The term "Federal land" means certain Federal land—

(A) that is—

(i) located in the County and Iron County, Utah; and

(ii) managed by the National Park Service;

(B) consisting of approximately 124,406 acres; and

(C) as generally depicted on the Zion National Park Wilderness Map and the area added to the park under section 1972(d).

(2) WILDERNESS AREA.—The term "Wilderness Area" means the Zion Wilderness designated by subsection (b)(1).

(3) ZION NATIONAL PARK WILDERNESS MAP.—The term "Zion National Park Wilderness Map" means the map entitled "Zion National Park Wilderness" and dated April 2008.

(b) ZION NATIONAL PARK WILDERNESS.—

(1) DESIGNATION.—Subject to valid existing rights, the Federal land is designated as wilderness and as a component of the National Wilderness Preservation System, to be known as the "Zion Wilderness."

(2) INCORPORATION OF ACQUIRED LAND.—Any land located in the Zion National Park that is acquired by the Secretary through a voluntary sale, exchange, or donation may, on the recommendation of the Secretary, become part of the Wilderness Area, in accordance with the Wilderness Act (16 U.S.C. 1131 et seq.).

(3) MAP AND LEGAL DESCRIPTION.—

(A) IN GENERAL.—As soon as practicable after the date of enactment of this Act, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Natural Resources of the House of Representatives a map and legal description of the Wilderness Area.

(B) FORCE AND EFFECT.—The map and legal description submitted under subparagraph (A) shall have the same force and effect as if included in this Act, except that the Secretary may correct any clerical or typographical errors in the map or legal description.

(C) AVAILABILITY.—The map and legal description submitted under subparagraph (A) shall be available in the appropriate offices of the National Park Service.

SEC. 1974. RED CLIFFS NATIONAL CONSERVATION AREA.

(a) PURPOSES.—The purposes of this section are—

(1) to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the National Conservation Area; and

(2) to protect each species that is—

(A) located in the National Conservation Area; and

(B) listed as a threatened or endangered species on the list of threatened species or the list of endangered species published under section 4(c)(1) of the Endangered Species Act of 1973 (16 U.S.C. 1533(c)(1)).

(b) DEFINITIONS.—In this section:

(1) HABITAT CONSERVATION PLAN.—The term "habitat conservation plan" means the conservation plan entitled "Washington County Habitat Conservation Plan" and dated February 23, 1996.

(2) MANAGEMENT PLAN.—The term "management plan" means the management plan for the National Conservation Area developed by the Secretary under subsection (d)(1).

(3) NATIONAL CONSERVATION AREA.—The term "National Conservation Area" means the Red Cliffs National Conservation Area that—

(A) consists of approximately 44,725 acres of public land in the County, as generally depicted on the Red Cliffs National Conservation Area Map; and

(B) is established by subsection (c).

(4) PUBLIC USE PLAN.—The term "public use plan" means the use plan entitled "Red Cliffs Desert Reserve Public Use Plan" and dated June 12, 2000, as amended.

(5) RESOURCE MANAGEMENT PLAN.—The term "resource management plan" means the management plan entitled "St. George Field Office Resource Management Plan" and dated March 15, 1999, as amended.

(c) ESTABLISHMENT.—Subject to valid existing rights, there is established in the State the Red Cliffs National Conservation Area.

(d) MANAGEMENT PLAN.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act and in accordance with paragraph (2), the Secretary shall develop a comprehensive plan for the long-term management of the National Conservation Area.

(2) CONSULTATION.—In developing the management plan required under paragraph (1), the Secretary shall consult with—

(A) appropriate State, tribal, and local governmental entities; and

(B) members of the public.

(3) INCORPORATION OF PLANS.—In developing the management plan required under paragraph (1), to the extent consistent with this section, the Secretary may incorporate any provision of—

(A) the habitat conservation plan;

(B) the resource management plan; and

(C) the public use plan.

(e) MANAGEMENT.—

(1) IN GENERAL.—The Secretary shall manage the National Conservation Area—

(A) in a manner that conserves, protects, and enhances the resources of the National Conservation Area; and

(B) in accordance with—

(i) the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.);

(ii) this section; and

(iii) any other applicable law (including regulations).

(2) USES.—The Secretary shall only allow uses of the National Conservation Area that the Secretary determines would further a purpose described in subsection (a).

(3) MOTORIZED VEHICLES.—Except in cases in which motorized vehicles are needed for administrative purposes, or to respond to an emergency, the use of motorized vehicles in the National Conservation Area shall be permitted only on roads designated by the management plan for the use of motorized vehicles.

(4) GRAZING.—The grazing of livestock in the National Conservation Area, where established before the date of enactment of this Act, shall be permitted to continue—

(A) subject to—

(i) such reasonable regulations, policies, and practices as the Secretary considers necessary; and

(ii) applicable law; and

(B) in a manner consistent with the purposes described in subsection (a).

(5) WILDLAND FIRE OPERATIONS.—Nothing in this section prohibits the Secretary, in cooperation with other Federal, State, and local agencies, as appropriate, from conducting wildland fire operations in the National Conservation Area, consistent with the purposes of this section.

(f) INCORPORATION OF ACQUIRED LAND AND INTERESTS.—Any land or interest in land that is located in the National Conservation Area that is acquired by the United States shall—

(1) become part of the National Conservation Area; and

(2) be managed in accordance with—

(A) the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.);

(B) this section; and

(C) any other applicable law (including regulations).

(g) WITHDRAWAL.—

(1) IN GENERAL.—Subject to valid existing rights, all Federal land located in the National Conservation Area are withdrawn from—

(A) all forms of entry, appropriation, and disposal under the public land laws;

(B) location, entry, and patenting under the mining laws; and

(C) operation of the mineral leasing, mineral materials, and geothermal leasing laws.

(2) ADDITIONAL LAND.—If the Secretary acquires additional land that is located in the National Conservation Area after the date of enactment of this Act, the land is withdrawn from operation of the laws referred to in paragraph (1) on the date of acquisition of the land.

(h) EFFECT.—Nothing in this section prohibits the authorization of the development of utilities within the National Conservation Area if the development is carried out in accordance with—

(1) each utility development protocol described in the habitat conservation plan; and

(2) any other applicable law (including regulations).

SEC. 1975. BEAVER DAM WASH NATIONAL CONSERVATION AREA.

(a) PURPOSE.—The purpose of this section is to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the Beaver Dam Wash National Conservation Area.

(b) DEFINITIONS.—In this section:

(1) MANAGEMENT PLAN.—The term "management plan" means the management plan for the National Conservation Area developed by the Secretary under subsection (d)(1).

(2) NATIONAL CONSERVATION AREA.—The term "National Conservation Area" means the Beaver Dam Wash National Conservation Area that—

(A) consists of approximately 68,083 acres of public land in the County, as generally depicted on the Beaver Dam Wash National Conservation Area Map; and

(B) is established by subsection (c).

(c) ESTABLISHMENT.—Subject to valid existing rights, there is established in the State the Beaver Dam Wash National Conservation Area.

(d) MANAGEMENT PLAN.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act and in accordance with paragraph (2), the Secretary shall develop a comprehensive plan for the long-term management of the National Conservation Area.

(2) CONSULTATION.—In developing the management plan required under paragraph (1), the Secretary shall consult with—

(A) appropriate State, tribal, and local governmental entities; and

(B) members of the public.

(3) MOTORIZED VEHICLES.—In developing the management plan required under paragraph (1), the Secretary shall incorporate the restrictions on motorized vehicles described in subsection (e)(3).

(e) MANAGEMENT.—

(1) IN GENERAL.—The Secretary shall manage the National Conservation Area—

(A) in a manner that conserves, protects, and enhances the resources of the National Conservation Area; and

(B) in accordance with—

(i) the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.);

(ii) this section; and

(iii) any other applicable law (including regulations).

(2) USES.—The Secretary shall only allow uses of the National Conservation Area that the Secretary determines would further the purpose described in subsection (a).

(3) MOTORIZED VEHICLES.—

(A) IN GENERAL.—Except in cases in which motorized vehicles are needed for administrative purposes, or to respond to an emergency, the use of motorized vehicles in the National Conservation Area shall be permitted only on roads designated by the management plan for the use of motorized vehicles.

(B) ADDITIONAL REQUIREMENT RELATING TO CERTAIN AREAS LOCATED IN THE NATIONAL CONSERVATION AREA.— In addition to the requirement described in subparagraph (A), with respect to the areas designated on the Beaver Dam Wash National Conservation Area Map as "Designated Road Areas", motorized vehicles shall be permitted only on the roads identified on such map.

(4) GRAZING.—The grazing of livestock in the National Conservation Area, where established before the date of enactment of this Act, shall be permitted to continue—

(A) subject to—

(i) such reasonable regulations, policies, and practices as the Secretary considers necessary; and

(ii) applicable law (including regulations); and

(B) in a manner consistent with the purpose described in subsection (a).

(5) WILDLAND FIRE OPERATIONS.—Nothing in this section prohibits the Secretary, in cooperation with other Federal, State, and local agencies, as appropriate, from conducting wildland fire operations in the National Conservation Area, consistent with the purposes of this section.

(f) INCORPORATION OF ACQUIRED LAND AND INTERESTS.—Any land or interest in land that is located in the National Conservation Area that is acquired by the United States shall—

(1) become part of the National Conservation Area; and

(2) be managed in accordance with—

(A) the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.);

(B) this section; and

(C) any other applicable law (including regulations).

(g) WITHDRAWAL.—

(1) IN GENERAL.—Subject to valid existing rights, all Federal land located in the National Conservation Area is withdrawn from—

(A) all forms of entry, appropriation, and disposal under the public land laws;

(B) location, entry, and patenting under the mining laws; and

(C) operation of the mineral leasing, mineral materials, and geothermal leasing laws.

(2) ADDITIONAL LAND.—If the Secretary acquires additional land that is located in the National Conservation Area after the date of enactment of this Act, the land is withdrawn from operation of the laws referred to in paragraph (1) on the date of acquisition of the land.

SEC. 1976. ZION NATIONAL PARK WILD AND SCENIC RIVER DESIGNATION.

(a) DESIGNATION.—Section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) (as amended by section 1852) is amended by adding at the end the following:

"(204) ZION NATIONAL PARK, UTAH.—The approximately 165.5 miles of segments of the Virgin River and tributaries of the Virgin River across Federal land within and adjacent to Zion National Park, as generally depicted on the map entitled 'Wild and Scenic River Segments Zion National Park and Bureau of Land Management' and dated April 2008, to be administered by the Secretary of the Interior in the following classifications:

"(A) TAYLOR CREEK.—The 4.5-mile segment from the junction of the north, middle, and south forks of Taylor Creek, west to the park boundary and adjacent land rim-to-rim, as a scenic river.

"(B) NORTH FORK OF TAYLOR CREEK.—The segment from the head of North Fork to the junction with Taylor Creek and adjacent land rim-to-rim, as a wild river.

"(C) MIDDLE FORK OF TAYLOR CREEK.—The segment from the head of Middle Fork on Bureau of Land Management land to the junction with Taylor Creek and adjacent land rim-to-rim, as a wild river.

"(D) SOUTH FORK OF TAYLOR CREEK.—The segment from the head of South Fork to the junction with Taylor Creek and adjacent land rim-to-rim, as a wild river.

"(E) TIMBER CREEK AND TRIBUTARIES.—The 3.1-mile segment from the head of Timber Creek and tributaries of Timber Creek to the junction with LaVerkin Creek and adjacent land rim-to-rim, as a wild river.

"(F) LAVERKIN CREEK.—The 16.1-mile segment beginning in T. 38 S., R. 11 W., sec. 21, on Bureau of Land Management land, southwest through Zion National Park, and ending at the south end of T. 40 S., R. 12 W., sec. 7, and adjacent land 1⁄2-mile wide, as a wild river.

"(G) WILLIS CREEK.—The 1.9-mile segment beginning on Bureau of Land Management land in the SWSW sec. 27, T. 38 S., R. 11 W., to the junction with LaVerkin Creek in Zion National Park and adjacent land rim-to-rim, as a wild river.

"(H) BEARTRAP CANYON.—The 2.3-mile segment beginning on Bureau of Management land in the SWNW sec. 3, T. 39 S., R. 11 W., to the junction with LaVerkin Creek and the segment from the headwaters north of Long Point to the junction with LaVerkin Creek and adjacent land rim-to-rim, as a wild river.

"(I) HOP VALLEY CREEK.—The 3.3-mile segment beginning at the southern boundary of T. 39 S., R. 11 W., sec. 20, to the junction with LaVerkin Creek and adjacent land 1⁄2-mile wide, as a wild river.

"(J) CURRENT CREEK.—The 1.4-mile segment from the head of Current Creek to the junction with LaVerkin Creek and adjacent land rim-to-rim, as a wild river.

"(K) CANE CREEK.—The 0.6-mile segment from the head of Smith Creek to the junction with LaVerkin Creek and adjacent land 1⁄2-mile wide, as a wild river.

"(L) SMITH CREEK.—The 1.3-mile segment from the head of Smith Creek to the junction with LaVerkin Creek and adjacent land 1⁄2-mile wide, as a wild river.

"(M) NORTH CREEK LEFT AND RIGHT FORKS.—The segment of the Left Fork from the junction with Wildcat Canyon to the junction with Right Fork, from the head of Right Fork to the junction with Left Fork, and from the junction of the Left and Right Forks southwest to Zion National Park boundary and adjacent land rim-to-rim, as a wild river.

"(N) WILDCAT CANYON (BLUE CREEK).—The segment of Blue Creek from the Zion National Park boundary to the junction with the Right Fork of North Creek and adjacent land rim-to-rim, as a wild river.

"(O) LITTLE CREEK.—The segment beginning at the head of Little Creek to the junction with the Left Fork of North Creek and adjacent land 1⁄2-mile wide, as a wildriver.

"(P) RUSSELL GULCH.—The segment from the head of Russell Gulch to the junction with the Left Fork of North Creek and adjacent land rim-to-rim, as a wild river.

"(Q) GRAPEVINE WASH.—The 2.6-mile segment from the Lower Kolob Plateau to the junction with the Left Fork of North Creek and adjacent land rim-to-rim, as a scenic river.

"(R) PINE SPRING WASH.—The 4.6-mile segment to the junction with the left fork of North Creek and adjacent land 1⁄2-mile, as a scenic river.

"(S) WOLF SPRINGS WASH.—The 1.4-mile segment from the head of Wolf Springs Wash to the junction with Pine Spring Wash and adjacent land 1⁄2-mile wide, as a scenic river.

"(T) KOLOB CREEK.—The 5.9-mile segment of Kolob Creek beginning in T. 39 S., R. 10 W., sec. 30, through Bureau of Land Management land and Zion National Park land to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(U) OAK CREEK.—The 1-mile stretch of Oak Creek beginning in T. 39 S., R. 10 W., sec. 19, to the junction with Kolob Creek and adjacent land rim-to-rim, as a wild river.

"(V) GOOSE CREEK.—The 4.6-mile segment of Goose Creek from the head of Goose Creek to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(W) DEEP CREEK.—The 5.3-mile segment of Deep Creek beginning on Bureau of Land Management land at the northern boundary of T. 39 S., R. 10 W., sec. 23, south to the junction of the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(X) NORTH FORK OF THE VIRGIN RIVER.—The 10.8-mile segment of the North Fork of the Virgin River beginning on Bureau of Land Management land at the eastern border of T. 39 S., R. 10 W., sec. 35, to Temple of Sinawava and adjacent land rim-to-rim, as a wild river.

"(Y) NORTH FORK OF THE VIRGIN RIVER.—The 8-mile segment of the North Fork of the Virgin River from Temple of Sinawava south to the Zion National Park boundary and adjacent land 1/2-mile wide, as a recreational river.

"(Z) IMLAY CANYON.—The segment from the head of Imlay Creek to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(AA) ORDERVILLE CANYON.—The segment from the eastern boundary of Zion National Park to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(BB) MYSTERY CANYON.—The segment from the head of Mystery Canyon to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(CC) ECHO CANYON.—The segment from the eastern boundary of Zion National Park to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(DD) BEHUNIN CANYON.—The segment from the head of Behunin Canyon to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(EE) HEAPS CANYON.—The segment from the head of Heaps Canyon to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a wild river.

"(FF) BIRCH CREEK.—The segment from the head of Birch Creek to the junction with the North Fork of the Virgin River and adjacent land 1/2-mile wide, as a wild river.

"(GG) OAK CREEK.—The segment of Oak Creek from the head of Oak Creek to where the forks join and adjacent land 1/2-mile wide, as a wild river.

"(HH) OAK CREEK.—The 1-mile segment of Oak Creek from the point at which the 2 forks of Oak Creek join to the junction with the North Fork of the Virgin River and adjacent land 1/2-mile wide, as a recreational river.

"(II) CLEAR CREEK.—The 6.4-mile segment of Clear Creek from the eastern boundary of Zion National Park to the junction with Pine Creek and adjacent land rim-to-rim, as a recreational river.

"(JJ) PINE CREEK .—The 2-mile segment of Pine Creek from the head of Pine Creek to the junction with Clear Creek and adjacent land rim-to-rim, as a wild river.

"(KK) PINE CREEK.—The 3-mile segment of Pine Creek from the junction with Clear Creek to the junction with the North Fork of the Virgin River and adjacent land rim-to-rim, as a recreational river.

"(LL) EAST FORK OF THE VIRGIN RIVER.—The 8-mile segment of the East Fork of the Virgin River from the eastern boundary of Zion National Park through Parunuweap Canyon to the western boundary of Zion National Park and adjacent land 1/2-mile wide, as a wild river.

"(MM) SHUNES CREEK.—The 3-mile segment of Shunes Creek from the dry waterfall on land administered by the Bureau of Land Management through Zion National Park to the western boundary of Zion National Park and adjacent land 1/2-mile wide as a wild river.".

(b) INCORPORATION OF ACQUIRED NON-FEDERAL LAND.—If the United States acquires any non-Federal land within or adjacent to Zion National Park that includes a river segment that is contiguous to a river segment of the Virgin River designated as a wild, scenic, or recreational river by paragraph (204) of section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) (as added by subsection (a)), the acquired river segment shall be incorporated in, and be administered as part of, the applicable wild, scenic, or recreational river.

(c) SAVINGS CLAUSE.—The amendment made by subsection (a) does not affect the agreement among the United States, the State, the Washington County Water Conservancy District, and the Kane County Water Conservancy District entitled "Zion National Park Water Rights Settlement Agreement" and dated December 4, 1996.

SEC. 1977. WASHINGTON COUNTY COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT PLAN.

(a) DEFINITIONS.—In this section:

(1) SECRETARY.—The term "Secretary" means the Secretary of the Interior.

(2) SECRETARY CONCERNED.—The term "Secretary concerned" means—

(A) with respect to land managed by the Bureau of Land Management, the Secretary; and

(B) with respect to land managed by the Forest Service, the Secretary of Agriculture.

(3) TRAIL.—The term "trail" means the High Desert Off- Highway Vehicle Trail designated under subsection (c)(1)(A).

(4) TRAVEL MANAGEMENT PLAN.—The term "travel management plan" means the comprehensive travel and transportation management plan developed under subsection (b)(1).

(b) COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT PLAN.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, in accordance with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) and other applicable laws (including regulations), the Secretary, in consultation with appropriate Federal agencies and State, tribal, and local governmental entities, and after an opportunity for public comment, shall develop a comprehensive travel management plan for the land managed by the Bureau of Land Management in the County—

(A) to provide to the public a clearly marked network of roads and trails with signs and maps to promote—

(i) public safety and awareness; and

(ii) enhanced recreation and general access opportunities;

(B) to help reduce in the County growing conflicts arising from interactions between—

(i) motorized recreation; and

(ii) the important resource values of public land;

(C) to promote citizen-based opportunities for—

(i) the monitoring and stewardship of the trail; and

(ii) trail system management; and

(D) to support law enforcement officials in promoting—

(i) compliance with off-highway vehicle laws (including regulations); and

(ii) effective deterrents of abuses of public land.

(2) SCOPE; CONTENTS.—In developing the travel management plan, the Secretary shall—

(A) in consultation with appropriate Federal agencies, State, tribal, and local governmental entities (including the County and St. George City, Utah), and the public, identify 1 or more alternatives for a northern transportation route in the County;

(B) ensure that the travel management plan contains a map that depicts the trail; and

(C) designate a system of areas, roads, and trails for mechanical and motorized use.

(c) DESIGNATION OF TRAIL.—

(1) DESIGNATION.—

(A) IN GENERAL.—As a component of the travel management plan, and in accordance with subparagraph (B), the Secretary, in coordination with the Secretary of Agriculture, and after an opportunity for public comment, shall designate a trail (which may include a system of trails)—

(i) for use by off-highway vehicles; and

(ii) to be known as the "High Desert Off-Highway Vehicle Trail".

(B) REQUIREMENTS.—In designating the trail, the Secretary shall only include trails that are—

(i) as of the date of enactment of this Act, authorized for use by off-highway vehicles; and

(ii) located on land that is managed by the Bureau of Land Management in the County.

(C) NATIONAL FOREST LAND.—The Secretary of Agriculture, in coordination with the Secretary and in accordance with applicable law, may designate a portion of the trail on National Forest System land within the County.

(D) MAP.—A map that depicts the trail shall be on file and available for public inspection in the appropriate offices of—

(i) the Bureau of Land Management; and

(ii) the Forest Service.

(2) MANAGEMENT.—

(A) IN GENERAL.—The Secretary concerned shall manage the trail—

(i) in accordance with applicable laws (including regulations);

(ii) to ensure the safety of citizens who use the trail; and

(iii) in a manner by which to minimize any damage to sensitive habitat or cultural resources.

(B) MONITORING; EVALUATION.—To minimize the impacts of the use of the trail on environmental and cultural resources, the Secretary concerned shall—

(i) annually assess the effects of the use of off-highway vehicles on—

(I) the trail; and

(II) land located in proximity to the trail; and

(ii) in consultation with the Utah Department of Natural Resources, annually assess the effects of the use of the trail on wildlife and wildlife habitat.

(C) CLOSURE.—The Secretary concerned, in consultation with the State and the County, and subject to subparagraph (D), may temporarily close or permanently reroute a portion of the trail if the Secretary concerned determines that—

(i) the trail is having an adverse impact on—

(I) wildlife habitats;

(II) natural resources;

(III) cultural resources; or

(IV) traditional uses;

(ii) the trail threatens public safety; or

(iii) closure of the trail is necessary—

(I) to repair damage to the trail; or

(II) to repair resource damage.

(D) REROUTING.—Any portion of the trail that is temporarily closed by the Secretary concerned under subparagraph (C) may be permanently rerouted along any road or trail—

(i) that is—

(I) in existence as of the date of the closure of the portion of the trail;

(II) located on public land; and

(III) open to motorized use; and

(ii) if the Secretary concerned determines that rerouting the portion of the trail would not signifi cantly increase or decrease the length of the trail.

(E) NOTICE OF AVAILABLE ROUTES.—The Secretary, in coordination with the Secretary of Agriculture, shall ensure that visitors to the trail have access to adequate notice relating to the availability of trail routes through—

(i) the placement of appropriate signage along the trail; and

(ii) the distribution of maps, safety education materials, and other information that the Secretary concerned determines to be appropriate.

(3) EFFECT.—Nothing in this section affects the ownership, management, or other rights relating to any non-Federal land (including any interest in any non-Federal land).

SEC. 1978. LAND DISPOSAL AND ACQUISITION.

(a) IN GENERAL.—Consistent with applicable law, the Secretary of the Interior may sell public land located within Washington County, Utah, that, as of July 25, 2000, has been identified for disposal in appropriate resource management plans.

(b) USE OF PROCEEDS.—

(1) IN GENERAL.—Notwithstanding any other provision of law (other than a law that specifically provides for a portion of the proceeds of a land sale to be distributed to any trust fund of the State), proceeds from the sale of public land under subsection (a) shall be deposited in a separate account in the Treasury to be known as the "Washington County, Utah Land Acquisition Account".

(2) AVAILABILITY.—

(A) IN GENERAL.—Amounts in the account shall be available to the Secretary, without further appropriation, to purchase from willing sellers lands or interests in land within the wilderness areas and National Conservation Areas established by this subtitle.

(B) APPLICABILITY.—Any purchase of land or interest in land under subparagraph (A) shall be in accordance with applicable law.

SEC. 1979. MANAGEMENT OF PRIORITY BIOLOGICAL AREAS.

(a) IN GENERAL.—In accordance with applicable Federal laws (including regulations), the Secretary of the Interior shall—

(1) identify areas located in the County where biological conservation is a priority; and

(2) undertake activities to conserve and restore plant and animal species and natural communities within such areas.

(b) GRANTS; COOPERATIVE AGREEMENTS.—In carrying out subsection (a), the Secretary of the Interior may make grants to, or enter into cooperative agreements with, State, tribal, and local governmental entities and private entities to conduct research, develop scientific analyses, and carry out any other initiative relating to the restoration or conservation of the areas.

SEC. 1980. PUBLIC PURPOSE CONVEYANCES.

(a) IN GENERAL.—Notwithstanding the land use planning requirements of sections 202 and 203 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712, 1713), upon the request of the appropriate local governmental entity, as described below, the Secretary shall convey the following parcels of public land without consideration, subject to the provisions of this section:

(1) TEMPLE QUARRY.—The approximately 122-acre parcel known as "Temple Quarry" as generally depicted on the Washington County Growth and Conservation Act Map as "Parcel B", to the City of St. George, Utah, for open space and public recreation purposes.

(2) HURRICANE CITY SPORTS PARK.—The approximately 41-acre parcel as generally depicted on the Washington County Growth and Conservation Act Map as "Parcel C", to the City of Hurricane, Utah, for public recreation purposes and public administrative offices.

(3) WASHINGTON COUNTY SCHOOL DISTRICT.—The approximately 70-acre parcel as generally depicted on the Washington County Growth and Conservation Act Map as "Parcel D", to the Washington County Public School District for use for public school and related educational and administrative purposes.

(4) WASHINGTON COUNTY JAIL.—The approximately 80-acre parcel as generally depicted on the Washington County Growth and Conservation Act Map as "Parcel E", to Washington County, Utah, for expansion of the Purgatory Correctional Facility.

(5) HURRICANE EQUESTRIAN PARK.—The approximately 40-acre parcel as generally depicted on the Washington County Growth and Conservation Act Map as "Parcel F", to the City of Hurricane, Utah, for use as a public equestrian park.

(b) MAP AND LEGAL DESCRIPTIONS.—As soon as practicable after the date of enactment of this Act, the Secretary shall finalize legal descriptions of the parcels to be conveyed under this section. The Secretary may correct any minor errors in the map referenced in subsection (a) or in the applicable legal descriptions. The map and legal descriptions shall be on file and available for public inspection in the appropriate offices of the Bureau of Land Management.

(c) REVERSION.—

(1) IN GENERAL.—If any parcel conveyed under this section ceases to be used for the public purpose for which the parcel was conveyed, as described in subsection (a), the land shall, at the discretion of the Secretary based on his determination of the best interests of the United States, revert to the United States.

(2) RESPONSIBILITY OF LOCAL GOVERNMENTAL ENTITY.—If the Secretary determines pursuant to paragraph (1) that the land should revert to the United States, and if the Secretary determines that the land is contaminated with hazardous waste, the local governmental entity to which the land was conveyed shall be responsible for remediation of the contamination.

SEC. 1981. CONVEYANCE OF DIXIE NATIONAL FOREST LAND.

(a) DEFINITIONS.—In this section:

(1) COVERED FEDERAL LAND.—The term "covered Federal land" means the approximately 66.07 acres of land in the Dixie National Forest in the State, as depicted on the map.

(2) LANDOWNER.—The term "landowner" means Kirk R. Harrison, who owns land in Pinto Valley, Utah.

(3) MAP.—The term "map" means the map entitled "Conveyance of Dixie National Forest Land" and dated December 18, 2008.

(4) SECRETARY.—The term "Secretary" means the Secretary of Agriculture.

(b) CONVEYANCE.—

(1) IN GENERAL.—The Secretary may convey to the landowner all right, title, and interest of the United States in and to any of the covered Federal land (including any improvements or appurtenances to the covered Federal land) by sale or exchange.

(2) LEGAL DESCRIPTION.—The exact acreage and legal description of the covered Federal land to be conveyed under paragraph (1) shall be determined by surveys satisfactory to the Secretary.

(3) CONSIDERATION.—

(A) IN GENERAL.—As consideration for any conveyance by sale under paragraph (1), the landowner shall pay to the Secretary an amount equal to the fair market value of any Federal land conveyed, as determined under subparagraph (B).

(B) APPRAISAL.—The fair market value of any Federal land that is conveyed under paragraph (1) shall be determined by an appraisal acceptable to the Secretary that is performed in accordance with—

(i) the Uniform Appraisal Standards for Federal Land Acquisitions;

(ii) the Uniform Standards of Professional Appraisal Practice; and (iii) any other applicable law (in cluding regulations).

(4) DISPOSITION AND USE OF PROCEEDS.—

(A) DISPOSITION OF PROCEEDS.—The Secretary shall deposit the proceeds of any sale of land under paragraph (1) in the fund established under Public Law 90–171 (commonly known as the "Sisk Act") (16 U.S.C. 484a).

(B) USE OF PROCEEDS.—Amounts deposited under subparagraph (A) shall be available to the Secretary, without further appropriation and until expended, for the acquisition of real property or interests in real property for inclusion in the Dixie National Forest in the State.

(5) ADDITIONAL TERMS AND CONDITIONS.—The Secretary may require any additional terms and conditions for any conveyance under paragraph (1) that the Secretary determines to be appropriate to protect the interests of the United States.

SEC. 1982. TRANSFER OF LAND INTO TRUST FOR SHIVWITS BAND OF PAIUTE INDIANS.

(a) DEFINITIONS.—In this section:

(1) PARCEL A.—The term "Parcel A" means the parcel that consists of approximately 640 acres of land that is—

(A) managed by the Bureau of Land Management;

(B) located in Washington County, Utah; and

(C) depicted on the map entitled "Washington County Growth and Conservation Act Map".

(2) SECRETARY.—The term "Secretary" means the Secretary of the Interior.

(3) TRIBE.—The term "Tribe" means the Shivwits Band of Paiute Indians of the State of Utah.

(b) PARCEL TO BE HELD IN TRUST.—

(1) IN GENERAL.—At the request of the Tribe, the Secretary shall take into trust for the benefit of the Tribe all right, title, and interest of the United States in and to Parcel A.

(2) SURVEY; LEGAL DESCRIPTION.—

(A) SURVEY.—Not later than 180 days after the date of enactment of this Act, the Secretary, acting through the Director of the Bureau of Land Management, shall complete a survey of Parcel A to establish the boundary of Parcel A.

(B) LEGAL DESCRIPTION OF PARCEL A.—

(i) IN GENERAL.—Upon the completion of the survey under subparagraph (A), the Secretary shall publish in the Federal Register a legal description of—

(I) the boundary line of Parcel A; and

(II) Parcel A.

(ii) TECHNICAL CORRECTIONS.—Before the date of publication of the legal descriptions un der clause (i), the Secretary may make minor corrections to correct technical and clerical errors in the legal descriptions.

(iii) EFFECT.—Effective beginning on the date of publication of the legal descriptions under clause (i), the legal descriptions shall be considered to be the official legal descriptions of Parcel A.

(3) EFFECT.—Nothing in this section—

(A) affects any valid right in existence on the date of enactment of this Act;

(B) enlarges, impairs, or otherwise affects any right or claim of the Tribe to any land or interest in land other than to Parcel A that is—

(i) based on an aboriginal or Indian title; and

(ii) in existence as of the date of enactment of this Act; or

(C) constitutes an express or implied reservation of water or a water right with respect to Parcel A.

(4) LAND TO BE MADE A PART OF THE RESERVATION.—Land taken into trust pursuant to this section shall be considered to be part of the reservation of the Tribe.

SEC. 1983. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated such sums as are necessary to carry out this subtitle.

APPENDIX B
SHPO Consultation

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Julie Fisher
Executive Director
Department of
Heritage & Arts

Utah Division of
State History

Brad Westwood
Director

September 20, 2016

Brian Tritle
Field Office Manager
Saint George Field Office
Bureau of Land Management
345 East Riverside Drive
St. George, UT 84790

RE: Proposed Resource Management Plans for Beaver Dam Wash National Conservation Area and Red Cliffs National Conservation Area and a Draft Amendment to the St. George Field Office Resource Management Plan and Final Environmental Impact Statement

For future correspondence, please reference Case No. 16-1141

Dear Mr. Tritle:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking on September 15, 2916.

We concur with your determination of effect for this undertaking. UTSHPO appreciates the background and thorough description of the Beaver Dam Wash and Red Cliffs National Conservation Areas. We feel there are sufficient controls and protections in place for the BLM's determination of "No Adverse Effect."

This letter serves as our comment on the determinations you have made, within the consultation process specified in §36CFR800.4. If you have questions, please contact me at 801-245-7263 or by email at cmerritt@utah.gov.

Sincerely,

Chris Merritt, Ph.D.
Deputy State Historic Preservation Officer
Archaeology

Utah Department of Heritage & Arts
300 S. Rio Grande Street • Salt Lake City, Utah 84101 • (801) 245-7225 • facsimile (801) 355-0587 • history.utah.gov

APPENDIX C

Section 7 Consultation and Biological Opinion

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

December 12, 2016

In Reply Refer To:
FWS/R6
ES/UT
6-UT-16-F-0078
2016-F-0078

Memorandum

To: Field Office Manager, St. George Field Office, Bureau of Land Management, St. George, Utah

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Conclusion of formal consultation for the Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement (EIS) for the Red Cliffs National Conservation Area (NCA), the Proposed RMP/Final EIS for the Beaver Dam Wash NCA, and the Proposed St. George Field Office RMP Amendment.

Background

We received a final biological assessment (BA) for the Proposed RMPs/Final EISs for the Red Cliffs NCA, Beaver Dam Wash NCA, and St. George Field Office, electronically on September 13, 2016. You determined that the proposed actions within the NCAs and RMP are not likely to adversely affect several threatened and endangered species and their designated critical habitat (Table 1).

1

Table 1. Listed Species within the NCA and RMP biological assessment

SPECIES	PLANNING DOCUMENT		
	Red Cliffs NCA RMP	*Beaver Dam Wash NCA RMP*	*St George Field Office RMPAmendment*
Shivwits milkvetch (*Astragalus ampullaroides*)*	X		X
Dwarf bear-poppy (*Arctomecon humilis*)			X
Gierisch Globemallow (*Sphaeralcea gierischii*)*			X
Holmgren milkvetch (*Astragalus holmgreniorum*)*			X
Siler pincushion cactus (*Pediocactus sileri*)			X
Desert tortoise (*Gopherus agassizii*)*	X	X	X
Southwestern willow flycatcher (*Empidonax traillii extimus*)	X	X	X
Western yellow-billed cuckoo (*Coccyzus americanus occidintalis*)	X	X	X
Mexican spotted owl (*Strix occidentalis lucida*)*			X
California condor (*Gymnogyps californianus*)	X	X	X
Virgin River chub (*Gila seminuda*)*	X		X
Woundfin (*Plagopterus argentissimus*)*	X		X

*Designated critical habitat occurs in the NCAs or the St. George Field Office

Generally, the basis for your determinations is that these RMP planning documents are intended to reduce land use effects and provide benefits to listed species. We agree that many of the actions directed by the RMP documents, such as reduced grazing, reduced off-highway vehicle use, and habitat restoration efforts will benefit listed species and we commend the Bureau of Land Management (BLM) for the conservation approaches guided by these documents.

We concur with your "not likely to adversely affect" determination for the California condor in all of the planning documents because it is unlikely that condors will frequent the NCA or RMP areas because nesting habitat is limited. We also concur with your "not likely to adversely affect" determination in the St. George Field Office RMP for the desert tortoise, southwestern willow flycatcher, western yellow-billed cuckoo, Mexican spotted owl, Virgin River chub, woundfin, Shivwits milkvetch, Siler pincushion cactus, and the California condor because none of these species occur in the area where the OHV designation is changing or will be affected by the creation of the three new ACEC's.

However, we are not able to concur with your "not likely to adversely affect" determination for the remaining species because some of the potential projects described in the NCA and RMP planning documents may have short-term adverse impacts to individual plants or animals despite the overall long-term benefits for the species and their habitats. For example, the restoration of riparian habitats may include the removal of tamarisk to restore native vegetation; tamarisk removal may negatively impact migrating or nesting birds and fish until native riparian vegetation is successfully restored.

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), this transmits the U.S. Fish and Wildlife Service's (USFWS or Service) final biological opinion (BO) for impacts to the desert tortoise (Red Cliffs and Beaver Dam NCAs), western yellow-billed cuckoo (Red Cliffs and Beaver Dam NCAs), southwestern willow flycatcher (Red Cliffs and Beaver Dam NCAs), Virgin River chub (Red Cliffs NCA), woundfin (Red Cliffs NCA), Shivwits milkvetch (Red Cliffs NCA), dwarf bear poppy (St. George RMP), Gierisch mallow (St. George RMP), Holmgren milkvetch (St. George RMP).

This biological opinion is based on information provided in the September 13, 2016 BA's, and email and phone communications between our offices. A complete administrative record of this consultation is on file at our office.

Consultation to Date

November 16, 2015

We provided comments on the Draft RMP for the Red Cliffs NCA, the proposed (RMP) for the Beaver Dam Wash NCA, and the Proposed St. George Field Office RMP Amendment.

June-July 2016

We received several versions of the draft RMP for the Red Cliffs NCA and the proposed RMP for the Beaver Dam Wash NCA, by mail and email.

September 2, 2016

We provided comments by email regarding conservation measures for the southwestern willow flycatcher and the western yellow-billed cuckoo in the draft (RMP) for the Red Cliffs NCA and the proposed RMP for the Beaver Dam Wash NCA.

September 13, 2016

We received a final BA for the proposed (RMP)/Final EIS for the Red Cliffs NCA, proposed RMP/Final EIS for the Beaver Dam Wash NCA, and the Proposed St. George Field Office RMP Amendment.

A complete administrative record for this project is on file in our office.

BIOLOGICAL OPINION

1.0 DESCRIPTION OF THE PROPOSED ACTION

1.1 Action Area

a) Red Cliffs National Conservation Area RMP

The action area encompasses 44,859 acres of land managed by the BLM St. George Field Office within the NCA boundaries. The Red Cliffs NCA is located entirely within Washington County, Utah adjacent to the city of St. George. See Map 1-1 in the Red Cliffs NCA BA.

b) Beaver Dam Wash National Conservation Area RMP

The action area encompasses 63,480 acres of land managed by the BLM St. George Field Office within the NCA boundaries. The Beaver Dam Wash NCA is located entirely within Washington County, Utah situated in the extreme southwest corner of the state. See Map 1-1 in the Beaver Dam Wash NCA BA.

c) St. George Field Office RMP Amendment

The action area encompasses 628, 790 acres of land managed by the BLM St. George Field Office located entirely within Washington County, Utah. See Map 1-2 in St. George Field Office RMP Amendment BA.

1.2 Proposed Action

a) Red Cliffs National Conservation Area RMP

The proposed action is the implementation of the RMP, including management goals, objectives, and actions. The proposed RMP was designed with the conservation of natural resources being of paramount importance and central to the planning process. For a complete description of all management goals, objectives, and actions please see Chapter 3 in the Red Cliffs NCA BA.

b) Beaver Dam Wash National Conservation Area RMP

The proposed action is the implementation of the RMP, including management goals, objectives, and actions. The Propose RMP was designed with the conservation of natural resources being of paramount importance and central to the planning process. For a complete description of all management goals, objectives, and actions please see Chapter 3 Beaver Dam Wash NCA BA.

c) St. George Field Office RMP Amendment

The amendment to the St. George Field Office RMP does two things:

- It creates three new Areas of Critical Environmental Concern (ACEC's) totaling 3,880 acres within the St. George Field Office, and
- It changes OHV use in an area (60,000 acres) that is currently open to cross country travel and limits OHV travel to existing roads and trails.

The creation of the three new ACEC's is explicitly designed to increase protection of several listed plant species. The change in travel designation in one area of the St. George Field Office is designed to limit OHV impacts on the landscape.

1.3 Applicant Committed Conservation Measures

Shivwits Milkvetch

Implement the goals, objectives, and management recommendations identified in the approved Recovery Plan for Shivwits milkvetch (USFWS 2006b).

Monitor identified populations of Shivwits milkvetch populations within the NCA in coordination with USFWS. Evaluate the effectiveness of management actions through monitoring and scientific research studies.

Conduct botanical inventories of areas within the NCA where appropriate soil types are present that comprise suitable Shivwits milkvetch habitat.

Use protective measures such as natural barriers, fencing, signing, and trail designation to protect populations of and habitat for Shivwits milkvetch.

Provide educational materials through various media and venues (e.g., trailhead kiosks, brochures, websites) that inform visitors about the endemic and at-risk native plants that grow in the NCA and appropriate public land etiquette to protect these species.

Pursue opportunities to complete detailed soil surveys in the NCA to assist in the identification of areas that could support populations of Shivwits milkvetch.

Pursue opportunities to collect data on the timing, frequency, and duration of precipitation events and how these influence persistence and expansion of Shivwits milkvetch populations.

Pursue opportunities for scientific research that focuses on the species of native bees or other pollinators that help to ensure reproduction within Shivwits milkvetch populations and gene flow between populations.

Research is supported that increases the knowledge of this species and the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence population trends and predicted climate change scenarios.

Desert Tortoise

While considering a new proposed right-of-way (ROW) application, to the greatest extent possible, BLM will authorize new ROWs only when the project-specific NEPA analysis indicates that the construction and operation of the facility would not result in the take of federally-listed species; the adverse modification of designated critical habitats…

Construct new trails in the Rural, Frontcountry, or Backcountry Zones, as shown in the TMP. Where new trail development would result in surface disturbance in designated critical habitat for Mojave desert tortoise, restore acreage of similar quality habitat at a 1:1 ratio. Restoration methods and adequacy would be determined by BLM in consultation with USFWS. Such methods could include, but are not limited to, reclamation and re-vegetation with approved native species or native species cultivars on linear disturbances, fire-damaged lands, or other disturbed areas.

Install tortoise barrier fencing along heavily traveled public use roadways in the NCA to minimize tortoise injuries and mortalities caused by motorized vehicles.

Coordinate with Washington County to post speed limits on heavily traveled public use roads where tortoise barrier fencing has not been installed to minimize tortoise injuries and mortalities caused by motorized vehicles.

Southwestern Willow Flycatcher

Impacts will be avoided through project monitoring by qualified biologists and the identification of tortoise dens or occupied Southwestern willow flycatcher nests within a project area, helping to ensure that the "incidental take" of tortoises would not result from these actions.

Treat non-native woody species (e.g., tamarisk, Russian olive) in a phased approach using biological controls, flaming, targeted grazing, hand removal, herbicides, mechanical methods, or a combination of methods, depending on target species, infestation level, site characteristics, and project size (see for Table 3-2 of the BA for descriptions of each method).

Prohibit new surface disturbing projects or activities within 100 meters (330 (ft)) of the edge of the riparian zone, except when the project would improve riparian resource conditions.

Exclude livestock from areas where riparian restoration has been implemented through rest/rotation systems, fencing, water management, temporary closure of portions or all of the allotment, or other methods that will achieve the goal of protecting the project or treatment areas from grazing impacts until identified resource goals and objectives have been met.

Temporarily close riparian restoration project areas to those land uses and authorized activities that have the potential to impact the success of the treatments until monitoring indicates that identified resource goals and objectives for these treatments have been met.

Prohibit placement of livestock salt blocks and other nutritional supplements within 1500 ft of the edge of the riparian zone. BLM will encourage that the locations of these supplements be moved every year.

Provide educational materials through various media and venues (e.g., trailhead kiosks, websites) that inform visitors about the ecological values of riparian areas and appropriate public land use etiquette to protect these areas.

Management of riparian habitat would be consistent with the Final Recovery Plan: Southwestern Willow Flycatcher (*Empidonax traillii extimus*) (USFWS 2002).

Maintain a database of observations of southwestern willow flycatchers.

Develop maps of potential habitats for southwestern willow flycatcher that include location, size, shape, spacing, and condition of habitat areas.

Manage potential habitat for southwestern willow flycatcher to allow natural regeneration into suitable habitat as rapidly as natural conditions allow.

Manage suitable habitat for southwestern willow flycatcher to conserve and protect its suitability for nesting, foraging, and occupancy.

Monitor changes in the relative abundance, health, reproductive success, and distribution of populations, in partnership with USFWS and UDWR.

Allow the reintroduction, translocation, and population augmentation of southwestern willow flycatcher and Western yellow-billed cuckoos into current or historic habitats in the NCA, in coordination with USFWS, UDWR, and local governments, subject to guidance provided by BLM's 6840 policy and by existing or future memoranda of understanding (MOU).

Prohibit the take-off and landing of powered parachutes in the NCA.

Prohibit the take-off and landing of remote-controlled aircraft in the NCA.

Follow Best Management Practices listed in Appendix F of the Biological Assessment.

Within the Red Cliffs NCA livestock grazing would not be authorized in designated critical habitat for the Mojave desert tortoise or other listed species.

Southwestern Willow Flycatcher and Western Yellow Billed Cuckoo

Management of riparian habitat would be consistent with the Final Recovery Plan: Southwestern Willow Flycatcher (Empidonax traillii extimus) (USFWS 2002) and future final recovery plans for the Western yellow-billed cuckoo.

Maintain a database of observations of southwestern willow flycatchers and Western yellow-billed cuckoos.

Develop maps of potential habitats for southwestern willow flycatcher and Western yellow- billed cuckoo that include location, size, shape, spacing, and condition of habitat areas.

Manage potential habitat for southwestern willow flycatcher and Western yellow-billed cuckoos

to allow natural regeneration into suitable habitat as rapidly as natural conditions allow.

Manage suitable habitat for southwestern willow flycatcher and Western yellow-billed cuckoos to conserve and protect its suitability for nesting, foraging, and occupancy.

Monitor changes in the relative abundance, health, reproductive success, and distribution of populations, in partnership with USFWS and the Utah Division of Wildlife Resources.

Allow the reintroduction, translocation, and population augmentation of southwestern willow flycatcher and Western yellow-billed cuckoos into current or historic habitats in the NCA, in coordination with USFWS, UDWR, and local governments, subject to guidance provided by BLM's 6840 policy (BLM 2008) and by existing or future memoranda of understanding (MOU).

Suitable habitat for Western yellow-billed cuckoo will be identified according to Guidelines for the identification of suitable habitat for WYBCU in Utah (USFWS 2015).

Surveys for Western yellow-billed cuckoo will be conducted according to A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: U.S. Fish and Wildlife Techniques and Methods (Halterman, Johnson, Holmes, and Laymon 2015).

Virgin River Chub and Woundfin

Soils

Consider hydrologic setting and existing hydrologic features in project design and layout.

Minimize soil exposure to erosional forces of wind and water by waiting until just before beginning construction to clear vegetation and to disturb the soil.

Minimize the area of bare soil within the approved work zone as much as possible.

Where applicable, cover entrances of construction sites with gravel to prevent trucks from tracking sediment from the construction site onto roads. This sediment will eventually end up clogging roadway drainage systems or settling into wetlands.

Protect and maximize existing native vegetation and natural forest/rangeland floor, thereby reducing impervious areas on the site.

Disperse stormwater to areas of undisturbed forest/rangeland floor wherever possible, rather than concentrating it into channels.

Determine the volume of available topsoil existing on the site. Topsoil shall be spread at a minimum compacted depth of 4 inches (or as appropriate determined by soil type).

Stockpile topsoil so that it meets specifications and does not interfere with work on the site.

Allow sufficient time in scheduling for topsoil to be spread and bonded with the subsoil prior to seeding, sodding, or planting.

The grant holder shall provide satisfactory reclamation of all sites disturbed by their activity. This may include installation of additional erosion control devices and seeding at the discretion of the BLM Authorized Officer.

Storm water - BMPs identified in the Storm Water Management Plan shall be in place prior to any earth-disturbing activity. Additional BMPs will be installed as determined necessary by the BLM Authorized Officer. All temporary BMPs shall be removed once site stabilization and reclamation efforts have been deemed successful by the BLM Authorized Officer.

Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

Slopes shall not be created so close to property lines as to endanger adjoining properties without adequate protection against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

All disturbed areas shall be stabilized structurally or with vegetation in compliance with the appropriate BMPs.

All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved erosion and sediment control plan until they are adequately stabilized.

All erosion and sediment control practices and measures shall be constructed, applied, and maintained in accordance with the approved erosion and sediment control plan.

Any sign of rill or gully erosion shall be immediately investigated and repaired as needed or requested by the authorizing officer.

Fall and winter erosion control measures must be upgraded and refined to protect the site from spring runoff and snowmelt.

Topsoil stripping shall be confined to the immediate construction areas. A 4 to 6-inch stripping depth is common, but depth may vary depending on the particular soil. All perimeter dikes, basins, and other sediment controls shall be in place prior to stripping.

Water Resources

Provide for erosion-resistant surface drainage by adding necessary drainage facilities and armoring prior to fall rain or snow. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent sediment from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

Remove berms from the outside edge or roads where runoff is channeled.

Leave abandoned roads in a condition that provides adequate drainage without further maintenance. Close these roads to traffic, reseed and/or scarify, and, if necessary, re-contour and provide cross ditches or drain dips.

Cross stream channels at right angles if at all possible.

Concentrate right-of-way actions adjacent to stream courses as far landward as safety allows.

Remove all temporary stream crossings immediately after use and cross-ditch the ends of skid trails/two tracks/right-of-ways to mitigate erosion from disturbed areas.

Place all excess material removed by maintenance operations in safe disposal sites and stabilize these sites to prevent erosion. Avoid locations where erosion will carry materials into a stream.

Evaluate potential effects of stream crossings/channel work on existing structures such as culverts, bridges, buried cables, pipelines, and irrigation flumes prior to construction activities to identify and mitigate foreseen impacts.

When designing protective/mitigation measures, consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the measure. Moreover, design and construct roads that are self-maintaining and consider using road surfacing, such as gravel. Design and construct stream crossings that handle the 100-year flood, and consider culvert and bridge designs that facilitate aquatic life passage.

Exclude livestock and vehicles from spring sources and riparian areas in which on site evaluation and/or monitoring data indicate degrading conditions.

Exclude livestock, wildlife, and vehicles from developed spring sources.

Stabilize and maintain grades in natural or artificial channels to prevent the formation and advancement of gullies.

Utilize erosion control structures including but not limited to head-cut lay-backs, zuni-bowls, check dams, and sediment basins to retain soils in highly erodible areas and protect water quality.

Use vegetation or structures to stabilize and protect banks of streams, lakes, or excavated channels against scour and erosion.

Manage and manipulate invasive stands of brush and weeds on forest, range, pasture land by mechanical, chemical, or biological means or by prescribed burning to improve watershed function and condition.

Reduce soil erosion and sediment delivery to surface waters by protecting, maintaining, and reestablishing desirable vegetative communities in areas of highly erodible or critically eroding soils.

Utilize mechanical treatment methods to roughen and aerate soils in degraded sites identified for reclamation.

Avoid alteration of natural hydrologic function and condition in source areas for springs, seeps, and fens.

Relocate surface-disturbing activities away from these sensitive areas as site conditions warrant.

Restore modified or damaged streams as close as practicable to natural conditions using bioengineering techniques to protect banks, and to reestablish riparian vegetation.

Maintain to the greatest extent practicable natural flow rates and chemical and physical properties of surface and groundwater during work within stream channels, floodplains, and/or riparian areas.

Low water crossings will be constructed at original streambed elevation in a manner that prevents any blockage or restriction of the existing channel. Material removed will be stockpiled for use in reclamation of the crossings.

The operator shall institute measures such as surfacing, watering, and use of non-saline dust suppressants on all roads authorized in this project to minimize impacts from fugitive dust emissions. The use of chemical dust suppressants on public surface will require prior approval from the BLM Authorized Officer.

Livestock management practices, such as animal health, feeding, and salting, shall be done in a manner to protect water quality.

Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.

Maintain appropriate vegetative/riparian buffers around water bodies to slow runoff and trap sediments and protect water quality.

Time work in wetlands and watercourses to occur during low flow season when conditions are driest. High flows occur during late summer early fall as a result of high intensity convective thunderstorm events.

Temporary BMPs used to filter sediments from water, thereby preventing sedimentation, shall be installed (per manufacturers recommendations) before any construction begins and shall subsequently be removed when the project is completed.

Consider rehabilitating closed routes to reduce erosion and restore landscapes.

The holder shall adhere to all requirements under the Clean Water Act.

Storm water BMPs identified in the applicant's State approved Storm Water Pollution Prevention Plan shall be in place prior to any earth-disturbing activity.

Additional BMPs will be implemented as determined necessary by the BLM Authorized Officer.

All temporary BMPs shall be removed once site stabilization and reclamation efforts have been deemed successful by the BLM Authorized Officer.

Culverts and water-bars shall be installed according to 9113 standards and sized for the 10-year storm event with no static head and to pass a 25-year event without failing.

Culverts shall be located on stable and straight stream reaches and along the stream grade. In steeper streams, it may be necessary to install natural channel design techniques downstream to minimize erosion. A hydrologist shall be consulted.

Erosion control features shall be maintained through periodic inspection and maintenance, including cleaning dips and cross-drains, repairing ditches, marking culvert inlets to aid in location, and clearing debris from culverts.

If requested by the BLM Authorized Officer, the holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s) as indicated and approved.

Culverts shall be free of corrosion, dents, or other deleterious conditions.

Spoil material from clearing, grubbing, and channel excavation shall be disposed of in a manner that will not interfere with the function of the channel and in accordance with all local, state, and Federal laws and regulations.

To protect water quality, anti-backflow devices shall be utilized while drafting fresh water from streams, springs, and wells.

Actions shall not result in adverse effects on the function of streams or stream corridors.

Actions shall not impair floodplain function.

New stream crossings shall be designed to accommodate a 100-year flood.

Provide for erosion-resistant surface drainage by adding necessary drainage facilities and armoring prior to fall rain or snow. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent it from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

No operations using chemical processes (except for vegetation management) or other pollutants in their activities will be allowed to occur within 200 ft of any water bodies.

All stream crossings affecting perennial streams or streams supporting riparian habitat shall be professionally engineered (design, construction, and maintenance).

Water developments (springs, reservoirs, catchments; wells, pipeline and water troughs) will conform to BLM Manual H 1741-2.

Actual work in spring and stream beds will be done by hand where possible.

The source of all spring developments shall be fenced.

Vegetation: Riparian Habitat and Wetlands

Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.

Locate residue piles (e.g., sawdust, field chipping residue) away from drainages where runoff may wash residue into water bodies or wetlands.

Maintain appropriate vegetative/riparian buffers around water bodies to protect water quality.

Manage riparian areas to provide adequate shade, sediment control, bank stability, and recruitment of wood into stream channels.

Locate project staging areas for refueling, maintenance equipment, materials, and operating supplies in areas not designated as riparian and/or stream bank management zones.

Determine the best locations and design for roads, the slope of roads, and the approach to stream crossings through proper planning. On perennial streams roads, which will be used for longer than one year, the crossings will be engineered and approved by the BLM Authorized Officer.

Do not locate roads or trails parallel to streams. Where roads must cross streams, cross perpendicularly and immediately exit the buffer zone.

Appropriate improvements, such as culverts, must be placed at stream crossings to keep vehicles/equipment out of the stream flow and to prevent direct sedimentation of streams.

Roads and trails (off-highway vehicle, horse, bicycle, hiking) will avoid wetlands and if avoidance is not possible will be designed and constructed in Technical Reference 2E22A68-NPS, Off-highway Vehicle Management.

Install and maintain cottonwood protection on existing and planted trees where beaver loss threatens survival. Work with volunteer groups and user groups to help with the maintenance of installed structures.

Watershed Management

Frequently and systematically inspect and document riparian areas and wetlands for noxious weed establishment and spread. Eradicate new infestations immediately since effective tools for riparian-area weed management are limited.

Promote dense growth of desirable vegetation in riparian areas (where appropriate) to minimize the availability of germination sites for weed seeds or propagules transported from upstream or upslope areas.

Address the risk of invasion by noxious weeds and other invasive species in watershed restoration projects and water quality management plans.

Fish and Wildlife Management and Special Status Species

The BLM will consult agency species management plans and other conservation plans as appropriate to guide management and devise mitigation measures when needed.

Lessees will be notified that a lease parcel contains potential habitat for threatened (T), endangered (E), proposed (P), candidate (C) and BLM sensitive (S) plants, fish and wildlife.

Biological inventories must be completed prior to approval of operations in areas of known or suspected habitat of special status species, or habitat of other species of interest such as, but not limited to, raptor nests, or rare plant communities. Surveys shall be conducted by qualified biologist(s) using protocols established for potentially affected species during the appropriate time period(s) for the species. Survey reports, data, and determinations shall be submitted to the BLM for review and confirmation according to BLM protocols. Operators, the BLM, and the BLM Authorized Officer will use the information gathered to develop an appropriate mitigation plan. Mitigating measures may include, but are not limited to, timing restrictions, relocation of development activities, and fencing operations or habitat. If special status species are encountered during operation, operations will cease immediately, and the BLM Authorized Officer will be notified.

To protect key wildlife species, special status species, and their habitats, surveys may be required prior to surface disturbance, habitat treatments, or similar activities. Develop and implement standard survey protocol for key species on the basis of the latest science, conservation assessments, our or UDWR recommendations, and similar information. Special design and construction measures may also be required in order to minimize impacts to special status species.

Where water is taken directly from areas containing special status fish a meshed screen will be placed on the intake hose of an appropriate size to minimize potential intake of specials status fishes.

Wildland Fire Ecology and Management

Avoid applying fire retardant in or near drinking water sources.

Avoid the application of retardant or foam within 300 ft of a waterway or stream channel. Deviations from this procedure are acceptable if life or property is threatened.

Fire lines will not be constructed by heavy equipment within riparian stream zones. If construction is necessary due to threats to life or property, control lines shall terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives on the basis of fire behavior, vegetation/fuel types, and fire fighter safety.

Lands will be temporarily closed to other uses in areas where fire suppression is being implemented.

If it is determined that use of retardant or surfactant foam within 300 ft of a waterway or stream channel is appropriate due to threats to life or property; alternative line construction tactics are not feasible because of terrain constraints, congested areas, or lack of ground personnel; or potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator shall determine whether there have been any adverse effects to federally listed species. If the action agency determines that adverse effects were incurred by federally listed species or their habitats, then the action agency must consult with us, as required by 50 CFR 402.05, as soon as practicable.

Stabilize areas that have low potential to naturally re-vegetate and that have high wind and soil erosion potential. Treatments include the following:

Installing water bars and other drainage diversions, culverts along fire roads, dozer lines, and other cleared areas;

Seeding and planting to provide vegetative cover;

Spreading mulch to protect bare soil and discourage runoff;

Repairing damaged roads and drainage facilities;

Clearing stream channels of structures or debris that is deposited by suppression activities;

Installation of erosion control structures;

Installation of channel stabilization structures;

Fence or restrict areas to livestock and wild horse and burro grazing to promote success of natural re-vegetation or establishment of seeded species;

Lands may be temporarily closed to other uses during emergency stabilization and rehabilitation practices if activities inhibit treatment;

Repair or replace range improvements and facilities; and

Monitor emergency stabilization and rehabilitation treatments

Livestock Grazing

To reduce negative impacts to grazing, determine the critical period(s) of a riparian site, and then limit grazing during the critical period(s) to no more often than once every three or four years. Critical periods and impacts are likely to be either in late spring-early summer, when stream banks are more easily broken down by trampling; or late summer-early fall, when excessive browsing may damage vegetation. Each site has its own critical period that shall be individually determined. Important critical period variables are soil moisture, plant species composition, and animal behavior patterns. Site may be grazed every year if use does not occur during the critical period(s). Extended periods of rest or deferment from grazing may be needed to enable recovery of badly degraded sites.

To maintain stream bank stability, limit cattle access to surface water when adjacent stream banks and shorelines are overly wet and susceptible to trampling and sloughing. Stream bank trampling can often be reduced by capitalizing on the natural foraging behavior of cattle. Cattle generally avoid grazing excessively wet sites or in cold-air pockets. Cattle seek out wind-swept ridges, and they graze on upland forage when it is more palatable than forage in riparian areas. Avoid hot season grazing of riparian areas.

To graze a site more than once per growing season, moisture and temperature conditions shall be conducive to plant growth. For such sites, allow a recovery period of at least 30 to 60 days, depending on vegetation type, before re-grazing within the same growing season. Grazing more often and for shorter periods-that is, 3 weeks or less at a time-is preferable to fewer and longer grazing periods.

To control the timing, frequency, and intensity of cattle grazing, managers shall consider creating smaller riparian pastures with similar, or homogenous, features. Adjusting timing, frequency, and intensity of grazing in individual pasture units is more important than adopting a formalized grazing season.

To protect stream banks, prevent cattle from congregation near surface waters. Fencing, supplemental feeding, and herding work best. Provide remote watering systems for cattle. Manage the riparian area as a separate and unique pasture. Inappropriate cattle grazing will usually first be evidenced by excessive physical disturbance to stream banks and shorelines. (Mosley et al. 1997)

On riparian areas that are determined to be non-functioning or functioning at risk as a result of livestock grazing impacts, limits of bank disturbance will be determined and included within the Terms and Conditions of the Grazing Permit. Monitoring of bank disturbance will use the Multiple Indicator Method.

Winter grazing minimizes soil compaction and potential stream bank deterioration and allows maximum growth of vegetation and plant vigor. Livestock use shall not exceed 70% and stubble height shall be at least four to six inches after the grazing period.

To protect stream banks, discourage trailing up and down the channel by placing logs across trails, perpendicular to the stream channel.

Adjust intensity, timing and/or duration of grazing during periods of forage drought.

Dwarf Bear-claw Poppy, Gierisch Globemallow, and Holmgren Milkvetch

ACEC protections that apply to the Proposed ACECs

Public lands in ACECs will be retained in federal ownership (unless purchased or exchanged for conservation of ACEC designation criteria and managed accordingly).

Land use authorizations that could result in the irreparable damage of relevant and important values within ACECs will not be authorized. For example, ground-disturbing military maneuvers and landfills will not be authorized in ACECs. All land use authorizations within a specific ACEC will be evaluated for conformance with the general and ACEC-specific RMP management prescriptions prior to approval.

Commercial and personal use woodland products harvesting (green wood, dead and down, poles, and Christmas trees) and firewood gathering is prohibited.

Unless previously made unavailable for livestock grazing in the 1999 St. George Field Office Resource Management Plan (RMP), public lands are available for livestock grazing in ACECs, subject to the Terms and Conditions of federal grazing permits and the terms and conditions of biological opinions issued by USFWS, pursuant to section 7 consultations under the ESA for federally-listed species.

Public lands in Washington County will remain available to mining location under the General Mining Law of 1872 and applicable regulations, except where segregated from mineral entry by

law or withdrawn in accordance with applicable law. Plans of Operation will be required for development in ACECs.

ACECs are closed to mineral materials disposal.

Proposed South Hills ACEC protections

Retain 100% of public lands in federal ownership.

Manage as Exclusion area for linear, site-type, and material site ROWs.

Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.

Open to fluid mineral leasing with No Surface Occupancy Stipulation.

Closed to dispersed camping.

Authorize the discharge of firearms. Except in the act of licensed hunting, all firearms must be discharged toward a proper backstop sufficient to stop the projectile's forward progress. Targets must be constructed of wood, cardboard, paper or similar unbreakable materials. All targets, clays, and shells are considered litter after use and must be removed and disposed of properly.

Special Recreation Permits may be issued for commercial, organized group, and competitive events, subject to site-specific analysis under NEPA and Section 7 consultations.

OHV area designation is Limited to Designated Roads and Trails.

State Line ACEC protections

Retain 100% of public lands in federal ownership.

Manage as an Exclusion area for linear, site-type, and material site ROWs.

Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure

that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.

Open to fluid mineral leasing with No Surface Occupancy Stipulation.

Closed to dispersed camping.

Special Recreation Permits may be issued for commercial, organized group, and competitive events, subject to site-specific analysis under NEPA and Section 7 consultations.
OHV area designation is Limited to Designated Roads and Trails.

Proposed Webb Hill ACEC protections

Retain 100% of public lands in federal ownership.

Manage as Exclusion area for linear, site-type, and material site ROWs.

Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.

Closed to fluid mineral leasing.

Closed to mineral materials disposal.

Closed to dispersed camping.

Do not grant special recreation permits (SRP) for commercial, organized group, and competitive events.

Non-motorized recreation use will continue to be limited to designated trails.

Travel management in the proposed Webb Hill ACEC will remain as stated in the 1999 RMP (VG-09, OV-01); however, the BLM confirmed in an email that OHV travel is not authorized in Webb Hill (personal communication, 11/30/2016, Bob Douglas).

2.0 STATUS OF THE SPECIES'/DESIGNATED CRITICAL HABITAT

Desert Tortoise

On August 20, 1980, the Service published a final rule listing the Beaver Dam Slope population of the desert tortoise in Utah as threatened (45 FR 55654). In the 1980 listing of the Beaver Dam Slope population, the Service concurrently designated 26 square miles (mi) of

BLM-administered land in Utah as critical habitat. The reason for listing was population declines because of habitat deterioration and past over-collection.

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Primary reasons for the determination included significant population declines, loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture.

On February 8, 1994, the Service designated approximately 6.45 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California (4,750,000 acres), Nevada (1,220,000 acres), Arizona (339,000 acres), and Utah (129,000 acres) (59 FR 5820-5846, also see corrections in 59 FR 9032-9036), which became effective on March 10, 1994.

The desert tortoise is a large, herbivorous reptile that occurs in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of the desert tortoise includes those desert tortoises living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Sonoran Desert in California

The desert tortoise lives in a variety of habitats from sandy flats to rocky foothills, including alluvial fans, washes and canyons where suitable soils for den construction might be found. It is found from near sea level to around 3,500 ft in elevation.

Desert tortoises reach 8 to 15 inches in carapace length and 4 to 6 inches in shell height. Hatchlings emerge from eggs at about 2 inches in length. Adults have a domed carapace and relatively flat, unhinged plastron. Their shells are high-domed, and greenish-tan to dark brown in color with tan scute centers. Desert tortoises weigh 8 to 15 pounds when fully grown. The forelimbs have heavy, claw-like scales and are flattened for digging, while hind limbs are more stumpy and elephantine.

Desert tortoises may live 50 or more years in the wild and even longer in captivity. Their diet consists primarily of wildflowers, grasses, and cacti. A large urinary bladder can store over forty percent of the tortoise's body weight in water, urea, uric acid, and nitrogenous wastes. During periods of sufficient rainfall tortoises drink from temporary rain pools. A common defensive behavior when molested or handled is to empty the bladder, leaving the tortoise at a considerable disadvantage during dry periods. For this reason, desert tortoises should not be handled when encountered in the wild.

Reproduction begins between ages 12-20, with clutch sizes of 1-14 eggs. In years with low rainfall, females may lay few to no eggs. Females can store sperm for five years or longer, meaning they can reproduce for several years after mating. Nests are built and eggs are laid in late spring or early summer. The hatchlings appear in 90 to 120 days. The mother leaves the nest, so once the hatchlings appear, they must survive on their own.

Tortoises depend on bushes for shade and protection from predators such as ravens and coyotes. To escape the temperatures of cold winters and very hot summers, many tortoises live in burrows. The spring and summer burrows vary from 18 inches to five ft long, but may only be a few inches from the surface. Winter burrows tend to be about eight ft long and may be two to three ft from the surface. They often share burrows and may use multiple burrows scattered across the landscape.

Desert tortoises hibernate for up to nine months each year, becoming most active from March to June and September to October. When they are young they seldom venture more than 150 ft from their burrow. As they get older, they may go as far as 3/4 mile in a day and use a network of burrows. In the most densely populated areas, you may find one tortoise per 2.5 acres. Typically, tortoise densities are closer to one tortoise per 100 acres.

Additional information on the status, life history, and distribution of the desert tortoise can be found in the species' recovery plan (USFWS 2011), and is incorporated herein by reference.

Southwestern Willow Flycatcher

The southwestern willow flycatcher was listed as endangered under the ESA of 1973, as amended on February 27, 1995 (60 FR 10695). There is no southwestern willow flycatcher critical habitat within the action area.

The southwestern willow flycatcher is a small grayish-green passerine bird (Family *Tyrannidae*) measuring approximately 5.75 inches. The bird's song is a sneezy "fitz-bew" or a "fit-a-bew", the call is a repeated "whit."

The southwestern willow flycatcher is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). The historical breeding range of the southwestern willow flycatcher included southern California (from the Santa Ynez River south), Arizona, New Mexico, southwestern Colorado, southern portions of Nevada and Utah, western Texas, (Sogge et al. 1997, USFWS 2002), and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).
The Recovery Plan (USFWS 2002) divides the southwestern willow flycatcher's breeding range into six Recovery Units, which are further subdivided into Management Units.

There are currently 288 known southwestern willow flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado holding an estimated 1,299 territories (Durst et al. 2008). It is difficult to determine the total number of flycatcher territories since not all sites are surveyed annually and territory occupancy fluctuates. Numbers of individuals have increased since the bird was listed and some habitat remains unsurveyed; however, after nearly a decade of intense surveys the total known territories are the same as 20 years ago (500-1000 pairs; Unitt 1987). About 50 percent of the 1,299 estimated territories throughout the subspecies range are located at four general locations in New Mexico and Arizona. Territories are typically 0.25-5.7 acres.

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, Sogge et al. 1997). Migration stopovers are likely very important for species survival; southwestern willow flycatchers use riparian habitats along major drainages in the Southwest during migration (Sogge et al. 1997, Yong and Finch 1997). Many migrating willow flycatchers use riparian habitats or patches (small areas of riparian vegetation) that would be unsuitable for nest placement (the vegetation structure is too short or sparse, or the patch of vegetation is too small). Over a 5-year period, flycatcher habitat can, in optimum conditions, germinate, be used for migration or foraging, continue to grow, and eventually be used for nesting. Thus, riparian habitats at all stages of growth are important for flycatcher conservation.

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 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, USFWS 2002). 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 (Edwards and Woodhouse 2016, Johnson et al. 1999a and 1999b).

Historically, most southwestern willow flycatcher nests (75-80 percent) were constructed in willows. Currently, the species nests in a variety of plant species, including exotic species such as tamarisk and Russian olive; plant structure tends to be more important than plant species.

Flycatchers have higher site fidelity (to a local area) than nest fidelity (to a specific nest location) and can move among sites within stream drainages and between drainages (Kenwood and Paxton 2001). Breeding populations can return 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 (Sogge and Tibbits 1994). Juvenile flycatchers dispersed the farthest for new breeding sites from the area where they hatched (Paxton et al. 2007) and do not always return to their nesting sites to breed (Whitfield and Strong 1995, Whitfield and Enos 1996). However, the higher a flycatcher's productivity in one year, the more likely it is to return to the same territory the following year. Those individuals that have higher than normal reproductive success and showed territory fidelity continued to reproduce above average, while those that did poorly at one site and moved tended to do better than in the previous year (Paxton et al. 2007).

Egg-laying can begin as early as May, but typically occurs in mid-June. 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 (Sedgwick 2000, Paxton and Owen 2002).

Tamarisk was introduced into the United States in the early 1800s and into the American Southwest by 1856 (Graf 1982). 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 in stream morphology and ecology due to tamarisk invasion. The effects of tamarisk to breeding southwestern willow flycatchers may not be as apparent as the effects to their habitat. There is no evidence that flycatchers breeding in tamarisk exhibit poorer nutritional condition or are suffering negative physiological effects (Owen and Sogge 2002). However, breeding success and the number of species supported within a tamarisk stand is reduced (Anderson et al. 1977).

The introduced tamarisk leaf beetle was first detected affecting tamarisk within the range of the southwestern willow flycatcher in 2008 along the Virgin River in St. George, Utah. Initially, this insect was not believed to be able to move into or survive within the southwestern United States. Along this Virgin River site in 2009, 13 of 15 flycatcher nests failed following vegetation defoliation (Paxton et al. 2010). As of 2010, the beetle has been found in southern Nevada, southern Utah, and northern Arizona within the flycatcher's breeding range. Because tamarisk is a component of about 50 percent of all known flycatcher territories (Durst et al. 2008), continued spread of the beetle has the potential to significantly alter the distribution, abundance, and quality of suitable flycatcher nesting habitat.

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; tamarisk habitat can develop from seeds to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod et al. 2005, Cardinal and Paxton 2005). Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch et al. 2000).

The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat, with consequent reductions in population levels. Destruction and modification of riparian habitats have been caused mainly by: reduction or elimination of surface and subsurface water due to diversion and groundwater pumping; changes in flood and fire regimes due to dams and stream channelization; clearing and controlling vegetation; livestock grazing; changes in water and soil chem istry due to disruption of natural hydrologic cycles; and establishment of invasive non-native plants. Concurrent with habitat loss have been increases in brood parasitism by the brown-headed cowbird (*Molothrus ater*), which inhibit reproductive success and further reduce population levels (USFWS 2002).

Additional information on the status, life history, and distribution of the yellow-billed cuckoo can be found in the species' recovery plan (USFWS 2002).

Western Yellow-billed Cuckoo (*Coccyzus americanus occidintalis*)

The western distinct population segment (DPS) of the yellow-billed cuckoo was listed as threatened on October 3, 2014 (79 FR 59992). Critical habitat was proposed on August 15, 2014 (79 FR 48548) and encompasses 546,335 acres. There is no recovery plan for the cuckoo. Additional details on the status of this species and proposed critical habitat are found in our final rule to list the species as threatened (79 FR 59992) and our proposed rule to designate critical habitat (79 FR 48548). A revised proposed rule that may include additional proposed critical

habitat is under development. The discussions of the status of this species in these documents are incorporated herein by reference.

The western yellow-billed cuckoo is medium sized bird (12 inches) and a member of the avian family Cuculidae. Morphologically, the western yellow-billed cuckoos throughout the western continental United States and Mexico are generally larger than those which make up the eastern population segment, with significantly longer wings, longer tails, and longer and deeper bills (Franzreb and Laymon 1993).

Yellow-billed cuckoos breed and nest from May through early-July (most arriving in June) with a primary breeding season in late June and July. In southeastern Arizona (and possibly in other parts of the southwest), nesting may regularly continue into September, with some birds occasionally feeding older fledglings into early October (Corman and Magill 2000, Halterman 2002). Eggs take 9-11 days to hatch, and the birds fledge within five to eight days. Fledglings continue to be dependent on adults for approximately 14-32 days. Western yellow-billed cuckoos typically have one brood a year, but can have up to three broods in one year.

The cuckoo was formerly widespread throughout the western U.S. and British Columbia (American Ornithologists Union 1998, Hughes 1999), but may now be extirpated or is rare in much of its former range. At the time of listing (2014), the largest remaining breeding areas in the U.S. were in southern and central California, Arizona, and New Mexico. Estimates of the breeding population in the U.S. ranged from 350-495 pairs.

Based on historical accounts, the western yellow-billed cuckoo was formerly widespread and locally common in California and Arizona, more narrowly distributed but locally common in New Mexico, Oregon, and Washington, and uncommon along the western front of the Rocky Mountains north to British Columbia (AOU 1998, Hughes 1999). The species may be extirpated from British Colombia, Washington, and Oregon (Hughes 1999). The western yellow-billed cuckoo is now very rare, occurring primarily in scattered drainages in western Colorado, Idaho, Nevada, and Utah (USFWS 2014a, 2014b). The largest remaining breeding areas are in southern and central California, Arizona, along the Rio Grande in New Mexico, and in northwestern Mexico (USFWS 2014b).

Yellow-billed cuckoos typically migrate south in early August, though some linger as late as October. They spend the winter in South America, east of the Andes, primarily south of the Amazon Basin in southern Brazil, Paraguay, Uruguay, eastern Bolivia, and northern Argentina (Ehrlich *et al.* 1992, AOU 1998). Wintering yellow-billed cuckoos generally use woody lowland vegetation near fresh water, however, wintering habitat of the western yellow-billed cuckoo DPS is poorly known.

In the arid West, cuckoos generally breed in dense riparian woodlands comprised of cottonwood, willow, and mesquite (Prosopis spp.) (Laymon and Halterman 1989, Hughes 1999), although mesquite is not a component of breeding habitat in the Rocky Mountain states of Colorado, Utah, Wyoming and Idaho. Throughout its range, the species typically nests in willow trees but will also use alder, cottonwood, walnut, box elder, sycamore, and tamarisk. Cuckoo foraging habitats may encompass a broader range than those needed for nest placement (USFWS 2013). Specifically, they will forage in riparian patches that have an overstory canopy only and are within close proximity (300 m) to breeding and nesting habitat (personal communication Steve Laymon,

Sacramento Field Supervisor USFWS 2015). Cuckoos may nest and forage in tamarisk but their habitats usually contain a native tree component (Gaines and Laymon 1984, Johnson *et al.* 2008). Areas of tamarisk monoculture are typically not suitable habitat.
During migration, cuckoos may be found in a variety of vegetation types, including coastal scrub, secondary growth woodland, hedgerows, humid lowland forests, and forest edges from sea level to 8,125 ft (Hughes 1999). Nesting, foraging, and migration habitats can be relatively dense and contiguous, irregularly shaped, or narrow and linear. During migration cuckoos may be found in smaller riparian patches than those in which they typically nest and forage.

Cuckoo habitats are largely associated with perennial rivers and streams but streamflow frequency, magnitude, duration, and timing can vary widely among regulated and unregulated systems and between years (Poff *et al.* 1997). Humid conditions created by surface and subsurface moisture appear to be an important habitat characteristic.

Cuckoos forage primarily by gleaning insects from vegetation but they also capture small vertebrates such as tree frogs (Hyla spp.) and lizards (Hughes 1999). They specialize on relatively large prey, including caterpillars (Lepidoptera spp.), katydids (Tettigoniidae spp.), cicadas (Cicadidae spp.), and grasshoppers (Caelifera spp.) (Laymon *et al.* 1997). Their breeding periods may be timed to coincide with outbreaks of insect species, including tent caterpillars and cicadas (Hughes 1999, Halterman 2009).

Critical habitat was proposed in August 2014 (79 FR 48548). In total, approximately 546,335 acres of critical habitat are proposed in Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming. There are eight proposed critical habitat units in Utah along the Colorado River, Green River, Dolores River, San Juan River, Virgin River, and on one unit that includes both Pigeon Water Creek and Lake Fork River. Final critical habitat has not been designated.

The physical and biological features identified for proposed critical habitat consist of three components: 1) Riparian woodlands with mixed vegetation structure in contiguous or nearly contiguous patches that are greater than 325 ft (100 meters) in width and 200 acres (81 hectares) or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats; 2) Adequate prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas; and 3) Dynamic riverine processes that provide hydrologic processes that encourage sediment deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old. These dynamic riverine processes are considered essential for developing and maintaining the first two primary biological and physical features.

The primary threat to the western yellow-billed cuckoo is loss or fragmentation of high-quality riparian habitat suitable for nesting (Corman and Wise-Gervais 2005). Actions such as dam building, groundwater pumping, stream channelization and stabilization, diversion of surface and ground water for agricultural and municipal purposes, livestock grazing, wildfire, drought, and

establishment of nonnative vegetation have changed surface and subsurface stream flows and altered the quality, distribution, abundance, and longevity of riparian vegetation (USFWS 2002). Habitat loss and fragmentation and related isolation of cuckoo populations has increased the species' vulnerability to stochastic events (e.g., chance weather events, wildfires) and to long term effects of additional development, climate change, and other factors. Pesticide use and resulting prey scarcity (especially the loss of sphinx moth caterpillars in the West) also have played a role in the decline of cuckoos in the DPS (Ehrlich *et al.* 1992).

Because of the absence or near absence of nesting by yellow-billed cuckoos in monotypic stands of tamarisk and other nonnative vegetation, conversion of native or mixed (native and non-native) riparian woodlands to nearly monotypic stands of tamarisk and other non-native vegetation, coupled with the inability of native vegetation to regenerate under altered hydrological conditions, is a significant threat to the western yellow-billed cuckoo now and in the future (79 FR 48547). Non-native vegetation occurs across most of the range; its establishment can be caused by altered hydrology or other disturbances, which are widespread throughout the range. Non-native vegetation is expected to increasingly modify and decrease habitat for the western yellow-billed cuckoo within a majority of its range in the United States and northern Mexico. Other threats to riparian habitat include long-term drought and climate change.

The ongoing threats, including small isolated populations, cause the remaining populations to be increasingly susceptible to further declines and local extirpations through increased predation rates, barriers to dispersal by juvenile and adult western yellow-billed cuckoos, chance weather events, fluctuating availability of prey populations, collisions with tall vertical structures during migration, defoliation of tamarisk by the introduced tamarisk leaf beetle (*Diorhabda* spp.), increased fire risk, and climate change events (Thompson 1961, McGill 1975, Wilcove *et al.*1986). The warmer temperatures already occurring in the western United States may alter the plant species composition of riparian forests over time. An altered climate may also disrupt and change food availability for the western yellow-billed cuckoo if the timing of peak insect emergence changes in relation to when the cuckoos arrive on their breeding grounds to feed on this critical food source.

Habitat for the western yellow-billed cuckoo has been modified and curtailed, resulting in only remnants of formerly large tracts of native riparian forests, many of which are no longer occupied by western yellow-billed cuckoos. Despite recent efforts to protect existing, and restore additional, riparian habitat in the Sacramento, Kern, and Colorado Rivers, and other rivers in the range of the western yellow-billed cuckoo, these efforts offset only a small fraction of the historical habitat that has been lost. Therefore, we expect the threats resulting from the combined effects associated with small and widely separated habitat patches to continue to affect a large portion of the range of the western yellow-billed cuckoo.

Virgin River Chub and Woundfin

The woundfin is critically imperiled in the Virgin River. Causes for declines in woundfin numbers can be attributed to the following suite of environmental conditions: summer water temperatures exceeding behavioral thermal maximum and critical thermal maximum; low flows resulting from drought and water development, runoff from burned portions of the drainage; predation and competition by nonnative fishes, in particular red shiner; and episodic low dissolved oxygen conditions. Many of these same threats affect Virgin River chub, however, long-term

monitoring in the upper Virgin River, where red shiner do not occur, indicate that the longer lived Virgin River chub appear to reproduce successfully in most years. In addition, some level of recruitment to the adult population appears to occur on a frequent basis (based on the consistent collection of Age-1+ and Age-2+ chub) (Fridell and Morvilius 2005, Golden and Holden 2004). A review of historical data indicated that two "core populations" of Virgin River chub (one in the upper river and one in the lower river) appear to be more tolerant of habitat conditions that limit the woundfin. Alternatively, the fact that Virgin River chub are longer-lived may allow for periodic recruitment, while populations of the shorter-lived woundfin are impacted by one poor recruitment year. A comparison of recent data collected at these two core populations indicates that, like woundfin, Virgin River chub are negatively affected by the presence of red shiner and other nonnative fish. However, unlike woundfin, Virgin River chub are able to persist where they are sympatric.

In 2007, UDWR's monitoring efforts determined Virgin River chub abundance declined by over 90 percent between 2006 and 2007 in the Utah portion of the Virgin River (UDWR 2012). Virgin River chub monitoring data supported information collected by other sampling efforts, including full pass distribution monitoring, suggesting that poor water quality during two late summer 2007 storm events had decimated the native fish population between La Verkin Hot Springs and Washington Fields Diversion. Monitoring efforts by UDWR determined that the same 2007 storm events that decimated Virgin River chub caused wild woundfin to be functionally extirpated from the Virgin River (UDWR 2012).

Re-establishment of the river population of woundfin has been attempted using hatchery propagated individuals (Table 1); however, the number of stocked woundfin surviving in the river for sampling recapture since the 2007 event is still low and 2012 sampling results indicate the species has not been reestablished with a self-sustaining population (Bennion 2013). A self-sustaining woundfin population has not been established in the river for many years. Hatchery raised woundfin were stocked each year in the upper Virgin River from 2003 to 2011 and Virgin River chub stocking has occurred each year from 2006 to 2010 (Table 2). Although no current population estimates are available for woundfin or Virgin River chub, representative sampling conducted during the spring and fall of each of the last several years (Table 3) indicates that although stocked woundfin are able to reproduce each year, survival to recruitment is limited (UDWR 2012). This is potentially a result of unfavorable habitat conditions including high water temperatures during low flow periods and low dissolved oxygen levels during some storm events with high flows. The effect of these conditions on Virgin River chub is likely similar; however, the species may be able to be deal with these adverse conditions in a manner that results in better fish survival (USFWS 2008). In 2010 and early 2011, the Virgin River Program initiated two studies to analyze population dynamics and water quality data to determine water quality conditions when fish kills occurred and what approaches can be taken to alleviate this and ensure recruitment of young-of-year listed fish species.

Table 2. Total number of woundfin and Virgin River chub stocked into the Virgin River-Utah, Ash Creek, and La Verkin Creek, 2003 through 2011.

Year	Woundfin	Virgin River Chub
2003	2,200	0
2004	3,100	0
2005	2,900	0
2006	6,000	4,195
2007	6,692	4,244
2008	27,079	6,313
2009	9,493	4,940
2010	1,762	2,938
2011	33,061	0
2012	24,879	0
2013	9,772	4,025
2014	15,203	520
2015	12,566*	2,241
2016	13,186*	0*

* Includes spring stocking only

Table 3. Total number of woundfin and Virgin River chub collected in spring and fall full-pass sampling in the Virgin River, La Verkin Hot Springs to Washington Fields Diversion.

Year	Woundfin	Virgin River Chub
2005	40,875	47,944
2006	8,556	24,017
2007	42	356
2008	791	8,915
2009	618	3,012
2010	622	1,365
2011	4,545	30,982
2012	543	4,439
2013	132	1,650
2014	1,055	737
2015	2,685	1,013
2016	7,327	546

Species Distribution

The spatial distribution of the Virgin River chub has changed little since it was listed in 1990 with populations persisting in two core areas (above Washington Fields Diversion in Utah and near the confluence with Beaver Dam Wash in Arizona). However, more transient populations below the Mesquite Diversion and downstream from the Johnson Diversion to the Arizona border were lost or reduced. Areas in the Muddy River, where native species and the Virgin River chub are considered common, have shrunk since the 1970s and now include only 8.7 miles of the upper river (Holden *et al.* 2005).

When the woundfin was listed in 1970, it occupied 12.5 percent of its historical range. Thirty years later, we designated that portion of historical range (87.5 miles of the Virgin River) as critical habitat. In the past 20 years, woundfin have been eliminated from at least 35 miles of

critical habitat in the lower river in Arizona and Nevada and abundance has now declined to precariously low levels in the Utah portion of the species range (Bennion 2013).

Diversions

In the upper Virgin River, the Hurricane and LaVerkin Ditch Diversions constructed in the late 1890s and early 1900s diverted Virgin River flows approximately three miles upstream of La Verkin Hot Springs. These diversions routinely dewatered the river downstream to La Verkin Hot Springs under low flow conditions. Those structures remained in service until replaced by the Quail Creek Diversion in 1985. The Quail Creek pipeline capacity is approximately 125 cfs. Current diversion operations maintain a minimum flow of 3 cfs. The Quail Creek Diversion now delivers the water rights that were formerly diverted into the Hurricane and LaVerkin diversions. Accordingly, diversion of this water has not changed since the original diversions were constructed.

A portion of the flow diverted at the Quail Creek Diversion is returned to the river at various locations downstream. The first release occurs just downstream from La Verkin Hot Springs, 1.6 miles upstream from the terminus of critical habitat at the confluence with La Verkin Creek. The Washington Fields water right requires a minimum flow of 86 cfs (or the natural flow of the river) to the Washington Fields Diversion. The entire flow of the river has been diverted near the present site of the Washington Fields Diversion regularly and for long periods since the late 1890s through authorized water rights. Currently a target discharge of 5 cfs passes the Washington Fields Diversion. Irrigation returns contribute flow downstream of the diversion structure.

The Virgin River channel is a "losing" reach within the Virgin River gorge and has dried regularly during pre-development times. Operations at the St. George City Water Treatment Plant downstream of Bloomington, Utah have altered summer base flows resulting in more frequent surface flow through the Gorge than occurred through much of the early 1900s. A series of springs beginning in the lower Virgin River Gorge and extending downstream through Littlefield, Arizona can maintain baseflows near 50 cfs in the Virgin River near its confluence with Beaver Dam Wash.

Three diversion structures in the lower 25 miles of the Virgin River capture substantial amounts of water during low flow periods: the Mesquite Diversion—30 to 40 cfs; the Bunkerville Diversion—15 to 20 cfs; and the Riverside Diversion can take the bulk of the remaining streamflow. During periods of drought, river discharge in the Mesquite Bridge and Riverside Reaches can be less than 20 cfs on average, and at times 0-5 cfs (Golden and Holden 2004). There are only two short reaches of critical habitat that are not heavily impacted by water development: the area immediately above the Washington Fields Diversion and the area extending from the lower Virgin River Gorge to the Mesquite Diversion.

Flows and Temperature

Analysis of fish populations during low flow periods has found that fall woundfin abundance was significantly lower in drought years than in non-drought years (Holden *et al.* 2001). The same relationship applied to other Virgin River native fishes as well (Golden and Holden 2002). Additionally, fall woundfin abundance was significantly lower in years where summer 50% exceedence flows were below 75 cfs (Holden *et al.* 2001). Fall woundfin abundance declines

even further at summer 50 percent exceedence flows below 50 cfs (Holden *et al.* 2001). In addition, river discharge directly impacts water temperature, predation, and other threats to Virgin River fishes.

The Virgin River Program has identified the need to improve habitat quality (e.g. water quality, quantity, and temperature) through the critical summer period as a top priority. The effects of low levels of turbidity are not completely understood, but appear to cause fish to crowd into habitats with cover, increasing competition for resources and the risk of predation (UDWR 2016). Researchers have shown that woundfin experience physiological limitations and subsequent mortality at approximately 31°C (Addley 2006). The woundfin loses its equilibrium if exposed to 31°C and above, which is its critical thermal maximum (CTM) (Deacon *et al.* 1987). Critical thermal maximums differ by species and acclimation conditions. Less well characterized but perhaps of equal concern is a temperature at which behavior is affected; a behavioral thermal maximum (BTM). Field observations in the Virgin River indicate that at temperatures in excess of 28°C, native fish shift their behavior to seek out thermal refuge (deeper pools, groundwater inflows, etc.) (Fridell and Morvilius 2005, Morvilius-Auer and Fridell 2006). Temperatures above the Washington Fields Diversion reach, particularly from Quail Creek Reservoir upstream to La Verkin Hot Springs, can be very high during the summer (peak daily temperature above 35 °C, mean daily temperature greater than 29 °C) (Addley *et al.* 2005). High water temperature in this reach is partially due to the 5,000 gpm discharge of the 42 °C La Verkin Hot Springs (Gerner 2008). At low river discharge conditions, there is little river water to dilute the hot springs water. Similarly in the lower river, CTM is often exceeded at the Riverside area and can even be exceeded near Beaver Dam Wash (Golden and Holden 2004).

Reducing the threat of future exceedence of BTM and CTM will require innovative water management strategies. The Virgin River Program has worked closely with the Washington County Water Conservation District (WCWCD) to develop strategies to help mitigate summer water temperature conditions. These strategies include releases of water from Kolob Reservoir and the construction and operation of a pumpback system (see below). Since 2004, the WCWCD has in some years, upon request from the Virgin River Program, released approximately 10 cfs of water from Kolob Reservoir during summers (generally in July and August) when water temperature approaches CTM. The water release enters the river upstream from critical habitat. Fish sampling during fall 2004 indicated over-summer survival that year was better than had been observed in preceding low flow years (Fridell and Morvilius 2005).

In 2010, the Virgin River Program and the WCWCD began work on a pumpback system to augment river discharge and mitigate high water temperature conditions in the upper Virgin River in the summer months. This system was constructed and tested in 2012 and it is now available to augment Virgin River flows up to 28 cfs in the reach of river extending from La Verkin Hot Springs to Washington Fields Diversion (UDWR 2012). The system delivers stored water from Sand Hollow Reservoir to Hurricane, Utah irrigators, thus off-setting the irrigation demand from the river during warm summer months. To date, operation of the pumpback station during low flow and high temperature events has reduced the number of hours the Virgin River exceeded the CTM and BTM of Virgin River fishes and recent sampling indicate fish survival over the summer months have improved since implementation of the pumpback station.

Red Shiner

The Virgin River is heavily populated by invasive fishes, and the red shiner dominates the fish population in the lower river where invasive fish management has not been implemented. No successful efforts to physically remove or chemically treat invasive fish have been undertaken in the lower river. Prior to invasion of red shiner, woundfin were consistently found in the lower basin (Deacon and Williams 2002).

The Upper Virgin River, where the Washington Fields Diversion demarcates the downstream terminus of the largest remaining population of woundfin and Virgin River chub, is free of the red shiner. However, until recently, the Virgin River from the Washington Fields Diversion to the Stateline Barrier was infested with the red shiner precluding successful establishment of woundfin and Virgin River chub populations in this stretch. Consistent removal efforts by the Virgin River Program have successfully limited red shiner populations downstream from the diversion structure. In addition, in 2005, the WCWCD, the St. George and Washington Canal Company, and the Virgin River Program constructed a fish screen designed to prevent entrainment at the diversion structure and also to shunt fish back to the Virgin River immediately downstream of the diversion structure (USFWS 2005). Therefore, the effectiveness of the Stateline Barrier is now of critical importance. Entrainment of Virgin River fish at diversion structures farther downstream (Mesquite, Bunkerville, and Riverside) is an unquantified threat to the Virgin River fishes that remains unresolved.

Tamarisk

Tamarisk (*Tamarix spp.*) was introduced into the United States from central Asia in the 1830s to stabilize river banks, as a windbreak, and as an ornamental plant (Baum 1967). This nonnative tree has taken over the riparian zone/floodplain of the Virgin River system, especially in low gradient areas with sandy substrates. The tamarisk armors floodplains and creates a narrow and deep river morphology, habitat conditions which are not suited for the woundfin. The tree impacts native fish habitat and is less desirable for other wildlife such as mammals and birds, including the endangered southwestern willow flycatcher. The tree is tolerant of drought, heat, cold, salinity, fire, and flooding. Its roots extend deeper than many riparian plants, thus it can out compete other plants and grow in areas where water is not readily available. The tree propagates through seeds and can sprout from roots or from branches. Tamarisk occurrences in the Virgin River drainage range from vast monotypic stands to individual trees interspersed within native vegetation, and also as isolated trees and stands in upland areas, where springs or moist soil conditions may be present. Tamarisk can dominate floodplain vegetation and can influence normal river function. Stream channels become restricted and flood flows may cut new channels due to the thick growth or because of tamarisk debris dams.

Tamarisk control efforts have begun throughout the Virgin River system. Initially, the impetus behind tamarisk control efforts was to reduce potential fire fuels near wildland/urban interfaces. However, more recently, tamarisk removal in complement with native revegetation has occurred in the St. George area to keep tamarisk out, but also to re-establish native vegetation for the benefit of wildlife including the southwestern willow flycatcher and also to help to reduce erosion from large discharge flood events. Large scale tamarisk removal projects coupled with native revegetation efforts have occurred near the City of Mesquite, but a river side fringe (30 ft wide) of

tamarisk has been left untouched to provide habitat for southwestern willow flycatcher and to minimize effects to the aquatic environment.

Large floods in 2005 and 2010 were of sufficient scale that large thickets of tamarisk were removed along the Virgin River main stem and in its tributaries, temporarily resetting the riparian ecosystem in places. Efforts have been made to take advantage of the flood induced reset by revegetating post flood point bars with native coyote willow. However, shifting the system away from tamarisk as the dominant species will require constant effort

Critical Habitat

The area designated as critical habitat for the Virgin River chub and the woundfin is the mainstem Virgin River and its 100-year floodplain, extending from the confluence of La Verkin Creek, Utah, to Halfway Wash, Nevada, and includes 59.6 km (37.3 mi) of the mainstem Virgin River in Utah, 50.6 km (31.6 mi) in Arizona, and 29.9 km (18.6 mi) in Nevada (USFWS 2000).

This designation totals 140.1 km (87.5 mi) of the mainstem Virgin River, which represents approximately 12.5 percent of the woundfin's historical habitat and 65.8 percent of the Virgin River chub's historical habitat. Due to the lack of historical data on the distribution of the woundfin in Arizona, this percentage is only an estimate. The area of the Virgin River designated as critical habitat consists of the remaining occupied habitat for the woundfin and Virgin River chub and it flows through public and private lands (USFWS 2000).

The primary constituent elements of critical habitat determined necessary for the survival and recovery of these Virgin River fishes are water, physical habitat, and biological environment. As stated above, the 100-year floodplain of the Virgin River is included in the designation of critical habitat for both species, but we designated only those portions of the 100-year floodplain that contain at least one of the primary constituent elements for critical habitat. The desired conditions for each of these elements are further discussed below (USFWS 2000). Water includes a sufficient quantity and quality of water (i.e., temperature, dissolved oxygen, contaminants, nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is identified for the particular life stage for each species. This includes the following: (1) water quality characterized by natural seasonally variable temperature, turbidity, and conductivity; (2) hydrologic regime characterized by the duration, magnitude, and frequency of flow events capable of forming and maintaining channel and instream habitat necessary for particular life stages at certain times of the year; and (3) flood events inundating the floodplain necessary to provide the organic matter that provides or supports the nutrient and food sources for the listed fishes (USFWS 2000).

Physical habitat includes areas of the Virgin River that are inhabited or potentially habitable by a particular life stage for each species, for use in spawning, nursing, feeding, and rearing, or corridors between such area. Woundfin physical habitat includes: (1) river channels, side channels, secondary channels, backwaters, and springs, and other areas which provide access to these habitats; (2) areas inhabited by adult and juvenile woundfin include runs and pools adjacent to riffles that have sand and sand/gravel substrates; (3) areas inhabited by juvenile woundfin are generally deeper and slower. When turbidity is low, adults also tend to occupy deeper and slower habitats; and (4) areas inhabited by woundfin larvae include shoreline margins and backwater habitats associated with growths of filamentous algae (USFWS 2000). Virgin River chub

physical habitat includes: (1) river channels, side channels, secondary channels, backwaters, and springs, and other areas which provide access to these habitats; and (2) areas with slow to moderate velocities, within deep runs or pools, with predominately sand substrates, particularly habitats which contain boulders or other instream cover (USFWS 2000).

The biological environment includes food supply, predation, and competition which are important elements of the biological environment and are considered components of this constituent element. Food supply is a function of nutrient supply, productivity, and availability to each life stage of the species (USFWS 2000). Predation and competition, although considered normal components of this environment, are out of balance due to nonnative fish species in many areas. Fourteen introduced species, including red shiner (*Cyprinella lutrensis*), black bullhead (*Ameiurus melas*), channel catfish (*Ictalurus punctatus*), and largemouth bass (*Micropterus salmoides*), compete with or prey upon the listed fishes. Of these, the red shiner is the most numerous and has been the most problematic for the listed fishes. The red shiner competes for food and available habitats and is known to prey on the eggs and early life stages of the listed fishes (USFWS 2000).

Components of the biological environment that comprise the primary constituent elements include the following: (1) seasonally flooded areas that contribute to the biological productivity of the river system by producing allochthonous (humus, silt, organic detritus, colloidal matter, and plants and animals produced outside the river and brought into the river) organic matter which provides and supports much of the food base of the listed fishes; and (2) few or no predatory or competitive nonnative species in occupied Virgin River fishes' habitats or potential reestablishment sites (USFWS 2000).

Dwarf Bear-Poppy

The dwarf bear-poppy is a perennial herb in the poppy family. The species occurs in Washington County, Utah within 9 miles (mi) (14.5 kilometers (km)) of St. George. This narrowly distributed perennial was federally listed as endangered in December 1979 (50 CFR 17.12) following a final rulemaking published in November 1979 (44 FR 64250). No critical habitat was designated for this species.

Dwarf bear-poppy was first collected in 1874 from the general vicinity of St. George, Utah (Nelson and Welsh 1993). We currently recognize 9 populations of the species that occur within approximately 9,000 acres (3,642 ha) of suitable habitat in Washington County, Utah. The elevation range the species occupies is 823 to 1,006 m (2,700 to 3,300 ft). Approximately 30 percent of the habitat is located on state, private or municipally administered lands; the remaining 70 percent occurs on federal lands managed by the Bureau of Land Management (BLM) (BLM 2008a, Nelson 1989b). Approximately 50 percent of the poppy's historic habitat has been lost to urbanization and degradation from off-road vehicles (Harper and Van Buren pers. comm. 2004). Since 1990, an estimated 326 acres of poppy habitat has been lost to development (Jorgenson 2015). Surveys in suitable habitat south of the state border in Arizona have not located additional populations (Bowker 2014).

Dwarf bear-poppy is a short-lived perennial. The average lifespan is 2.6 years (Harper and Van Buren 2004), but if the seedlings persisted for one year after germination, the average lifespan increases to 4.6–8 years (Nelson 1989; Harper and Van Buren 2004). Maximum lifespan can reach 10 years (Harper and Van Buren 2002; Harper and Van Buren 2004). Plants seemed to

reach maximum growth during their seventh growing season and declined thereafter (Harper and Van Buren 2004).

Dwarf bear-poppy reproduces sexually by seeds. The species has a mixed mating system and is thus capable of producing seeds through self-fertilization or cross-pollination by pollinators (Tepedino *et al.* 2014). However, the highest number of seeds and fruits are produced when flowers are cross-pollinated (Tepedino *et al.* 2014). Flowers are pollinated by bees and at least nineteen different species from six families have been identified to forage on dwarf bear-poppy flowers, including many native bees and the non-native common honeybee (*Apis mellifera*), although pollinator diversity has declined over the past decade (Tepedino *et al.* 2014). Pollination rate and seed production are related to plant density; as dwarf bear-poppy individuals become more rare on the landscape pollination success and seed production decline (Harper *et al.* 2000; Harper and Van Buren 2004).

Dwarf bear-poppy is a seedbanking species, producing very large amounts of seed, up to hundreds of thousands per acre each year that remain dormant but viable in in the soil for many years (Nelson 1989a; Nelson 1989b; Harper and Van Buren 2004). This species' persistent seedbank cannot be understated for the survival of this species. Long-lived seeds play a critical role in many plant species survival in arid and semi-arid environments and allow species to persist during unfavorable conditions in an unpredictable environment (Cabin *et al.* 2000; Megill *et al.* 2011). Seeds are primarily dispersed by wind and animals, mainly ants and rodents, which are also seed predators (Harper and Van Buren 2004; Farrall and Mull 2012; Mull 2012). Seeds are dispersed before they are mature and they need several years to complete development before they germinate (Nelson 1989b; Allphin *et al.* 1998;). In a controlled setting, this species is practically impossible to germinate, seedlings have never bloomed in captivity, and individuals have not been successfully transplanted or cultivated by tissue culture (Pence 2016).

Seedling recruitment is episodic and occurs en masse when rainfall is sufficient during the late winter and spring. The species utilizes a pulse-reserve life history strategy where mass seedling recruitment occurs in favorable years that are infrequent (Simpson 2014). A large recruitment event occurred in 1992 and was linked to precipitation of at least 2 in (5 cm) between February and April (Harper and Van Buren 2004). Long time intervals are common between recruitment events, longer than the longevity of most dwarf bear-poppy individuals (Nelson and Welsh 1993; Harper and Van Buren 2004). During intervening years between recruitment events, a large fraction of the population remains dormant as a seedbank (Harper and Van Buren 2004). Seedling size is quite variable within a population and size is positively correlated with both survival and reproduction; larger seedlings have higher survival and reproductive rates than smaller seedlings (Harper and Van Buren 2004). Seedling mortality can be high and was documented as 33 percent, and 50 percent for two years, and may even reach 95 percent (Harper and Van Buren 2002; Harper and Van Buren 2004). Mortality rates for the large cohort in 1992 ranged from 13 to 87 percent per year (Harper and Van Buren 2002; Harper and Van Buren 2004).

We have never been confident of a total population size estimate for the dwarf bear-poppy because of the limited census data we have for most populations. The difficulty in estimating total population size is because there are large fluctuations in plant abundance at all monitoring plots, there is a large fraction of the population that remains dormant and thus non-detectible as a seedbank outside of recruitment years, and vast acreages of suitable habitat within the Red Bluff population have never been surveyed. Until comprehensive survey information is available, we

and species experts generally characterize the size of the total population in terms of acres of suitable habitat. Aerial surveys performed by drones or low-flying aircraft during peak bloom are recommended to obtain population estimates for populations with large and medium acreages such as Red Bluff, Warner Ridge, Webb Hill, White Dome, and Beehive Dome.

A population viability analysis (PVA) for the species indicates a downward population trend within the past 21 years (Meyer *et al.* 2015). Only one successful seedling recruitment and plant establishment event occurred within this time period and it appears that other large seedling recruitment events were not successful due to high seedling mortality from drought conditions. Two years of favorable moisture appear to be necessary to support successful plant establishment and population growth. The downward population trend may be accordance with the pulse-reserve life history strategy where mass seedling recruitment occurs in favorable years that are infrequent. However, this downward trend is concerning given the long time-frame of decline.

Several genetic studies have been performed on dwarf bear-poppy (Van Buren and Harper 1996; Allphin *et al.* 1998; Simpson 2014). All show that different sites within populations have different levels of genetic variability and that not all sites experience an equal amount of gene flow. Some populations are in danger of becoming genetically isolated, specifically the Shinob Kibe population and the Boomer Hill site, an isolated location within the Red Bluff population. Boomer Hill is located at the most distant edges of the range and is likely to experience limited gene flow. The Shinob Kibe population may also be experiencing inbreeding depression as a result of its small size (USFWS 2016). The Webb Hill population occupies a medium-size habitat area. Population genetics vary with high levels of heterogeneity, but the most continuously occupied portion of the population south of Brigham road is very homogeneous (Simpson 2014; Van Buren and Harper 1996). Webb Hill is the central population within the species' range and appears to serve an important genetic role as a corridor between eastern and western populations (Simpson 2014). The high levels of genetic variation between populations provide a strong argument for preserving all extant populations as the loss of any individual population would greatly reduce the genetic diversity of the species.

Dwarf bear-poppy occurs between 823 to 1,006 meters (2,700 to 3,300 ft) in elevation. The plant is restricted to gypsiferous soils and most commonly occurs on soils of the Shnabkaib Member of the Moenkopi Formation, but sometimes are found on the Middle Red Member or Upper Red Member (USFWS 1985; Nelson and Welsh 1993). These soils are slightly basic, high in both gypsum and calcium carbonate, and in comparison with desert shrub soils have lower concentrations of magnesium, potassium and iron and higher levels of calcium and copper (Nelson and Harper 1991).

The climate across the range of the species is characterized by extreme daily temperature fluctuations, and unpredictable but generally low precipitation, averaging only 0.8 in (2 cm) annually (Harper and Van Buren 2004). Precipitation mainly occurs during the winter months with summer rainstorms contributing roughly a quarter of the annual total precipitation (Nelson and Harper 1991; Harper and Van Buren 2004). A recent habitat model indicates annual precipitation is the strongest predictor of suitable habitat followed by geology, soil gypsum content, and summer maximum temperatures (Bowker 2014).

Additionally, the habitat model indicates the majority of existing suitable habitat is currently

occupied by the species (Bowker 2014).

Dwarf bear-poppy habitat is sparsely vegetated, and consists of highly weathered rounded hill and dome formations. Where the species occurs, roughly half of the soil surface is bare of vegetation, and the majority of the living cover in the habitat is biological soil crust (Nelson 1989a; Nelson and Harper 1991; Simpson 2014). Associated native plants include shadscale (*Atriplex confertifolia*), Torrey's ephedera (*Ephedra torreyana*), nodding buckwheat (*Eriogonum cernum*), desert trumpet (*E. inflatum*), desert pepperweed (*Lepidium fremontii*) and burrobush (*Ambrosia salsola*). Invasive species include red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), barb-wire Russian thistle (*Salsola paulsenii*), African mustard (*Malcomia africana*), and halogeton (*Halogeton glomeratus*) (Harper and Van Buren 2004; Simpson 2014; Duda *et al.* 2003; Searle and Van Buren 2016).

At the time of listing, land development, OHV use, and collection for ornamental purposes were considered threats to dwarf bear poppy. Additionally, gypsum strip mining was considered a potential threat and the extremely restricted range, small population size, and restricted gene pool were considered factors intensifying other threats to the species. We no longer consider gypsum strip mining and collection for ornamental purposes to be threats to the species. However, development and recreation continue to be high threats to the species.

Land development on dwarf bear-poppy habitat has had a significant negative impact on the species since listing, with up to 50 percent of the habitat lost and development continuing to increase in the area, likely resulting in additional habitat loss on State and private lands. This habitat loss and fragmentation has also resulted in a reduction in pollinator diversity for the species, which can negatively impact reproduction and decrease gene flow. With increased human population and development comes increased pressure from recreation, which may also impact pollinator presence and diversity. The loss of pollinators and pollinator diversity likewise exacerbates the impact of the existing threats, and many of the identified threats have likely contributed to the recorded drop in pollinator diversity. We now consider the loss of specialist pollinators to constitute a high magnitude threat to the species.

The designation of ACECs at two of the populations on BLM lands and the creation of TNC Nature preserves at two more has provided some protection from both development and recreation; however, illegal or unauthorized recreation and vandalism still occur at these areas and past use of motorized vehicles still heavily impacts populations within protected habitat. While ACECs and the TNC preserves do provide some protection for the species outside of the Act, the remaining populations have few to no legal protections. We consider the lack of legal protections on State and private lands to constitute a high threat to the species.

Dwarf-bear-poppy is still extremely imperiled. We are concerned that the magnitude of past and current impacts to the species may not yet be fully evident. This species requires significant threat abatement and successful propagation methods to prevent extinction and improve its chances of survival.

Gierisch Mallow

Gierisch mallow is a perennial herb in the mallow family. The species occurs in northern Mohave County, Arizona, and adjacent Washington County, Utah. This narrowly distributed perennial was federally listed as endangered on August 13, 2013 (78 FR 49149).

We designated approximately 12,882 acres (ac) (5,189 hectares (ha)) of critical habitat in August 2013 (78 FR 49165). We designated 2 critical habitat units. Each critical habitat unit contains occupied habitat as well as the primary constituent elements (PCEs)—or the physical and biological features—essential for the conservation of the species (Table 4). The Starvation critical habitat unit contains two Gierisch mallow populations, including the second largest population. This unit is located west of I-15 as this highway crosses the State line of Arizona and Utah, and is bounded by the Virgin River to the west and I-15 to the south and east. The Black Knolls critical habitat unit contains the remaining 16 Gierisch mallow populations, including the largest population. It is located south of I-15 as this highway crosses the State line of Arizona and Utah, and is bounded by Black Rock Gulch to the west and Mokaac Mountain to the south and east.

Table 4. Gierisch mallow critical habitat units.

Critical Habitat Unit	Designated Critical Habitat Unit (acres)					Total Habitat Area (Acres)
	BLM Utah	BLM Arizona	State of Utah	State of Arizona	Private	
Starvation Point	**1,982**	**544**	**167**	**615**		**3,309**
Black Knolls		**8,862**	**651**			**9,513**

Based on our knowledge of the life history, biology, and ecology of Gierisch mallow and the requirements of the habitat to sustain the essential life history functions of the species, the PCEs for Gierisch mallow are:

(1) Appropriate geological layers or gypsiferous soils, in the Harrisburg Member of the Kaibab Formation within the elevation range of 775 to 1,148 meters (m) (2,477 to 3,755 ft). For a list of the appropriate geologic layers and soils, see our final rule (August 13, 2013; 78 FR 49165)
(2) Appropriate Mojave desert scrub plant community an associated native species for the appropriate soil type.
(3) Biological soil crusts within the soil types described for the appropriate soil type.
(4) The presence of insect visitors or pollinators, such as the globemallow bee and other solitary bees.
(5) Areas free of disturbance and areas with low densities or absence of nonnative, invasive plants, such as red brome and cheatgrass.

There are 18 populations of the Gierisch mallow; seventeen populations are on BLM lands, one population is on State lands in Arizona, and one is partially on State lands in utah. Seventeen of the populations occur in Arizona and one population occurs in Utah. The estimated total

population size for the species at the time of listing ranged between 16,000 – 26,000 individuals range-wide. The population estimate in Utah ranged between 5,000 and 8,000 individuals (Hughes 2009).

We have very little life history information for the Gierisch mallow since it is a recently described species. We do not know the life span of individuals although the woody-base of some individuals indicates they are at least moderately long-lived (over three years in age). The species uses seedbank to persist but we do not know the longevity or viability of the seedbank.

The Gierisch mallow likely requires specialist pollinators in the *Diadasia* genus (globemallow bee) to produce seeds. Globemallow bees are considered important pollinators for the globemallow genus (Tepedino 2010). Globemallow bees are solitary bees and are known to occur within the range of the Gierisch mallow (Sipes and Tepedino 2005; Sipes and Wolf 2001). The globemallow bee, along with other solitary bees, nest in the ground, and nests are commonly found in partially compacted soil along the margins of dirt roads in the western United States (Tepedino 2010). Prior to the proliferation of roads, it is possible that the bees nested in soils compacted by herd animals or trails (Esque 2012, pers. comm.). It is important to protect those nesting sites and associated natural habitat for the globemallow bee and other potential pollinators.

We do not have genetic information for the species.

Gierisch mallow occurs in sparsely vegetated, warm desert communities. All occupied habitat throughout its range occurs within the landcover described as Mojave mid-elevation mixed desert scrub (NatureServe 2011, p. 2). This classification represents the extensive desert scrub in the transition zone above the creosote (*Larrea tridentata*)– white bursage (*Ambrosia dumosa*) desert scrub and below the lower montane woodlands from 700 to 1800 m (2,296 to 5,905 ft) that occur in the eastern and central Mojave Desert. The vegetation within this ecological system is quite variable.

Depending on the moisture regime, the Gierisch mallow also can be associated with native annuals that are often ephemeral (seen only in the spring) and, like many Mohave Desert plant species, seasonally abundant based on climatic conditions. Gierisch mallow also appears to be associated with biologic soil crusts (Frates 2012, pers. comm.). Biological soil crusts provide fixed carbon on sparsely vegetated soils and help keep plant interspaces fertile and aids in supporting other microbial populations (Beymer and Klopatek 1991). In desert shrub and grassland communities that support few nitrogen-fixing plants, biotic crusts can be the dominant source of nitrogen (Rychert *et al.* 1978). Additionally, soil crusts stabilize soils, help to retain moisture, and provide seed-germination sites. Soil crusts are effective in capturing wind-borne dust deposits, and have been documented contributing to a 2- to 13-fold increase in nutrients in southeastern Utah (Reynolds *et al.* 2001). The presence of soil crusts generally increases the amount and depth of rainfall infiltration (Loope and Gifford 1972).

Mining activities have impacted Gierisch mallow habitat in the past and will continue to be a threat in the future to the species' habitat throughout its range. All of the populations and most of the habitat that are located on BLM and State of Arizona lands have an extensive history of gypsum mining and mining activities continue today in the species' habitat. A small amount of Gierisch mallow habitat (approximately 167 ac (68 ha)) occurs on State of Utah managed lands; however, no mining is proposed on these lands to-date. In Arizona, two of the 18 populations are located in

the immediate vicinity of gypsum mining, including the Black Rock Gypsum Mine, which has an approved Mining Plan of Operation by the BLM to expand into the largest Gierisch mallow population. Gypsum mining is expected to continue and expand in the near future (Cox 2011b, Dixon 2012). Considering the small area of occupied habitat immediately adjacent to existing gypsum mines, anticipated future mining will result in the loss of habitat for two populations that comprise approximately 46 percent of the total population. Destruction and modification of habitat for the Gierisch mallow are anticipated to result in a significant decrease in both the range of the species and the size of the total population.

Recreational use from off-highway vehicle (OHV) activity has impacted the species and its critical habitat in Utah on BLM lands. Several hills in the habitat are crisscrossed with OHV tracks (USFWS 2008). These impacts are from unauthorized use OHV use in this area that leave existing roads and trails. Continued unauthorized OHV use can have a significant negative effect on the long-term viability of the Utah population of the Gierisch mallow because habitat degradation can be severe enough to prevent reestablishment of new plants, as well as removing mature, reproducing plants from the population.

Livestock use occurs in all of the Gierisch mallow populations on BLM lands. Livestock eat the flowering stalks of the Gierisch mallow and consumption of the species is quite heavy during periods of drought (Atwood 2008; USFWS 2008). The steepness of the terrain where many plants are located reduces the overall herbivory pressure on the species. Persistent and heavy grazing reduces the reproductive output of plants, potentially reducing the size of the populations in the future. Smaller populations of the Gierisch mallow are likely to be more susceptible to the effects of herbivory during drought years if the majority of the flowering stalks are consumed.

Invasive species are present in Gierisch mallow habitat and can be very abundant, particularly red brome, in wet years. Given the ubiquitous nature of cheatgrass and red brome in the Mojave desert and the Intermountain West and their ability to rapidly invade dryland ecosystems (Mack 1981, Mack and Pyke, 1983, Thill *et al.* 1984), we expect these nonnative species to increase in the future in response to surface disturbances from increased mining activities, recreation activities, and global climate change. See the Holmgren milkvetch threats discussion on invasive species for more detail (Status of the Species Hom).

The Gierisch mallow has a highly restricted distribution over an area that covers approximately 460 ac (186 ha). Individual populations occupy very small areas with large densities of plants. Stochastic events could impact a significant portion of a population. Small populations that are restricted by habitat requirements also are more vulnerable to the effects of climate change, such as prolonged droughts and increased fire frequencies.

Holmgren Milkvetch

Holmgren milkvetch is a member of the pea family (Fabaceae or Leguminosae) endemic to the Mojave Desert. Plants are stemless, mostly prostrate, herbaceous perennials that produces leaves and small purple flowers in the spring and dies back to its roots after the flowering season. Please refer to our *Astragalus holmgreniorum* (Holmgren Milk-Vetch) and *Astragalus ampullarioides* (Shivwits Milk-Vetch) Recovery Plan (USFWS 2006) for a more in-depth discussion of the species' status, life history, and distribution, which is incorporated herein by reference..

The species occurs in six populations, all within approximately 10 miles (mi) (16 kilometers (km)) of St. George, Utah. This narrowly distributed perennial was federally listed as endangered in October 2001 (50 CFR 17.12) following a final rulemaking published in September 2001 (66 FR 49560–49567).

We designated approximately 6,289 acres (ac) (2,545 hectares (ha)) of critical habitat in January 2007 (50 CFR 17.12), following a final rulemaking published in December 2006 (71 FR 77972–78012). We designated 3 critical habitat units containing 5 critical habitat sub-units to coincide with the 6 known populations (1 unit has 3 sub-units; 1 has 2 sub-units; and 1 unit does not have a sub-unit). Each critical habitat area contains occupied habitat as well as the primary constituent elements (PCEs)—or the physical and biological features—essential for the conservation of the species.

Based on our knowledge of the life history, biology, and ecology of Holmgren milkvetch and the requirements of the habitat to sustain the essential life history functions of the species, the PCEs for Holmgren milkvetch are:

(1) Appropriate geological layers or soils that support individual Holmgren milkvetch plants. For a list of the appropriate geologic layers and soils, see our final rule (December 27, 2006; 71 FR 77972).
(2) Topographic features/relief (mesas, ridge remnants, alluvial fans, and fan terraces, their summits and backslopes, and gently rolling to steep swales) and the drainage areas along formation edges with little to moderate slope (0 to 20percent).
(3) The presence of insect visitors or pollinators (see our December 27, 2006, 71 FR 77972 final rule for a list of known pollinators).

Critical habitat does not include manmade structures (i.e. buildings, aqueducts, airports, roads, and the lands on which the structures were located) that existed when we published our final rule in December 2006. For a more detailed description of Holmgren milkvetch's critical habitat, please see the final rule published December 27, 2006 (71 FR 77972).

Holmgren milkvetch is an extremely short-lived perennial herb with low survivorship. The average lifespan of individuals is 1.3 years, and few plants live past two growing seasons (Stubben 1997; Van Buren and Harper 2003; Meyer *et al.* 2015). Approximately 11 percent of seedlings survive two growing seasons. If plants survive past the first year, the average lifespan is 2.6 years. Although very few plants survive past two growing seasons, Holmgren milkvetch is iteroparous, or capable of producing seed in more than 1 year.

The active growing season for the species is primarily from January to mid-June:

- January to early April – emergence. Plants entering their second year of growth or older plants appear following a warming event. Seedlings emerge later following a precipitation event.
- March and April – flowering. Individual plants have between 6 and16 flowers on each flower stalk and may have several stalks. The average lifetime flower production is 34.4 flowers per plant (Meyer *et al.* 2015). This number is very low for a short-lived perennial plant.

- End of April – fruit set. The average lifetime fruit production is 114 seeds per plant (Meyer *et al.* 2015). This number is very low for a short-lived perennial plant.
- End of May – seeds released. Fruits contain an average of 25 seeds (Stubben 1997).
- Late May to mid-June – die back. Plants then die back to their roots between late May and mid-June (Van Buren and Harper 2003).

Holmgren milkvetch is primarily pollinated by solitary bees. For bees to be present in a landscape, habitat must provide suitable nesting substrate and resources such as food, water, and nesting materials (Steffan-Dewenter and Tscharntke 1999; Tepedino *et al.* 1997; Tepedino 2000). Because a wide diversity of bees visit Holmgren milkvetch, a variety of suitable ground nesting substrates is probably required. Additionally, sufficient quantity of flowers and density of flowering plants is needed to attract bees (Harper *et al.* 2000).

Holmgren milkvetch is partially self-compatible (the pollen is capable of fertilizing the female reproductive structures on the same plant) and although some Holmgren milkvetch flowers can produce fruit through self-pollination (i.e. no insect visitors), self-fertilized flowers produce fewer fruits, which ultimately negatively influence the number of offspring (Tepedino 2005). Seeds are thought to be dispersed by water, as the plants are generally found on the skirt edges of washes or in run-off channels around mounds (Van Buren and Harper 2004a). Rodents and smaller, ground-dwelling birds are other likely dispersal agents.

Holmgren milkvetch seeds are estimated to remain viable for 9 years based on seed retrieval study (Searle 2011; Meyer *et al.* 2015). Milkvetch seeds in general have hard seed coats that retain their viability through physical dormancy that is commonly lost gradually over many years (Hull 1973; Bowles *et al.* 1993). For a more in-depth description of Holmgren milkvetch's life history, including pollinators, habitat requirements and associated species, please see our *Astragalus holmgreniorum* (Holmgren Milkvetch) and *Astragalus ampullarioides* (Shivwits Milkvetch) Recovery Plan (USFWS 2006).

The Holmgren milkvetch population is declining based upon monitoring data over the last 20 years (Van Buren *et al.* 2016). Plants in the State Line population, the largest population of the species, are no longer responding to favorable spring moisture conditions. The most recent evaluation for the species indicates seedlings and reproductive output are significantly reduced in habitat disturbed by livestock grazing and recreation (Van Buren *et al.* 2016). In the second largest Central Valley population, there was a strong drop in reproductive output in the northern portion of the population that also appears to be associated with soil and habitat disturbance (Shultz and Meyer 2015). In the smallest three Holmgren milkvetch populations (South Hills, Stucki Springs, and Purgatory Flat), population size has also declined with few to no plants being detected in recent years (Table 5). These populations may be considered functionally extirpated. Population augmentation efforts are recommended for all monitored populations in designated critical habitat on federal land and other protected land.

Table 5. Holmgren milkvetch population size of South Hills, Stucki Springs, and Purgatory Flat populations.

Population	Acres of Designated Critical Habitat	Survey Year	Number of Plants	Population Trend
South Hills	129	2005	208	Declining
		2016	0	
Stucki Springs	438	2005	30	Declining
		2015	10	
Purgatory Flat	176	2001	30	Declining
		2016	0	

As stated previously, we listed Holmgren milkvetch as endangered under the ESA in 2001. The decision to list the species was based upon its rarity and declining population trend as well as the threats of urban development, livestock grazing, recreation, displacement by nonnative invasive plants, and mineral development.

Threats the species currently faces include land development / urban expansion, recreation, illegal dumping, climate change, livestock grazing, and invasion by exotic plant species. Habitat loss, fragmentation, and degradation from land development, recreation (particularly motorized OHV use), and livestock use affects all populations and are expected to continue. High levels of motorized OHV use has negatively impacted localized populations of Holmgren milkvetch (Van Buren *et al.* 2016). Reduced availability of pollinators due to habitat loss, fragmentation, and degradation could severely reduce Holmgren milkvetch population viability. Habitat loss and disturbance could cause the extirpation of local populations and is an imminent concern for the Central Valley population which supports an estimated one-third of all Holmgren milkvetch individuals.

Livestock grazing can have particularly detrimental impacts on plants and plant communities. Impacts include changes in vegetation composition and abundance, increased soil erosion and compaction, a reduction in water infiltration rates, and an increase in runoff (Gifford and Hawkins 1978; Robinson and Bolen 1989; Waser and Price 1981; Holechek *et al.* 1998; Loftin *et al.* 2000), leaving less water available for plant production (Dadkah and Gifford 1980). The ecological impacts of grazing include: (1) alteration of species composition of communities, including decreases in density and biomass of individual species, reduction of species richness, and changing community organization; (2) disruption of ecosystem functioning, including interference in nutrient cycling and ecological succession; and (3) alteration of ecosystem structure, including changing vegetation stratification, contributing to soil erosion, and decreasing availability of water to biotic communities (Fleischner 1994). Overgrazing by livestock may negatively impact bee pollinator diversity by reducing plant diversity and the floral resources those plants provide in terms of relative abundance of pollen and nectar quality (Potts *et al.* 2003). Livestock may also increase the spread of cheatgrass and red brome (DiTomaso 2000).

The establishment and spread of invasive plants is one of the fastest growing threats for many rare species. Controlling invasive species once they are established is difficult. Because of historical

and ongoing land disturbance, dominant forb associates include the introduced weedy species red brome (*Bromus rubens*), storksbill (*Erodium cicutarium*), African mustard (*Malcolmia africana*), and cheatgrass (*Bromus tectorum*) (Armstrong and Harper 1991; Van Buren 1992; Stubben 1997; Harper and Van Buren 1998, 2003b; Van Buren and Harper 2003a, 2003b, 2004a; Searle and Yates 2010). Nonnative annuals make up the highest percentage of living cover in Holmgren milkvetch habitat, and they tend to emerge prior to Holmgren milkvetch, thus potentially competing for soil moisture and nutrients. Cheatgrass has increased in abundance over the past 20 years and responds favorably to spring moisture for two consecutive years (Van Buren *et al.* 2016). The timing of high cheatgrass abundance is in direct conflict with the peak growth and reproduction time period for Holmgren milkvetch, and competitive effects appear to be increasing. In addition, cheatgrass invades areas in response to surface disturbances Hobbs 1989; Rejmanek 1989; Hobbs and Huenneke 1992; Evans *et al.* 2001). We already have documentation that Holmgren milkvetch is a poor competitor and invasive plant species has negatively impacted localized populations (Van Buren *et al.* 2016). We anticipate this threat will increase in the future, particularly in disturbed habitat. Nearly all form of anthropogenic disturbance including the previously discussed threats of development, recreation, and livestock grazing provide avenues for invasive plants to spread. We are concerned that fire frequency may also increase with the spread of invasive plant species in designated Critical Habitat; fire frequency has already increased in other nearby areas of the Mojave desert.

Long-term changes in regional precipitation and temperature regimes may affect the distribution and viability of this species in the future. The number of plants present in any given year is correlated with precipitation in undisturbed habitat. We are concerned about the potential for the cumulative effect of drought in combination with other threats to negatively impact the species that is already in decline.

For a detailed analysis of the threats the species currently faces, please refer to the *Astragalus holmgreniorum* (Holmgren Milkvetch) and *Astragalus ampullarioides* (Shivwits Milkvetch) Recovery Plan (USFWS 2006).

Shivwits Milkvetch

Shivwits milkvetch is a perennial herb that is considered a tall member of the pea family, although some plants appear shorter because of grazing impacts. Stems may grow along the ground or to a height of 20 to 50 cm (8 to 20 in); ungrazed flowering stems may attain a height of 1 meter (40 in). Please refer to our *Astragalus holmgreniorum* (Holmgren Milk-Vetch) and *Astragalus ampullarioides* (Shivwits Milk-Vetch) Recovery Plan (USFWS 2006) for a more in-depth discussion of the species' description, which is incorporated herein by reference.

The species is a narrowly distributed Mojave Desert endemic restricted to Washington County, Utah. It was first collected near Shem in Washington County, Utah, by Duane Atwood in 1976. The species was originally described by Stanley Welsh (1986) as a variety of *A. eremiticus*. Barneby (1989) questioned the taxonomic significance of the species and submerged *A. eremiticus* var. *ampullarioides* within typical *A. eremiticus*. Later research work by Harper and Van Buren (1998) and Stubben (1997) demonstrated significant genetic and ecological differences between typical *A. eremiticus* and *A. eremiticus* var. *ampullarioides*. Welsh (1998) revised the species' taxonomy elevating the taxon to full species status as *A. ampullarioides* The species was federally listed as endangered on September 28, 2001 (66 FR 49560).

We designated approximately 2,181 acres (ac) (883 hectares (ha)) of critical habitat in January 2007 (50 CFR 17.12), following a final rulemaking published in December 2006 (71 FR 77972–78012). We designated 4 critical habitat units, including 2 subunits, to coincide with the 6 known populations. Each critical habitat area contains occupied habitat as well as the primary constituent elements (PCEs)—or the physical and biological features—essential for the conservation of the species.

Based on our knowledge of the life history, biology, and ecology of Shivwits milkvetch and the requirements of the habitat to sustain the essential life history functions of the species, the PCEs for Shivwits milkvetch are:

(4) Appropriate geological layers or soils that support individual Shivwits milkvetch plants. For a list of the appropriate geologic layers and soils, see our final rule (December 27, 2006; 71 FR 77972).
(5) Topographic features/relief (alluvial fans, and fan terraces, and gently rolling to steep swales with little to moderate slope (3 to 24 percent)) that are often markedly dissected by water flow pathways from seasonal precipitation.
(6) The presence of insect visitors or pollinators (see our December 27, 2006, 71 FR 77972 final rule for a list of known pollinators).

Critical habitat does not include manmade structures (i.e. buildings, aqueducts, airports, roads, and the lands on which the structures were located) that existed when we published our final rule in December 2006. For a more detailed description of Shivwits milkvetch critical habitat, please see the final rule published December 27, 2006 (71 FR 77972).

Shivwits milkvetch is a short-lived perennial. The average lifespan is 2.6 years, although the maximum lifespan can reach 13 years. On average adult plants produce 51 seeds over their lifespan. Seeds that don't germinate within the first year are probably lost from the seedbank due to burial in the deep cracks in the Chinle soils (Searle and Van Buren 2015; Searle and Van Buren 2016). Therefore, the species does not appear to have a seedbank to aid in persistence.

Bees are the primary pollinators of Shivwits milkvetch. Those that have been collected are *Anthophora coptognatha, Anthophora danmersi, Anthophora* spp., *Eucera quadricincta, Bombus morrisoni, Hoplitis gimellei, Osmia clarescens, Osmia marginata,* and *Osmia titusi* (Tepedino 2001). Flowers are capable of producing fruit without insect visitation, i.e., autogamously. However, pollinator visitation is needed to increase the total number of seeds produced and support genetic diversity for the species (Tepedino 2001).

A genetic study indicated that the six populations had higher gene flow historically and are currently experiencing very low to no gene flow. Populations have differentiated through genetic drift and the largest population in Zion National Park has the lowest overall level of genetic diversity (Brienholt *et al.* 2009).

Shivwits milkvetch grows only on purple clay soils derived from the Petrified Forest member of the Chinle geological formation (Harper and Van Buren 1997). Populations are found between 920 to 1330 m (3,018 to 4,367 ft) in elevation. A large portion of the soil surface is non-vegetated; however, nonnative, invasive annuals have begun occupying suitable habitat.

Native plant species normally associated with *A. ampullarioides* include trees and perennial shrubs such as *Pinus edulis* (pinyon pine), *Gutierrezia* spp. (broom snakeweed), *Colegyne ramosissima* (blackbrush) *Atriplex canescens* (fourwing saltbrush) and *Hilaria rigida* (galleta). Native perennial and annual forbs and grasses include *Calochortus flexuosus* (sego lily), *Dichelostemma pulchellum* (Bluedicks), and *Lotus humistratus* (hill lotus). Because of historic and ongoing land disturbances, the most frequently found forb associates are the introduced weedy species *Bromus tectorum* (cheatgrass), *Bromus rubens* (foxtail brome), *Erodium cicutarium* (storksbill), and *Moluccella laevis* (bells of Ireland) (VanBuren and Harper 2003a).

Annual exotics make up the highest percentage, approximately 37%, of total living cover in Shivwits milkvetch habitat (Van Buren and Harper 2003a). These invasive weed species tend to emerge prior to Shivwits milkvetch and may compete for soil moisture and nutrients. The effects of exotic species is unknown, but concern exists on whether these exotic species represent competition that prior was not in existence or whether these exotic species have replaced native plants (Van Buren and Harper 2003a).

Threats to the species include urban expansion and associated infrastructure development, OHV use, grazing by domestic livestock as well as native grazers, and invasive species competition. These threats have led to direct habitat loss, loss of pollinators and habitat fragmentation. A newer potential threat is that of fire due to invasion of nonnative annual grasses into suitable habitat for Shivwits milkvetch. The soils are extremely sensitive and prone to erosion, which could be accelerated after fire disturbance.

3.0 ENVIRONMENTAL BASELINE

3.1 Status of the Species within the Action Area

Red Cliffs National Conservation Area

Shivwits Milkvetch

The Red Cliffs NCA overlaps with 338 acres of the Silver Reef critical habitat sub-unit and 84 acres of the Harrisburg Bench and Cottonwood critical habitat sub-units. These sub-units occur primarily on BLM lands but also contain private lands (Table 6).

The Silver Reef and Harrisburg Bench and Cottonwood populations of Shivwits milkvetch are small in size. The Silver Reef population does not receive regular monitoring and contained 12 plants in 2006 (USFWS 2006). The Harrisburg Bench and Cottonwood population receives some monitoring and contained an estimated 342 plants in 2006 (USFWS 2006). Plant density declined during the 2000 – 2009 monitoring period (Searle and Yates 2010).

Table 6. Harrisburg Junction Critical Habitat Sub-Units Acreage by Landowner.

Critical Habitat Sub-Units	Designated Critical Habitat Sub-Units (acres)				Total Habitat Area
	BLM	State	Private	Tribal	
Silver Reef	**415**	**0**	**47**	**0**	**462**
Harrisburg Bench and Cottonwood	**260**	**0**	**37**	**0**	**297**

Desert Tortoise

Though not exactly congruent, the boundaries of the Red Cliffs Desert Reserve created by the 1995 Washington County Habitat Conservation Plan, serve as a very close approximation of the Red Cliffs National Conservation Area. The Red Cliffs Desert Reserve was established to protect a large, diverse, and functional expanse of habitat capable of sustaining wildlife populations otherwise threatened by rapid development and habitat loss.

The estimated desert tortoise density in Zones 2,3, and 5 of the Red Cliffs Desert Reserve was 15.8 desert tortoises/km^2 in 2013 (UDWR 2014). There are approximately 38,787 acres (157 km^2) of desert tortoise habitat in the Red Cliffs Desert Reserve (Washington County 1995). Therefore a rough population estimate of desert tortoises within the Red Cliffs National Conservation Area is n= 2,480.

The tortoise population within Red Cliffs Desert Reserve has recently declined in association with extended drought and an outbreak of upper respiratory tract disease. In 2005, wildfires burned about 20% of the tortoise habitat within the reserve (McLuckie et al 2007). These cumulative effects mean that the preservation and enhancement of remaining habitats is of high importance for the long-term viability of desert tortoises in the Red Cliffs Desert Reserve and the Upper Virgin River recovery unit.

Southwestern Willow Flycatcher

In 2016, the UDWR conducted surveys at five previously occupied breeding sites, two potential breeding sites, and one restoration project site along the Virgin River in St. George, Utah. They also conducted a survey at a potential breeding site near the Santa Clara River and Virgin River confluence. Ten flycatcher territories, distributed among three breeding sites, were occupied in 2016.

There are currently no known southwestern willow flycatcher nesting sites within the Red Cliffs NCA. Suitable breeding, nesting, and migratory habitat are located adjacent to the NCA along the Virgin River, Leeds and Quail Creek, and ephemeral washes. Red Cliffs NCA is approximately 1.0 mile from critical habitat and 1.7 miles from the nearest known nesting site that was surveyed in 2016.

Western Yellow-billed Cuckoo

Yellow-billed cuckoos were historically uncommon in Utah. Scattered records exist for the State, mainly from the Salt Lake Valley, the Virgin River, and the southeastern part of Utah (Hayward *et al.* 1976). At the time of our proposed listing for the species, we concluded that the number of breeding pairs in Utah was fewer than 10 and not likely more than 20 pairs (78 FR 61622; October 3, 2013).

Within the boundaries of the Red Cliffs NCA, there are no documented observations of the species. Historical detections (1932, 1937, 1939, and 1981) (Utah Division of Natural Resources Collaborative Information Site and Mapping Platform 2016) exist less than two miles downstream from the boundary of the Red Cliffs NCA, on the Virgin River and Harrisburg Creek (a tributary to the Virgin River). The extent of suitable breeding and nesting habitat within the action area is unknown. Based on cursory review of aerial photos, there exists potentially suitable habitat along the Virgin River in the eastern-most portion of the Red Cliffs NCA.

There is no proposed critical habitat for the species within Red Cliffs NCA. The closest proposed critical habitat (Unit 68, UT-8) is found approximately 12 miles downstream of the action area on the Virgin River.

Virgin River Chub and Woundfin

The action area reaches in the Virgin River within the BLM RMP amendments include the area from Confluence Park (the confluence of the Virgin River with La Verkin Creek and Ash Creek) downstream to the Washington Fields Diversion.

The range of habitat in Utah is identical for the woundfin and Virgin River chub. The historical range of these fish species included rivers in Arizona, Nevada, and Utah, extending from near the junction of the Salt and Verde Rivers at Tempe, Arizona, to the mouth of the Gila River at Yuma, Arizona, and the Colorado River from Yuma, Arizona upstream to the Virgin River in Nevada, Arizona, and Utah, and into La Verkin Creek in Utah. The fish were extirpated from much of their former range, and are now confined to the mainstem Virgin River from La Verkin Hot Springs and the lower portion of Ash and La Verkin Creeks downstream to near Lake Mead. The portion of occupied habitat within the action area includes the 14.5miles of 100-year floodplain from La Verkin Hot Springs to the Washington Fields Diversion.

Historically, the section of the Virgin River within the action area was heavily occupied by woundfin, Virgin River chub, and other native fish species. The UDWR samples the Virgin River in spring and fall on an annual basis. From 2003 through 2016, woundfin and Virgin River chub were collected on an annual basis in their critical habitat; however, numbers are low and populations of both species are still significantly impacted by poor water quality and lack of water quantity. Fisheries sampling results for the Virgin River in fall 2016 found catch rates of 0.081 Virgin River chub, and 1.396 woundfin per 538 ft^2 in the La Verkin Hot Springs to Washington Fields Diversion reach (UDWR 2016). Although these catch rates are low compared to the numbers of woundfin and Virgin River chub captured in 2005 and 2006 (See Table 2 above), recent sampling results show that reproduction is occurring and that some fish are recruiting to the adult population.

Virgin River flow in this reach is subject to minimum bypass of flows that are not diverted for municipal or agricultural purposes. Until recently, the Virgin River downstream of the action area was periodically dewatered at the Washington Field Diversion (constructed in the early 1900s). Native fish were entrained into the Washington Fields Canal until the Virgin River Program constructed a fish screen in 2005.

Beaver Dam Wash National Conservation Area

Desert Tortoise

The Beaver Dam Wash NCA is part of the Beaver Dam Slope sub-unit of the Northeast Mojave Recovery Unit, which includes areas in Nevada and Arizona. The estimated desert tortoise density in the Beaver Dam Slope sub-unit of the Northeast Mojave Recovery Unit is 5.4 desert tortoises/km^2 in 2012 (USFWS 2012), resulting in a population estimate of n= 4,059 desert tortoises in the Beaver Dam Slope Sub-unit.

Southwestern Willow Flycatcher

In 2016, the UDWR conducted surveys at 5 previously occupied breeding sites, 2 potential breeding sites, and 1 restoration project site along the Virgin River in St. George, Utah. They also conducted a survey at a potential breeding site near the Santa Clara River and Virgin River confluence. Ten flycatcher territories, distributed among 3 breeding sites, were occupied in 2016.

There are currently no known southwestern willow flycatcher nesting sites within the Beaver Dam Wash NCA; however, there was one unconfirmed sighting reported within the Beaver Dam Wash in 1985. Suitable habitat occurs along Beaver Dam Wash, but is most likely migratory habitat. Beaver Dam Wash NCA is approximately 6 miles from critical habitat and approximately 12 miles from the nearest known nesting site that was surveyed in 2016.

Western Yellow-billed Cuckoo

Yellow-billed cuckoos were historically uncommon in Utah. Scattered records exist for the State, mainly from the Salt Lake Valley, the Virgin River, and the southeastern part of Utah (Hayward *et al.* 1976). At the time of our proposed listing for the species, we concluded that the number of breeding pairs in Utah was fewer than 10 and not likely more than 20 pairs (78 FR 61622; October 3, 2013).

Within the Beaver Dam Wash NCA, surveyors have observed cuckoos infrequently, and primarily along Beaver Dam Wash; detections occurred in 1982, 1990, 2001 (Utah Division of Natural Resources Collaborative Information Site and Mapping Platform 2016). Most recently, surveyors detected a single individual in 2014. Surveyors concluded that this individual was likely migrating through the area (UDWR 2014). The extent of suitable breeding and nesting habitat within the action area is unknown.

There is no proposed critical habitat for the species within Beaver Dam Wash NCA. The closest proposed critical habitat (Unit 68, UT-8) is found approximately 10 miles to the east on the Virgin River in Washington County.

St. George Field Office

Dwarf Bear-claw Poppy

South Hills ACEC:

The proposed South Hills ACEC (1 of the 3 parcels) occurs within the Red Bluff population of the dwarf bear-poppy. This population is considered the largest (by acreage of suitable habitat) poppy population with an estimated 6,221 acres across BLM, State, private, and Tribal lands. The majority (84%) of the habitat occurs on BLM land (Table 7). The proposed South Hills ACEC overlaps with 1,665 acres of poppy suitable habitat in the Red Bluff population, and connects to the existing Red Bluff and Santa Clara Land Hill ACECs that protect additional dwarf bear-poppy suitable habitat (3,435 and 225 acres, respectively). Our records indicate that approximately 1,000 dwarf bear-poppy plants were counted in the proposed South Hills ACEC in 1994. The poppy census is sorely out of date and a new census is needed.

Table 7. Red Bluff population suitable habitat area by landowner.

Population	Habitat Area (acres)				Total Habitat Area
	BLM	State	Private	Tribal	
Red Bluff	5221	894	76	30	6221

As mentioned above, we have never been confident of a population size estimate for the Red Bluff population because of limited census data. The difficulty in estimating population size is because there are vast acreages of suitable habitat within the Red Bluff population that have never been surveyed. The Red Bluff population was estimated to contain 10,000 plants in 1998 (Allphin 1998); however, this estimate was considered a "best guess" and no comprehensive survey has been performed to validate this estimate. The Red Bluff population trend is similar to the total population trend for the species between 1992 and 2003; plant abundance was high for four years following the high recruitment year of 1992 followed by a strong downward trend to 2003 (Figure 1). The Red Bluff population experienced a favorable recruitment year in 2006, but the majority of plants did not survive past the seedling stage.

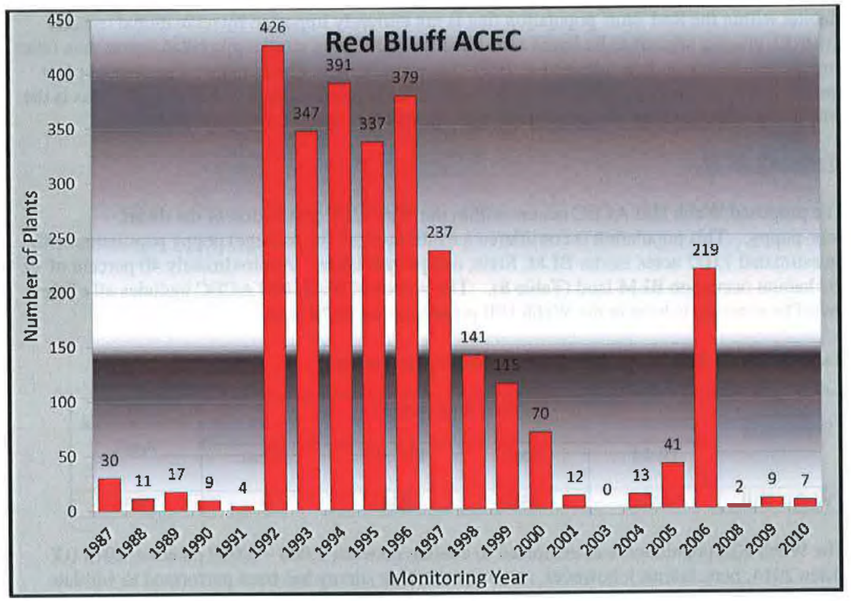

Figure 1. Red Bluff plant abundance at BLM monitoring transects.

The Red Bluff population maintains very high levels of genetic variability compared to other dwarf bear-poppy populations and contains the greatest number of unique genotypes for the species (Allphin *et al.* 1998). This population is also genetically most similar to nearby populations and serves as an important genetic "bridge" between isolated sites within this large population (includes Boomer Hill) and the Webb Hill population in the central portion of the species' range (Simpson 2014). The proposed South Hills ACEC contains the Boomer Hill site; the site has the highest genetic variability of any poppy study sites and should be protected to support genetic diversity of the species (Allphin *et al.* 1998; Simpson 2014). Boomer Hill contains unique genetic markers that indicate this site has been separate from other areas for a long period of time (Simpson 2014).

The plants in the Red Bluff population were reported to be highly self-incompatible (Harper and VanBuren 2004), a breeding system not recorded for other dwarf bear-poppy populations (Tepedino *et al.* 2014). This report should be confirmed because self-incompatible populations are at greater risk of extinction (Aguilar *et al.* 2006; Busch and Schoen 2008). Furthermore, estimates of reproductive success should be assessed for the Red Bluff population as an indicator of pollinator limitation within this population (Tepedino *et al.* 2014). Pollinators were assessed at Red Bluff in 2012 and no specialist pollinators were found visiting the species; the only flower visitors were honeybees (*Apis mellifera*) and sweatbees (*Lasioglossum* sp.) that are not expected to visit areas of low poppy density. Reproductive success was on the moderate to low end of range for the species in terms of fruit set, seeds per fruit and seed weight criteria (Tepedino *et al.* 2014).

Habitat within the Red Bluff population that is not currently impacted by recreational use and livestock grazing appears to be intact and contains significantly more cryptobiotic cover than other populations based on data collected in 2009 (Simpson 2014). The number of associated plant species is low at this population, likely because of the high crust cover. Additionally, this is the only population that does not contain any introduced plant species (Simpson 2014).

Webb Hill ACEC:

The proposed Webb Hill ACEC occurs within the Webb Hill population of the dwarf bear-poppy. This population is considered a medium-sized (by acreage) poppy population with an estimated 1,037 acres across BLM, State, and private lands. Approximately 40 percent of the habitat occurs on BLM land (Table 8). The proposed Webb Hill ACEC includes all of the dwarf bear-poppy habitat in the Webb Hill population on BLM land.

Table 8. Webb Hill population habitat area by landowner

Population	Habitat Area (acres)				Total Habitat Area
	BLM	State	Private	Tribal	
Webb Hill	**417**	**356**	**264**	**0**	**1,037**

The Webb Hill population was estimated to contain between 1,000 – 3,000 plants in 2014 (O' Brien 2014, pers. comm.); however, no comprehensive survey has been performed to validate this estimate. The BLM established two monitoring transects in 1987 to monitoring plant abundance. The Webb Hill population trend is similar to the total population trend for the species between 1992 and 2003; plant abundance was high for three years following the high recruitment year of 1992 followed by a strong downward trend to 2003, see Figure 2. In fact, Webb Hill has the highest recorded plant abundance in 1992 and 1994 compared to the other two monitored populations (Red Bluff and Warner Ridge). However, during the last favorable recruitment year in 2006, the Webb Hill population has the lowest level of plant abundance of the three monitored populations.

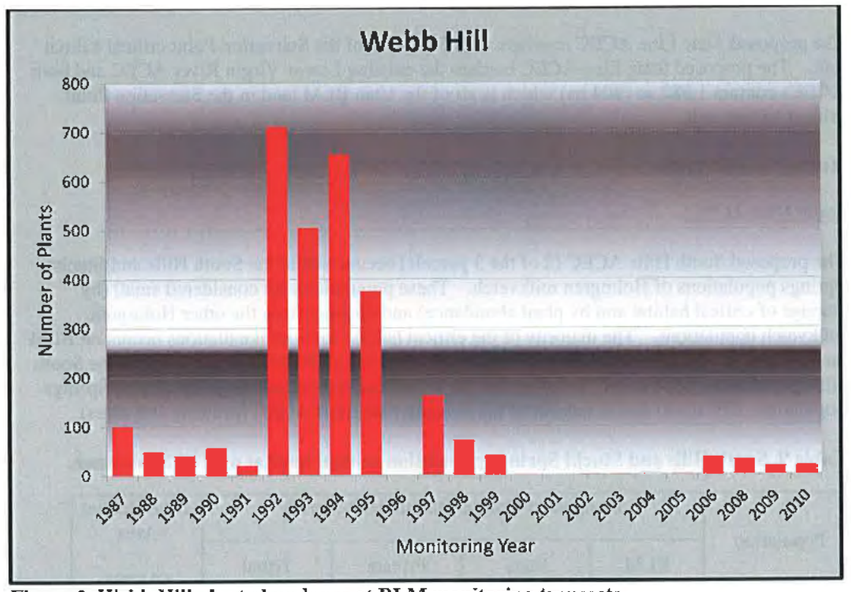

Figure 2. Webb Hill plant abundance at BLM monitoring transects.

The Webb Hill population has a high level of genetic diversity in combination with other centrally located poppy sites in the Atkinville subpopulation of the Webb Hill population (Simpson 2014; Van Buren and Harper 1996). This population contains a mixture of genes from eastern and western poppy populations, and appears to provide a genetic corridor between eastern and western populations, at least historically (Simpson 2014). The Webb Hill population is now completely surrounded by major roads (including Interstate 15) and has no habitat connectivity to other extant populations or its Atkinville subpopulation.

Pollinators were assessed at Webb Hill in 2012 and no specialist pollinators were found visiting the species; the only flower visitors were honeybees (*Apis mellifera*) and sweatbees (*Lasioglossum* sp.) that are not expected to visit areas of low poppy density. Reproductive success was on the moderate to low end of range for the species in terms of fruit set, seeds per fruit and seed weight criteria (Tepedino *et al.* 2014).

Gierisch Mallow

State Line ACEC:

The proposed State Line ACEC occurs within the Starvation Point population of the Gierisch mallow and the Starvation Point critical habitat unit. This population is considered the second largest (by plant abundance) Gierisch mallow population with an estimated 5,000 to 8,000 individuals across BLM and State of Utah lands (Hughes 2012).

The proposed State Line ACEC overlaps with 513 acres of the Starvation Point critical habitat unit. The proposed State Line ACEC borders the existing Lower Virgin River ACEC and both ACECs contain 1,982 ac (804 ha) which is all of the Utah BLM land in the Starvation Point critical habitat unit.

Holmgren Milkvetch

South Hills ACEC:

The proposed South Hills ACEC (2 of the 3 parcels) occurs within the South Hills and Stucki Springs populations of Holmgren milkvetch. These populations are considered small (by acreage of critical habitat and by plant abundance) and disjunct from the other Holmgren milkvetch populations. The majority of the critical habitat for both populations occurs on BLM land (Table 9). The proposed South Hills ACEC contains all BLM critical habitat in the South Hills population (124 acres), and contains the remaining critical habitat of the Stucki Springs population (239 acres) that is outside of the existing Red Bluff ACEC (protects 199 acres).

Table 9. South Hills and Stucki Springs population critical habitat unit by landowner.

Population	Designated Critical Habitat Unit (acres)				Total Habitat Area (Acres)
	BLM	State	Private	Tribal	
South Hills	124	0	5	0	129
Stucki Springs	438	0	0	0	438

As mentioned above, the South Hills and Stucki Springs populations have declined with few to no plants being detected in recent years (see Table 9). These populations may be considered functionally extirpated and pilot population augmentation efforts are underway (beginning winter 2016) for the Stucki Spring population. Scarified seeds will be introduced into twenty plots that will receive different watering treatments. Researchers will monitor seedling emergence, survival, and plant growth at augmentation plots (Meyer and Rominger 2016). Future plans will involve plant augmentation at all declining populations on BLM lands.

The South Hills and Stucki Springs populations contain unique genotypes for the species and contain a genetically discrete structure than the other 4 populations. Thus, the protection of both populations is important to support genetic diversity of the species (King *et al.* 2011; Young and King 2011).

State Line ACEC:

The proposed State Line ACEC occurs within the State Line population of Holmgren milkvetch and the State Line critical habitat unit. This population is considered the largest (by acreage of critical habitat and plant abundance) Holmgren milkvetch population with an estimated 3,836 acres across BLM, State, and private lands. Slightly more than half of the unit occurs on BLM land in Utah and Arizona (56%) (Table 10). The proposed State Line ACEC overlaps with

1,260 acres of critical habitat in the State Line population and contains the majority of occupied habitat on Utah BLM lands. The proposed State Line ACEC borders the existing Lower Virgin River ACEC and both ACECs contain 1,757 ac of Holmgren milkvetch critical habitat which is all of the Utah BLM land in the State Line critical habitat unit. Our records indicate that 12,829 Holmgren milkvetch plants were counted in the proposed State Line ACEC in 2005; this represents 73 percent of the plants in the State Line population based on the 2005 census. The Holmgren milkvetch census is sorely out of date and a new census is needed.

Table 10. State Line population critical habitat unit by landowner.

Population	Designated Critical Habitat Unit (acres)					Total Habitat Area (Acres)
	BLM Utah	BLM Arizona	State of Utah	State of Arizona	Private	
State Line	1,767	362	752	934	21	3,836

As mentioned above, the State Line population has declined and plants have not responded to favorable moisture conditions in the past decade (Van Buren *et al.* 2016). The primary driver of the decline is due to significantly lower seedling recruitment that may be the result of habitat disturbance and loss of pollinators as a result of livestock grazing and recreation. This is concerning because the State Line population had the highest plant density and population size in 2005 and presumably was the population with the lowest extinction risk at that time.

Pilot population augmentation efforts are underway (beginning winter 2016) for the State Line population in an attempt to halt the decline. Scarified seeds will be introduced into twenty plots that will receive different watering treatments. Researchers will monitor seedling emergence, survival, and plant growth at augmentation plots (Meyer and Rominger 2016). Future plans will involve Holmgren and native plant augmentation at all declining populations on BLM lands.

The State Line population is a large, centrally located population that contains the highest level of genetic diversity of any Holmgren milkvetch population (King *et al.* 2011; Young and King 2011). The protection of this population is critical to support genetic diversity of the species.

3.2 Factors Affecting the Species Environment within the Action Area

Red Cliffs National Conservation Area

Shivwits Milkvetch

Residential development is a stressor to both Shivwits milkvetch populations on private lands.

Roads and trail development is a stressor to the species on BLM and private lands. Within the Red Cliffs NCA, the Silver Reef critical habitat sub-unit contains approximately 3 miles of single-track road spanning the entire area. Within the Red Cliffs NCA, the Harrisburg Bench and Cottonwood critical habitat sub-unit contains 0.2 miles of single track road.

Recreation has impacted both populations in the past by extensive OHV use (USFWS 2006). However, the BLM took corrective action in 2006 - 2007 and installed fences at both populations

to address OHV impacts with funding assistance from The Nature Conservancy. Fencing appears to be adequately addressing recreation impacts at both populations (Searle 2016).

Illegal dumping of household items and waste disposal has also impacted the species within both populations (USFWS 2006). If not addressed, these activities can cause long-term irreparable harm to the species and its habitat.

Invasive nonnative species are impacting Shivwits milkvetch in both populations and their increasing abundance is a concern due to increasing competitive effects (see Status of the Species, Holmgren milkvetch). Red brome and cheatgrass are the two most abundant nonnative plants in the species' habitat (Miller *et al.* 2007). Subsequent alteration of fire frequency in Shivwits milkvetch habitat is also a concern. In 2005, a wildfire impacted areas surrounding the Harrisburg Bench and Cottonwood population. We do not have information that indicates weed abundance has increased in the burned areas like it has in other post-burned areas in the Mojave desert. Herbicide use to control invasive species by Utah Department of Transportation (UDOT) management is a potential threat to the Harrisburg Bench and Cottonwood population because of its close proximity to Interstate 15.

The Silver Reef population faces the greatest number of threats and appears to be subject to the greatest variety of impacts compared to the other 5 populations (USFWS 2006).

Desert Tortoise

Threats to the desert tortoise include disease, specifically upper respiratory tract disease (URTD); recreation; poaching; inadequate fencing leading to road mortalities; and illegal OHV riding. The UDWR attributes 2003–2009 tortoise population declines to drought, disease, wildfires and secondary threats such as predation, habitat degradation, and direct take of animals (McLuckie pers. comm. 2010). There was a slight non-significant increase (there is overlap of the 95% C.I.) in estimated desert tortoise density within the Red Cliffs Desert Reserve between 2009-2011 (Mcluckie et al. 2012).

One hundred sixteen species of non-native plants occur in the Mojave and Colorado Deserts (Brooks and Esque 2002). The proliferation of non-native plant species has contributed to an increase in fire frequency in tortoise habitat (USFWS 1994; Brooks 1998; Brown and Minnich 1986). Recurrent fires can negatively affect the desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002).

Numerous wildfires occurred across the species' range in 2005 due to abundant fuel from the proliferation of non-native plant species after a very wet winter. These wildfires heavily impacted two of the six desert tortoise recovery units, burning approximately 19 percent of desert tortoise habitat in the Upper Virgin River and 10 percent in the Northeastern Mojave (Table 11).

Although it is known that tortoises were burned and killed by the wildfires, tortoise mortality estimates are not available.

Table 11. Acres of desert tortoise habitat burned in each recovery unit during 2005. Note all data is preliminary and needs further analysis.

Recovery Unit	Habitat Burned (acres)	Percent Habitat Burned	CH* Burned (acres)	Percent CH Burned
Upper Virgin River**	10,446	< 19	10,446	19
Northeastern Mojave***	500,000	10	124,782	11
Eastern Mojave	6,000	< 1	1,219	<1
Western Mojave	0	0	0	0
Northern Colorado	0	0	0	0
Eastern Colorado	0	0	0	0
Total	**516,446**	-	**136,447**	-

* CH – critical habitat
** Estimates only for Upper Virgin River.
*** Potential habitat was mapped and calculated as Mojave Desert if it were less than 4,200 ft in elevation minus playas, open water, developed, and agricultural lands.

Disease was identified in the 2011 Revised Recovery Plan as an important threat to the desert tortoise and occurs within the action area. Disease is a natural phenomenon in wild populations of animals and can contribute to population declines by increasing mortality and reducing reproduction. However, URTD appears to be a complex, multi-factorial disease interacting with other stressors to affect desert tortoises (Brown et al. 2002; Tracy et al. 2004). The disease occurs mostly in relatively dense desert tortoise populations, as mycoplasmal infections are dependent upon higher densities of the host (Tracy et al. 2004).

Southwestern Willow Flycatcher

Southwestern willow flycatchers may have always been rare in Utah. Surveys conducted by Sogge et al. (2003) found only a few breeding locations and territories in southern Utah and little population trend data are available for the state. However, loss and modification of habitat may have reduced populations. Severe flood events in 2005 and 2010 resulted in lost habitat along the Virgin River. Conversely, several habitat restoration projects have taken place within the Virgin River floodplain focusing on replacing non-native vegetation with native willow and cottonwood.

Recreation is permitted throughout the Red Cliffs NCA. Grazing is permitted within the Beaver Dam Wash NCA.

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in Washington County. Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (USFWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Fleishman et al. 2003, Sogge et al. 2005).

Tamarisk beetles impact the condition of tamarisk trees and the suitability of tamarisk-dominated habitat on the upper Virgin River and, as a result, represent an important factor influencing the

flycatcher's distribution, reproductive success, and habitat use within the action area. The decline of tamarisk has had neutral or short-term detrimental effects on the southwestern willow flycatcher because flycatchers have adapted to using the invasive tamarisk as habitat.

Tamarisk beetles were introduced on the Virgin River at St. George in 2006, and defoliated tamarisk trees for the first time in late July – August 2008. In 2008 tamarisk defoliation occurred late in the flycatcher breeding cycle or after flycatchers had finished breeding altogether, and thus likely had little impact on flycatcher behavior. In both 2009 and 2010, however, tamarisk beetles caused two defoliation events, the first in early June, coinciding with the peak of flycatcher egg laying and incubation, and then again in late July – August. In 2011, following a winter flood and cool spring conditions, beetles caused a single defoliation event during late July – August. In 2012 and 2013 the defoliation events occurred in late July, late in the breeding cycle. Years of annual defoliation of nesting substrate throughout the action area may have caused flycatchers to move nesting activities from tamarisk-dominated (Seegmiller Marsh) to the native-dominated sites (Y-Drain Marsh).

Western Yellow-billed Cuckoo

Establishment of non-native vegetation, recreation, drought, and water depletions represent significant impacts to western yellow-billed cuckoo throughout the action area. These activities increase habitat fragmentation, noise and visual disturbance, and changes in local hydrology, which in turn negatively influence the space available to cuckoo for breeding, feeding and sheltering. Loss and reduction of space to carry out a species' life cycle increase the probability of extinction of local breeding groups, particularly those that consist of a few individuals (Pulliam and Dunning 1994, USFWS 2002).

Virgin River Chub and Woundfin

Factors that may be affecting the current distribution and abundance of Virgin River chub and woundfin in the action area include reduced flows and periodic dewatering of several reaches of the river (detailed above Status of the Species section), the periodic release of sediment (sluicing) from Quail Creek Diversion during storm events, and nonnative fish including the red shiner.

A potential factor limiting fish populations above Washington Fields Diversion may be the periodic release of sediment (sluicing) accumulated behind the Quail Creek Diversion (Fridell et al. 2004) during storm events. The increase in stream flow from these storm events are shown to decrease dissolved oxygen below lethal levels for fish. In 2004, the Washington County Water Conservancy District developed an interim management plan in an attempt to address these concerns (Olsen 2004). However, two late summer 2007 fish kills that happened during sluicing of the Quail Creek Diversion during natural storms indicate that sluicing activities may continue to have impacts to native fish in the Virgin River. Since then, the Water Conservancy District has made efforts to monitor water quality during storm events and close gates to reduce the amount of reduced dissolved oxygen water flowing through the Virgin River.

Red shiner became established in this reach of the river in the 1980s. The UDWR, operating through the Virgin River Program, has periodically treated portions of the Virgin River drainage with a fish toxicant (rotenone) to remove nonnative species thereby improving habitat for down-migrating native species. These chemical treatments typically occur downstream of the

Washington Fields or Johnson Diversions. Prior to chemical treatment, native fish are salvaged from the area that will be treated, and UDWR estimates that they achieve about an 80 percent removal of native fish. On several occasion since 1988, salvaged native fish were translocated from downstream reaches to above the Washington Fields Diversion in preparation for rotenone treatments.

The reach of river downstream from Washington Fields Diversion was treated with rotenone (a fish toxicant) approximately 15 times since 1988 to eliminate undesirable species. Prior to 2011, the last treatment occurred during fall 2008 and the upper portion of the Virgin River was free of red shiner through fall 2010 until they reinvaded during the floodwater period of December 2010. Annual fisheries sampling has determined that rotenone work completed in fall 2011 was effective in removing red shiner from the upper Virgin River and that a 2013 rebuild of the Arizona-Utah Stateline Fish Barrier was effective in keeping red shiner from reinvading the upper Virgin River. Thus, the greatest threat to woundfin and Virgin River chub remains inadequate water quality and quantity (see Status of the Species section); and these are threats that the Virgin River Program is currently working on. These and other related Virgin River Program activities (establishing effective barriers to nonnative fishes upstream movements coupled with mechanical and chemical control projects) constitute an aggressive and ongoing effort that are integral to native Virgin River fish recovery.

In summary, virtually all factors that contributed to the decline of the Virgin River fishes occur in portions of the action area. Extensive water development and diversion and persistent negative interaction with nonnative species, particularly red shiner, are the greatest threats to the native fish populations in the Virgin River.

Beaver Dam Wash National Conservation Area

Desert Tortoise

One hundred sixteen species of non-native plants occur in the Mojave and Colorado Deserts (Brooks and Esque 2002). The proliferation of non-native plant species has contributed to an increase in fire frequency in tortoise habitat (USFWS 1994; Brooks 1998; Brown and Minnich 1986). Recurrent fires can negatively affect the desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002).

Numerous wildfires occurred across the species' range in 2005 due to abundant fuel from the proliferation of non-native plant species after a very wet winter. These wildfires heavily impacted two of the six desert tortoise recovery units, burning approximately 19 percent of desert tortoise habitat in the Upper Virgin River and 10 percent in the Northeastern Mojave (Table 12). Although it is known that tortoises were burned and killed by the wildfires, tortoise mortality estimates are not available. Since 2000, over 50% of the Beaver Dam Wash National Conservation Area has burned or re-burned. This decreases the quality and quantity of available desert tortoise habitat in the NCA.

Table 12. Acres of desert tortoise habitat burned in each recovery unit during 2005. Note all data is preliminary and needs further analysis.

Recovery Unit	Habitat Burned (acres)	Percent Habitat Burned	CH* Burned (acres)	Percent CH Burned
Upper Virgin River**	10,446	< 19	10,446	19
Northeastern Mojave***	500,000	10	124,782	11
Eastern Mojave	6,000	< 1	1,219	<1
Western Mojave	0	0	0	0
Northern Colorado	0	0	0	0
Eastern Colorado	0	0	0	0
Total	**516,446**	-	**136,447**	-

* CH – critical habitat

** Estimates only for Upper Virgin River.

*** Potential habitat was mapped and calculated as Mojave Desert if it were less than 4,200 ft in elevation minus playas, open water, developed, and agricultural lands.

Disease was identified in the 2011 Revised Recovery Plan as an important threat to the desert tortoise and occurs within the action area. Disease is a natural phenomenon in wild populations of animals and can contribute to population declines by increasing mortality and reducing reproduction. However, upper respiratory tract disease (URTD) appears to be a complex, multi-factorial disease interacting with other stressors to affect desert tortoises (Brown et al. 2002; Tracy et al. 2004). The disease occurs mostly in relatively dense desert tortoise populations, as mycoplasmal infections are dependent upon higher densities of the host (Tracy et al. 2004).

Grazing occurs in the Beaver Dam Wash NCA. Grazing effects the structure of the vegetative community and the quality and quantity of desert toroise habitat. For a full discussion of grazing and its impacts on the landscape (see Effects of the Action, Beaver Dam Wash National Conservation Area, Desert Tortoise).

Southwestern Willow Flycatcher

Southwestern willow flycatchers may have always been rare in Utah. Surveys conducted by Sogge et al. (2003) found only a few breeding locations and territories in southern Utah and little population trend data are available for the state. However, loss and modification of habitat may have reduced populations. There is limited riparian habitat within the Beaver Dam NCA, and therefore less likelihood for nesting or migrating flycatchers here as compared to the Red Cliffs NCA.

Recreation and grazing activities are permitted throughout Beaver Dam Wash NCA.

These activities may directly or indirectly impact southwestern willow flycatchers if they occurred in this NCA.

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in Washington County. Tamarisk had been believed by some to be a habitat type of lesser quality for

the southwestern willow flycatcher, however comparisons of reproductive performance (USFWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Fleishman et al. 2003, Sogge et al. 2005).

Tamarisk beetles impact the condition of tamarisk trees and the suitability of tamarisk-dominated habitat on the upper Virgin River and, as a result, represent an important factor influencing the flycatcher's distribution, reproductive success, and habitat use within the action area. The decline of tamarisk has had neutral or short-term detrimental effects on the southwestern willow flycatcher because flycatchers have adapted to using the invasive tamarisk as habitat.

Western Yellow-billed Cuckoo

Livestock grazing, establishment of non-native vegetation, recreation, drought, and water depletions represent significant impacts to western yellow-billed cuckoo throughout the action area. These activities increase habitat fragmentation, noise and visual disturbance, and changes in local hydrology, which in turn negatively influence the space available to cuckoo for breeding, feeding and sheltering. Loss and reduction of space to carry out a species' life cycle increase the probability of extinction of local breeding groups, particularly those that consist of a few individuals (Pulliam and Dunning 1994, USFWS 2002).

St. George Field Office

Dwarf Bear-claw Poppy

South Hills ACEC:

Residential and road development have directly impacted the Red Bluff population of dwarf bear-poppy. Residential development has resulted in the loss of the majority of the eastern end of the population on private and State lands. State lands adjacent to the Bloomington residential area are heavily impacted by recreational use. Residential development and grading of the land may result in future loss of plants and habitat on State lands within this population. Residential development is not a threat on BLM lands.

Recreational use by motorized vehicles (ORVs and motorcycles), non-motorized vehicles (mountain bikes), and hikers have directly impacted dwarf bear-poppy habitat in the proposed South Hills ACEC. This area has a history of unrestricted motorized until 1999 when recreational use was restricted to existing roads and trails. In the St. George RMP, all forms of recreational use including motorized use continue to be authorized in the proposed South Hills ACEC on existing roads and trails whereas motorized use was excluded from the Red Bluff and Warner Ridge ACECs in 1999 (BLM 1999).

All forms of recreational use occur on an existing two-track road (Cove Wash Road) that is located within dwarf bear poppy habitat and connects to the main road in the area, the Stucki Springs Road. Recreational use has occurred in the general area of the two-track road within poppy habitat because there are no barriers to protect the habitat from such use. This use is technically considered to be authorized because it is difficult to distinguish between "existing" and "newly created" roads and trails. We anticipate the upcoming St. George BLM Field Office Travel Plan

will restrict the existing recreational use in this area, but we do not have any specific information at this time.

We do not have information regarding the extent or impacts to the dwarf bear-poppy from the recreational use that has and continues to occur. We also do not have information about the number of miles of linear disturbance from recreational use within the proposed South Hills ACEC. We consider motorized use impacts to be a high threat to the species as supported by data from BLM OHV monitoring in the Red Bluff, Webb Hill and Warner Ridge populations. Protections for the species are needed that include closure of motorized use in dwarf bear-poppy habitat and additional fencing to protect plants and habitat from recreational use in the proposed South Hills ACEC. Motorized use restrictions are not included in the proposed South Hills ACEC designation.

Fencing is in place along the boundary of the proposed South Hills ACEC and the existing Red Bluff ACEC to protect dwarf bear-poppy habitat in the Red Bluff ACEC. As mentioned above, the Red Bluff ACEC was closed to motorized use in 1999 and fencing to exclude motorized use began in 1999 and was completed in 2008. This boundary was a problem area for illegal motorized use in the Red Bluff ACEC. At this location between 2007 and 2009, BLM law enforcement officers wrote multiple citations made 25-30 fence repairs annually, or an average of once every two weeks. Since 2009 at this location, there has been a downward trend in unauthorized motorized use with the incorporation of frequent patrols by the BLM and the notification of infractions by non-motorized users of the Bearclaw Poppy Trail (BLM 2012). The decline in motorized use in the Red Bluff ACEC is supported by BLM monitoring of motorized tracks in the Red Bluff monitoring transects that identified 157 tracks in 1987 down to 2 tracks at the last recording in 2009, see Figure 3. Similar protections are needed for dwarf bear-poppy in the proposed South Hills ACEC.

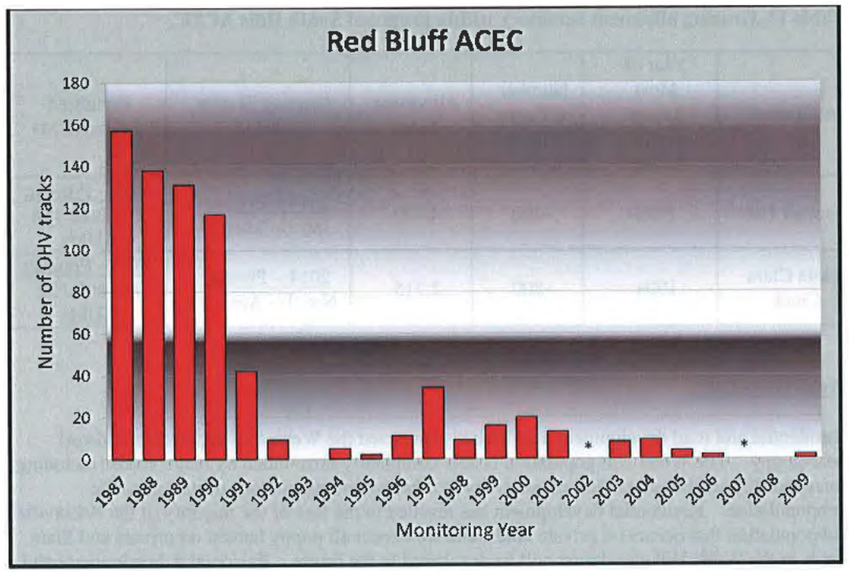

Figure 3. Red Bluff ACEC OHV tracks in BLM monitoring transects. * indicates no monitoring was performed that year.

Within the proposed South Hills ACEC, all poppy suitable and occupied habitat is open to livestock use. Livestock grazing occurs within approximately 674 acres of poppy suitable habitat in the Boomer Hill allotment and within approximately 912 acres of the Santa Clara Creek allotment. Our records indicate that approximately 200 dwarf bear-poppy plants were counted in the Boomer allotment boundaries and approximately 800 poppy plants were counted within the Santa Clara Creek proposed South Hills ACEC in 1994 (Table 13). There is infrequent use and livestock trailing occur in poppy habitat (BLM 2001; BLM 2014). Livestock use has not occurred in the proposed South Hills ACEC in recent years because of non-use permitting (Douglas 2016, pers. comm).

Table 13. Grazing allotment summary within proposed South Hills ACEC.

Allotment	Year of Most Recent Poppy Survey	Number of Poppy Plants	Allotment Acres	Grazing Season of Use	Permitted Cattle/AUMs
Boomer Hill	1994	~200	4,270	2014 – Present: Jan 1 – May 31	2014 – Present: 31 cattle/ 154 AUMs
Santa Clara Creek	1994	~800	2,715	2014 – Present: Nov 1 – April 30	2014 – Present: 16 cattle/ 92 AUMs

Webb Hill ACEC:

Residential and road development have directly impacted the Webb Hill population of dwarf bear-poppy. The Webb Hill population is now completely surrounded by major roads (including Interstate 15) and has no habitat connectivity to other extant populations or its Atkinville subpopulation. Residential development has resulted in the loss of the majority of the Atkinville subpopulation that occurs on private lands, and we expect all poppy habitat on private and State lands in the Webb Hill population will be developed in the future. Residential development and grading of the land for future residential development has resulted in loss of plants and habitat on State lands within this population.

In 1997, a land exchange between the BLM and the State of Utah reconfigured the ownership to consolidate State parcels and minimize impacts to dwarf bear-poppy (BLM 1997). While there may be no easy way to directly compare plant density between sites, it is known that all parcels contained poppy habitat. The result of the Webb Hill land exchange is that 130 acres of occupied habitat left Federal management. The gain was that 103 acres entered Federal management in order to create a larger block of continuous dwarf bear-poppy for management and protections (BLM 1997). BLM lands within the Webb Hill population are completely fenced to clearly delineate the land ownership boundary and exclude use in poppy habitat.

Recreational use by OHVs was by far the most common recreational activity impacting dwarf bear-poppy, and nearly all areas of occupied habitat have experienced OHV impact in the past 30 years. Extensive damage to the habitat by OHVs has occurred at the Webb Hill population. OHV use is now prohibited at Webb Hill population and throughout much of occupied habitat on BLM lands (BLM 1999). However, impacts to the land from previous use may last for decades to come (Abella 2014). Today, OHV use is further restricted on BLM lands in the Webb Hill population by perimeter fences. These fences have significantly reduced, but not ended, the unauthorized use of OHV within fenced habitat.

Unauthorized OHV use has been recorded at all known populations (either where it was prohibited, or off-trail use where OHV travel was restricted to designated routes). Unauthorized motorized use occurs in the Webb Hill population, but the frequency of this use has declined over

time. The decline in motorized use is supported by BLM monitoring of motorized tracks in the Webb Hill monitoring transects that identified 286 tracks in 1987 down to 10 tracks at the last recording in 2009, see Figure 4. We have no documentation of the number of citations for illegal motorized use and the frequency of fence repairs from 1987 to the present.

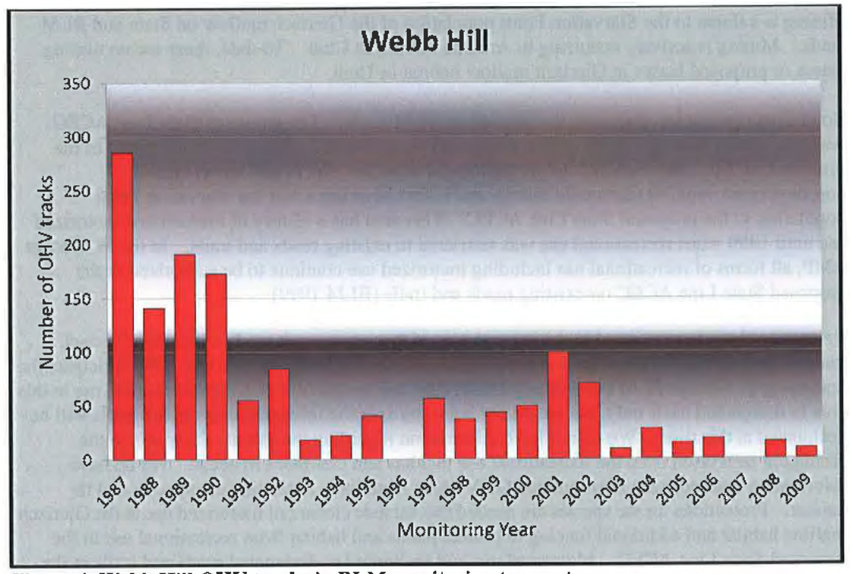

Figure 4. Webb Hill OHV tracks in BLM monitoring transects.

While OHV use in the habitat has strongly declined since 1987, the impact to the habitat and the species continues into the future. Old OHV trails continue to be used by non-motorized users and the majority of this use is unauthorized. We do not have information of the current level of unauthorized recreational use in the Webb Hill population. We anticipate the level of recreational use will increase on BLM lands in the Webb Hill population with an increase in local population growth, with smaller buffers between residential development and poppy habitat, and with fewer options for recreation as open space is developed in and immediately surrounding the St. George city limits.

In 2011, the majority of OHV roads and trails in the BLM portion of the Webb Hill population were ripped to decompact impacted soils as part of a restoration project designed to benefit the species and discourage continued use by recreationists. We do not have information on the effectiveness of this restoration effort for the species.

A potential threat that is present in the Webb Hill population is the presence of invasive annual weeds. Large areas of this population are infested with red brome (*Bromus rubens*) (Roth 2011). This strong competitor may negatively impact poppy plants and other native plants that provide floral resources for pollinators.

Gierisch Mallow

State Line ACEC:

Mining is a threat to the Starvation Point population of the Gierisch mallow on State and BLM lands. Mining is actively occurring in Arizona but not in Utah. To-date, there are no mining leases or proposed leases in Gierisch mallow habitat in Utah.

Road development has impacted the species on BLM lands. The proposed State Line ACEC contains approximately 7 miles of two-track road that provide access across the entirety of the proposed ACEC. Recreational use by motorized vehicles (OHVs and motorcycles), non-motorized vehicles (mountain bikes), and hikers have impacted the Starvation Point population in the proposed State Line ACEC. This area has a history of unrestricted motorized use until 1999 when recreational use was restricted to existing roads and trails. In the St. George RMP, all forms of recreational use including motorized use continue to be authorized in the proposed State Line ACEC on existing roads and trails (BLM 1999).

Recreational use has occurred in the general area of these two-track roads within the Gierisch mallow habitat because there are no barriers to protect the habitat from such use. We anticipate the upcoming St. George BLM Field Office Travel Plan will restrict the existing recreational use in this area to designated trails only, but we do not have any specific information on which trails will be designated at this time. We do not have information regarding the extent of impacts to the Holmgren milkvetch from the recreational use that has and continues to occur. We do have information that indicates unauthorized OHV use is negatively impacting the species and its habitat. Protections for the species are needed that include closure of motorized use in the Gierisch mallow habitat and additional fencing to protect plants and habitat from recreational use in the proposed State Line ACEC. Motorized use will be limited to designated roads and trails in the proposed State Line ACEC designation.

Within the proposed State Line ACEC, all Holmgren milkvetch habitat is open to livestock use. The majority of the Starvation Point critical habitat unit is within the River pasture of the Curly Hollow allotments. Livestock use occurs on an annual basis in this critical habitat unit between November 1 and the end of February. Livestock use has steadily increased since 2000 in this allotment, and livestock adjustments due to frequent fires in other pastures of the Curly Hollow allotment has occurred since at least 2003. We do not have detailed information about the livestock adjustments in the River pasture as a result of those fires and how that affected the number of livestock or season of use.

We have documentation that the abundance of invasive plant species in the Starvation Point critical habitat unit has increased over time (Van Buren *et al.* 2016). Nonnative annuals make up the highest percentage of living cover in portions of the critical habitat. Cheatgrass has increased in abundance over the past 20 years and responds favorably to spring moisture for two consecutive years (Van Buren *et al.* 2016). In addition, cheatgrass invades areas in response to surface disturbances (Hobbs 1989; Rejmanek 1989; Hobbs and Huenneke 1992; Evans *et al.* 2001). We anticipate nonnative, invasive plants will increase in the future, particularly in disturbed habitat. Nearly all form of anthropogenic disturbance including mining, recreation, and livestock grazing provide avenues for invasive plants to spread.

We are concerned that fire frequency may also increase with the spread of invasive plant species in critical habitat; fire frequency has already increased in other pastures (burn and middle) of the Curly Hollow allotment.

Holmgren Milkvetch

South Hills ACEC:

Residential development is a threat to the South Hills population of Holmgren milkvetch on private lands but is not a threat on BLM lands.

Road development is a threat to the species on BLM and private lands. The South Hills critical habitat unit is immediately adjacent to an unpaved Cove Wash road, the main access road, along its western border, and contains 0.2 miles of two-track road and primitive trail at the southern end of the unit. The Stucki Springs road bisects the Stucki Springs critical habitat unit and the Stucki Springs population. The Stucki Springs critical habitat unit also contains approximately 2 miles of two-track road that connects to the main Stucki Springs road.

Recreational use by motorized vehicles (OHVs and motorcycles), non-motorized vehicles (mountain bikes), and hikers have impacted the South Hills and Stucki Springs populations prior to the BLM fencing these populations in the last decade. The western portion of the Stucki Springs population is the only area of Holmgren milkvetch critical habitat that remains unfenced to-date. This area has a history of unrestricted motorized use until 1999 when recreational use was restricted to existing roads and trails. In the St. George RMP, all forms of recreational use including motorized use continue to be authorized in the proposed South Hills ACEC on existing roads and trails whereas motorized use was excluded from the adjacent Red Bluff ACEC in 1999 (BLM 1999). Regular visits to check the integrity of the fencing is needed to ensure continued protection from recreational use.

All forms of recreational use occur on the Stucki Springs road within the Stucki Springs critical habitat unit. Recreational use has occurred in the general area of the two-track road within unfenced portions of Holmgren milkvetch habitat because there are no barriers to protect the habitat from such use. Authorized motorized use restrictions will be limited to designated roads and trails in the proposed South Hills ACEC. We anticipate the upcoming St. George BLM Field Office Travel Plan will restrict the existing recreational use in this area, but we do not have any specific information at this time. We do not have information regarding the extent or impacts to the Holmgren milkvetch from the recreational use that has and continues to occur.

Illegal dumping of household items and waste disposal has also impacted the species within both critical habitat units (see USFWS 2006). These dump sites have been used for target practice and have resulted in increased letter accumulation and surface disturbance. If not addressed, these activities can cause long-term irreparable harm to the species and its habitat.

Within the proposed South Hills ACEC, the BLM fenced the entire South Hill critical habitat unit in the past decade to exclude livestock from Holmgren milkvetch habitat. The Stucki Springs critical habitat unit is split between the Boomer Hill and Curly Hollow allotments. Livestock use has not occurred in that portion of the Curly Hollow allotment since Grand Canyon Trust obtained the grazing permit in 2002. The BLM has also fenced that portion of the critical habitat unit

within the last decade to exclude all use. Regular visits to check the integrity of the fencing is needed to ensure continued protection from livestock use.

Invasive plants species are identified as a threat to the species in both critical habitat units (USFWS 2006). However, we have no recent documentation of the presence or abundance of invasive plant species in these populations.

State Line ACEC:

Residential development is a threat to the State Line population of Holmgren milkvetch on State and private lands but is not a threat on BLM lands. Private land in the critical habitat unit has either been developed or is planned for development as part of the Sun River retirement community. The Utah State Institutional Trust Lands Administration (SITLA) is protecting a 166-acre parcel for the species from development until January 1, 2020 as per a Letter of Intent extension signed in the fall of 2015. The Letter of Intent provides our agency and our conservation partners time to acquire the property via a land exchange or land purchase. If the State land is not protected by the deadline, it will likely be developed.

Road development has impacted the species on BLM, State, and private lands. The proposed State Line ACEC contains approximately 8 miles of two-track road that provide access across the entirety of the proposed ACEC. Recreational use by motorized vehicles (OHVs and motorcycles), non-motorized vehicles (mountain bikes), and hikers have impacted the State Line population in the proposed State Line ACEC. This area has a history of unrestricted motorized use until 1999 when recreational use was restricted to existing roads and trails. In the St. George RMP, all forms of recreational use including motorized use continue to be authorized in the proposed State Line ACEC on existing roads and trails (BLM 1999).

Recreational use has occurred in the general area of these two-track roads within Holmgren milkvetch habitat because there are no barriers to protect the habitat from such use. This use is technically considered to be authorized because it is difficult to distinguish between "existing" and "newly created" roads and trails. We anticipate the upcoming St. George BLM Field Office Travel Plan will restrict the existing recreational use in this area, but we do not have any specific information at this time. We do not have information regarding the extent of impacts to the Holmgren milkvetch from the recreational use that has and continues to occur. We do have information that indicates habitat disturbance is negatively impacting the species. We consider recreation impacts to the species to be a high threat to the species. Protections for the species are needed that include closure of motorized use in Holmgren milkvetch habitat and additional fencing to protect plants and habitat from recreational use in the proposed State Line ACEC. Authorized motorized use restrictions will be limited to designated roads and trails in the proposed State Line ACEC designation.

Illegal dumping of household items and waste disposal has also impacted the species within this critical habitat unit (see USFWS 2006). These dump sites have been used for target practice and have resulted in increased letter accumulation and surface disturbance. If not addressed, these activities can cause long-term irreparable harm to the species and its habitat.

Within the proposed State Line ACEC, all Holmgren milkvetch habitat is open to livestock use. The State Line critical habitat unit is within the River pasture of the Curly Hollow allotments.

Livestock use occurs on an annual basis in this critical habitat unit between November 1 and the end of February. Livestock use has steadily increased since 2000 in this allotment, and livestock adjustments due to frequent fires in other pastures of the Curly Hollow allotment has occurred since at least 2003. We do not have detailed information about the livestock adjustments in the River pasture as a result of those fires and how that affected the number of livestock or season of use. The phenology study performed in 2015 indicates that adult Holmgren milkvetch plants emerge and grow during the livestock season of use (Rominger 2016) and there is the potential for livestock to impact the species when plants are coming out of dormancy and seedlings are germinating in the early spring.

Invasive plants species are identified as a threat to the species in the State Line population (USFWS 2006). We also have documentation that the abundance of invasive plant species in the State Line population has increased over time (Van Buren *et al.* 2016). Nonnative annuals make up the highest percentage of living cover in Holmgren milkvetch habitat, and they tend to emerge prior to Holmgren milkvetch, thus potentially competing for soil moisture and nutrients. Cheatgrass has increased in abundance over the past 20 years and responds favorably to spring moisture for two consecutive years (Van Buren *et al.* 2016). The timing of high cheatgrass abundance is in direct conflict with the peak growth and reproduction time period for Holmgren milkvetch, and competitive effects appear to be increasing. In addition, cheatgrass invades areas in response to surface disturbances Hobbs 1989; Rejmanek 1989; Hobbs and Huenneke 1992; Evans *et al.* 2001). We already have documentation that Holmgren milkvetch is a poor competitor and invasive plant species has negatively impacted the State Line population (Van Buren *et al.* 2016). We anticipate this threat will increase in the future, particularly in disturbed habitat. Nearly all form of anthropogenic disturbance including the previously discussed threats of development, recreation, and livestock grazing provide avenues for invasive plants to spread. We are concerned that fire frequency may also increase with the spread of invasive plant species in critical habitat; fire frequency has already increased in other pastures (burn and middle) of the Curly Hollow allotment.

4.0 Effects of the Action

Red Cliffs National Conservation Area

Shivwits Milkvetch

Designating the Red Cliffs NCA would provide numerous benefits to the Shivwits milkvetch by managing the following Resources listed below. The BA outlines the beneficial measures in detail, typically separating the action relating to each Resource into at least four categories: General Management Actions, Public Education and Interpretation, Scientific Research, and Climate Change Monitoring.

Actions within the Red Cliffs NCA include a wide variety of activities from restoration, flaming, targeted grazing, hand removal, herbicides, mechanical methods, fuel breaks, plantings, harrowing and chaining, artificially watering plants, recreation, transportation, biological controls, monitoring activities, and hazard fuel reduction projects.

Within the Red Cliffs NCA, management of the following resources are most likely to affect Shivwits milkvetch:

- Lands and Realty
- Special Status Plant Species
- Roads and Trails (Comprehensive Travel and Transportation Management and Recreation and Visitor Services)
- Recreation and Visitor Services (e.g. camping, competitive events, etc.)
- Noxious Weeds and Invasive Species
- Fire Suppression

OHV activities and livestock grazing do not occur near the population of Shivwits milkvetch in the Red Cliffs NCA.

Lands and Realty

The Red Cliffs NCA RMP includes the following conservation measures for lands and realty:

1) OPLMA Section 1975 (g) (1) specifically restricts allowable uses by withdrawing the public lands of this NCA, subject to valid existing rights, from: All forms of entry, appropriation, and disposal under the public land laws; Location, entry, and patenting under the mining laws; and Operation of the mineral leasing, mineral materials, and geothermal leasing laws.
2) Do not authorize renewable energy leases.
3) Designate linear ROW Avoidance and Exclusion areas.
4) Under Water Quality management, the BLM states they will pursue acquisition of non-federal lands from willing sellers within the NCA that would benefit the conservation and protection of surface and groundwater resources and pursue acquisition of surface and/or groundwater rights from willing sellers for use in campgrounds, visitor facilities, and for other administrative uses, where consistent with Utah State law.

The effects of these land and realty measures to the species are beneficial overall, as the NCA designation would provide several avoidance and minimization benefits to Shivwits milkvetch populations. The above withdrawals would provide for substantial protection of federally listed species within the NCA. Under the proposed management, 32,366 acres would be managed as ROW Exclusion areas and 12,359 acres as ROW Avoidance areas, protecting habitats for federally listed species and from development-related impacts. As a result of the measures in these designations, we do not anticipate crushing or damage to individual plants or increases in habitat fragmentation or degradation.

Acquiring ground water resources could be beneficial for the species, by protecting important plant-soil water recharge functions (e.g. hydraulic lift). Acquiring water resources for use in campsites could provide the opposite non-beneficial effect.

While these measures provide substantial benefit to the species, developments can still occur in avoidance areas and maintenance activities will be required along existing ROWs and developments. These activities could result in loss or fragmentation of Shivwits milvetch habitat and impacts to individual plants.

Special Status Plant Species

The BA sets out specific management actions for the management of Shivwits milkvetch in the Red Cliffs NCA under the Resource 'Special Status Plant Species'. These management actions are:

1) Implement the goals, objectives, and management recommendations identified in the approved Recovery Plan for *Astragalus ampullarioides* (Shivwits milkvetch) (USFWS 2006b).
2) Monitor identified populations of Shivwits milkvetch populations within the NCA in coordination with USFWS. Evaluate the effectiveness of management actions through monitoring and scientific research studies.
3) Conduct botanical inventories of areas within the NCA where appropriate soil types are present that comprise suitable Shivwits milkvetch habitat.
4) Use protective measures such as natural barriers, fencing, signing, and trail designation to protect populations of and habitat for Shivwits milkvetch.
5) Provide educational materials through various media and venues (e.g., trailhead kiosks, brochures, websites) that inform visitors about the endemic and at-risk native plants that grow in the NCA and appropriate public land etiquette to protect these species.
6) Pursue opportunities to complete detailed soil surveys in the NCA to assist in the identification of areas that could support populations of Shivwits milkvetch.
7) Pursue opportunities to collect data on the timing, frequency, and duration of precipitation events and how these influence persistence and expansion of Shivwits milkvetch populations.
8) Pursue opportunities for scientific research that focuses on the species of native bees or other pollinators that help to ensure reproduction within Shivwits milkvetch populations and gene flow between populations.
9) Research is supported that increases the knowledge of this species and the understanding of ecosystem processes, natural cycles, and anthropogenic factors that may influence population trends and predicted climate change scenarios.

The BLM's commitment to these measures, including their commitment to implement the 2006 Recovery Plan for Shivwits milkvetch, will provide numerous protections and actionable recovery activities. Additionally, livestock grazing in the Red Cliffs allotment will be made unavailable over the life of the RMP. The BA is unclear if targeted grazing could occur in these areas for restoration purposes or wildfire suppression. While non-beneficial effects could occur from any of these management actions (e.g. trampling), we believe the beneficial effects outweigh any possible negative effects of these actions.

In addition to the above specific measures, designation of the Red Cliffs NCA would protect native plant communities important to Shivwits milkvetch. Management actions associated with the following resources in the BA are likely to effect this milkvetch: Conservation and Protection of Native Vegetation Communities, Vegetation Resource Uses: Plant Materials and, Native Veg Community Restoration.

Conservation and Protection of Native Vegetation Communities

1) Manage land uses and authorized activities to ensure that ecological systems meet or exceed management objectives identified in the Utah Standards for Rangeland Health and Guides for Grazing Management.
2) Apply BMPs and other management techniques designed to minimize impacts on native vegetation communities for all land uses and authorized activities.
3) Implement a program to strategically collect, store, and increase native seeds, cuttings, biological soil crust communities and species for conservation and for use in future restoration projects
4) Authorize the use of biological controls, targeted grazing, flaming, hand removal, herbicides, mechanical methods, or a combination of methods to develop fuel breaks and hazard fuel reduction projects (see Table 3-2 in the BA for descriptions of each method).

Vegetation Resource Uses: Plant Materials

1) Fees or permits would not be required for the collection of small quantities of pinyon pine seeds (pine nuts) for non-commercial personal use.
2) Fuelwood and Post Harvesting for Commercial and Non-Commercial Purposes
3) Do not authorize commercial and non-commercial fuelwood or post harvesting in the NCA.
4) Do not authorize commercial or non-commercial Christmas tree harvesting in the NCA.
5) The collection of dead and down materials for campfires is not authorized in the Red Cliffs Recreation Area; visitors must provide firewood for use in campfires in the campground and day use area.
6) Do not authorize native seed harvesting for commercial or non-commercial purposes in the NCA.
7) Do not authorize the commercial or non-commercial harvesting, removal, salvage, and/or sale of native desert vegetation (e.g., cacti, succulents, other native species) in the NCA.
8) Authorize the individual collection of native plant materials (excluding all federally-listed native plant species) by Native Americans for religious, ceremonial, and traditional purposes.
9) Authorize collection of native seeds, seedlings, plants, cuttings, biological soil crusts and species for scientific research through an NCA Scientific Research Permit and Utah BLM Specimen Collection Permit, where required.
10) Authorize the collection of native seeds, seedlings, cuttings, biological soil crust communities and species for conservation and future use in restoration projects.

ES&R Actions and Other Native Vegetation Community Restoration

1) Apply BMPs and other management techniques designed to minimize loss of top soil and soil crusts during restoration projects and ES&R actions.
2) In planning re-vegetation projects for disturbed and fire-damaged areas, identify desired plant communities and use ecologically sustainable methods that minimize new surface disturbances and impacts on other resource values of the NCA.
3) Establish monitoring plots and use desired plant species frequency, density, and distribution data to evaluate the effectiveness of the treatments.

4) Conduct monitoring to evaluate effectiveness of re-vegetation and ES&R actions, as determined by the project-specific monitoring plans.
5) Implement a program to strategically collect, store, and increase native seeds, cuttings, biological soil crust communities and species for conservation and for use in future restoration projects.
6) Maximize the use of microsites of fertile soils ("fertile islands") and areas where biological soil crusts are regenerating.
7) Authorize the use of artificial water, carbon sequestration soil treatments, or other methods that have been shown to increase success of restoration efforts in desert ecosystems.
8) Authorize the inoculation of biological (cryptogamic) soil crust species or mycorrhizae to restore biological soil crusts and assist plant establishment.
9) Authorize use of native seeds, plant materials, and native plant cultivars for re-vegetation efforts, in the following order of preference:

    1. Locally derived sources;
    2. Regionally derived sources.
    3. Only authorize use of non-native plant species when all the following criteria are met:
        a) Desired native species are not available;
        b) The natural biological diversity of the treatment area would not be diminished;
        c) Exotic and naturalized species can be confined within the treatment area;
        d) Restoration of native vegetation species would be facilitated by use of the non-native species;
        e) Use of non-native species would benefit threatened and endangered species, including the Mojave desert tortoise.

10) Include a high proportion of early colonizing (early successional) native annual and perennial species in seed mixes or plantings to quickly re-establish soil cover, minimize invasive species establishment, and facilitate the re-establishment of late successional species.
11) Include species in seed mixes or plantings that will function as "nurse" plants to facilitate the re-establishment of species that require shade during initial growth stages.
12) To implement seeding restoration, authorize the use of non-invasive (e.g., aerial applications, hand scattering, surface distribution of encapsulated seeds, mulching) and minimally invasive seeding (e.g., small seed drills, hand raking) methods, as well as plug plants, containerized plants, and other plant materials.
13) To protect seeds from rodents, birds, and other granivores, authorize the use of non-invasive (e.g., seed encapsulation, mulching) and minimally invasive (e.g., small seed drills, hand raking) seed protection methods.
14) Evaluate the use of invasive seed protection methods (e.g., harrowing, chaining) outside of designated critical habitats on a case-by-case basis. Authorize the use of such methods only when scientific research demonstrates that the benefits would clearly outweigh the negative effects on federally listed species, habitats, and other resource values.
15) Authorize hand planting of plugs, other plant materials, and containerized plants for vegetation restoration and ES&R treatments.

These management actions are extensive and specific. We believe implementation of these actions will provide overall benefit to Shivwits milkvetch by improving the resistance and resilience of the surrounding plant, pollinator, and seed disperser communities, though some negative effects are also possible. Negative effects can include trampling, damage or mortality of native plants and biological soil crusts, and increasing exposure to invasive or noxious plants.

Roads and Trails

The NCA plans to develop a nationally recognized non-motorized trail system that provides high quality opportunities for a wide range of recreational activities and manage the motorized route system.

The proposed actions for developing and managing trails and roads will have beneficial and non-beneficial impacts. The Shivwits milkvetch population is within one mile of a motorized dirt road and a hiking trail. Activities occurring under the proposed action may increase foot traffic, motorized traffic, dust deposition, invasive and weedy plant pressure, and changes to pollinator communities. Under the Air Quality section of the BA, the BLM plans to post speed limits on dirt roads and reclaim closed routes. They will also manage erosion and dust along roads and throughout the NCA, though specific measures, including speed limits, are not provided. It is unclear, but likely, that mechanized equipment used for geological and paleontological resources would need to travel off-road at times.

Impacts to the land from previous recreational uses may last for decades (Abella 2014). Thus, developing a comprehensive plan designating specific trails for motorized and non-motorized use, as committed to in the Red Cliffs NCA BA Recreation and Visitor Service and Travel Management, and enforcing compliance, is critical to maintaining Shivwits milkvetch habitat.

No areas in the NCA will be open to cross-country OHV use, nearly 20,000 will be closed to OHV use, and the remaining nearly 25,000 acres will be limited to designated roads and trails. The BLM will consider additional protections during the development of their Transportation Management Plan (TMP). The BA states that the TMP will manage any trails with federally listed plant habitat to protect plants and habitat.

The BLM will complete a separate Section 7 consultation with USFWS on the specific effects of the TMP.

Recreation and Visitor Services

Recreation and visitor services include the following activities:

1) Campground development and management;
2) Dispersed camping management;
3) Commercial, competitive, and group use management.
4) Prohibit SRPs for competitive equestrian events in the NCA.
5) Prohibit SRPs for competitive motorized events in the NCA.
6) Prohibit the discharge of firearms, except in the act of licensed hunting according to state laws during prescribed seasons.
7) Prohibit paintball activities of any kind.

The proposed actions for developing and managing campgrounds will have beneficial and non-beneficial impacts. The Shivwits milkvetch population is near a popular designated campground. Camping can crush or remove plants, alter 'safe-site' characteristics (the biological and physical components necessary for a seed in the seedbank to germinate and establish), remove, crush, or destroy biological soil crusts important to this species, increase dust, and increase pressure from invasive and noxious weeds (see Effects of the Action: Dwarf bear-poppy). As noted in the Special Status Plant Species, Vegetation Resource Uses: Plant Materials section above, the collection of dead and down materials for campfires is not authorized in the Red Cliffs Recreation Area; visitors must provide firewood for use in campfires in the campground and day use area. This will lessen the likelihood of users trampling native plants and biological soil crusts, and spreading non-native species.

Prohibiting the discharge of firearms and paintball guns will reduce activity specific effects such as increased crushing or damage to individual plants and increased debris (e.g. bullets, targets, paint, and pellets).

Hunting will be authorized in the NCA. This activity tends to occur off-trail increasing the likelihood of damage or mortality to Shivwits milkvetch, association native plant communities, and associated biological soil crusts. Litter (e.g. spent casings) may also be a concern. The resulting surface disturbance could increase the spread of invasive or noxious weeds and erosion in Shivwits milkvetch habitat.

Prohibiting the issuance of SRPs for competitive equestrian and motorized events will help protect Shivwits milkvetch from increased foot traffic, vehicular traffic and associated dust, trail widening, and dust associated with the equestrian and motorized events. Other types of SRPs that are authorized on trails or roads near Shivwits milkvetch will compound effects of regular recreation use by increasing use on existing roads and trails and potentially expanding use of campgrounds. The SRP events can impose restrictions on their participants and can be held liable for addressing any infractions that result from the event.

Noxious Weeds and Invasive Species

Weed control would continue to be implemented under the proposed management using an Integrated Weed Management approach and relevant standard operating procedures and mitigation measures presented in the Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS (BLM 2007). With proper implementation, weed treatment methods under the proposed management would eliminate or reduce noxious weeds and invasive species.

Under the proposed management, a range of tools could be utilized to control weeds and invasive species, including: biological controls, flaming, targeted grazing, hand removal, herbicide, and mechanical methods. The BA does not specify which of these methods could be used near the Shivwits milkvetch population.

The effects of herbicide can result in damage or mortality to non-target plants, trampling and crushing of plants and biological soil crusts, and negative impacts to pollinators (see Effects of actions authorized under proposed ACEC designation - Collection and Weed Control).

Mechanical weed control can result in the trampling, crushing, or uprooting of special status plants, as well as increasing dust and temporarily increasing surface disturbance. Biological weed control agents are unlikely to negatively affect sensitive plant species, as they are generally highly host-specific and are tested for the potential attack to non-target plant species. As we don't know if these methods will be used, we cannot assess their effects in this BO.

The use of contracted grazing animals is unlikely near the Shivwits milkvetch population due to the likelihood for associated trampling impacts on native plant communities. Controlling noxious weeds and invasive species in riparian areas with biological controls, hand removal, herbicide, and mechanical methods could pose some risks to Shivwits milkvetch.

Fire

Wildfire Suppression

The wildfire suppression methods in the proposed action include a variety of strategies including: use of fertile islands, the cautious use of back-burning, tailoring seed mixes to include early successional species, protecting seeds from herbivory, and the use of low impact methods for ensuring seed-soil contact.

Most of these would likely be beneficial to Shivwits milkvetch, though some negative effects could occur as well. Additionally, the BA does not state which actions would occur near Shivwits milkvetch.

During suppression activities, the following effects could occur to the Shivwits milk-vetch:

- Trampling individuals or habitat by human foot traffic or vehicle use;
- Soil disturbances associated with fire suppression activities could increase erosion; and
- Chemicals in fire retardants and foams can negatively impact Shivwits milkvetch and other native plants; the foams can dissolve plant epicuticular wax, which makes plants more susceptible to herbivory and changes in temperature (Tamura et al. 2001, Backer et al. 2004).

The soils are extremely sensitive to disturbance and any short-term effects to the soils or habitat would lead to long-term effects. Some of the foreseen effects from wildfire suppression to the species and suitable habitat are bulleted below.

- Short-term Effects:
  - Heat stress or mortality to federally protected plants from back-burning operations; and
  - Crushing of federally protected plants, resulting in damage or mortality, from human foot traffic or use of vehicles and heavy equipment in fire suppression operations.

- Long-term Effects:
  - Federally protected species and their habitat could benefit from interdependent effects of wildland fire suppression actions that prevent loss of suitable habitat from catastrophic wildland fires; and
  - Increased potential for erosion in the sensitive soils of the Chinle formation.

Wildfire Use and Prescribed Fire

Wildland fire and prescribed fire use would not be appropriate and is therefore not authorized within the NCA. Prescribed fire could only occur on small scales up to one acre as part of scientific studies and would not be authorized in the late successional shrublands where Shivwits milkvetch is found.

Under natural situations, fire is not likely to occur within Shivwits milkvetch habitat. However, with the increase in invasive species, such as *Bromus* spp., fire frequency is increasing. Therefore areas that are not adapted to fire have been recently experiencing fire. The type of fire that is likely to burn through the area because *Bromus* spp. have invaded is likely to be made up of fuel model 1 fuels, or light and flashy fuels. These fuels may burn at a high intensity, but the severity of the burn is low and minimal if any changes to the soil chemistry would be expected. However, these fires can be devastating to the native plant populations because native plants are not fire adapted and cannot compete with a reduced fire return interval.

Backburning is also a planned strategy, although it is typically only used in emergency situations; the BA also states backburning will only occur on a case-by-case basis and with NCA manager approval. Backburning activities may result in direct loss of plants, suitable habitat, or occupied habitat for Shivwits milkvetch.

Overall, if wildland fires are not controlled or an unauthorized prescribed fire occurred in Shivwits milkvetch habitat, additional short-term effects to the Shivwits milkvetch would include: heat stress or mortality to federally protected plants from wildland fires and prescribed fire operations; and damage or mortality from human foot traffic or use of vehicles and heavy equipment during wildland fire use or prescribed fire operations.

Non-fire Treatments

Non-fire fuels treatments may be implemented throughout the NCA. Non-fire treatments will likely avoid locations where Shivwits milkvetch occurs and times when it is actively growing, though the BA does not explicitly state this. If not avoided, these fire management actions could destroy populations, individuals, or habitat (by altering the existing substrate).

Effects from non-fire fuel treatments would be similar to those for wildland fire use and prescribed fire. Because of pre-planning and specific operational prescriptions for non-fire fuel treatments, resource protection measures would be incorporated into site-specific project plans and operations as necessary. This would allow BLM to minimize or avoid many negative short-term and long-term effects to federally protected species from these activities. Overall, these pre-planned treatments have a greater potential for positive long-term benefits to federally protected species and their designated critical habitat or suitable habitat(s) than wildland fire suppression. Of the

non-fire fuel treatments, manual and mechanical treatments have greater potential for short-term and long-term effects than biological or chemical treatments. The following general short-term and long-term residual effects could occur to federally protected species from non-fire fuel treatments (including manual, mechanical, and seeding treatments; chemical treatments; and biological control):

- Short-term Effects:
  - Soil or ground disturbance from vehicles or heavy equipment during treatments, resulting in disturbance or destruction of vegetation, federally protected plant species, and the biological soil crusts upon which they depend.

- Long-term Effects:
  - Decreased risk for large, catastrophic fire events through fuels reduction and the gradual transition to a more natural Fire Regime;
  - Restoration of habitats that have been altered due to invasion of non-native species, or long-term exclusion of fire (in fire-adapted vegetation communities); and
  - Long-term positive effects could potentially benefit a species' reproduction, numbers, or distribution, in some cases, facilitating the return of a species to its historic range.

Overall, the proposed action includes conservation measures to avoid and minimize effects to Shivwits milkvetch, reducing overall effects to this species. Impacts to Shivwits milkvetch will be minimized by the designation of this critical area as an NCA. While the proposed action will continue to allow some effects to the species, we anticipate the overall effect of the proposed action will be beneficial to the species – these actions are an important step in the protection and recovery of Shivwits milkvetch.

Desert Tortoise

The proposed Red Cliffs NCA RMP is constructed with the conservation of natural resources of paramount importance. There is a wide suite of management actions planned and described in the document. Though designed with conservation intent, some of the management actions described may result in take of the Mojave desert tortoise and it designated critical habitat. The use of and creation/improvement of recreation infrastructure, fire suppression activities, vegetation management projects, and the establishment of a ROW avoidance areas may all result in the take of desert tortoises.

The Red Cliffs NCA encompasses a vast majority of the Red Cliffs Desert Reserve (Reserve), created by the 1995 Washington County HCP. The Red Cliffs Desert Reserve was explicitly designed for desert tortoise conservation so that development could occur on desert tortoise habitat located on private land throughout the county. Most of the occupied desert tortoise habitat lies within the Frontcountry Zones of the NCA.

Although recreation (hiking, biking, equestrian use) is restricted to designated trails in the Frontcountry Zone there may be some desert tortoise mortaliy caused by the high levels of use. Juvenile tortoises may be crushed as they cross the trails, some tortoises may be harassed by recreation users, and trails tend to widen over time (effecting available desert tortoise habitat). In

the BA, a 1:1 mitigation ratio is described, as some trails are closed and new ones are created.

Fire is a significant threat to desert tortoises and their habitat. Fire suppression activities are described in the BA with desert tortoise conservation at the forefront. Staging activities will occur on existing roads, however the use of heavy equipment to construct fire breaks may result in desert tortoise mortality and the destruction of habitat. The intent of fire suppression activities described in the BA is to protect desert tortoise habitat, However, those activities may result in accidental injury or mortality of desert tortoises.

Native vegetation restoration projects, including noxious and invasive plant control projects, are described in the proposed RMP. These projects will be designed to improve habitat conditions for the desert tortoise and other listed and native wildlife and plant species. Hand tools and non-motorized efforts will be the primary mechanisms for restoration projects. However, heavy equipment may be utilized at certain times. The use of heavy equipment to remove non-native vegetation or plant/seed native vegetation, may result in desert tortoise mortality and at least short-term negative impacts to habitat. It is clear that the restoration of native vegetation communities is the goal within the NCA and will be a long-term benefit, however these activities may result in injury or mortality of desert tortoises or loss of habitat in the short term.

The proposed RMP creates a ROW Exclusion Area of 38,472 acres on lands managed by the BLM within the NCA boundary (of 44, 859 total acres), which is a clear commitment to desert tortoise conservation. The proposed RMP creates 6,367 acres of ROW Avoidance Areas, including the existing utility corridors. However, during the maintenance or upgrade of existing utilities, there may be some direct mortality of tortoises and degradation of habitat.

The proposed RMP states that while "considering a new proposed ROW application, to the greatest extent possible, BLM will,…e) authorize new ROW's only when the project-specific NEPA analysis indicates that the construction and operation of the facility would not result in the take of federally-listed species; the adverse modification of designated critical habitats…". This demonstrates a clear commitment to minimizing impacts to desert tortoises and their habitat.

However, the Avoidance Area described in the Proposed RMP includes the area where a future proposed Northern Corridor may be located. This BO does not analyze this new highway as a proposed action has not been submitted to us for section 7 consultation. However, we note that a new highway or other facilities within this avoidance area would negatively impact desert tortoise conservation. A new highway or other facilities would further fragment the desert tortoise habitat within the Reserve and could greatly impact the quality of desert tortoise habitat within the NCA. For a thorough description and analysis of the potential impacts of roads or other facilities through the NCA please see Attachment A (Effects of the Proposed Northern Transportation Route on the Threatened Mojave Desert Tortoise).

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Activities that directly disturb flycatchers and cuckoos while they are engaged in critical phases of their life cycles may result in negative effects such as territory and nest abandonment, and reduced reproductive success. Activities that alter or displace soils, vegetation and local hydrology in suitable habitat decrease the space available for flycatchers and cuckoos to carry out their life cycles. Consequently, there is increased probability of extinction of local breeding groups,

particularly those that consist of a few individuals (Pulliam and Dunning 1994, USFWS 2002).

The following Resource and Land Use Programs within the Red Cliffs NCA may affect the southwestern willow flycatcher and western yellow-billed cuckoo by either disturbing the species while it is breeding, foraging or sheltering, or degrading and eliminating suitable habitat for the species: Water Quality, Conservation and Protection of Native Vegetation Communities, Riparian Vegetation, Fire Suppression, ES&R Actions and Other Native Vegetation Community Restoration, Noxious Weeds and Invasive Species, Special Status Plant Species, Including Threatened and Endangered Species, Special Status Wildlife Species-Including Threatened, Endangered, and 10(j) Non-Essential Experimental Population Species, Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow Billed Cuckoo, and Other Riparian-Dependent Species, Special Status Species: Mojave Desert Tortoise, Special Status Fish Species: Woundfin Minnow and Virgin River Chub, BLM Sensitive Species, BLM Sensitive Species, BLM Sensitive Native Fish Species, BLM Sensitive Mammal Species, BLM Sensitive Raptor Species, Migratory Birds and Birds of Conservation Concern, and BLM Sensitive Reptile and Amphibian Species.

The Water Quality Program may affect negatively affect flycatchers and cuckoos in the short term as a consequence of activities that cause soil and vegetation disturbance in suitable habitat for the species. In the long term, this program is likely to beneficially affect the species as it includes management actions to restrict land use along the Virgin River. It also includes actions to inventory and map riparian vegetation, and evaluate water quality and flow rates. This information will support future riparian restoration, which will benefit flycatchers and cuckoos.

The Conservation and Protection of Native Vegetation Communities Program may negatively affect flycatchers and cuckoos as a consequence of vegetation management tools implemented in suitable habitat for the development of fuel breaks and hazard fuel reduction projects. Activities such as the use of chainsaws, mowing, application of herbicides, and biological control in riparian habitat may disturb the species if they are present during application. These activities, as well as targeted grazing implemented for the same purposes, may further alter the vegetation structure that comprises suitable habitat for the species. Where these activities assist in the restoration of native vegetation communities, flycatchers and cuckoos will benefit from increased space to carry out its life cycle.

The Riparian Vegetation Program may negatively affect flycatchers and cuckoos where vegetation treatments that use biological control, flaming, hand removal, herbicides, and mechanical methods are applied in or adjacent to suitable habitat for the species. If applied when flycatchers and cuckoos are present, the species could suffer increased stress, and abandon territories and nests. These activities, as well as targeted grazing implemented for vegetation treatment, may further alter the vegetation structure that comprises suitable habitat for the species. In addition, southwestern willow flycatchers nest in mixed native and non-native vegetation, including tamarisk. Tamarisk control projects and the use of tamarisk beetles can negagively impact southwestern willow flycatchers by defoliating vegetation that provides habitat for the species (Paxton et al. 2011, Simberloff 2012). Where these activities assist in the restoration of native vegetation communities, flycatchers and cuckoos will benefit from increased space to carry out its life cycle.

The Fire Suppression Program may negatively affect flycatchers and cuckoos as a consequence of vegetation management tools implemented in suitable habitat for the development of fuel breaks and hazard fuel reduction projects. Activities such as the use of chainsaws, mowing, application of herbicides, and biological control in riparian habitat may disturb the species if it is present during application. These activities, as well as targeted grazing implemented for vegetation treatment, may further alter the vegetation structure that comprises suitable habitat for the species. Where these activities assist in the restoration of native vegetation communities, flycatchers and cuckoos will benefit from increased space to carry out its life cycle.

Activities carried out under the, and ES&R Actions and Other Native Vegetation Community Restoration Programs may negatively affect flycatchers and cuckoos in the short term, but will beneficially affect the species in the long term for the reasons previously stated under the Conservation and Protection of Native Vegetation Communities Program.

The Noxious Weeds and Invasive Species Program may negatively affect flycatchers and cuckoos as a consequence of vegetation management tools implemented to control weeds and exotic invasives. These tools include biological control, flaming, targeted grazing, hand removal, herbicide, and mechanical methods, and may disturb the species if it is present during application. These activities may further alter the vegetation structure that comprises suitable habitat for the species. Where these activities result in the restoration of native vegetation communities, flycatchers and cuckoos will benefit from increased space to carry out its life cycle.

The Special Status Plant Species, Including Threatened and Endangered Species Program may beneficially affect flycatchers and cuckoos where habitat protection and restoration activities occur adjacent to riparian habitat.

The Special Status Wildlife Species-Including Threatened, Endangered, and 10(j) Non-Essential Experimental Population Species Program may beneficially affect flycatchers and cuckoos where activities are implemented to protect high quality riparian habitat. These activities include the acquisition of non-federal riparian lands and limitations on recreational activities in degraded habitat. Protection of riparian habitat from future development may benefit the species in the long term by maintaining space available to cuckoo to carry out its life cycle.

Activities carried out under the Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow Billed Cuckoo, and Other Riparian-Dependent Species, Special Status Species: Desert Tortoise, Special Status Fish Species: Woundfin Minnow and Virgin River Chub, Sensitive Species, BLM Sensitive Species, BLM Sensitive Native Fish Species, BLM Sensitive Raptor Species, Migratory Birds and Birds of Conservation Concern, BLM Sensitive Mammal Species, and BLM Sensitive Reptile and Amphibian Species Programs may benefit flycatchers and cuckoos for the reasons previously stated under the Special Status Wildlife Species – Including Threatened, Endangered, and 10(j) Non-Essential Experimental Population Species Program.

Virgin River Chub and Woundfin

The primary action affecting Virgin River chub, woundfin, and their critical habitat is BLM's commitment to conduct riparian restoration along the Virgin River in the Red Cliffs National Conservation Area (NCA). Because BLM has committed to excluding any development within

330 ft of riparian areas, including roads and other ROWs, within the NCA, we do not expect other actions to affect Virgin River chub, woundfin, and their critical habitat.

Near or in-stream work associated with riparian restoration may cause a number of effects to the Virgin River chub and woundfin and their critical habitats. Direct and indirect effects to the two fish species and critical habitat may occur from operation of heavy equipment near the stream, dewatering of stream via pumping or redirection of flows, removal of woody debris, removal of in-channel sediments, and removal of riparian vegetation. Operation of heavy equipment instream or along the bank can disturb bottom sediments and increase turbidity, leak pollutants (fuels, oils, lubricants, and other substances), alter channel morphology by compaction from the weight of the vehicle, and directly harm aquatic biota such as vegetation, and immotile or slow moving species. Project proponents committed to minimize these effects by scheduling activities outside of the spawning season, coordinating with local fisheries professionals to translocate native fish prior to construction, and through implementation of best management practices for sediment and pollution control (see Applicant Committed Conservation Measures section).

The use of herbicides and pesticides in riparian areas could have a short-term adverse effect to fish and their critical habitat. Herbicides and pesticides can affect fish and their habitats in several ways. Direct adverse effects from the use of herbicides and pesticides include interference with oxygen uptake, reductions in dissolved oxygen in water, or poisoning via direct toxicity or altering reproduction function. BLM has committed to avoiding the use of pesticides/herbicides with non-aquatic formulations in riparian areas and

If riparian restoration requires dewatering of stream channels, these actions can have substantial effects on the fish species, which depend on continual flow. There may also be an increase in turbidity when the streamflow is returned to its original channel. Dewatering related impacts on listed fish can be minimized by translocation of fish prior to dewatering operations and by following an approved dewatering protocol.

Revegetation techniques will include seeding, collecting and planting cuttings of willows and cottonwood, and tree and shrub plantings from container stock. Revegetation work can cause short-term disturbance in and near the stream channel. Adverse effects to fish can be minimized by avoiding work during the spawning season and by translocation of fish if necessary.

In the long-term, riparian restoration will reduce excessive erosion, moderate turbidity levels, potentially reduce temperatures and reduce human-related disturbance to fish along the Virgin River. It will also provide a long-term source of detritus to the stream and result in long-term benefits to fish habitat as described below.

Water Elements - Short term adverse effects to water quality may result from heavy equipment use in the stream channels and from dewatering activities. Water quality impacts are not expected to exceed species tolerances in most instances, or will be limited in duration because dewatered areas will be rewatered following construction. Because the project will restore riparian areas to more natural functions, we expect the hydrologic regime will not be significantly altered by the proposed action. Channel forming and maintenance functions will still occur in the NCA.

Physical Habitat Elements – Construction in some areas may destroy some elements of fish habitat such as secondary channels and backwaters; runs, pools and riffles; and instream cover in the

short-term. In the long-term, these types of habitat elements are expected to reform as natural fluvial geomorphic process reshape natural channel areas affected by construction activities.

Biological Environment (Food Supply, Predation and Competition) – Increases in sedimentation and pollution that result from heavy equipment operation in or near the streams may cause a reduction in food supply for endangered fish species. This effect will be limited in time to the period of construction, and will be mitigated to some degree by long-term benefits of riparian restoration.

Beaver Dam Wash National Conservation Area

Desert Tortoise

The proposed Beaver Dam Wash NCA RMP is constructed with the conservation of natural resources of paramount importance. There is a wide suite of management actions planned and described in the document. Though designed with conservation intent, some of the management actions described may result in take of the Mojave desert tortoise and it designated critical habitat. The use of and creation/improvement of recreation infrastructure, fire suppression activities, vegetation management projects, and grazing may all result in accidental injury or mortality of desert tortoises.

Most of the occupied desert tortoise habitat lies within the Frontcountry Zones of the Beaver Dam Wash NCA. Although recreation (hiking, biking, equestrian use), is restricted to designated trails in the Frontcountry Zone there may be some desert tortoise injury or mortaliy caused by the high levels of use. Juvenile tortoises may be crushed as they cross the trails, some tortoises may be harassed by recreation users, and trails tend to widen over time (effecting available desert tortoise habitat). Most of the desert tortoise habitat within the NCA is designated critical habitat, thus whenever habitat is permanently lost due to the construction of new recreation infrastructure, historic habitat should be reclaimed/re-vegetated at a minimum of a 1:1 ratio. Additionally, new trails need to be sited so as to minimize the impacts to the local desert tortoise population and associated habitat. Though an area might be highly valued for recreation development, if the area consists of high quality desert tortoise habitat, then the proposed recreation development should be moved.

Fire is a significant threat to desert tortoises and their habitat. Fire suppression activities are described in the BA with desert tortoise conservation at the forefront. Staging activities will occur on existing roads, however the use of heavy equipment to construct fire breaks may result in desert tortoise mortality and the destruction of habitat. The intent of fire suppression activities described in the BA is to protect desert tortoise habitat, However, those activities may result in accidental injury or mortality of desert tortoises.

Native vegetation restoration projects, including noxious and invasive plant control projects, are described in the proposed RMP. These projects will be designed to improve habitat conditions for the desert tortoise and other listed and native wildlife and plant species. Hand tools and non-motorized efforts will be the primary mechanisms for restoration projects. However, heavy equipment may be utilized at certain times. The use of heavy equipment to remove non-native vegetation or plant/seed native vegetation, may result in desert tortoise mortality and at least short-term negative impacts to habitat. It is clear that the restoration of native vegetation

communities is the goal within the NCA and will be a long-term benefit, however these activities may result in injury or mortality of desert tortoises or loss of habitat in the short term.

The proposed RMP authorizes grazing in allotments that contain occupied desert tortoise habitat. In an effort to greatly reduce any potential impacts to desert tortoise habitat from grazing, the BLM has adjusted the season of use, authorizing grazing activities during the desert tortoise inactive season. Functionally almost all desert tortoise habitat within the NCA is located in three different pastures across two allotments, where the season of use is either 11/1-3/15 or 11/16-3/15.

Grazing may negatively impact desert tortoise habitat over time. Impacts of grazing on arid lands are well documented (Fleischner 1994; Jones 2000). Recovery from these impacts is variable, but can take decades, will likely require significant management effort beyond excluding livestock, and will be affected by other factors such as drought (GAO 1991; Friedel 1991; Laycock 1991). Livestock grazing (sheep and cattle as well as horses and burros) is known to have direct and indirect impacts on desert tortoises and their habitats through trampling that results in direct mortality, either while above ground or in burrows, and degradation of vegetation and soils, including the spread of non-native plants or the displacement of native plants (Brooks 1995; Avery 1998; Boarman 2002). The magnitude of the threat on desert tortoise populations remains unclear, and the degree of impact depends on a number of factors including, but not limited to, resiliency of soil and vegetation types, type of livestock, stocking rates, season of use, and years of use with and without rest (USFWS 1994). Other factors can interact with livestock grazing and can affect the degree and extent of impacts to desert tortoises (e.g., introduction and spread of weeds [Brooks 2009], changes in vegetation due to grazing, fire, drought, and other land uses [USFWS 1994]).

Grazing is thought to reduce cover of shrubs and annual forbs. There is also evidence that the foraging behavior and food preferences of range cattle and desert tortoises overlap (spatial and temporal), with the greatest overlap occurring in the spring when fresh annual plants preferred by both desert tortoises and livestock are at their peak biomass and densities (Oldemeyer 1994) Competition for these food plants is expected to be greatest when annual plants start to dry in the spring, before cattle and tortoises switch to other forage plants (Avery and Neibergs 1997).

Direct and indirect interactions occur between cattle and tortoises (Avery and Neibergs 1997). Grazing during winter may destroy a large percentage of active tortoise burrows (Avery and Neibergs 1997). For example, almost 200 tortoise burrows were recorded as trampled during a survey of the 2.6-square-kilometer (1-square-mile) East Bajada (of the Black Mountains), Arizona, study plot in 1997 (Woodman et al. 1998). The presence of cattle dung, tracks, and trails suggested that most trampled burrows were caused by livestock, but some may have been due to horses or burros. In a study on translocated tortoises in the northwest Mojave Desert, one tortoise was found alive in its hibernation burrow even though the burrow had been crushed by cattle. It had skin lesions and had been parasitized by fly larvae. The tortoise was removed from the study because it was assumed that it would have died if it had been left in the crushed burrow (Nussear 2004). Tortoises with home ranges located in areas of poorly-managed cattle grazing may experience increased risk of mortality, increased energeticcosts, and changes in activity time budgets (caused by additional time and effort required to build new burrows).

Grazing can continue to impact soil biogeochemical characteristics three decades after grazing had been removed (Neff et al. 2005). Reduced soil nutrient levels in historically grazed sites

compared to never-grazed site occur from erosion of nutrient-rich fine soil materials due to disturbance caused by grazing practices. Soil organic matter, carbon and nitrogen content, and microbial biomass are also lower at grazed sites. The decline of organic matter content may be attributed to the destruction of biological soil crusts or long-term changes in vegetation cover/composition resulting from grazing (Neff et al. 2005).

Unmanaged livestock grazing, especially where plants are not adapted to large herbivorous mammals or where the non-native species are less palatable than the natives, can preferentially remove native vegitation, leaving non-native plants to grow under reduced competition (Wittenberg and Cock 2005:228). Studies at the Desert Tortoise Natural Area showed that both abundance and diversity of native plants and animals is higher inside than outside of the protected desert tortoise habitat (Brooks 2000). It should be noted that the Desert Tortoise Natural Area has received limited protection since 1973, but has been effectively protected from sheep grazing and off-highway vehicle use through the installation of exclusion fencing for the last 10 years (Brooks 2000). Similarly, grazing (and simulated grazing treatments) negatively impacted native plant species, while non-native species were unaffected and demonstrated superior competitive abilities, at Carrizo Plain National Monument, California (Kimball and Schiffman 2003).

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Activities that directly disturb flycatchers and cuckoos while they are engaged in critical phases of its life cycle may result in negative effects such as territory and nest abandonment, and reduced reproductive success. Activities that alter or displace soils, vegetation and local hydrology in suitable habitat decrease the space available for flycatchers and cuckoos to carry out their life cycles. Consequently, there is increased probability of extinction of local breeding groups, particularly those that consist of a few individuals (Pulliam and Dunning 1994, USFWS 2002).

The following Resource and Land Use Programs within the Beaver Dam Wash NCA may affect the southwestern willow flycatcher and western yellow-billed cuckoo by either disturbing the species while they are breeding, foraging or sheltering, or degrading and eliminating suitable habitat for the species: Water Quality, Conservation and Protection of Native Vegetation Communities, Riparian Vegetation, Fire Suppression, ES&R Actions and Other Native Vegetation Community Restoration, Noxious Weeds and Invasive Species, Vegetation Resource Uses: Livestock Grazing, Special Status Wildlife Species-Including Threatened, Endangered, and 10(j) Non-Essential Experimental Population Species, Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow Billed Cuckoo, and Other Riparian-Dependent Species, Sensitive Species, Sensitive Native Fish Species, BLM Sensitive Mammal Species, BLM Sensitive Raptor Species, Migratory Birds and Birds of Conservation Concern, BLM Sensitive Reptile and Amphibian Species, Visual Resource Management, Comprehensive Travel and Transportation Management, and Lands and Realty.

The Water Quality Program may affect negatively affect flycatchers and cuckoos in the short term as a consequence of activities that cause soil and vegetation disturbance in suitable habitat for the species. In the long term, this program is likely to beneficially affect the species as it includes acquisition and protection of non-federal tracts along the Beaver Dam Wash from willing sellers. It also includes actions to inventory and map riparian vegetation, and evaluate water quality and flow rates. This information will support future riparian restoration, which will benefit flycatchers and cuckoos.

The Conservation and Protection of Native Vegetation Communities Program may negatively affect flycatchers and cuckoos as a consequence of vegetation management tools implemented for the development of fuel breaks and hazard fuel reduction projects. Activities such as the use of chainsaws, mowing, application of herbicides, and biological control in riparian habitat may disturb the species if it is present during application. These activities, as well as targeted grazing implemented for the same purposes, may further alter the vegetation structure that comprises suitable habitat for the species. Where these activities assist in the restoration of native vegetation communities, cuckoo will benefit from increased space to carry out its life cycle.

Activities carried out under the Riparian Vegetation, Fire Suppression, and ES&R Actions and Other Native Vegetation Community Restoration Programs may negatively affect flycatchers and cuckoos in the short term, but will beneficially affect the species in the long term for the reasons previously stated under the Conservation and Protection of Native Vegetation Communities Program.

The Noxious Weeds and Invasive Species Program may negatively affect flycatchers and cuckoos as a consequence of vegetation management tools implemented to control weeds and exotic invasives. These tools include biological control, flaming, targeted grazing, hand removal, herbicide, and mechanical methods, and may disturb the species if it is present during application. These activities may further alter the vegetation structure that comprises suitable habitat for the species. Where these activities result in the restoration of native vegetation communities, flycatchers and cuckoos will benefit from increased space to carry out its life cycle.

The Vegetation Resource Uses: Livestock Grazing Program may negatively affect cuckoo as a consequence of soil and vegetation disturbance in suitable habitat for the species. Livestock grazing is one of the most common sources of past and ongoing riparian habitat degradation (78 FR 61622; October 3, 2013). Specifically, cattle may trample and compact riparian soils, inhibiting germination and changing local hydrology. Cattle further alter the composition and structure of native vegetation, promoting the dispersal of nonnative plant species. Over time, livestock grazing in riparian habitats, combined with other alterations in streamflow, typically results in reduction of plant species diversity and density, and may increase the distribution and density of nonnative tamarisk by eliminating competition from native cottonwood and willow saplings, which are preferred forage for livestock (Krueper et al 1993). Consequently, flycatchers and cuckoos may experience a loss of suitable habitat within the Beaver Dam Wash NCA.

The Special Status Wildlife Species-Including Threatened, Endangered, and 10(j) Non-Essential Experimental Population Species Program may beneficially affect flycatchers and cuckoos where activities are implemented to protect high quality riparian habitat. These activities include the acquisition of non-federal riparian lands. Protection of riparian habitat from future development may benefit the species in the long term by maintaining space available to flycatchers and cuckoos to carry out their life cycle.

Activities carried out under the Special Status Bird Species: Southwestern Willow Flycatcher, Western Yellow Billed Cuckoo, and Other Riparian-Dependent Species, Special Status Species: California Condor, Special Status Species: Desert Tortoise, Sensitive Species, Sensitive Native Fish Species, BLM Sensitive Raptor Species, Migratory Birds and Birds of Conservation Concern, BLM Sensitive Mammal Species, and BLM Sensitive Reptile and Amphibian Species

Programs may benefit flycatchers and cuckoos for the reasons previously stated under the Conservation and Protection of Native Vegetation Communities Program.

The Visual Resource Management Program may beneficially affect flycatchers and cuckoos where decisions are made to preserve and retain the existing character of the landscape. Where decisions are made to partially retain the existing character of the landscape, the Program may negatively affect flycatchers and cuckoos. Although unlikely projects or developments could be authorized that adversely affect flycatchers and cuckoos, they are not prohibited. Consequently, some decisions could result in direct disturbance to these species if it is present during project construction. Some decisions could also result in habitat loss that may decrease space available to flycatchers and cuckoos to carry out their life cycles.

The Recreation and Visitor Services Program may negatively affect flycatchers and cuckoos where recreation facilities overlap suitable habitat for these species. Construction and maintenance of visitor facilities, trails, and campsites may disturb the species, if it is present during development. If these recreation features are sited in suitable habitat for the species, there will be less space available to carry out its life cycle. Application of rules to limit dispersed camping near surface water sources may have a beneficial effect to flycatchers and cuckoos in the long term because it will protect against losses of suitable habitat.

The Comprehensive Travel and Transportation Management Program may negatively affect flycatchers and cuckoos as a transportation system is established in the NCA. Where public and administrative access may overlap suitable habitat for the species, there may be direct adverse effects to flycatchers and cuckoos as a consequence of disturbance and habitat loss. These effects may include interruption of breeding, foraging and sheltering activities. They may also include a decrease in the amount of space available to carry out its life cycle.

The Lands and Realty Program may beneficially affect flycatchers and cuckoos where land tenure adjustments and land use authorizations promote conservation, protection, and enhancement of NCA resource values.

St. George Field Office

Dwarf Bear-Poppy, Gierisch Globemallow, and Holmgren Milkvetch

ACEC Protections

The proposed action to designate the South Hills ACEC (1,950 acres), State Line ACEC (1,410 acres), and Web Hill ACEC (520 acres) would have primarily beneficial effects on the listed plants in these areas by providing protections from land use activities. The objective of ACEC designations is to identify and evaluate areas where the relevance and importance criteria, as stated at 43 CFR 1610.7.2, satisfy biological conservation and restoration mandates from OPLMA (Section 1979).

ACEC protections that apply to the Proposed ACECs

- Public lands in ACECs will be retained in federal ownership (unless purchased or exchanged for conservation of ACEC designation criteria and managed accordingly).
- Land use authorizations that could result in the irreparable damage of relevant and important values within ACECs will not be authorized. For example, ground-disturbing military maneuvers and landfills will not be authorized in ACECs. All land use authorizations within a specific ACEC will be evaluated for conformance with the general and ACEC-specific RMP management prescriptions prior to approval.
- Commercial and personal use woodland products harvesting (green wood, dead and down, poles, and Christmas trees) and firewood gathering is prohibited.
- Unless previously made unavailable for livestock grazing in the 1999 St. George Field Office Resource Management Plan (RMP), public lands are available for livestock grazing in ACECs, subject to the Terms and Conditions of federal grazing permits and the Terms and Conditions of Biological Opinions issued by USFWS, pursuant to Section 7 consultations under the ESA for federally-listed species.
- Public lands in Washington County will remain available to mining location under the General Mining Law of 1872 and applicable regulations, except where segregated from mineral entry by law or withdrawn in accordance with applicable law. Plans of Operation will be required for development in ACECs.
- ACECs are closed to mineral materials disposal.

Proposed South Hills ACEC protections

- Retain 100% of public lands in federal ownership.
- Manage as Exclusion area for linear, site-type, and material site ROWs.
- Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.
- Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.
- Open to fluid mineral leasing with No Surface Occupancy Stipulation.
- Closed to dispersed camping.
- Authorize the discharge of firearms. Except in the act of licensed hunting, all firearms must be discharged toward a proper backstop sufficient to stop the projectile's forward progress.
- Targets must be constructed of wood, cardboard, paper or similar unbreakable materials. All targets, clays, and shells are considered litter after use and must be removed and disposed of properly.
- Special Recreation Permits may be issued for commercial, organized group, and competitive events, subject to site-specific analysis under NEPA and Section 7 consultations.
- OHV area designation is Limited to Designated Roads and Trails.

State Line ACEC protections

- Retain 100% of public lands in federal ownership.
- Manage as an Exclusion area for linear, site-type, and material site ROWs.
- Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.
- Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.
- Open to fluid mineral leasing with No Surface Occupancy Stipulation.
- Closed to dispersed camping.
- Special Recreation Permits may be issued for commercial, organized group, and competitive events, subject to site-specific analysis under NEPA and Section 7 consultations.
- OHV area designation is Limited to Designated Roads and Trails.

Proposed Webb Hill ACEC protections

- Retain 100% of public lands in federal ownership.
- Manage as Exclusion area for linear, site-type, and material site ROWs.
- Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.
- Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use, on a case-by-case basis, within the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted. Restore and re-vegetate treatment areas to reduce the potential for re-infestations.
- Closed to fluid mineral leasing.
- Closed to mineral materials disposal.
- Closed to dispersed camping.
- Do not grant SRPs for commercial, organized group, and competitive events.
- Non-motorized recreation use will continue to be limited to designated trails.
- Travel management in the proposed Webb Hill ACEC will remain as stated in the 1999 RMP (VG-09, OV-01); the BLM has stated in an email that OHV travel is not authorized in Webb Hill (personal communication, 11/30/2016, Bob Douglas).

Lands and Realty

The proposed action would designate the proposed South Hills, State Line, and Web Hill ACECs and retain all public lands within the ACECs in federal ownership. The following two measures are identified in the BA:

1) Federal designation in perpetuity would provide the full scope of ESA legal protections in these areas. Additionally, non-federal lands within or adjacent to the potential ACECs may be acquired for incorporation into the ACECs management.

2) The BLM has stated that any and all proposed land authorizations within a specific ACEC will be evaluated for conformance with the general and ACEC-specific RMP management prescriptions (personal communication, 11/30/2016, Bob Douglas). This tiered approach provides a significantly high level of protection for both native species. 3) Under the proposed action, the proposed ACECs would be designated and managed as ROW Exclusion areas (e.g. no powerlines, borrow areas, or roads would be permitted in ACECs). New ROWs would not be granted, avoiding impacts on these endangered native plants and their habitats from the construction of new utility and transportation facilities.

The effects of these land and realty measures to the species are beneficial overall, as the two designations would provide several avoidance and minimization benefits to dwarf-bear poppy populations and each land use application would need to adhere to all ACEC protections.

Large areas of important habitat will be designated as exclusion areas and will remain under federal jurisdication. New land uses that would be clearly harmful, such as landfills or military maneuvers, will not be authorized. As a result of the measures in these designations, we do not anticipate crushing or damage to individual plants or increases in habitat fragmentation or degradation from new land uses. These measures provide substantial benefit to the species. However, damage or loss of plants may occur from maintenance activities within the ACECs where maintenance results in surface disturbances in plant habitats.

Collection and Weed Control

The following three measures are identified in the BA:

1) General ACEC restrictions prevent harvesting and collecting any plants or timber without a permit.

2) Under the proposed action, approved herbicides to control exotic invasive annuals or noxious weeds would only be authorized on a case-by-case basis. Prior to any herbicide being used in any ACEC, consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols, to ensure that special status plants are not impacted.

3) Restoration and re-vegetation treatments associated with weed control activities will comply with all legal requirements, such as project-specific NEPA processes and section 7 consultation where federally-listed species and designated critical habitats could be affected.

The effects of restricting harvesting and plant/timber collection would be beneficial by avoiding and reducing surface disturbances, foot traffic, vehicular traffic and associated fugitive dust, and the removal of native vegetation. Some of these effects will still occur for permits that are issued for collections.

The BLM has stated the proposed RMP Amendment limits noxious weed and invasive species management in the ACECs to herbicides, the use of which must be approved on a case-by-case basis (personal communication 11/30/16 Bob Douglas).

Herbicides have the potential to impact non-target plants through drift, runoff, wind transport of contaminated soil, accidental spills, and direct spraying. Drift of herbicides to non-target plants is likely to be the greatest risk to sensitive plant species. Herbicide weed control administered by foot can also result in the trampling and crushing of special status plants, associated native plants, and associated biological soil crusts. The proposed action allows herbicide treatment within the ACECs, but the BA commits the BLM to consult with USFWS prior to implementation of any herbicide treatments where federally-listed plants may be affected.

The BLM will follow Standard Operating Procedures they identified in the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS), 2007* (personal communication 11/30/16 Bob Douglas). The 2007 PEIS provides NEPA compliance by assessing the use of certain herbicides to treat undesirable vegetation on public lands administered by the BLM; it provides a broad, comprehensive background source of information to which subsequent environmental analyses can be tiered. Additionally, the PEIS provides a programmatic Endangered Species Act (ESA) Section 7 consultation for the broad range of activities described in the PEIS. In 2015, the St. George Field Office signed a Decision Record, authorizing the use of herbicides on public land in Washington County, as described in the Proposed Action in the St. George Field Office, Red Cliffs National Conservation Area and Beaver Dam Wash National Conservation Area Integrated Weed Management Plan and evaluated in the Programmatic Environmental Assessment. Any use of herbicides in ACECs or elsewhere on public lands would not be authorized until all legal requirements have been met, including the public disclosure of environmental impacts through a project-specific NEPA process and the completion of all consultations mandated by law, such as section 7 consultation under the ESA, where federally-listed species and designated critical habitats could be affected.

Vegetation treatments occurring outside of special-status plant species' habitats also may negatively affect these species by affecting their pollinators. For example rare plant species that are dependent upon pollinators for reproduction are supported by the presence of other, more common plant species that are available as pollinator food throughout the growing season (Tepedino et al. 1997, Coyner and Hreha 1995).

Overall, restoration and re-vegetation treatments associated with weed control efforts would have a generally beneficial effect by attempting to prevent reinfestation of the weeds and improve the resilience of the local plant community. However, non-beneficial effects may also occur as a result of these projects (increases in foot traffic, vehicular traffic, dust, changes to the seed bank, etc.). Consulting with USFWS prior to projects that may affect federally-listed plants will help ensure these projects proceed with minimal risk.

Minerals

The following measures are identified in the BA:

1) The ACEC designation would manage the proposed South Hills and State Line ACECs as Open to fluid mineral leasing with No Surface Occupancy (NSO).

2) The proposed Webb Hill ACEC would be Closed to leasing and Closed to mineral fluid storage.

3) All proposed ACECs are Closed to mineral materials disposal.

4) All ACECs are public lands and thus remain available to mining location.

5) Plans of Operations will be required for any development of any claims in ACECs.

The proposed action would manage the proposed Webb Hill ACEC as closed to mineral material sales and harvesting, protecting listed plants habitat. Closing the proposed Webb Hill ACEC to leasing and mineral fluid storage (oil and gas) and closing all ACECs to mineral materials disposal (saleable minerals) will provide substantial benefit to these listed plants populations by decreasing foot and motorized traffic, dust deposition, invasive and weedy plant pressure, changes to local hydrology, possible contamination of local soils and hydrology, and changes to pollinator communities. Currently, the BLM does not know of any leasable or saleable claims within the proposed Webb Hill ACEC, South Hills ACEC, or State Line ACEC (personal communication, 11/30/16, Bob Douglas).

All ACECs will remain open to mining location under the General Mining Law of 1872 and applicable regulations, except where segregated from mineral entry by law or withdrawn in accordance with applicable law. Locatable minerals include metallic minerals (gold, silver, lead, copper, zinc, nickel, etc.), nonmetallic minerals (fluorspar, mica, certain limestones and gypsum, tantalum, heavy minerals in placer form and gemstones) and certain uncommon variety minerals.

While there may be locatable mining claims in either ACEC, plans of Operation will be required for development of locatable minerals in ACECs. Activities related to locatable minerals may result in increased surface disturbance, increased foot and vehicle traffic, vegetation disturbance, removal of top soil, and overburden. Surface disturbance for locatable minerals can vary by claim). The surface disturbance footprint for locatable minerals can include processing plants, evaporation ponds, equipment maintenance buildings and other support facilities. Potential impacts of locatable minerals mining include mortality of individuals, localized population mortality, habitat loss, degradation and fragmentation, increased soil erosion, reductions in pollinator populations, reductions in plant vigor and reproductive potential, reductions in seed bank quantity and quality, and increasing invasive plant occurrences (Brock and Green 2003; BLM 2008b). There is also the potential for release or exposure to toxic chemicals and wastes.

In the proposed South Hills and State Line ACECs, the NSO stipulation also provides important protection to the species by preventing surface disturbances that could impact listed plants plants and habitat. However, the NSO stipulation may not entirely protect these populations from indirect impacts related to mineral exploration and extraction. For example, even on NSO lands, seismic exploration and fracking activities may occur (discussed in further detail below). Activities occurring under the proposed action may increase foot traffic, motorized traffic, dust deposition, invasive and weedy plant pressure, changes to local hydrology, and changes to pollinator communities in dwarf-bear poppy habitats within the proposed South Hills and State Line ACECs.

Effects to listed plants growth and reproduction may occur from dust deposition as a result of increased traffic during the active growing and flowering season. Road traffic mobilizes and spreads dust on unpaved roads (Farmer 1993; Trombulak and Frissell 2000), and dust accumulation within nearby habitat can negatively affect plant growth and physiology (Eller 1977; Farmer 1993; Hobbs 2001; Spatt and Miller 1981; Sharifi *et al.* 1997; Thompson *et al.* 1984; Trombulak and Frissell 2000, Lewis 2013). The distance from a road at which dust can affect vegetation varies (Everett 1980; Spatt and Miller 1981; Walker and Everett 1987; Santelmann and Gorham 1988; McCrea 1984; Myers-Smith *et al.* 2006, Lewis 2013). Dust from vehicle traffic on dirt roads can travel up to 3,281 ft (1,000 m) from the source (Walker and Everett 1987). Dust related impacts are greatest next to roads and impacts attenuate with distance from roads (references summarized in USFWS 2014).

Dust deposition during the active growing and flowering season from increased traffic can impact listed plants individuals. Dust can clog plant pores, increase leaf temperature, alter photosynthesis, and affect gas and water exchange (Sharifi *et al.* 1997; Ferguson *et al.* 1999; Lewis 2013), thereby negatively affecting plant growth and reproduction though we are not sure to what extent. During the flowering period, dust may negatively impact some plants' reproduction out to a distance of 1,312 ft (400 m) from dirt roads (Lewis 2013). However, we would expect impacts to be greatest within 300 ft (91m) of dirt access roads (Etyemezian *et al.* 2004; Vernath *et al.* 2003; Lewis 2013; Silver 2007). We anticipate dust deposition from minerals exploration will be low.

Seismic activities are temporary actions and leave no permanent structures. While it is unknown which types of seismic exploration will be allowed, the commitments outlined in the BA state these activities could only occur from designated roads in the proposed ACECs affecting listed plants. Seismic exploration for oil and gas is unlikely in the proposed Webb Hill ACEC as the area is closed to leasing and fluid mineral storage. If seismic activities are authorized from a road within known habitat of either ACEC, these activities could disturb listed plants individuals if not detected during site specific surveys.

Oil and gas extraction activities often include fracking. Fracking activities may have 2 possible effects on plants within a NSO ACEC: 1) changes to local hydrological resources through water depletions, 2) contamination of water resources through improper underground mineral fluid storage (Howarth *et al.* 2011, Mehany and Guggemos 2015), and 3) possible seismic events (earthquakes) due to improper or excessive underground water storage (Showstack 2012, Balcerak 2012, Mehany and Guggemos 2015).

Additionally, mineral extraction activities could occur just outside the ACEC boundaries, thus potentially impacting plants within the boundaries. Associated impacts include some potential for: modification or degradation of suitable or occupied habitat outside the ACEC; reductions in the species' fecundity (through dust impacts); loss of species' pollinators nesting habitat, travel corridors, and secondary floral resources; and increased competition from invasive plant species. As a result, there may be decreased recruitment, and increased plant damage and mortality. All of these could have impacts on plants within the ACEC as well.

The Plans of Operation required for development in any ACEC ensure consultation with USFWS and continued protection of federally listed plants and habitats.

Grazing

Within the proposed South Hills and State Line ACECs, all listed plants suitable and occupied habitat is open to livestock use. Livestock use has increased steadily in the State Line population allotments; the State Line population includes the largest Holmgren's milkvetch population and the second largest Geirish mallow population. Livestock use has not occurred in the proposed South Hills ACEC in recent years because of non-use permitting (personal communication, 11/30/2016, Bob Douglas). Livestock use does not occur in the Webb Hill ACEC. If livestock grazing permits are reissued in the proposed South Hills ACEC, effects to dwarf bear-poppies are likely.

The deleterious effects of livestock on western arid ecosystems are well-documented (Clark *et al.* 2015; Jones 2000; Munson *et al* 2016). Trampling by livestock can disturb the biological soil crust layer (Belnap and Gilette 1997) which can result in increased erosion and reductions in soil fertility and soil moisture (Belnap *et al.* 2001; Belnap *et al.* 2009; Kuske *et al.* 2012; Rosentreter *et al.* 2007; Schwinning *et al.* 2008). Biological soil crusts are beneficial for plant establishment and growth (Belnap *et al.* 2001), and may take hundreds of years to recover from disturbance (Belnap 2003). Soil compaction by livestock trampling can affect water infiltration, soil porosity, and root development, making plants less able to take up water and more vulnerable during drought conditions (Castellano and Valone 2007; Sharrow 2007). Livestock grazing can also alter the structure of the rodent community, which may have impacts to plants (Hall *et al.* 2005; Jones 2000; Jones 2001) and facilitate the spread of invasive plant species (Masters and Sheley 2001).

As livestock use an area, they can cause changes to soil structure from trampling the ground and help introduce invasive species which changes the structure of the plant community. This, in turn, can alter the insect community. Some of these changes may include damage to ground-nesting pollinators and their nests, changes in water infiltration due to soil compaction, subsequent nonnative plant invasions, and changes in the timing and availability of pollinator food plants (Jones 2000).

Cattle trampling can result in severe damage to individual plants, particularly in heavily travelled areas such as watering areas, fences, and along trails (Clark *et al.* 2015, Rominger 2016). Dwarf bear-poppy evolutionary and life history traits and their desert habitats generally result in naturally low vital rates. Livestock grazing likely results in suppression of already low population growth rates, through lowered recruitment rates (Clark 2008a; Clark *et al.* 2015; Clark and Clark 2008). Because reproductive effort is positively correlated with size, impacts from livestock grazing that negatively affect size would be expected to negatively affect reproduction and species survival (Clark *et al* 2015). Indeed, State Line Holmgren's milkvetch population experiences heavy livestock grazing that may be driving a significant decline in seedling recruitment for this species. These trampling effects are also likely to affect survival and recruitment of Gierish mallow populations in the proposed State Line ACEC.

Gierisch mallow is palatable to livestock; Holmgren's milkvetch and dwarf bear-poppy are not. Livestock eat the flowering stalks of the Gierisch mallow and consumption of the species is quite heavy during periods of drought (Atwood 2008; USFWS 2008). Continued heavy grazing in the State Line population will increase the consumption and mortality of Gierisch mallow individuals.

Recreation Authorizations

Modify existing off-highway vehicle (OHV) Area Designations

The following measures are identified in the BA:

1) The proposed action would change OHV travel in the proposed South Hills and State Line ACECs from restricted to existing roads and trails to restricted to designated roads and trails.

2) BLM would retain their ability to close routes in sensitive species habitat and in all ACECs (personal communication, 11/30/2016, Bob Douglas). As such, BLM has indicated that the proposed Webb Hill ACEC is closed to all OHV travel.

These designation changes are required prior to development of the Travel Management Plan. Closing the proposed Webb Hill ACEC to OHV travel will benefit listed plants by eliminating a major threat to the species in this area (see below). The proposed action to modify existing off-highway vehicle (OHV) area designations in the proposed South Hills and State Line ACECs would also have beneficial effects, but could also have potentially harmful effects on the listed plants in this area.

A significant stressor to listed plants is OHV use (44 FR 64250-64252, November 6, 1979; USFWS 1985; USFWS 2016). Approximately 50 percent of the poppy's historic habitat has been lost to urbanization and degradation from off-road vehicles (Harper and Van Buren pers. comm. 2004). The proposed limit of use to designated trails is compliant with the goal set out in the listed plants Draft Recovery Plan: (1) effective control of unauthorized land uses, particularly those identified as damaging to listed plants and its habitat, such as OHV and bicycle use. The second goal will be addressed during development of the Travel Management Plan: directing road and trail development away from listed plants recovery populations such that neither construction nor OHV use has a negative effect on the plants or their habitat. Unauthorized OHV use occurs at all known listed plants populations (either where it was prohibited, or off-trail use where OHV travel was restricted to designated routes).

Activities occurring under the proposed action may decrease in areas no longer designated and increase along designated routes. These include: foot traffic, motorized traffic, dust deposition (see Effects of the Action), invasive and weedy plant pressure, and changes to pollinator communities in dwarf-bear poppy habitats within the ACECs. Limiting travel to designated trails also eliminates confusion regarding which trails are already 'existing'. This elimination should benefit listed plants by reducing crushing or damage to individuals, associated plant communities, and biological soil crusts. Habitat fragmentation would also be reduced and non-designated routes that have been impacted in the past would have an opportunity to begin natural or human-assisted recovery.

Impacts from all forms of recreational land use include damage and mortality of individuals, destruction and fragmentation of habitat, soil compaction and erosion, destruction of biological soil crusts, and degradation of the vegetative community (Brooks and Lair 2005; Ouren *et al.* 2007; Roth 2012b). Recreational land use modifies the natural Mojave Desert ecosystem including soil components, biological soil crusts, associated native plant communities, pollinator

communities, and the potential for encroachment of non-native weeds in disturbance areas (Adams *et al.* 1982; Goeft and Alder 2001). Soil compaction and erosion may render the habitat unsuitable for the listed plants and affect future recruitment of the species in some locations. Studies show that the majority of environmental impacts occur within the trail footprint because soil compaction and erosion are generally confined to the existing trail margins with minimal change to adjacent areas (White *et al.* 2006; Goeft and Alder 2001). Recreational land use by OHVs is by far the most common recreational activity impacting listed plants, and nearly all areas of occupied habitat have experienced OHV impact in the past 30 years. Extensive damage to the habitat by OHVs has occurred at Webb Hill and continues to occur within the proposed South Hills ACEC and the proposed State Line ACEC.

Seeds from invasive species are often carried and spread by vehicles (Forman and Alexander 1998) and livestock. The spread of invasive nonnative species is considered the second largest threat to imperiled plants in the United States (Wilcove *et al.* 1998), and is second only to habitat loss as factors responsible for biodiversity declines (Randall 1996). Invasive nonnative plants alter ecosystem attributes including geomorphology, fire regime, hydrology, microclimate, nutrient cycling, and productivity (Dukes and Mooney 2004). We are particularly concerned that fire frequency may increase with the continued pressure of invasive plant species in the proposed Webb Hill and State Line ACECs. Invasive nonnative plants also can detrimentally affect native plants through competitive exclusion, alteration of pollinator behaviors, niche displacement, hybridization, and changes in insect predation. Examples are widespread and involve numerous taxa, locations, and ecosystems (Aguirre and Johnson 1991; D'Antonio and Vitousek 1992; DiTomaso 2000; Melgoza *et al.* 1990; Mooney and Cleland 2001; Levine *et al.* 2003; Traveset and Richardson 2006). Invasive species seed pressure can occur both from roads within the proposed ACECs and roads outside the proposed ACECs. Changes in OHV use as a result of ACEC designation will help reduce this pressure, but will not eliminate it.

Additionally, the proposed Webb Hill ACEC and the proposed State Line ACEC have large populations of the invasive annual grasses red brome (*Bromus rubens*) and cheatgrass (*Bromus tectorum*), as well as other invasive and noxious weeds. Even with OHV closure in the proposed Webb Hill ACEC and road designation in the proposed State Line ACEC, weeds will continue to be a problem. Proactive weed management of the proposed South Hills ACEC, which does not currently have a weed infestation, will help protect listed plants in this area.

Impacts to the land from previous OHV use may last for decades (Abella 2014). The poppy habitat is slow to recover from recreational impacts and visible evidence remains on trails with no recreational land use since 1999. Thus, closing the proposed Webb Hill ACEC to OHV use and modifying existing OHV Area Designations in the proposed South Hills and State Line ACECs will provide an important protection for recovery of the listed plants). The BLM will consider additional protections during the development of their Transportation Management Plan (TMP). The BA states that the TMP will manage any trails with federally listed plant habitat to protect plants and habitat; however, no specific conservation measures are identified in this consultation. The measures we currently recommend are included in the Conservation Recommendation section below.

The BLM will complete a separate Section 7 consultation with USFWS on the specific effects of the TMP. It should also be noted that unauthorized OHV trails multiply on SITLA lands –

fugitive dust and invasive weed pressure from these areas adjacent to the ACECs will also affect plant communities within the ACECs.

Camping, Target Shooting, and Non-motorized recreation

The following measures are identified in the BA:

1) Federally listed plants and habitat would be protected in the proposed ACECs by closing the areas to dispersed camping.

2) The BLM would continue to authorize recreational target shooting in the South Hills ACEC, but would require the removal of all targets, clays, and shells to protect plants and habitat in this area.

The proposed Webb Hill is within the city limits of St. George, which has implemented shooting ordinance restrictions; these ordinances were adopted by BLM for the Webb Hill area through the 1999 RMP. While the proposed State Line ACEC is also partially within the city limits of St. George, the ACEC is not completely banned from shooting and hunting is permitted. However, the BLM is not explicitly authorizing recreational target shooting in the State Line ACEC.

The proposed South Hills and State Line ACECs allow off-trail non-motorized recreation, hunting, and non-motorized wheeled game carriers for game retrieval. These activities can crush and damage plants and associated biological soil crusts. Litter (e.g. spent casings, lost arrows) may also be a concern. The resulting surface disturbance may increase the spread of invasive or noxious weeds and erosion in listed plants habitat.

In the proposed Webb Hill ACEC, the BLM would not authorize Special Recreation Permits (SRPs) for commercial, organized group, or competitive events. The BLM would continue to authorize the issuance of SRPs for commercial, organized group, and competitive events in the proposed South Hills and State Line ACECs. The SRP events increase foot traffic and associated vehicular traffic as well. The BLM has committed to only issuing SRPs in ACECs if site-specific NEPA analysis and Section 7 ESA consultations find that the proposed activities would not result in adverse modification of critical habitats or the damage or loss of the federally-listed native plants.

Closing the proposed ACECs to dispersed camping is an important protection for the listed plants. Regulation and enforcement of this restriction will be critical to ensuring the beneficial effects of this closure. Dispersed camping can crush or remove plants, alter 'safe-site' characteristics (the biological and physical components necessary for a seed in the seedbank to germinate and establish), remove, crush, or destroy biological soil crusts important to this species, increase dust, and increase pressure from invasive and noxious weeds (see Effects of the Action).

Target shooting presumably occurs near designated roads and trails; however, we do not have information of designated target shooting areas within the proposed South Hills ACEC. Target shooting is not explicitly authorized in the State Line ACEC. Due to city ordinances, the proposed Webb Hill ACEC would not allow the discharge of firearms or target shooting.

Effects would be similar to other recreational trail uses, such as hiking (increased foot and vehicle traffic, increased camping). Activity specific effects can include increased crushing or damage to individual plants near the trail (e.g. in areas likely to be used for crouching behind shrubs or other foliage, walking to collect stray or spent arrows or bullets) and increased debris (e.g. arrows, bullets, targets).

Any SRP events in the proposed South Hills and State Line ACECs will compound effects of regular recreation use by increasing use on existing roads and trails and potentially expanding use of campgrounds. The SRP events can impose restrictions on their participants and can be held liable for addressing any infractions that result from the event.

Overall, the proposed action includes conservation measures to avoid and minimize effects to listed plants, reducing overall effects to this species. Impacts to listed plants will be minimized because BLM will: (1) not allow future land exchanges on ACEC lands, providing a federal nexus for the protection of the plants on these lands in perpetuity, (2) not allow minerals material disposal on these lands, (3) not allow surface occupancy for minerals development in ACECs, (4) not allow most new ROWs or road construction, (5) only allow travel on designated roads and trails, (6) not allow dispersed camping, (7) consult with USFWS on any proposed herbicide application in an ACEC and (8) not allow any collecting or harvesting of plant materials within ACECs. While the proposed action will continue to allow effects to the species, we anticipate the overall effect of the proposed action will be beneficial to the species – these actions are an important first step in the protection and recovery of listed plants.

5.0 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.

Shivwits Milkvetch, Dwarf Bear-claw Poppy, Gierisch Globemallow, and Holmgren Milkvetch

Cumulative effects to the listed plant species under the proposed action 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' occupied, suitable, or potential habitat; and
- 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

The RMP action area is surrounded by a checkerboard pattern of land ownership including Tribal, State, and private landowners. The proximity of these lands to these populations of Shivwits milkvetch makes them susceptible to activities on Tribal, State and private lands. Unrelated State, tribal, local or private actions that are most likely to occur in the future within the action area is the continued use and new development of the nearby tribal, private, and SITLA parcels for housing and roads, minerals development, grazing, herbicide and pesticide treatment, agriculture, or recreation. These have resulted in the temporary and permanent loss of native vegetation and the erosion of soils.

St. George and Washington County have changed dramatically over the past 100 years due to increased urbanization; the area continues to see additional urban growth and development. Some of this growth has resulted in the conversion of agricultural land to subdivisions and housing developments and the concomitant development of roads and infrastructure in and around the proposed NCA. Some impacts related to this growth have been detrimental, including increased loss of suitable and occupied habitat within the population, increased soil compaction and invasive and noxious plant species in and adjacent to the action areas, and increased recreational development and recreational use. Direct loss of habitat through land conversion and indirect loss of habitat through erosion and fragmentation continue to impact this species. In addition, any further fragmentation of endangered plant habitat is likely to lead to further genetic isolation of the remaining populations for these species.

On State lands, there is no formal or regulatory protection for the milkvetch and there are no formal enforcement or management measures to protect the species from residential development and recreational land use. Without additional protections, these uses result in the loss of plants and habitat, habitat degradation and fragmentation, and the continual generation of fugitive dust into ESA listed plant habitats. Plant habitat within the action area would also be subject to increased invasive or noxious weed pressure from the surrounding State lands.

Undocumented endangered populations may exist on non-Federal lands. Many activities, including minerals development, grazing operations, housing developments and associated infrastructure, recreation activities (e.g. OHVs, camping, hunting, etc.), unauthorized herbicide control, and research are expected to continue on State and private lands within the Shivwits milkvetch range. These activities may lead to loss of plants, populations, and habitat; habitat fragmentation that may negatively impact the pollinators and gene flow between populations. Building new roads and upgrading two-tracks will likely increase on private and state lands. Unauthorized OHV trails will likely continue and increase. Contributing as cumulative effects to the proposed actions, all these activities may affect endangered plant populations by increasing mortalities, injuring plants, and further impacting occupied and suitable habitat.

Desert Tortoise

Unrelated State, tribal, local or private actions that are most likely to occur in the future within the project area is development of the nearby private parcels. Development on most of those lands is covered and mitigated by the incidental take permit issued for the Washington County Habitat Conservation Plan (HCP).

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Cumulative effects to the federally protected western yellow-billed cuckoo may result from rapid urbanization and population growth that is expected to continue in Washington County. This population growth could affect the species and its habitat in the following ways: 1) conversion of agriculture lands to municipal and industrial may change existing water return-flow patterns; 2) increased storm-water runoff could diminish water quality; 3) population growth will likely result in the need for more bridges, infrastructure, and residential and commercial development, which could affect physical habitat; and 4) recreation use may increase along river banks (OHVs, fish transport, physical disturbance of habitat, etc.).

Virgin River Chub and Woundfin

Cumulative effects to the federally protected Virgin River chub, and woundfin may result from rapid urbanization and population growth that is expected to continue in Washington County. This population growth could affect natural resources in the following ways: 1) conversion of agriculture lands to municipal and industrial may change existing water return-flow patterns; 2) increased stormwater runoff could diminish water quality; 3) population growth will likely result in the need for more bridges, infrastructure, and residential and commercial development which could affect physical habitat; and 4) recreation use may increase along river banks (OHVs, fish transport, physical disturbance of habitat, etc.). Recent efforts to develop Master Plans for the Santa Clara and Virgin Rivers represent a step toward sound river and floodplain management; however, these guiding principles must be continuously implemented on a large scale to achieve success. Moreover, the municipalities, BLM, and WCWCD have been and will continue to acquire riparian habitat, remove non-native vegetation, and restore native vegetation to protect the river corridor from these impacts.

6.0 Conclusion

After reviewing the current status of the listed species, the environmental baseline for the action area, the effects of the proposed RMPs and amendment, it is our biological opinion that the Red Cliffs NCA RMP, Beaver Dam NCA RMP, and St. George Field Office RMP amendment, as proposed, are not likely to jeopardize the continued existence of the the listed species in this BO or destroy or adversely modify designated critical habitat.

We base our conclusion on the following:

Shivwits Milkvetch

1) In the long-term, the proposed Red Cliffs NCA RMP is expected to improve habitat conditions and reduce impacts from linear ROWs, commercial and personal plant material harvest, fluid mineral leasing, mineral extraction, dispersed camping, competitive recreation events, target shooting, and severe wildland fire.
2) BLM's commitment to follow the applicant committed measures of this BO.

Desert Tortoise

1) The management actions described in the submitted BA's are primarily designed to improve habitat conditions and maintain a functioning landscape where desert tortoise conservation is a priority.
2) Some of the management actions defined in the submitted BA's may result in the take of individual tortoises. However, the potential impacts do not pose threats at the population level.
3) The BLM's commitment not to authorize new ROW's within the ROW avoidance area of the Red Cliffs National Conseration Area if the new ROW would result in take of threatened or endangered species.
4) BLM's commitment to follow applicant committed conservation measures in this BO.

Southwestern Willow Flycatcher

1) The lack of critical habitat within the action area.
2) The small segment of population that uses the action area.
3) Management of riparian habitat would be consistent with the Final Recovery Plan: Southwestern Willow Flycatcher (*Empidonax traillii extimus*) (USFWS 2002).
4) The potential for long-term benefits to the species, including habitat restoration and maintenance.
5) BLM's commitment to follow applicant committed conservation measures.

Western Yellow-billed Cuckoo

1) The absence of document occurrences of cuckoo and the small area of potentially suitable habitat.within the Red Cliffs NCA.
2) The potential for long-term benefits to the species, including habitat restoration and maintenance.
3) BLM's commitment to follow Applicant Committed Measures (Management Actions), including the management of riparian areas based on future recovery plans for cuckoo.
4) The small segment of population that uses the Beaver Dam Wash NCA.
5) The potential for long-term benefits to the species, including habitat restoration and maintenance.
6) BLM's commitment to follow Applicant Committed Measures (Management Actions), including the management of riparian areas based on future recovery plans for cuckoo.

Virgin River Chub and Woundfin

1) BLM has excluded any development within 330 ft of riparian areas within the NCA.
2) The only activities with adverse effects to fish or their critical habitat is riparian restoration. Restoration effects will be short-term and will have benefits to fish and their critical habitat long-term.
3) BLM has committed to using approved revegetation techniques to restore temporary impacts along the Virgin River, which is critical habitat for the endangered fish species and the southwestern willow flycatcher;
4) BLM's commitment to follow applicant committed conservation measures in this BO.

Dwarf Bear-Poppy

1) In the long-term, the proposed ACEC designations are expected to improve habitat conditions and reduce impacts from linear ROWs, commercial and personal plant material harvest, fluid mineral leasing, dispersed camping and recreation use.
2) The issuance of Special Recreation Permits for commercial, organized groups and competitive events would not result in the damage or loss of listed plants.
3) BLM's commitment to follow applicant committed conservation measures in this BO.

Holmgren Milkvetch

1) In the long-term, the proposed ACEC designations are expected to improve habitat conditions and reduce impacts from linear ROWs, commercial and personal plant material harvest, fluid mineral leasing, dispersed camping and recreation use.
2) The issuance of Special Recreation Permits for commercial, organized groups and competitive events would not result in the damage or loss of listed plants.
3) BLM's commitment to follow applicant committed conservation measures in this BO.

Gierisch Mallow

1) In the long-term, the proposed ACEC designations are expected to improve habitat conditions and reduce impacts from linear ROWs, commercial and personal plant material harvest, fluid mineral leasing, dispersed camping and recreation use.
2) The issuance of Special Recreation Permits for commercial, organized groups and competitive events would not result in the damage or loss of listed plants.
3) BLM's commitment to follow applicant committed conservation measures in this BO.

7.0 Incidental Take

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. The regulatory definition of harm is "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering." The regulatory definition of harass is "...an intentional or negligent act or omission which creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding or sheltering." Incidental take is defined as "...takings that result from, but are not the purpose of, carrying out of an otherwise lawful activity conducted by the Federal Agency or applicant." Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.
In May, 2015, the Services finalized a new rule regarding incidental take statements in programmatic consultations (50 CFR Part 402, Vol. 80, No. 90). Under this final rule, the Services defined the term *framework programmatic action*: "for the purposes of an incidental take statement, as a Federal action that approves a framework for the development of future actions(s)

that are authorized, funded, or carried out at a later time, and any take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out and subject to further section 7 consultation" (50 CFR Part 402.02 Definitions). The general nature of the the Proposed Resource Management Plan (RMP)/Final EIS for the Red Cliffs National Conservation Area (NCA), the Proposed Resource Management Plan (RMP)/Final EIS for the Beaver Dam Wash National Conservation Area (NCA), and the Proposed St. George Field Office RMP Amendment does not allow the Service to describe and anticipate quantifiable levels of take at this time for any of the species analyzed, and all leases issued would be subject to Section 7 consultation at the site specific level. Thus, the actions proposed by BLM St. George Field Office and analyzed in this BO, fits the definition for a framework programmatic action.

In the new rule, section 402.14 (i)(6) states that "for a framework programmatic action, an incidental take statement is not required at the programmatic level; any incidental take resulting from any action subsequently authorized, funded, or carried out under the program will be addressed in subsequent section 7 consultation, as appropriate". Therefore, incidental take statements for relevant species are not provided in this BO.

8.0 Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Shivwits Milkvetch, Dwarf Bear-claw Poppy, Gierisch Globemallow, Holmgren Milkvetch

1) The following commitment should apply to all ACECs: the St. George 1999 RMP states, "BLM will continue to implement existing recovery plans, habitat management plans, and the Washington County Habitat Conservation Plan as they apply to listed species. Among other things, existing plans call for monitoring and studies, habitat consolidation, selected fencing, public education, signing, law enforcement, and protection from mining, off-road travel, and other forms of impacting land use."

2) Exclude motorized use from ACECs and BLM lands in listed plant occupied habitat and designated critical habitat.

3) Do not authorize existing roads or trails in ACECs and BLM lands in listed plant occupied habitat and designated critical habitat.

4) Frequent law enforcement and regulation should occur at dispersed camping closures in ACECs.

5) Target shooting areas should be developed and clearly marked with signs detailing restrictions outside of listed plant occupied habitat and designated critical habitat.

6) Follow the below measures for listed plants for all proposed surface disturbance activities.

7) Prohibit all seismic exploration in ACECs, and BLM lands within 1.25 miles of listed plant occupied habitat and designated critical habitat.

8) Prohibit energy and mining development in ACECs, and BLM lands within 1.25 miles of listed plant occupied habitat and designated critical habitat.

9) Withdraw ACECs and BLM lands within 1.25 miles of listed plant occupied habitat and designated critical habitat from mineral entry.

10) SRP events should be monitored before, during, and after events to monitor compliance with conservation measures designed to avoid impacts to listed plants. No specific SRP restrictions are included in this BA, and the BLM should develop specific restrictions in consultation with us.

11) Controlling noxious weeds and invasive species in listed plant habitat may negatively impact the species. No specific weed control measures and restrictions are included in this BA, and the BLM should develop specific measures and restrictions in consultation with us.

12) The BLM should consult with us on restoration activities following fire or other surface disturbance within 1 mile of listed plant habitat or designated critical habitat to ensure activities do not negatively impact the species or its pollinators.

Proposed Surface Disturbance Activities

For the purposes of these recommendations, the following terms are so defined: *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 listed plants; habitat descriptions can be found in Federal Register Notice and species' recovery plan links at http://www.fws.gov/endangered/species/. *Occupied habitat* is defined as areas currently or historically known to support listed plants; synonymous with "known habitat."

1) Pre-project habitat assessments will be completed across 100% of the project action area within potential habitat prior to any activities to determine if listed or sensitive species habitat is present.

2) Species surveys 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, a) 1 mile buffer will be maintained between surface disturbance and avoidance areas, or b) 1.25 mile buffers will be maintained between avoidance areas and subsurface disturbance activities (including drilling), water depletions, or other actions that may result in changes to the local hydrology and avoidance areas. However, site specific distances will need to be approved by Service and BLM when surface disturbance will occur upslope of habitat.

Where conditions allow, surveys:

a) Must be conducted by a qualified botanist(s), and according to BLM and FWS accepted survey protocols (USFWS 2011);
b) Will be conducted in suitable 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 positively identified (surveyors should verify flowering dates and that the plant is flowering by contacting a BLM or FWS expert or demonstrating that the nearest known population is in flower);
c) Will occur within 1 mile from the edge of the proposed action;
d) Will occur within 1.25 miles of proposed water depletions or other actions that will result in changes to the local hydrology;
e) Will include, but not be limited to, plant species lists and habitat characteristics, and;
f) Will be valid until June 1st of the following year; and
g) Electronic copies of clearance survey reports (included appendices) and GIS shape files will be sent no later than December 31st to each of the following:
    - Utah Natural Heritage Program (with copies of NHP field survey forms);
    - Applicable/affected land owners and/or management agencies; and
    - U.S. Fish and Wildlife Service Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119).

3) For project activities within 1 mile of suitable or occupied habitat:

a) Aerial application of herbicides or insecticides will not occur at any time;
b) All weed control efforts will be consulted on with USFWS. 100% clearance surveys will be required;
c) Consult with USFWS on any restoration and revegetation projects (including those associated with weed control treatments);
d) No burning, including backburning, will be authorized;
e) No livestock grazing, including targeted grazing;
f) Surface disturbing activities will not occur (including new access routes);
g) Roads and utilities should share common right-of ways where possible;
h) Place signing to limit off-road travel in sensitive areas;
i) Existing roads will be graveled; the operator is encouraged to apply water for dust abatement to such areas during flowering and fruit set period of applicable plants; dust abatement applications will be comprised of water only;
j) Place signing to reduce vehicle speed to 15 mph or lower on dirt or gravel roads within 300 ft of suitable habitat and 25 mph or lower in the project area;
k) Stay on designated routes and other cleared/approved areas;
l) Reduce current infrastructure and right-of-ways to the minimum needed, without compromising safety;
m) Minimize the disturbed areas through interim and final reclamation. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area;

n) Construction activities will not occur within occupied habitat;
o) Before and during activities, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.;
p) A qualified botanist will be on site during activities to monitor the surface disturbance activity and assist with implementation of applicable conservation measures (USFWS 2011); and
q) Post activity monitoring for invasive species will be required.

4) For project activities within 1.25 miles of suitable or occupied habitat:

a) Subsurface activities (including drilling), water depletions, or hydrologic alteration activities will not occur;
b) Ensure that water extraction or disposal practices do not result in change of hydrologic regime;
c) Ensure above ground contaminants and byproducts are contained and properly managed;
d) Use silt fences, hay bales, and similar structures or practices to avoid water flow and/or sedimentation into habitat and avoidance areas; appropriate placement of fill is encouraged; and
e) Subsurface explosives or other ground-shaking actions will not be allowed, unless hydrological and botanical surveys are completed that positively identify no groundwater reserves are present that could be used by associated nurse plants in the area for hydrological lift.

5) All activities that may have some effect on listed species shall be monitored for a period of five years. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to actions. Annual reports shall be provided to the BLM and the Service. 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 Service.

The BLM will work with USFWS to develop restoration plans when there is potential impact to suitable habitat for any listed species. 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 Service to ensure continued compliance with the ESA.

Desert Tortoise

1) Before all ground disturbing activities within desert tortoise habitat, FWS protocol level desert tortoise surveys should be conducted.

2) In addition to the 1:1 mitigation ratio within the Red Cliffs National Conservation Area (for developing new recreation infrastructure), desert tortoise conservation will be the management priority and alternative routes and sites will be considered for new recreation infrastructure that is within high density desert tortoise habitat. This same consideration should be given to high density desert tortoise habitat when developing new recreation

infrastructure within the Beaver Dam Wash National Conservation Area. There should be no net loss of desert tortoise habitat due to the implementation of the two proposed RMP's.

Southwestern Willow Flycatcher

1) Surveys for southwestern willow flycatcher will be conducted according to *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010).

2) We recommend the following for southwestern willow flycatcher:
- Temporary and permanent activities that elevate noise levels greater than 10 dBA above ambient conditions will not occur within 0.25 miles of suitable habitat between April 15-August 15.
- Temporary or permanent structures will not be sited within 0.25 mile of suitable habitat.
- Aerial application of herbicides or insecticides will not occur at any time of the year within 0.5 miles of suitable habitat.
- Mechanical or manual application of herbicides or insecticides will not occur between April 15-August15 within 0.25 miles of suitable habitat.
- Removal of vegetation comprising suitable habitat for the species (e.g. tamarisk, Russian olive, Siberian elm) will not be conducted between April 15-August 15. No more than 10 percent of non-native shrub or tree species targeted for removal will be treated or removed in one year within a habitat patch. Re-vegetation efforts with native shrub and tree species will immediately follow.
- No burning will occur within 0.5 miles of suitable habitat between April 15-August 15.
- No general livestock grazing will occur within suitable habitat.
- No back-burning will occur within 0.5 miles of suitable habitat between April 15-August 15.
- Work will not be permitted within suitable habitat between April 15-August 15 unless protocol level surveys have been completed and the area is deemed unoccupied.

3) BLM will work with USFWS to develop restoration plans when there is potential impact to suitable southwestern willow flycatcher habitat.

Western Yellow-billed Cuckoo

1) Suitable habitat for Western yellow-billed cuckoo will be identified prior to any activity in riparian areas that may increase noise levels or result in surface disturbance. Suitable habitat assessments will be conducted according to Guidelines for the identification of suitable habitat for WYBCU in Utah (USFWS 2015).

2) The survey protocol for western yellow-billed cuckoo was updated in 2016. Future updates are likely. Therefore, we recommend that surveys be conducted according to the most recent version of *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: U.S. Fish and Wildlife Techniques and Methods* (Halterman et al., 2016).

3) Within 0.5 mile of suitable habitat for the species, we recommend the following:

   a. Temporary and permanent activities that elevate noise levels greater than10 dBA beyond ambient conditions will not occur between June 1 – August 31.
   b. Temporary or permanent structures will not be sited within 0.5 mile of suitable habitat.
   c. The aerial application of herbicides or insecticides that may directly or indirectly eradicate prey base for cuckoo will not occur at any time of the year.
   d. Mechanical or manual application of herbicides or insecticides will not occur between June 1 – August 31.
   e. Mechanical vegetation treatment methods, such as mowing or cutting with a chainsaw will not occur during the cuckoo nesting season, June 1 – August 31.
   f. Removal of vegetation comprising suitable habitat for the species (e.g. tamarisk, Russian olive, Siberian elm) will not be conducted between June 1 – August 31. No more than 5 percent of a habitat patch (as defined in our 2015 Suitable Habitat Guidelines) will be treated or removed in one year. Revegetation efforts with native shrub and tree species will immediately follow removal.
   g. Use of fire will not occur between June 1 – August 31.

Virgin River Chub and Woundfin

1) To minimize the potential for impacts to spawning fish (spawning period is April 1 – July 31) and the breeding season for the Southwestern willow flycatcher (breeding period is April 15 – August 15), actions within the Virgin River channel or within the Virgin River 100-year floodplain will not occur between April 1 and August 15. During this timeframe, construction actions may occur above the Virgin River's 100-year floodplain.

2) Dewatering and Fish Clearances – To minimize adverse effects to the aquatic environment from in-water construction, construction crews will dewater areas using cofferdams or other water control structures prior to construction. Prior to dewatering, the applicant should contact UDWR (currently Melinda Bennion, 435-879-8694) to arrange fish clearance at each respective site. Biologists will prepare a report for USFWS and UDWR that summarizes the number of fish handled, species, and individual lengths. After construction, construction crews will remove cofferdams incrementally to minimize pulses of sediment downstream.

3) In-water work protection measures for fish protection will include the following:

   - Fish clearance prior to river diversion.
   - If water is pumped out of the dewatering area it will be pumped into a stilling basin prior to entering back in the Virgin River.

   - Follow the chemical pollution prevention measures included below.
   - No additional disturbance should occur outside of the fish clearance area without prior notification and additional fish clearance.

4) The qualifications of any organization conducting fish clearances, with the exception of the UDWR, must be approved and permitted by us prior to any activities associated with the fish clearances.

5) Construction activities will maintain upstream and downstream fish passage when working on the river and will ensure fish passage in the river channel where work is completed on water diversions.

6) All temporary water intake pipes and water diversion structures will be fitted with fish screens to minimize fish mortality.

7) The design will include the installation of non-native fish protection measures (geotextile) at the base of any riprap wall to prevent creating non-native fish habitat in the river channel. This geotextile will be wrapped into the riprap (riprap installed on the top) to prevent unraveling in the flowing stream channel.

8) Construction activities in designated critical habitat for woundfin and Virgin River chub will not occur during active flooding events (when the water level rises more than 6 inches above the normal wetted channel).

9) Erosion control will be provided on all cut-and-fill slopes with exposed bare soil by applying compost or mulch to the slope or through other means. Native vegetation will be established on the slope where possible.

10) Large equipment will be used in floodplains only when necessary.

11) The contractor or responsible representative will minimize sedimentation resulting from bank or stream bed disturbance.

12) The contractor or responsible representative will operate equipment from the top of the bank or from the channel behind a cofferdam to minimize disturbance to the riparian area and to protect stream banks.

13) The contractor or responsible representative will minimize channel crossing and will not cross or disturb wetlands with heavy equipment.

14) The contractor or responsible representative will remove all construction material from the active channel and the 100-year floodplain at the end of the project.

15) All staging areas will be located outside of the Virgin River's 100-year floodplain in previously disturbed sites.

16) BLM or other responsible representative will identify and minimize the potential for accidental spills of hazardous materials by implementing BMPs and measures specified in

the storm water pollution prevention plan (SWPPP). BLM will develop a spill prevention, control, and countermeasures (SPCC) plan and will follow it during construction. This plan will identify riparian zones and drainages and describe measures to ensure protection. This plan will be implemented to identify and protect sensitive resources through applicable BMPs. The SPCC and SWPPP will address the following issues:

- Provide the contractor with a list of specific requirements for refueling construction equipment near riparian zones and water bodies, which could include washing equipment, not refueling within 100 ft of water bodies, and steps to control, contain, and clean up any spill that occurs.
- Designate riparian zones and drainages by staking and flagging them.
- Ensure that equipment operating near aquatic habitat contains a hazardous materials response kit to prevent impacts to aquatic habitat. Use equipment mats to prevent fuel and contaminant leakages from entering the river.

17) Concrete, grout, cement mortar, and solid and source site materials will be stored in staging areas away from the 100-year floodplain. The contractor or responsible representative shall provide watertight tanks or barrels for the storage and disposal of chemical pollutants, including those that are produced as byproducts of the construction activities, such as drained lubricating or transmission fluids, grease, soaps, or concrete. Upon completion of construction work, these containers will be removed. Fueling machinery will occur off site or in a confined, designated area to prevent spillage into the Virgin River. In case of emergency, a hazardous materials spill kit will be kept on site during construction that is appropriate for the solvents involved in operation and maintenance of vehicles and machinery used during the Project. Sanitary facilities, such as chemical toilets, will be located at a sufficient distance from the wetted channel to prevent water contamination. At the completion of construction activities, facilities will be disposed of without causing pollution to the river or soils.

18) The contractor or responsible representative will not dispose of or place any excavated material and/or construction debris into any stream channel, flowing waters, or adjacent wetlands; this includes material such as grease, oil, joint coating, or any other possible pollutants. Excess soil material will be disposed of at an upland site away from any channel or habitat of a federally listed or sensitive species.

19) Broadcast applications of herbicide is prohibited within the Virgin River's 100-year floodplain; if necessary, spot treatments will be applied by hand using herbicides approved for aquatic habitats by the U.S. Environmental Protection Agency in order to treat noxious weeds within the floodplain.

20) All revegetation work will be implemented as described below and in coordination with the Virgin River Program Local Coordinator (currently Steve Meismer, 435-673-3617). Furthermore, this work will be consistent with the Virgin River Master Plan (VRMP). Appropriate specifications can also be obtained from the Utah Pollutant Discharge

Elimination System (UPDES) Permit as long as this information does not conflict with the revegetation specifications below or with the Virgin River Program recommendations.

21) Revegetation will occur in all areas disturbed by Project activities including but not limited to staging/stockpile areas, active construction sites, access corridors, and burrow/disposal sites. The planting success criteria and monitoring will be coordinated with the Virgin River Program and us. Monitoring will occur for three years following construction completion and BLM will follow-up on future revegetation needs if the planting is not successful.

22) Native grasses, forbs, shrubs, and certified weed-free native seed will be used to reseed disturbed soils as appropriate.

23) Riparian vegetation, consisting of vegetation dormant season pole plantings of coyote willow (*Salix exigua*), Fremont cottonwood (*Populus fremontii*), Goodings willow (*Salix gooddingii*), and/or seepwillow (*Baccharis salicifolia*), will be planted using the methods described below.

24) All pole plantings will use dormant cuttings from all species listed above and will be planted in the bank and lower overbank zones. Pole plantings utilize multiple stems that are planted into holes excavated by an auger (chainsaw or equipment mounted). Pole plantings for coyote willow and seepwillow will have 3 cuttings of the same species per hole and will be spaced 12 ft on center. Multiple rows will be staggered. Cuttings will be buried no less than 4 ft into the ground, to reach the lowest water table of the year. With stems placed into the open hole, good soil-to-stem contact will be achieved by filling the hole with mud-water slurry. Good soil-to-stem contact promotes root development. Once buried, stems will be cut to leave approximately 6-8 inches of stem above ground surface. Goodings willow and cottonwood cuttings will be planted immediately adjacent to the toe of the bank stabilization, with willows closer to the stream. These species may be planted as single poles with 1-2 coyote willow stems in the hole as well. Longer cottonwood poles (3-4 ft longer than the depth to water surface) can be planted behind bank stabilization and within gabion blankets and baskets.

25) Tamarisk, Russian olive, arundo and other invasive plant species should be treated prior to the beginning of construction in order to prevent the spread of viable seeds and vegetative material.

26) If bank stabilization and erosion control structures are necessary, they should be properly designed to maintain or enhance natural stream function (sinuosity, gradient, hydrology, and sediment transport).

27) Concrete, asphalt, steel or other human-made materials should not be used for bank stabilization or in the active stream channel. Boulders, root-wads and other natural materials found locally should be used to stabilize stream banks.

28) If construction materials are displaced by high flow, the applicant will contact the USFWS, Utah Field Office (currently Mr. George Weekley, 801-975-3330; ext. 137) or the Virgin River Program (currently Mr. Steve Meismer, 435-673-3617; Virgin River Program) as soon as possible to coordinate the least intrusive retrieval methods.

29) Confine construction activities and equipment to the designated construction work areas. These areas will be designated by lathes and flagging. Construction activities will be contained in these areas. New areas will need approval.

30) Ingress and egress access should be kept to a minimum.

31) Best management construction practices will be used to limit the release of fine sediment into the Virgin River during construction in areas adjacent to the river. BMPs include the use of silt-free fill, riprap (if used for rock slope protection), and silt barriers.

32) A construction SWPPP will be developed to prevent pollutants from being introduced into the river due to construction.

33) Equipment will be cleaned to remove noxious weeds and seeds and petroleum products before being moved onsite.

34) Materials will not be stockpiled immediately adjacent to the river channel.

35) Fill materials will be free of fines, waste, pollutants, and noxious weeds.

36) Sort excavated soils into mineral soils and top soils. When backfilling a disturbed site, place top soils on top to provide a seed bed for native plants.

37) Disturbed areas will be monitored for noxious and undesirable plant species, and control actions will be implemented if necessary for three years following construction completion. Disturbed areas will be revegetated when appropriate after construction with native plants or certified weed-free native seed. Planting success will be monitored, and, if the planting fails, it will be reseeded or replanted.

9.0 Reporting Requirements

Upon locating dead fish, wildlife, or plant species, where human activity is suspected as a possible cause, immediate notification must be made to the Service's Salt Lake City Field Office at (801) 975-3330 and the Service's Division of Law Enforcement, (435) 734-6446. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to the Service. Instructions for proper care, handling, transport, and disposition of such specimens will be issued by the Service's Division of Law Enforcement.

10.0 Reinitiation – Closing Statement

This concludes formal consultation on the action outlined in your request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action was retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect 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; or (3) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations

causing such take must cease pending reinitiation.

We appreciate your commitment in the conservation of endangered species. If the Proposed Resource Management Plan (RMP)/Final EIS for the Red Cliffs National Conservation Area (NCA), the Proposed Resource Management Plan (RMP)/Final EIS for the Beaver Dam Wash National Conservation Area (NCA), and the Proposed St. George Field Office RMP Amendment affects listed species differently than identified above; it may become necessary to reinitiate section 7 consultation. If you require further assistance or have any questions, please contact Nathan Brown at (435) 865-3763.

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Shivwits Milkvetch

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ATTACHMENT A

EFFECTS OF THE PROPOSED NORTHERN TRANSPORTATION ROUTE ON THE THREATENED MOJAVE DESERT TORTOISE

U.S. Fish and Wildlife Service
Utah Ecological Services Field Office
November 2015

Introduction

Washington County, Utah has proposed a northern transportation route multi-lane highway that would bisect Zone 3 of the Red Cliffs Desert Reserve (Figure 1). The Red Cliffs Desert Reserve was established in 1996 to protect a large, diverse, and functional expanse of habitat capable of sustaining wildlife populations otherwise threatened by rapid development and habitat loss. The Red Cliffs Desert Reserve was established as part of the requirements of the 1996 Washington County Habitat Conservation Plan (HCP), as compensation for impacts to the desert tortoise from these ongoing habitat losses.

The Red Cliffs Desert Reserve is also part of the Bureau of Land Management (BLM) Red Cliffs National Conservation Area (NCA) that was established by the Omnibus Public Lands Management Act of 2009 (OPLMA) to conserve, protect, and enhance the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of its public lands. Section 1974 (d)(1) of OPLMA mandates the Secretary, through BLM, to develop a comprehensive resource management plan (RMP) for the Red Cliffs NCA to in part protect threatened or endangered species that occur within the NCA, including the threatened desert tortoise (BLM 2015). Alternative D of the Draft RMP includes Washington County's proposal to construct a northern transportation route through Zone 3 of the Red Cliffs Desert Reserve (Figure 1), which would have negative impacts on the area's natural resources, including the desert tortoise (see Analyses of Effects of Roadways to Desert Tortoises, below; BLM 2015).

The Red Cliffs Desert Reserve is part of the Upper Virgin River recovery unit for the desert tortoise, which is the smallest recovery unit in the species' range. However, the recovery unit is of high importance to the rangewide status of the species due to its high population densities of desert tortoises. The approximately 30,000 acres of protected tortoise habitat within the Red Cliffs Desert Reserve is a fragile cornerstone of the Upper Virgin River Recovery Unit, and this habitat is subjected to significant pressures associated with residential and commercial development, including associated infrastructure.

The tortoise population within Red Cliffs Desert Reserve has recently declined in association with extended drought and an outbreak of upper respiratory tract disease. In 2005, wildfires burned about 20% of the tortoise habitat within the reserve (McLuckie et al 2007). These cumulative effects mean that the preservation and enhancement of remaining habitats is of high importance for the long-term viability of desert tortoises in the Red Cliffs Desert Reserve and the Upper Virgin River recovery unit.

This paper presents our analysis of the effects of roads, and specifically the proposed northern transportation route, to the Mojave desert tortoise. We provide our assessment of a recent Washington Parkway (i.e., northern transportation route) study that concluded that it may be possible to develop a new transportation corridor that would improve conditions on the Reserve

(Jacobs and Logan Simpson Design 2012). We also evaluate the proposed development of a northern transportation route relative to consistency with existing land use planning efforts; i.e., Washington County HCP and Red Cliffs NCA. Finally, we provide our conclusion and recommendations for the ongoing decision process regarding the proposed northern transportation route.

Analyses of Effects of Roadways to Desert Tortoises

Paved highways have significant impacts on desert tortoise populations and habitat. Roads fragment habitat and facilitate invasion of non-native vegetation (U.S. Fish and Wildlife Service (USFWS) 2011). Desert tortoises are killed by vehicle traffic. Highways also provide access to remote areas for collectors, vandals, and poachers. Overall, the desert tortoise recovery plan recommends precluding land disturbances within tortoise conservation areas, including the construction of roads or other linear facilities (USFWS 2011).

Road Mortality

Substantial numbers of desert tortoises are killed on paved roads (Boarman 2002, USFWS 2011). In the central Mojave Desert, at least one adult tortoise is killed per 2.0 mile (3.2 kilometer (km)) of road per year along a heavily traveled road (Boarman and Sazaki 1996). The numbers of juveniles killed likely goes underestimated due to the difficulty in locating them because of their small size (Boarman and Sazaki 1996). Fencing has been used to successfully reduce highway mortality of desert tortoises; however, fencing may increase the effects of habitat fragmentation to desert tortoise populations (Boarman and Sazaki 1996, Boarman 2002, Nafus et al. 2013; see *Habitat Fragmentation and Population Viability*, below).

Road Effect Zone

Roads result in reduced desert tortoise population densities in a zone extending at least 437 yards (400 meters (m)) from roadways (Boarman and Sazaki 2006, Nafus et al. 2013), and as far as 2.8 mi (4.6 km) (Von Seckendorff Hoff and Marlow 1997).

High traffic volumes can exacerbate the road effect zone (Boarman and Sazaki 2006). For example, the relative abundance of tortoise sign and burrows are significantly lower along intermediate (30-60 vehicles per day) and high traffic volume (320-1100 vehicles per day) roads as compared to low traffic volume roads (<1 vehicle per day) (von Seckendorff Hoff and Marlow 2002, Nafus et al. 2013). Adult tortoises located near high traffic roads were at least 30% smaller (and below the typical size for sexual maturity) than tortoises associated with lower traffic volumes or no roads (Nafus et al. 2013). A reduction in the average size of individuals may result in lower population growth rates. Overall, these observations may indicate that habitat near roads used by as few as 300 vehicles per day represents sink habitat for desert tortoises (Nafus et al. 2013).

The reasons for reduced tortoise population densities and changed demographic structure adjacent to the roads is not known, but highway mortalities likely play a role (Boarman and Sazaki 2006, Nafus et al. 2013). However, roads also provide access to remote areas for poachers; create high noise conditions; fragment habitat; and facilitate the invasion of non-native vegetation (Boarman 2002; U.S. Fish and Wildlife Service (USFWS 2011)), as we further describe below. These

factors may individually or cumulatively negatively affect tortoise populations adjacent to roads. More study is warranted regarding the factors that result in reduced tortoise densities adjacent to roads.

Habitat Fragmentation and Population Viability

Infrastructure such as fencing and roads can greatly inhibit desert tortoise movements, resulting in population and habitat fragmentation (Edwards et al. 2004, Brooks and Lair 2005, Boarman and Sazaki 1996). These barriers to movement and population connectivity reduce the exchange of genetic material, which can lead to inbreeding (Boarman and Sazaki 1996). Effects of inbreeding may take decades to be manifested in a tortoise population. However, demographic effects such as population declines due to reduced immigration and emigration, especially in already small populations, would happen on much quicker timescales, as described below.

Our 1994 desert tortoise recovery plan included a minimum viable population study for the Mojave population of the desert tortoise, concluding that effective reserves should be 1,000 square miles and support 10,000-20,000 tortoises (i.e., a minimum 10 adults per square mile) (USFWS 1994; USFWS 1995, Washington County HCP Steering Committee (WCHCP) 1995). In all of Washington County, an estimated 10,491 tortoises existed on 192 square miles when the Washington County HCP was developed (USFWS 1995, WCHCP 1995).

It has long been acknowledged that the Red Cliffs Desert Reserve is small (95 square miles) and does not achieve the desired size for tortoise reserves (USFWS 1995). However, viable populations can persist if active management and protection of populations and habitat is achieved—i.e., through establishment and management of the Red Cliffs Desert Reserve (USFWS 1995). Overall, we conclude that populations of at least 10,000 adult tortoises are more likely to remain viable in the long term, but populations as low as 2,000 adult tortoises may only be viable under concerted management efforts. Population segments with fewer tortoises than 2,000 are unlikely to remain viable even with intensive management.

The Red Cliffs Desert Reserve is already fragmented by Interstate Highway 15, State Road (SR) 18, Red Hills Parkway, Cottonwood Road, and the rapidly growing St. George and neighboring urban areas. These linear features and ongoing urban development have resulted in the segmentation of the Red Cliffs Desert Reserve into five desert tortoise populations: Zones 1 and 2 are contiguous but are separated from Zone 3 by SR-18 and desert tortoise fencing (see Figure 1). Zones 4 and 5 are separated from Zone 3 by I-15 (and tortoise fencing) and from each other by the Virgin River (see Figure 1).

Zone 3 (i.e., the location of the proposed northern transportation route) represents the largest section of contiguous habitat with the highest densities of tortoises in the Red Cliffs Desert Reserve. Only Zone 3 comes close to attaining a tortoise population of 2,000 animals. A recent population decline has resulted in abundances that fall short of the 2,000-animal goal (Table 1). However, the estimated population was over 2,400 animals each year from 1998-2001 (Mcluckie et al. 2015). Therefore, we can reasonably expect that management actions should still target sustaining a population of 2,000 animals in Zone 3. The ability for Zone 3 to maintain viable desert tortoise populations long-term relies at a minimum on 1) avoiding the placement of any additional features that would result in added habitat fragmentation and 2) reducing existing habitat fragmentation.

Table 1. Zone 3 Subunits

Subunit	Area (km^2)	1999 Abundance*	2014 Abundance
A	21.18	515	242
B**	4.41	107	50
A + B	25.59	622	292
E	1.98	48	23
C	64.31	1563	733
D	7.18	175	82
C + D	71.49	1738	815

*Tortoise abundance numbers are based on estimates of densities in Zone 3 of the Red Cliffs Desert Reserve. Density=24.3 tortoises/km2 in 1999 and 11.4 tortoises/km2 in 2013 (McLuckie et al. 2015).
** Subunits south of proposed northern transportation highway route are highlighted yellow.

However, populations within Zone 3 are fragmented into three population subunits by the Red Hills Parkway, Cottonwood Road, and tortoise fencing (see Table 1, Figure 2), across which tortoises do not readily interact (McLuckie 2015, pers. comm.): subunits (A+B), (C+D), and E (Figure 2.) In order to reach and sustain a minimum population of 2,000 adult animals that genetically interact in Zone 3 of the reserve, connectivity needs to be established: 1) across Cottonwood Road, linking subunits (A+B) and (C+D), and 2) across the Red Hills Parkway, linking subunits (A+B) and E.

If the proposed northern transportation route is constructed, the population in Zone 3 that is currently fragmented into three separate populations (subunits (A+B) , (C+D), and E) would be segmented into five populations subunits A, B, C, D, & E; (see Figure 2) . This would further reduce the ability for Zone 3 to achieve a genetically connected minimum viable population goal of 2,000 adult animals. Establishing renewed connectivity across the subunits (rather than further fragmenting habitats with a new road) will be important to assure long-term viability of the population.

The remaining Zones 1, 2, 4, and 5 of the Red Cliffs Desert Reserve essentially serve as "assurance" satellite reserves. They are small in size and support very low tortoise population numbers (WCHCP 1995) with the exception of Zone 4 which has relatively higher tortoise populations due to the fact that the population is supplemented by tortoise translocations from incidental take areas. Overall, the small size and low population densities of Zones 1, 2, 4, and 5, means that the long-term management and successful conservation of Zone 3 is of paramount importance to the success of the Red Cliffs Desert Reserve and the viability of the Upper Virgin River desert tortoise recovery unit

As described above (see *Road Mortality*), tortoise fencing may reduce mortality of desert tortoises (Boarman et al. 1997), and tortoises have been documented to use culverts to cross beneath roadways (Boarman et al. 1998). The degree to which fencing and culverts mitigate the

population- and habitat-fragmenting effects of roads remains unknown (Nafus et al. 2013). Information is lacking to enable us to design structures that ensure demographic and genetic connectivity of tortoise populations.

Fences can transform a semipermeable barrier into an impermeable one, thereby further fragmenting populations and subsequently increasing extinction risk (Nafus et al. 2013). For example, within Zone 3 there is no evidence that desert tortoises use the five existing culverts across Red Hills Parkway for dispersal; remote camera documentation shows that tortoises only use these culverts as burrows or temporary shade (McLuckie 2015, pers. comm.). The Red Hills Parkway is similar or smaller in length and width as the proposed northern transportation route would be; therefore the lack of effectiveness of culverts would likely be the same. Long-term, genetic divergence occurs within desert tortoise populations separated by highways, even where culverts are present (Latch et al. 2011).

Almost the entire available, important desert tortoise habitat was already set aside as part of the Red Cliffs Desert Reserve to compensate for impacts to tortoises from residential and commercial development. We do not believe there is sufficient additional high quality tortoise habitat that could be protected and managed as adequate mitigation for the loss of habitat and population connectivity associated with the construction of a northern transportation route through Zone 3.

In summary, the only way to sustain a viable population of tortoises within the Red Cliffs Desert Reserve is to ensure that habitat connectivity is retained and improved between subunits. Zone 3 is the largest and most contiguous portion of the Red Cliffs Desert Reserve and supports the largest population densities. The proposed northern transportation route would further fragment Zone 3 and severely hinder our ability to ensure a viable desert tortoise population. There are no known methods to minimize or mitigate the habitat and population fragmenting effects of a new highway in Zone 3. The use of fencing and culverts cannot be considered a viable strategy to offset the effects of desert tortoise habitat and population fragmentation that would result from the construction of a northern transportation route (see Assessment of the Washington Parkway Study, below).

Invasive Species and Fire

One hundred sixteen species of non-native plants occur in the Mojave and Colorado Deserts (Brooks and Esque 2002). As natural areas are impacted by linear features such as roads, routes, trails, and railroads, previously intact, contiguous habitats become degraded and fragmented, and non-native invasive species play a more dominant role in ecosystem dynamics (USFWS 2011).

Paved roads and highways act as conduits for plant invasions into adjacent plant communities, with greater cover and species richness of invasive plants along road verges, when compared to unimproved roads (Gelbard and Belnap 2003). For example, road corridors and their associated disturbance to habitat is a primary pathway for red brome (*Bromus rubens*) invasion, and other exotic plant invasions into the Mojave desert (Hunter 1991, Gelbard and Belnap 2003). Non-native, invasive species and edge-associated species often become dominant along linear features (e.g., roads), which serve as corridors for weed dispersal (Boarman and Sazaki 2006; Brooks 2003). Vehicles serve as a major vector in dispersal of non-native species along roadways (Brooks and Lair 2005; Von der Lippe and Kowarik 2007).

Areas with high road density tend to have more exotic species than areas with low road density (Dark 2004). Heavily traveled roads are positively correlated with nitrogen pollution, increased levels of soil nitrogen, and also produce gradients of heavy metal accumulation in the soil and plants (Brooks and Lair 2005). These nutrient and metal inputs affected the growth and composition of plants up to 200 meters away from a highway (Angold 1997). Plants that are better competitors for those nutrient additions, respond positively with increased biomass and density (Angold 1997, Brooks 2003, Brooks and Lair 2005). In nitrogen-limited dryland systems, even small increases in nitrogen facilitate the invasion of weed species (Brooks 2003, Chambers et al. 2007, James et al. 2008). In the Mojave Desert, soil nitrogen additions result in an increased density and biomass of invasive annual plants, with a concurrent decrease in density, biomass and species richness for native plant species (Brooks 2003).

Overall, the cover and richness of non-native plant species increases as distance from the road decreases (Boarman and Sazaki 2006). Similarly, less desert tortoise sign is observed closer to roads as compared to further away (LaRue 1993; Boarman et al. 1997; von Seckendorff Hoff and Marlow 2002; Boarman and Sazaki 2006; also see *Road Effect Zone*, above).

All ecological systems in the Red Cliffs NCA are highly departed from their natural range of variability due to the presence of non-native grasses and forbs (Provencher et al. 2011). The proliferation of non-native plant species has contributed to an increase in fire frequency in tortoise habitat (USFWS 1994; Brooks 1998; Brown and Minnich 1986).

Recurrent fires negatively affect the desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002). Large areas of each NCA burned 2005-06, and thereby converted from shrub to annual non-native grassland and forbland (Provencher et al. 2011); about 20% of the tortoise habitat within the Red Cliffs Desert Reserve burned (McLuckie et al. 2007).

Any purported" benefit" of the northern transportation route serving as a fire break (see Assessment of the Washington Parkway Study, below) would be nullified because the highway becomes a seed source and establishment zone for non-native vegetation. The highway would likely increase the occurrence of non-native invasive plant species and consequently increase the risk of catastrophic fire in the Red Cliffs Desert Reserve.

Controlling invasive weed species is difficult. Prevention should be the first line of defense and is the most cost-effective strategy against invasive species because well-established infestations are difficult to eradicate (Transportation Research Board 2006). Control after weeds have established or gone to seed may begin a long process, because many seeds are viable for years (Transportation Research Board 2006).

Increased Human Access

Direct take of desert tortoises by collectors and pet owners has played a role in the population decline in the Red Cliffs Desert Reserve (McLuckie et al. 2015). Law enforcement officials have documented illegal collecting of tortoises for food or cultural ceremonies on a few occasions (USFWS 1994). There are pending law enforcement investigations where desert tortoises were illegally collected directly adjacent to existing roadways that bisect the Red Cliffs Desert Reserve (McLuckie 2015, pers. comm.).

Highways can result in an increased access point as people park their cars along the shoulders and walk into adjacent habitats (LaRue 1993). The construction of a northern transportation route multi-lane highway through the heart of the Red Cliffs Desert Reserve could increase the potential for the illegal collection and removal of desert tortoises by providing increased human access.

It is possible that human access could be minimized by avoiding the construction of exits and vehicle pull-offs, and fencing the highway right-of-way. However, as previously described, fencing of a new highway would result in the unmitigable effects of increased habitat fragmentation within Zone 3 of the Red Cliffs Desert Reserve (see *Habitat Fragmentation and Population Viability*, above).

Increased Predation

Desert tortoises have several natural predators including: coyotes, kit foxes, feral dogs, bobcats, skunks, badgers, common ravens, hawks, and golden eagles. Predation by native predators alone would not be expected to cause dramatic population declines of desert tortoise populations (USFWS 2011). However, linear features such as roads can serve as corridors that increase the dispersal of predators (Boarman 2002).

Linear features (e.g. utility corridors and roads) attract avian predators, including ravens, red-tailed hawks, and turkey vultures (Knight & Kawashima 1993, Boarman & Berry 1995, Boarman et al 1995, Knight et al 1999).
The presence of roads may encourage such opportunistic species because road-killed animals are a reliable food source (Camp et al. 1993; Knight & Kawashima 1993). Barrier fences can be used to reduce road-kills, and consequently remove this as a food source for ravens and other predators (Boarman and Sazaki 1996). However, as described above (see *Habitat Fragmentation and Population Viability*), fencing would result in the unmitigable effects of increased habitat fragmentation within Zone 3 of the Red Cliffs Desert Reserve.

In addition, roads can result in induced residential and commercial development (see *Induced Growth*, below) with subsequent increases in predation. For example, in the Mojave Desert, raven populations increased by more than 1000 percent over the past 25 years due to the increase of human-provided food resources (Boarman 2003). Ravens obtain food in the form of organic garbage from landfills and trash containers, water from sewage ponds and municipal areas, and nesting substrates on billboards, utility towers, bridges, and buildings (Boarman 2002, Boarman et al. 2006).

Management actions to reduce raven populations and predation of tortoises include (1) managing raven populations by reducing access to anthropogenic resources; (2) removing offending ravens or other birds in specially targeted tortoise management zones; and (3) continuing research. However, not all of these actions are sufficient to significantly reduce the problem of increased raven predation in developing areas. For example, there is little value in modifying structures to prevent perching because ravens hunt primarily on the wing (Boarman 2003). There is also no evidence that lethal removal will have a long-lasting effect on raven population levels, raven foraging behavior, or survival of juvenile tortoises (Boarman 2003).

Overall, the construction and operation of a northern transportation route through the Red Cliffs Desert Reserve will increase the predation risk of desert tortoises due to its ability to provide a dispersal corridor for predators and the availability of increased road-kill animals for predators to scavenge. A fenced highway corridor, while it may reduce the availability of road-kill animals, would result in the unmitigable effect of increased habitat fragmentation of Zone 3. Our recommended recovery actions for the Mojave desert tortoise include management actions to reduce human features that increase predator populations (USFWS 2011).

Induced Growth

The proposed northern transportation route may cause induced growth on private lands in the Red Cliffs Desert Reserve. Not all of the private lands have been acquired and protected (Figure 3). A new highway could result in landowners selling their properties to commercial developers with ensuing land use changes, timing, and rate of change given the current absence of paved access across this area. The potential for new interchange locations or points of access may also increase residential and commercial growth in these areas. The Endangered Species Act regulations require analyses and minimization of indirect effects, including growth and development associated with new highways (National Wildlife Federation v. Coleman, 5th Circuit March 25, 1976).

As described above, we conclude that it would not be possible to minimize the effects to desert tortoises of a northern transportation route in this area to the extent needed to preserve the biological and ecological integrity of the ecosystem due to effects of habitat and population fragmentation, invasive species, increased human access, and increased predation (see *Increased Predation*, above); all of which would be increased by induced growth.

Noise

The 1994 Recovery Plan cited noise and vibration as having potentially significant effects on the desert tortoise's behavior, communication, and hearing apparatus (USFWS 1994). While there are no studies regarding the effects of road noise to desert tortoise populations (see *Road Effect Zone*, above), a large number of other vertebrate species are significantly negatively affected by road noise (Reijnen and Foppen 2006, Fahrig and Rytwinski 2009, Benitez-Lopez et al. 2010, Rytwinski and Fahrig 2012). Therefore, any evaluation of a northern transportation route through the Red Cliffs Desert Reserve should consider the potential effects of road noise to desert tortoises and other wildlife species for which the Red Cliffs NCA provides important habitat.

As described in our 1994 desert tortoise recovery plan (USFWS 1994) and reiterated in Boarman 2002:

Anthropogenic noise and vibrations may impact tortoises in several ways including: disruption of communication, and damage to the auditory system. Background noise may mask important vocal signals in insects and amphibians (e.g., bushcrickets (Bailey and Morris 1986) and green treefrogs (Ehret and Gerhardt 1980). Hierarchical social interactions, hearing, and vocal communication have all been identified in desert tortoises (Adrian et al. 1938, Campbell and Evans 1967, Patterson 1976, and Brattstrom 1974, Bowles et al. 1999).

Many anthropogenic noises, such as automobile, jet, and train noises cover a wide frequency bandwidth. When such sounds propagate through the environment, the high frequencies rapidly attenuate, but the low frequencies may travel great distances (Lyon, 1973). The dominant frequencies that remain after propagation correspond closely to the frequency bandwidth characteristic of desert tortoise vocalizations. Therefore, masking of these signals may significantly alter an animal's ability to effectively communicate or respond in appropriate ways.

The same holds true for incidental sounds made by approaching predators; masking of these sounds may reduce a tortoise's ability to avoid capture by the predator. The degree to which masking by noise affects tortoise survival and reproduction depends on the physical characteristics (i.e., frequency, amplitude, and short- and long-term timing) of the noise and the animal signal, propagation characteristics of the sounds in the particular environment, auditory acuities of the tortoises, and importance of the signal in mediating social or predator interactions.

There are no studies to test the masking effect of noise on tortoise behavior, but the effect is likely to be relatively low given that vocal communication is probably not extremely important in mediating social interactions and that noises loud enough to mask sounds important to tortoises are generally uncommon and short in duration. However, the noise would be continuous enough alongside heavily traveled roads to result in effects to tortoise behavior.

Loud noises (and associated vibrations) also may damage the hearing apparatus of tortoises. Little research has been performed on tortoise ears, but it is clear that tortoises are able to hear, and the relatively complex vocal repertoires demonstrated by tortoises suggest that their hearing acuity is similarly complex. Off-highway vehicle noise can reduce the hearing thresholds of Mojave fringe-toed lizards (Brattstrom and Bondello 1983 *in* USFWS 1994). Relatively short, single bursts (500 sec) of loud sounds (95 dBA at 5 meters) caused hearing damage to seven test lizards (Brattstrom and Bondello 1983 *in* USFWS 1994). Comparable results were obtained when desert iguanas (*Dipsosaurus dorsalis*) were exposed to one to ten hours of motorcycle noise (Bondello 1976 *in* USFWS 1994). It is likely that repeated or continuous exposure to damaging noises will cause a greater reduction in auditory response of these lizards. It is not unreasonable to expect loud noises [e.g., highway noise] to similarly impact the auditory performance of desert tortoises.

Assessment of the Washington Parkway Study

The Washington Parkway Study (study; Jacobs and Logan Simpson Design 2012) evaluated effects of a new northern transportation corridor to desert tortoises. The study concluded that it may be possible to develop a new transportation project that improves conditions on the Red Cliffs Desert Reserve. We do not agree that a new road could improve conditions for desert tortoises, other sensitive species, or habitats within the Red Cliffs Desert Reserve (see Analyses of Effects of Roadways to Desert Tortoises, above).

The Study offers a number of best management practices and recommendations to minimize documented effects and improve conditions for desert tortoises from highway construction and operation. We conclude that these measures are not sufficient to offset the negative effects of the highway:

a. The study recommends the use of tortoise fencing, culvert passages, and signs warning motorists of the potential for tortoise presence.

We conclude that tortoise fencing and culverts would not fully compensate for the habitat fragmentation effects of a multi-lane northern transportation route (see *Habitat Fragmentation and Population Viability*, above). As previously described, there is no evidence that desert tortoises are moving through existing culverts along the multi-lane Red Hills Parkway in the Red Cliffs Desert Reserve (see *Habitat Fragmentation and Population Viability*, above), and information is lacking to design passage structures to ensure population connectivity. Therefore, additional fencing and culverts along a new multi-lane highway through Zone 3 would likely increase existing fragmentation (see *Habitat Fragmentation and Population Viability*, above).

b. The study suggests that an elevated roadway over important habitat areas would prevent direct impacts of tortoises being hit by vehicles and allow habitat to remain intact below the bridge.

We agree that elevated roadways can reduce impacts of tortoise mortality from vehicle collisions and provide increased connectivity as compared to culverts. However, the long expanses of elevated crossings (3 miles minimum)[1] needed to eliminate habitat fragmentation in the Red Cliffs Desert Reserve is likely not economically feasible. In addition, there would still be impacts from invasive species, increased predation, and potentially noise associated with an elevated highway corridor (see *Invasive Species, Increased Predation*, and *Noise* above).

c. The study recommends eliminating Cottonwood Road. The northern transportation route would provide for east-west traffic demand and an additional road to the north may be needed to access private property.

The removal of Cottonwood Road would provide positive benefits to the desert tortoise if completed irrespective of the northern transportation route. However, replacing Cottonwood Road with the northern transportation route and an additional road to the north does not result in reduced fragmentation of Zone 3. A northern transportation route would likely incur higher vehicle speeds and increased traffic densities as compared to Cottonwood Road, with commensurate higher effects to desert tortoises (Boarman and Sazaki 2006, Nafus et al. 2013; see *Road Effect Zone*, above). The only feasible management direction toward sustaining viable tortoise populations is to reduce existing habitat fragmentation within Zone 3 (see *Habitat Fragmentation and Population Viability*, above).

d. The study recommends reducing habitat loss by using minimum shoulder widths and median barriers to reduce the construction footprint, and using walls to minimize cut and fill requirements.

1 We estimated spans needed to cross the desert tortoise reserve using GIS analysis of the proposed routing (Figures 1 and 2) of the highway provided to us by the BLM.

We conclude that even if direct habitat loss is minimized, the resulting multi-lane highway will still severely fragment desert tortoise populations in Zone 3 (see *Habitat Fragmentation and Population Viability*, above).

e. The study recommends restoring old abandoned roadways within the Red Cliffs Desert Reserve where they are not designated for recreational use. The study also suggests that there may be opportunities to consolidate utility corridors and access roads, limiting disturbance in remote parts of the Red Cliffs Desert Reserve.

As described above (see *Habitat Fragmentation and Population Viability*, above), desert tortoise habitat in Zone 3 of the Red Cliffs Desert Reserve is already fragmented by existing roads. Old abandoned roadways, access roads, and utility corridors also contribute to habitat degradation and we believe they should be restored or consolidated as feasible even without construction of a northern transportation route.

f. The study recommends that compensatory mitigation for a new northern transportation route could include the purchase and protection of lands with other existing tortoise populations in the Upper Virgin River recovery unit. These areas would be satellite populations that could become important if there is a marked population decline as a result of a large fire or disease.

As described above (see *Habitat Fragmentation and Population Viability*), Zone 3 is the largest contiguous habitat within the Red Cliffs Desert Reserve. Due to its large size and relatively dense tortoise populations, we do not believe there are remaining desert tortoise habitats of sufficient size or quality to provide adequate compensation for the loss of ecological and population viability that would occur as the result of a northern transportation route. Satellite reserves by themselves would not result in sufficient compensation for a multi-lane highway's impacts to Zone 3, given that Zone 3 is the largest, contiguous section of habitat in the Red Cliffs Desert Reserve (also see g., below).

g. The study recommends establishing a satellite reserve to minimize the potential for localized extirpation. The study also recommends establishment of a head-start program (i.e., "tortoise hatchery").

We agree that establishing a satellite reserve to minimize the potential for localized extirpation is worthy of consideration especially given the low tortoise numbers in the Red Cliffs Desert Reserve (see Table 1). The study's recommendation for a head-start program should be considered a last-resort or short-term option to increase tortoise numbers in the Red Cliffs Desert Reserve rather than as a long-term means of population management. The need for satellite reserves or a head-start program should be addressed even without construction of a new road through Zone 3.

h. The study recommends eliminating the spread of non-native plants associated with the highway corridor by 1) using native plant species to reseed disturbed areas following highway construction, 2) washing equipment prior to entering and leaving the construction site, 3) utilizing weed barriers and herbicides to reduce the spread of invasive species, 4)

minimizing the project footprint to reduce the potential acreage for the introduction of exotic and invasive species, and 5) using targeted grazing by goats and other bio-control agents.

We agree that these are appropriate measures for minimizing the introduction and establishment of non-native plant species. However, sustained invasive weed species management is likely to be difficult and costly (see *Invasive Species and Fire*, above). In addition, none of these measures would be necessary if the northern transportation route is not built.

i. The study recommends that a comprehensive fire management plan could be prepared that incorporates the transportation facility as a fire break and point of access for fire fighters.

We agree that a comprehensive fire management plan is an essential part of long-term management of the Red Cliffs Desert Reserve. However, a highway is not an essential component of fire management, and brings additional negative impacts to tortoises and their habitat (see *Habitat Fragmentation and Population Viability*, *Invasive Species*, *Increased Human Access*, *Increased Predation*, and Noise above). The BLM will continue to address fire management under the NCA RMP; all alternatives include fire management scenarios including the use of biological controls, targeted grazing, hand removal, herbicides, mechanical methods, or a combination of methods to develop fuel breaks and hazard fuel reduction projects (BLM 2015).

j. The study recommends the use of trash management; increased signage relative to impacts associated with litter and off-leash dogs; and avoiding structures that can be used as perches by tortoise predators (e.g., overhead lighting, fences) to reduce the threat of predation.

We agree that these are appropriate measures for minimizing predation concerns (see *Increased Predation* above). However, these actions are not sufficient to significantly reduce the problem of increased raven predation in developing areas (see *Increased Predation*, above). In addition, none of these measures would be necessary if the northern transportation route is not built.

k. The study recommends that a new transportation facility could be designed to allow limited and controlled access to the Red Cliffs Desert Reserve, encouraging recreation only on designated trails.

We agree that these are appropriate measures for minimizing human access concerns (see *Increased Human Access* above). However, none of these measures would be necessary if the northern transportation route is not built.

Consistency with Existing Land Use Planning Efforts

Washington County Habitat Conservation Plan (HCP)

Preservation of existing ecological values and diversity are the foremost objectives of the Washington County HCP. These values include the endangered, threatened, and candidate species of concern; the Mojave desert vegetation which provides food and cover for these and other species; and the relatively untrammeled areas which provide scenic splendor for Washington County inhabitants and visitors (WCHCP 1995).

The central element of the Washington County HCP was the protection of the threatened desert tortoise through creation of the Red Cliffs Desert Reserve. Management of the Red Cliffs Desert Reserve includes the removal of competing and consumptive uses which may potentially impact the desert tortoise and other species. As described above (see Analyses of Effects of Roadways to Desert Tortoises), competing uses that could impact the desert tortoise and should therefore not be authorized include the development of a northern transportation route within the Red Cliffs Desert Reserve.

The Washington County HCP spoke to the presence of existing roads but did not identify the development of any new roads within the Red Cliffs Desert Reserve (WCHCP 1995). The expansion of Skyline Drive (i.e., Red Hills Parkway) was the only new road project to occur in the Red Cliffs Desert Reserve (WCHCP 1995). The Red Hills Parkway expansion was completed to meet the traffic needs of the growing community.

As described above, tortoise barrier fencing and culverts were installed along the Red Hills Parkway to allow tortoises to move under the road, but available information indicates that the tortoises are not using these features for dispersal (see *Habitat Fragmentation and Population Viability*, above). Therefore the construction of any similar or larger highways would likely increase habitat fragmentation within the Red Cliffs Desert Reserve, reducing the reserve's ability to meet its purpose of compensating for human development impacts under the HCP.

Red Cliffs NCA

The Red Cliffs NCA includes a majority of the Red Cliffs Desert Reserve, which was created to offset impacts to desert tortoises and their habitat from human development under the 1996 Washington County Habitat Conservation Plan (HCP). Desert tortoise conservation is of paramount importance in the Red Cliffs Desert Reserve, while other commensurate uses are authorized as long as impacts to desert tortoises and their habitat are avoided or sufficiently minimized.

As described by the BLM in their draft RMP for the Red Cliffs NCA, management decisions under Alternative D (which would allow for construction of the northern transportation route) would not meet the conservation, protection, and enhancement purpose of the NCA for ecological resources. The designation of utility and transportation corridors would damage or destroy native vegetation and adversely modify critical habitat for the desert tortoise, including destroying dens and burrows, and native vegetation that provides shelter and nutrition. Injuries and mortalities to tortoises during new utility developments or roadway construction would certainly occur, as this

area has some of the highest tortoise densities documented in the Upper Virgin River Recovery Unit.

A new multi-lane roadway, constructed along any of the alternative alignments proposed by Washington County, would also fragment tortoise habitat and reduce population connectivity and viability (see *Habitat Fragmentation and Population Viability*, above). The potential impacts on desert tortoise populations could threaten the viability of tortoises in the Upper Virgin River Recovery Unit.

BLM manual No. 6220 National Monuments, National Conservation Areas, and Similar Designations (Public) updated 7/13/2012 (BLM 2012) also states the BLM will only develop new facilities, including structures and roads, within Monuments and NCAs where they are necessary for public health and safety, are required under law, are necessary for the exercise of valid existing rights or other non-discretionary uses, prevent impacts to fragile resources, or further the purposes for which an area was designated.. As described throughout this paper (see Analyses of Effects of Roadways to Desert Tortoises, above), we conclude that a northern transportation route would have significant negative effect to the desert tortoise and other wildlife populations within the Red Cliffs Desert Reserve.

Conclusions and Recommendations

In this paper we completed an evaluation of Washington County's proposal to construct a multi-lane highway northern transportation route through the Red Cliffs Desert Reserve. Construction of a highway through this area was not envisioned by the 1995 Washington County HCP which established the Red Cliffs Desert Reserve as compensation for impacts to desert tortoises and other species from ongoing residential and commercial development. A highway in this area is also not consistent with the purpose, goals, and objectives of the Red Cliffs NCA.

The proposed northern transportation route is inconsistent with the HCP and NCA because the construction and operation of a multi-lane highway would have significant negative impacts to desert tortoises, their habitat, and the ecological functioning of the Red Cliffs Desert Reserve for a multitude of Mojave desert species. Impacts from a northern transportation route would include increased road-kills, habitat fragmentation, invasive species and fire, human access, predation, and increased noises. These impacts are likely to have a substantial negative impact on the desert tortoise population stability and viability within the Red Cliffs Desert Reserve.

We conclude that the effects of habitat fragmentation to tortoise populations from a highway are not mitigable (see *Habitat Fragmentation and Population Viability*, above) given our current knowledge of management practices. Although management actions may minimize some effects of highways (e.g., fencing to reduce tortoise road-kills, reducing invasive weed species), more study is needed to determine the efficacy of these methods. Tortoise barrier fencing also has the effect of further fragmenting habitats and we are not aware of design features that would result in the successful use of culverts by tortoises. We do not know if culverts can provide long-term, sustained demographic and genetic connectivity within or between fragmented desert tortoise populations across a multi-lane highway. Similarly, additional information is needed on the effects of noise to desert tortoises before this impact can be fully assessed.

New highways should not be considered within the Red Cliffs Desert Reserve until we are able to understand and fully avoid impacts to population viability. Further, there are no remaining habitats of sufficient size or quality to provide adequate compensation for the loss of desert tortoise population connectivity and viability that would occur as the result of a northern transportation route through Zone 3.

There is no support or scientific basis for the conclusions presented in the Washington Parkway Study (Jacobs and Logan Simpson Design 2012) that there would be a net conservation benefit from the construction, operation, and maintenance of a new highway through the Red Cliffs National Conservation Area and Red Cliffs Desert Reserve. For example, any beneficial effects from the road serving as a fire break would be nullified immediately by the road serving as an ignition point and anchor point for the spread of invasive species (which often carry fire in the Mojave system). The construction of an "elevated" highway would still present the same fire ignition and invasive species propagation issues as a grade-level highway.

The expansion and continuation of Red Hills Parkway east to I-15 should be considered as an alternative to the northern transportation route. A comprehensive traffic analysis should be conducted to examine how the timing of traffic lights, existing route design and modification, and the expansion of the Red Hills Parkway could all be augmented to enhance traffic outcomes.

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Figure 1. Red Cliffs Deseret Reserve Management Zones and the Proposed Northern Transportation Route

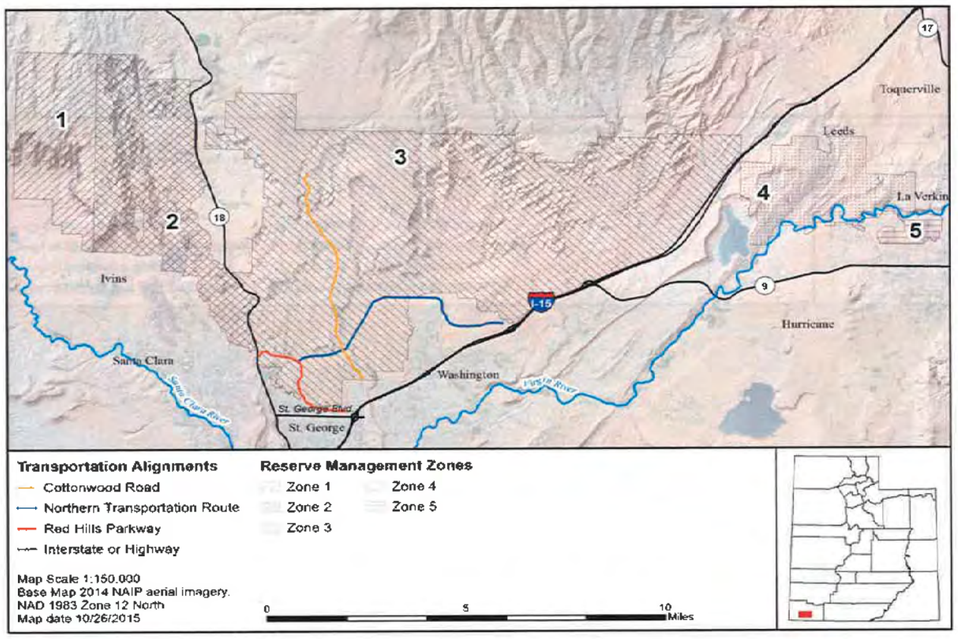
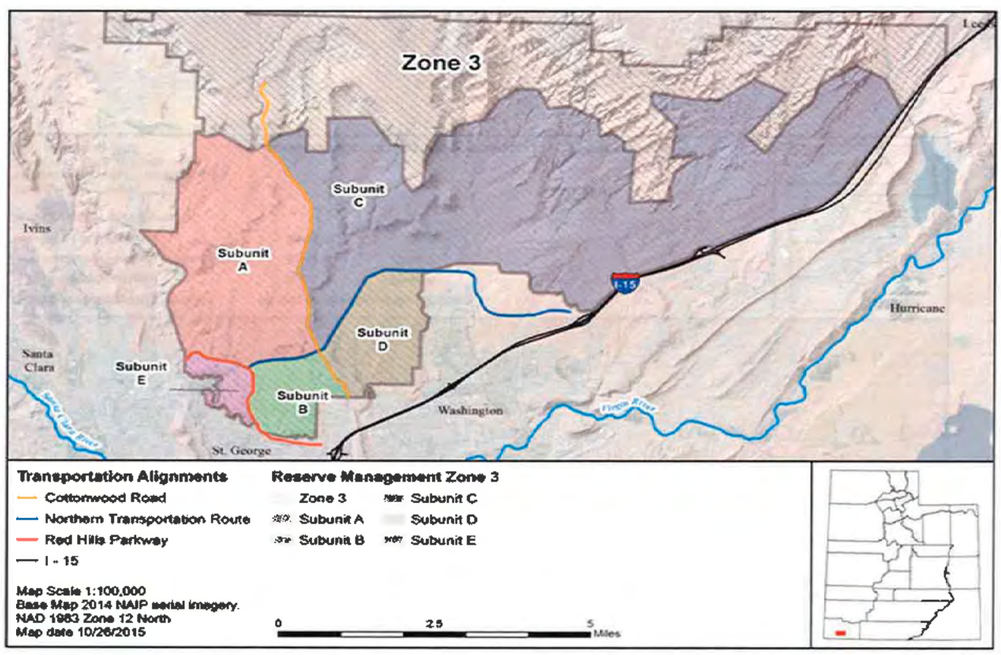


Figure 2. Subunits in Zone 3 of the Red Cliffs Desert Reserve



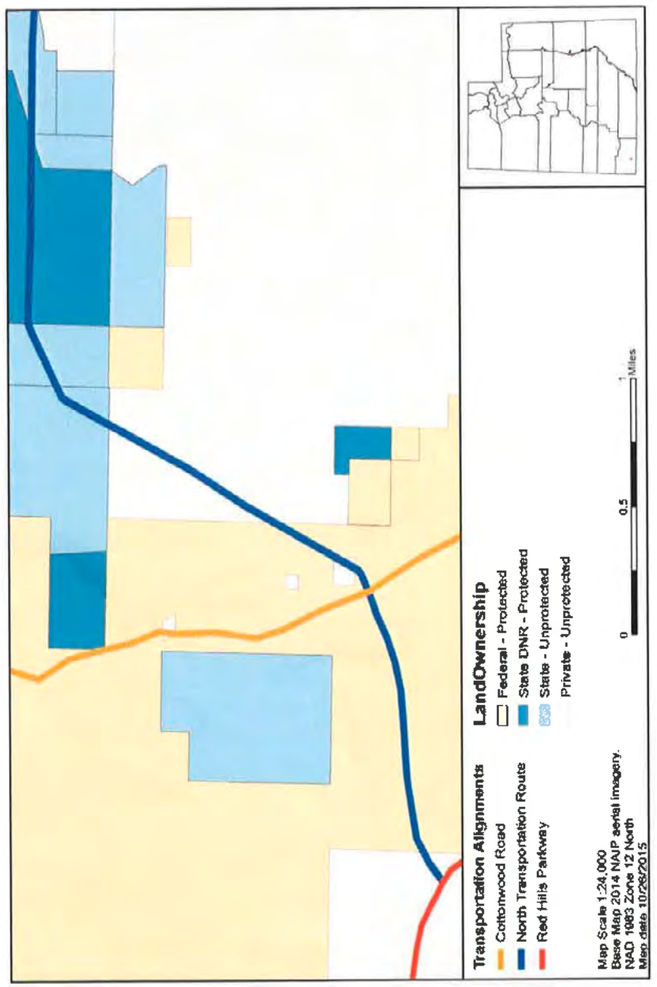


Figure 3. Land Ownership along the Proposed Northern Transportation Route

APPENDIX D

Best Management Practices for Management Actions

This appendix provides a list of common best management practices, standard operating procedures, and conditions of approval that are routinely applied to projects and management activities on public lands. Best management practices are mitigation measures applied on a site-specific basis to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts. They are applied to management actions to aid in achieving desired outcomes for safe, environmentally responsible resource development, by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. Best management practices can also be proposed by project applicants for activities on public lands (e.g., trail construction). Best management practices not incorporated into the permit application by the applicant but may be considered and evaluated through the environmental review process and incorporated into the use authorization as conditions of approval or right-of-way stipulations.

Standard operating procedures (SOPs) are examples of established guidelines that are followed by the BLM in carrying out management activities on public lands. Examples of Conditions of Approval are also included here, as stipulations such as these are often incorporated into use authorization or rights-of-way grants. Additional best management practices, SOPs and conditions of approval could be developed to meet resource objectives on the basis of local conditions and resource specific concerns.

1.0 Soils

1.1 Best Management Practices

- ► Loosen compacted subsoil if needed by ripping to appropriate depth depending on site specific conditions.
- ► Consider hydrologic setting and existing hydrologic features in project design and layout
- ► Minimize soil exposure to erosional forces of wind and water by waiting until just before beginning construction to clear vegetation and to disturb the soil.
- ► Minimize the area of bare soil within the approved work zone as much as possible.
- ► Where applicable, cover entrances of construction sites with gravel to prevent trucks from tracking sediment from the construction site onto roads. This sediment will eventually end up clogging roadway drainage systems or settling into wetlands.
- ► Protect and maximize existing native vegetation and natural forest/rangeland floor, thereby reducing impervious areas on the site.
- ► Disperse stormwater to areas of undisturbed forest/rangeland floor wherever possible, rather than concentrating it into channels.
- ► Determine the volume of available topsoil existing on the site. Topsoil shall be spread at a minimum compacted depth of 4 inches (or as appropriate determined by soil type).
- ► Stockpile topsoil so that it meets specifications and does not interfere with work on the site.
- ► Allow sufficient time in scheduling for topsoil to be spread and bonded with the subsoil prior to seeding, sodding, or planting.

1.2 Conditions of Approval

- ► When saturated soil conditions exist on or along the right-of-way, construction shall be halted until soil material dries out sufficiently for construction to proceed without undue damage and erosion to the right-of-way.
- ► All construction and travel on the road and right-of-way shall stop until soils dry if ruts greater than three inches are formed by vehicles and equipment.
- ► The grant holder shall provide satisfactory reclamation of all sites disturbed by their activity. This may include installation of additional erosion control devices and seeding at the discretion of the BLM Authorized Officer.

Storm water - BMPs identified in the Storm Water Management Plan shall be in place prior to any earth-disturbing activity. Additional BMPs will be installed as determined necessary by the BLM Authorized Officer. All temporary BMPs shall be removed once site stabilization and reclamation efforts have been deemed successful by the BLM Authorized Officer.

- ► Topsoil shall be conserved during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation. Topsoil shall only be used for reclamation and shall not be used to bed or pad the pipe during backfilling.

- The operator shall provide timely year-round road maintenance and cleanup on roads. A regular schedule for maintenance shall include, but not be limited to, crown or slope reconstruction, blading, ditch, culvert and catchment cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than three inches, blading, and/or gravelling shall be conducted as approved by the BLM Authorized Officer.
- The grantee shall construct water bars, kicker dikes, ditch breaks, pocking, or other erosion control techniques, on all of the right-of-way, as directed by the BLM Authorized Officer. The water bars or dikes shall be constructed across the full width of the disturbed area.
- Disturbed portions of the right-of-way surface shall be left rough and not smoothed to facilitate seed germination and seedling survival.
- Topsoil segregation will not occur when soils are saturated or frozen unless special authorization is granted by the BLM Authorized Officer.
- Soil or loam that is stored or stockpiled during construction shall be handled in a way to preserve soil quantity and natural soil properties and productivity.
- The face of cut/fill slopes will be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
- The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded swales, and downspouts.
- Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
- Slopes shall not be created so close to property lines as to endanger adjoining properties without adequate protection against sedimentation, erosion, slippage, settlement, subsidence or other related damages.
- All disturbed areas shall be stabilized structurally or with vegetation in compliance with the appropriate BMPs.
- All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved erosion and sediment control plan until they are adequately stabilized.
- All erosion and sediment control practices and measures shall be constructed, applied, and maintained in accordance with the approved erosion and sediment control plan.
- Frozen material or soft, mucky, or highly compressible materials shall not be incorporated into fill slopes or structural fills.
- Any sign of rill or gully erosion shall be immediately investigated and repaired as needed or requested by the authorizing officer.
- Fall and winter erosion control measures must be upgraded and refined to protect the site from spring runoff and snowmelt.
- Topsoil stripping shall be confined to the immediate construction areas. A 4 to 6-inch stripping depth is common, but depth may vary depending on the particular soil. All perimeter dikes, basins, and other sediment controls shall be in place prior to stripping.
- After the areas to be topsoiled have been brought to grade, and immediately prior to spreading the topsoil, the subgrade shall be loosened by disking or scarifying to a depth of at least two inches (or as site specific analysis determines appropriate for soil type) to ensure bonding with subsoil.
- Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed sodding or seeding.

2.0 Water Resources

2.1 Best Management Practices

- Avoid using roads during wet periods if such use will likely damage the road drainage features.
- Grade road surfaces only as often as necessary to maintain a stable running surface and to retain the original surface drainage.
- Avoid cutting the toe of cut slopes when grading roads or pulling ditches.
- Provide for erosion-resistant surface drainage by adding necessary drainage facilities and armoring prior to fall rain or snow. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow

deposition of sediment, and prevent sediment from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

- Avoid grading sections of road that do not need maintenance, as this elevates sediment production from the newly disturbed surface. Raise the blade where grading is not needed.
- Remove berms from the outside edge or roads where runoff is channeled.
- Leave abandoned roads in a condition that provides adequate drainage without further maintenance. Close these roads to traffic, reseed and/or scarify, and, if necessary, re-contour and provide cross ditches or drain dips.
- Cross stream channels at right angles if at all possible.
- Concentrate right-of-way actions adjacent to stream courses as far landward as safety allows.
- Remove all temporary stream crossings immediately after use and cross-ditch the ends of skid trails/two tracks/right-of-ways to mitigate erosion from disturbed areas.
- Place all excess material removed by maintenance operations in safe disposal sites and stabilize these sites to prevent erosion. Avoid locations where erosion will carry materials into a stream.
- Evaluate potential effects of stream crossings/channel work on existing structures such as culverts, bridges, buried cables, pipelines, and irrigation flumes prior to construction activities to identify and mitigate foreseen impacts.
- When designing protective/mitigation measures, consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the measure. Moreover, design and construct roads that are self-maintaining and consider using road surfacing, such as gravel. Design and construct stream crossings that handle the 100-year flood, and consider culvert and bridge designs that facilitate aquatic life passage.
- Exclude livestock and vehicles from spring sources and riparian areas in which on site evaluation and/or monitoring data indicate degrading conditions.
- Exclude livestock, wildlife, and vehicles from developed spring sources.
- Stabilize and maintain grades in natural or artificial channels to prevent the formation and advancement of gullies.
- Utilize erosion control structures including but not limited to head-cut lay-backs, zuni-bowls, check dams, and sediment basins to retain soils in highly erodible areas and protect water quality.
- Use vegetation or structures to stabilize and protect banks of streams, lakes, or excavated channels against scour and erosion.
- Manage and manipulate invasive stands of brush and weeds on forest, range, pasture land by mechanical, chemical, or biological means or by prescribed burning to improve watershed function and condition.
- Reduce soil erosion and sediment delivery to surface waters by protecting, maintaining, and reestablishing desirable vegetative communities in areas of highly erodible or critically eroding soils.
- Utilize mechanical treatment methods to roughen and aerate soils in degraded sites identified for reclamation.
- Avoid alteration of natural hydrologic function and condition in source areas for springs, seeps, and fens. Relocate surface-disturbing activities away from these sensitive areas as site conditions warrant.
- Restore modified or damaged streams as close as practicable to natural conditions using bioengineering techniques to protect banks, and to reestablish riparian vegetation.
- Maintain to the greatest extent practicable natural flow rates and chemical and physical properties of surface and groundwater during work within stream channels, floodplains, and/or riparian areas.
- Low water crossings will be constructed at original streambed elevation in a manner that prevents any blockage or restriction of the existing channel. Material removed will be stockpiled for use in reclamation of the crossings.
- The operator shall institute measures such as surfacing, watering, and use of non-saline dust suppressants on all roads authorized in this project to minimize impacts from fugitive dust emissions. The use of chemical dust suppressants on public surface will require prior approval from the BLM Authorized Officer.
- Livestock management practices, such as animal health, feeding, and salting, shall be done in a manner to protect water quality.
- Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.
- Maintain appropriate vegetative/riparian buffers around water bodies to slow runoff and trap sediments and protect water quality.

- Time work in wetlands and watercourses to occur during low flow season when conditions are driest. High flows occur during late summer early fall as a result of high intensity convective thunderstorm events.
- Temporary BMPs used to filter sediments from water, thereby preventing sedimentation, shall be installed (per manufacturers recommendations) before any construction begins and shall subsequently be removed when the project is completed.
- Consider rehabilitating closed routes to reduce erosion and restore landscapes.

2.2 Conditions of Approval

- The holder shall adhere to all requirements under the Clean Water Act.
- Storm water BMPs identified in the applicant's State approved Storm Water Pollution Prevention Plan shall be in place prior to any earth-disturbing activity.
- Additional BMPs will be implemented as determined necessary by the BLM Authorized Officer.
- All temporary BMPs shall be removed once site stabilization and reclamation efforts have been deemed successful by the BLM Authorized Officer.
- Culverts and water-bars shall be installed according to 9113 standards and sized for the 10-year storm event with no static head and to pass a 25-year event without failing.
- Culverts shall be located on stable and straight stream reaches and along the stream grade. In steeper streams, it may be necessary to install natural channel design techniques downstream to minimize erosion. A hydrologist shall be consulted.
- Erosion control features shall be maintained through periodic inspection and maintenance, including cleaning dips and cross-drains, repairing ditches, marking culvert inlets to aid in location, and clearing debris from culverts.
- If requested by the BLM Authorized Officer, the holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s) as indicated and approved.
- Culverts shall be free of corrosion, dents, or other deleterious conditions.
- Spoil material from clearing, grubbing, and channel excavation shall be disposed of in a manner that will not interfere with the function of the channel and in accordance with all local, state, and Federal laws and regulations.
- To protect water quality, anti-backflow devices shall be utilized while drafting fresh water from streams, springs, and wells.
- Actions shall not result in adverse effects on the function of streams or stream corridors.
- Actions shall not impair floodplain function.
- New stream crossings shall be designed to accommodate a 100-year flood.
- Provide for erosion-resistant surface drainage by adding necessary drainage facilities and armoring prior to fall rain or snow. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent it from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.
- No operations using chemical processes (except for vegetation management) or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies.
- All stream crossings affecting perennial streams or streams supporting riparian habitat shall be professionally engineered (design, construction, and maintenance).
- Water developments (springs, reservoirs, catchments; wells, pipeline and water troughs) will conform to BLM Manual H 1741-2.
- Actual work in spring and stream beds will be done by hand where possible.
- The source of all spring developments shall be fenced.

3. 0 Vegetation: Rangeland

Guidance may come from various sources. See individual resources.

3.1 Standard Operating Procedures

Utilize the techniques and methods for vegetation treatments identified in the Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).

3.2 Best Management Practices

- Close and rehabilitate roads quickly once they are no longer needed.
- Close selected routes to protect special status species and significant plant communities
- Build roads to the appropriate standard, no higher than necessary for use and safety, and utilize primitive or two-track roads rather than newly constructed roads where feasible.
- Pipelines (and electrical powerlines when possible) shall be placed within road corridors to minimize disturbance.
- Minimize disturbance to soil and native vegetation as much as possible.
- Stockpile topsoil for use in final reclamation. Topsoil shall be stored separately from other fill materials.
- When timely natural regeneration of the native plant community is not likely to occur, carefully select species that will not compete with or exclude botanical resources for re-vegetation efforts. Bare sites shall be seeded as soon as appropriate to prevent establishment of undesirable plant species.
- Ensure that seed used for re-vegetation as well as straw and hay bales used for erosion control are certified free of noxious weeds.
- Monitor re-vegetation sites to ensure successful establishment of desired species.
- Monitor the long-term success of re-vegetation efforts to ensure successful establishment of desired species and detect any noxious weed infestations. If re-vegetation is unsuccessful, continue efforts to establish desired species in disturbed sites.
- In desert shrub/saltbush communities with biological soil crusts, require reclamation that includes but is not limited to: broadcasting bacterial inoculants, planting native grass, forbs, and shrubs seedlings, and exclosure fences.

3.3 References

BLM (US Department of the Interior, Bureau of Land Management). 2007. Final Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. BLM, Nevada State Office, Reno, NV. June 2007.

4.0 Vegetation: Riparian Habitat and Wetlands

4.1 Standard Operating Procedures

- Utilize the techniques and methods for vegetation treatments identified in the Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).

4.2 Best Management Practices

- Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.
- Locate residue piles (e.g., sawdust, field chipping residue) away from drainages where runoff may wash residue into water bodies or wetlands.
- Maintain appropriate vegetative/riparian buffers around water bodies to protect water quality.
- Manage riparian areas to provide adequate shade, sediment control, bank stability, and recruitment of wood into stream channels.
- Locate project staging areas for refueling, maintenance equipment, materials, and operating supplies in areas not designated as riparian and/or stream bank management zones.
- Determine the best locations and design for roads, the slope of roads, and the approach to stream crossings through proper planning. On perennial streams roads, which will be used for longer than one year, the crossings will be engineered and approved by the BLM Authorized Officer.
- Do not locate roads or trails parallel to streams. Where roads must cross streams, cross perpendicularly and immediately exit the buffer zone.
- Appropriate improvements, such as culverts, must be placed at stream crossings to keep vehicles/equipment out of the stream flow and to prevent direct sedimentation of streams.
- Roads and trails (off-highway vehicle, horse, bicycle, hiking) will avoid wetlands and if avoidance is not possible will be designed and constructed in Technical Reference 2E22A68-NPS, Off-highway Vehicle Management.
- Install and maintain cottonwood protection on existing and planted trees where beaver loss threatens survival. Work with volunteer groups and user groups to help with the maintenance of installed structures.

5.0 Noxious and Invasive Weed Prevention

This list incorporates many suggested practices under various land uses, and is designed to allow managers to pick and choose those practices that are most applicable and feasible for each situation.

5.1 Site-Disturbing Projects

5.1.1 Pre-project Planning

- Environmental analyses for projects and maintenance programs shall assess weed risks, analyze high-risk sites for potential weed establishment and spread, and identify prevention practices.
- Determine site-specific restoration and monitoring needs and objectives at the onset of project planning.
- Learn to recognize noxious and invasive weeds.
- Inventory all proposed projects for weeds prior to ground-disturbing activities. If weeds are found, they will be treated (if the timing is appropriate) or removed (if seeds are present) to limit weed seed production and dispersal.
- Be cognizant of moving equipment and machinery from weed-contaminated areas to non-contaminated areas.
- Locate and use weed-free project staging areas. Avoid or minimize travel through weed infested areas, or restrict travel to periods when spread of disseminules is least likely.
- Identify sites where equipment can be cleaned. Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts shall be collected and incinerated when possible.
- If certified weed-free gravel pits become available, the use of certified weed-free gravel will be required wherever gravel is applied to public lands (e.g., roads).
- Maintain stockpiled, non-infested material in a weed-free condition. Topsoil stockpiles shall be promptly re-vegetated to maintain soil microbial health and reduce the potential for weeds.
- Use competitive seed mixes when practical. A certified seed laboratory shall test each lot according to the Association of Official Seed Analysts standards (which include an all-state noxious weed list) and provide documentation of the seed inspection test. The seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. Seed may contain up to 2.0 percent of "other crop" seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended.

5.1.2 Project Implementation

- Minimize soil disturbance. To the extent practicable, native vegetation shall be retained in and around project activity areas, and soil disturbance kept to a minimum.
- If a disturbed area must be left bare for a considerable length of time, cover the area with weed barrier until re-vegetation is possible.

5.1.3 Post-project

- Clean all equipment before leaving the project site when operating in weed infested areas.
- Inspect, remove, and properly dispose of weed seed and plant parts found on clothing and equipment. Proper disposal means bagging and incinerating seeds and plant parts or washing equipment in an approved containment area.
- Re-vegetate disturbed soil where appropriate to optimize plant establishment for that specific site. Define re-vegetation objectives for each site. Re-vegetation may include topsoil replacement, planting, seeding, fertilization, and certified weed-free mulching as necessary. Use native material where appropriate and feasible.
- Monitor sites where seed, hay, straw, or mulch has been applied. Eradicate weeds before they form seed. In contracted projects, contract specifications could require that the contractor control weeds for a specified length of time.
- Inspect and document all ground-disturbing activities in noxious weed infested areas for at least three growing seasons following completion of the project. For ongoing projects, continue to monitor until reasonably certain that no weeds are present. Plan for follow-up treatments on the basis of inspection results.

6.0 Roads and Utilities

6.1 Pre-project Planning

- Communicate with contractors, local weed districts or weed management areas about projects and best management practices for prevention.

- Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts shall be collected and incinerated when practical, or washed off in an approved containment area.
- Avoid acquiring water for road dust abatement where access to water is through weed-infested sites.
- Treat weeds on travel right-of-ways before seed formation so construction equipment doesn't spread weed seed.
- Schedule and coordinate blading or pulling of noxious weed-infested roadsides or ditches in consultation with the local weed specialist. When it is necessary to blade weed-infested roadsides or ditches, schedule the activity when disseminules are least likely to be viable.

6.2 Project Implementation

- Retain shade to suppress weeds by minimizing the removal of trees and other roadside vegetation during construction, reconstruction, and maintenance; particularly on south aspects.
- Do not blade or pull roadsides and ditches infested with noxious weeds unless doing so is required for public safety or protection of the roadway. If the ditch must be pulled, ensure weeds remain on-site. Blade from least infested to most infested areas.

6.3 Post-project

- Clean all equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before leaving the project site if operating in areas infested with weeds. Seeds and plant parts shall be collected and incinerated when possible.
- When seeding has been specified for construction and maintenance activities, seed all disturbed soil (except travel route) soon after work is completed.
- Use a certified weed-free seed mix suitable for local environmental conditions that includes fast, early growing (preferably native) species to provide quick revegetation. Consider applying weed-free mulch with seeding.
- Periodically inspect roads and right-of-ways for noxious weeds. Train staff to recognize weeds and report locations to the local weed specialist. Follow-up with treatment when needed.
- When reclaiming roads, treat weeds before roads are made impassable. Inspect and follow up on the basis of initial inspection and documentation.
- To avoid weed infestations, create and maintain healthy plant communities whenever possible, including utility right-of-ways, roadsides, scenic overlooks, trailheads, and campgrounds.

7.0 Recreation Activities

- Inspect and clean mechanized trail vehicles of weeds and weed seeds.
- Wash boots and socks before hiking into a new area. Inspect and clean packs, equipment, and bike tires.
- Avoid hiking through weed infestations whenever possible.
- Keep dogs and other pets free of weed seeds.
- Avoid picking unidentified "wildflowers" and discarding them along trails or roadways.
- Maintain trailheads, campgrounds, visitor centers, picnic areas, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Consider high-use recreation areas as high priority sites for weed eradication.
- Sign trailheads and access points to educate visitors on noxious and invasive weeds and the consequences of their activities.
- Inspect and document travel corridors for weeds and treat as necessary.
- Encourage use of pelletized feed for backcountry horsemen and hunters. Pelletized feed is unlikely to contain weed seed.

8.0 Watershed Management

- Frequently and systematically inspect and document riparian areas and wetlands for noxious weed establishment and spread. Eradicate new infestations immediately since effective tools for riparian-area weed management are limited.
- Promote dense growth of desirable vegetation in riparian areas (where appropriate) to minimize the availability of germination sites for weed seeds or propagules transported from upstream or upslope areas.
- Address the risk of invasion by noxious weeds and other invasive species in watershed restoration projects and water quality management plans.

9.0 Grazing Management

- ► Consider prevention practices and cooperative management of weeds in grazing allotments. Prevention practices may include:
  - Altering season of use
  - Minimizing ground disturbance
  - Exclusion
  - Preventing weed seed transportation
  - Maintaining healthy vegetation
  - Re-vegetation
  - Inspection
  - Education
  - Reporting
- ► Provide certified weed-free supplemental feed in a designated area so new weed infestations can be detected and treated immediately. Pelletized feed is unlikely to contain viable weed seed.
- ► If livestock may contribute to seed spread in a weed-infested area, schedule livestock use prior to seed-set or after seed has fallen.
- ► If livestock were transported from a weed-infested area, annually inspect and treat entry units for new weed infestations.
- ► Consider closing infested pastures to livestock grazing when grazing will either continue to exacerbate the condition or contribute to weed seed spread. Designate those pastures as unsuitable range until weed infestations are controlled.
- ► Manage the timing, intensity (utilization), duration, and frequency of livestock activities to maintain the competitive ability of desirable plants and retain litter cover. The objective is to prevent grazers from selectively removing desirable plant species and leaving undesirable species.
- ► Exclude livestock grazing on newly seeded areas with fencing to ensure that desired vegetation is well established, until objectives for seeding have been met.
- ► Reduce ground disturbance, including damage to biological soil crusts. Consider changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites and other areas of concentrated livestock use.
- ► Inspect areas of concentrated livestock use for weed invasion, especially watering locations and other sensitive areas that may be particularly susceptible to invasion. Inventory and manage new infestations.
- ► Livestock are to be excluded from burned areas until monitoring results show emergency stabilization and rehabilitation objectives have been met.

10.0 Outfitting/Recreation Pack and Saddle Stock Use

- ► Allow only certified weed-free hay/feed on BLM lands.
- ► Inspect, brush, and clean animals (especially hooves and legs) before entering public land. Inspect and clean tack and equipment.
- ► Regularly inspect trailheads and other staging areas for backcountry travel. Bedding in trailers and hay fed to pack and saddle animals may contain weed seed or propagules.
- ► Tie or contain stock in ways that minimize soil disturbance and prevent loss of desirable native species.
- ► Authorized trail sites for tying pack animals shall be monitored several times per growing season to quickly identify and eradicate new weeds. Trampling and permanent damage to desired plants are likely. Tie-ups shall be located away from water and in shaded areas where the low light helps suppress weed growth.
- ► Educate outfitters to look for and report new weed infestations.

11.0 Wildlife

- ► Periodically inspect and document areas where wildlife concentrate in the winter and spring and cause excess soil disturbance.
- ► Use weed-free materials for all wildlife management activities.
- ► Incorporate weed prevention into all wildlife habitat improvement project designs.

12.0 Fire

12.1 Incident Planning

- ► Increase weed awareness and weed prevention by providing training to new and/or seasonal fire staff on invasive weed identification and prevention.
- ► Ensure that a weed specialist is included on a Fire Incident Management Team when wildfire or prescribed operations occur in or near a weed-infested area. Include a discussion of weed prevention operational practices in all fire briefings.
- ► Use operational practices to reduce weed spread (e.g., avoid weed infestations when locating fire lines).
- ► Identify and periodically inspect potential helispots, staging areas, incident command posts, and base camps and maintain a weed-free condition. Encourage network airports and helibases to do the same.
- ► Develop a burned-area integrated weed management plan, including a monitoring component to detect and eradicate new weeds early.

12.2 Fire-fighting

- ► Ensure that all equipment (including borrowed or rental equipment) is free of weed seed and propagules before entering incident location.
- ► When possible, use fire suppression tactics that reduce disturbances to soil and vegetation, especially when creating fire lines.
- ► Use wet or scratch-lines where possible instead of fire breaks made with heavy equipment.
- ► Given the choice of strategies, avoid ignition and burning in areas at high risk for weed establishment or spread.
- ► Hose off vehicles on site if they have traveled through infested areas.
- ► Inspect clothing for weed seeds if foot travel occurred in infested areas.
- ► When possible, establish incident bases, fire operations staging areas, and aircraft landing zones in areas that have been inspected and are verified to be free of invasive weeds.
- ► Cover weed infested cargo areas and net-loading areas with tarps if weeds exist and can't be removed or avoided.
- ► Flag off high-risk weed infestations in areas of concentrated activity and show weeds on facility maps.
- ► If fire operations involve travel or work in weed infested areas, a power wash station shall be staged at or near the incident base and helibase. Wash all vehicles and equipment upon arrival from and departure to each incident. This includes fuel trucks and aircraft service vehicles.
- ► Identify the need for possible fire rehab to prevent or mitigate weed invasion during fire incident and apply for funding during the incident.

12.3 Post-fire Rehabilitation

- ► Have a weed specialist review burned area rehabilitation reports to ensure proper and effective weed prevention and management is addressed.
- ► Thoroughly clean the undercarriage and tires of vehicles and heavy equipment before entering a burned area.
- ► Treat weeds in burned areas. Weeds can recover as quickly as 2 weeks following a fire.
- ► Schedule inventories 1 month and 1 year post-fire to identify and treat infestations. Eradicate or contain newly emerging infestations.
- ► Restrict travel to established roads to avoid compacting soil that could hinder the recovery of desired plants.
- ► Determine soon after a fire whether re-vegetation is necessary to speed recovery of a native plant community, or whether desirable plants in the burned area will recover naturally. Consider the severity of the burn and the proportion of weeds to desirable plants on the land before it burned. In general, more severe burns and higher pre-burn weed populations increase the necessity of re-vegetation. Use a certified weed-free seed mix.
- ► Inspect and document weed infestations on fire access roads, equipment cleaning sites, and staging areas. Control infestations to prevent spread within burned areas.
- ► Seed and straw mulch to be used for burn rehabilitation (e.g., for wattles, straw bales, dams) shall be certified weed-free.
- ► Replace soil and vegetation right side up when rehabbing fire line.

13.0 Fish and Wildlife Management and Special Status Species

13.1 Standard Operating Procedures

- Fences constructed will comply with applicable wildlife fence standards, such as those described in BLM Handbook H-1741-1, Fencing (BLM 1989). Current standards for fencing cattle out in deer and elk range is a four strand fence, 40 inches high with a spacing of wires from ground to top of 60" (smooth bottom wire), 6" (second wire barbed), 6" (third wire barbed), 12" (top wire preferably smooth but may need to be barbed in areas of intense cattle use).
- The BLM will consult agency species management plans and other conservation plans as appropriate to guide management and devise mitigation measures when needed.
- Lessees will be notified that a lease parcel contains potential habitat for threatened (T), endangered (E), proposed (P), candidate (C) and BLM sensitive (S) plants, fish and wildlife.
- Existing plant location records will be consulted and site inventories will be conducted to identify suitable habitat for these plants. Surveys for occupied suitable habitat will be conducted prior to any ground disturbance. Surveys will take place when the plants can be positively identified, during the appropriate flowering periods. Surveys will be conducted by qualified field botanists/biologists who will provide documentation of their qualifications, experience and knowledge of the species prior to starting work.
- For BLM sensitive species surface-disturbing activities will be avoided within 100 meters of occupied plant habitat wherever possible and where geography and other resource concerns allow. Fragmentation of existing populations and identified areas of suitable habitat will be avoided wherever possible.
- Where development is allowed within 100 meters of occupied habitat for T, E, P and C species or BLM sensitive species, unauthorized disturbance of plant habitat will be avoided by on-site guidance from a biologist, and by fencing the perimeter of the disturbed area, or such other method as agreed to by the Fish and Wildlife Service. In such instances, a monitoring plan approved by the Service will be implemented for the duration of the project to assess impacts to the plant population or seed bank. If detrimental effects are detected through monitoring, corrective action will be taken through adaptive management.
- Surface disturbance closer than 20 meters to a listed plant will be considered an adverse effect. Mitigating measures within this narrow buffer are very important and helpful to individual plants, but we do not expect that all adverse effects can be fully mitigated within this distance. Some adverse effects due to dust, dust suppression, loss of pollinator habitat, and toxic spills will likely remain. There are two possible exceptions to this rule of thumb: 1) The new disturbance is no closer to a listed plant than preexisting disturbance and no new or increased impacts to the listed plant are expected; or 2) the listed plant is screened from the proposed disturbance (e.g., tall, thick vegetation or a berm acts as a screen or effective barrier to fugitive dust and other potential impacts).
- Transplantation of potentially affected plants will not be used as a rationale to defend a "not likely to adversely affect" or a "no effect" determination for listed plant species.
- Documentation will include individual plant locations and suitable habitat distributions. Prior to conducting plant surveys, the operator will provide maps (as hard copy and GIS files) of all proposed areas of disturbance to the BLM. Maps will include existing and proposed roads, pipelines, well pads, pits, parking lots, and all other work areas. Post-construction or as-built maps will also be submitted to account for any deviations from preproject maps. Specific polygons where rare plant surveys have been conducted will be included, along with the results of those surveys (positive or negative). The locations of any monitoring plots established to measure the status of rare plants and habitat in the vicinity of project activities will also be provided.
- Protect pollinator species for endangered or threatened species by incorporating the standard operating procedures found in the Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).
- Biological inventories must be completed prior to approval of operations in areas of known or suspected habitat of special status species, or habitat of other species of interest such as, but not limited to, raptor nests, , or rare plant communities. Surveys shall be conducted by qualified biologist(s) using protocols established for potentially affected species during the appropriate time period(s) for the species. Survey reports, data, and determinations shall be submitted to the BLM for review and confirmation according to BLM protocols. Operators, the BLM, and the BLM Authorized Officer will use the information gathered to develop an appropriate mitigation plan. Mitigating measures may include, but are not limited to, timing restrictions, relocation of development activities and fencing operations or habitat. If special status species are encountered during operation, operations will cease immediately, and the BLM Authorized Officer will be notified.
- To protect key wildlife species, special status species, and their habitats, surveys may be required prior to surface disturbance, habitat treatments, or similar activities. Develop and implement standard survey protocol for key species on the basis of the latest science, conservation assessments, CDOW recommendations, and similar information. Special design and construction measures may also be required in order to minimize impacts to special status species.

13.2 Best Management Practices

- Raptors:
  - Protect nest sites from human disturbances by implementing CPW recommended buffers around known nest sites.
  - Provide perching and nesting structures as mitigation where disturbances are impacting raptors.
  - Apply guidance from Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006 (Avian Power Line Interaction Committee 2006) and Avian Protection Plan (APP) Guidelines (Avian Power Line Interaction Committee and US Fish and Wildlife Service 2005) or most current guidance for new power line construction (including upgrades and reconstruction) to prevent electrocution of raptors.
- Control noxious weeds using integrated techniques. Limit chemical control in areas with rare plant species to avoid damage to non-target species. Mechanical or chemical control in and near rare plant habitat shall only be implemented by personnel familiar with the rare plants.
- Prohibit collection of rare plants or plant parts, except as permitted by the BLM Authorized Officer for scientific research.
- The use of deicers and dust suppressants within 100 meters (328 feet) of road-side occurrences of special status plant species will require prior approval from the BLM.
- Herbicide application shall be kept at least 200 meters from known plant populations, except in instances where weed populations threaten habitat integrity or plant populations. Great care shall be used to avoid pesticide drift in those cases.
- Retain existing snags for wildlife use in places where they will not create a human hazard
- Where linear disturbance is proposed edges of vegetation shall be feathered to avoid long linear edges of habitat and allow for greater habitat complexity for wildlife.
- Protect existing temporary pools to providing breeding and hibernating habitat for amphibians.
- Avoid fragmentation of wildlife habitat especially in wildlife migration and movement corridors.
- Where water is taken directly from areas containing special status fish a meshed screen will be placed on the intake hose of an appropriate size to minimize potential intake of specials status fishes.

13.3 References

Avian Power Line Interaction Committee. 2006. Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 1996. Edison Electric Institute, Avian Power Line Interaction Committee, and the California Energy Commission. Washington, DC, and Sacramento, CA.

Avian Power Line Interaction Committee and US Fish and Wildlife Service. 2005. Avian Protection Plan (APP) Guidelines, April 2005. Washington, DC.

BLM (United States Department of the Interior, Bureau of Land Management). 1989. Handbook H-1741-1: Fencing. Release 1-1572. BLM, Washington, DC. December 6, 1989. 58pp.

_____. 2007. Final Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. BLM, Nevada State Office, Reno, NV. June 2007.

14.0 Wildlife Damage Management

14.1 Standard Operating Procedures

- Control activities conducted by the US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services will be coordinated with the BLM on an annual basis, including review of authorized control areas and annual submittal of control activities on NCA lands.

- US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services will notify the BLM's Authorized Officer before any damage control activity is implemented within the restricted area(s), and exceptions will be approved on a case-by-case basis.
- All US Environmental Protection Agency use restrictions and requirements for toxicants are to be followed where control devices are used on public lands. BLM's Authorized Officer must be notified before any toxicants are deployed and a map of the treatment area must be provided. Adequate signage must be provided and maintained.

15.0 Cultural Resources

15.1 Standard Operating Procedures

- The holder of a BLM authorization to carry out land use activities on Federal lands, including all leases and permits, must notify the BLM, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony (43 Code of Federal Regulations [CFR] 10.4(g)). Activities must stop in the immediate vicinity of the discovery. The discovery must be protected from the authorized activity for a period of 30 days or unless otherwise notified by the (43 CFR 10.4(c) and (d)).
- If newly discovered historic or archaeological materials or other cultural resources are identified during project implementation, work in that area must stop and the BLM Authorized Officer must be notified immediately. Within five working days the BLM Authorized Officer will inform the proponent as to:
  - Whether the materials appear eligible for the National Register of Historic Places;
  - The mitigation measures the proponent will likely have to undertake before the site could be used (assuming in situ preservation is not practicable), (36 CFR 800.13); and
  - A time frame for the BLM Authorized Officer to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Office, that the BLM Authorized Officer's findings were correct and mitigation was appropriate.
- A standard Education/Discovery stipulation for cultural resource protection shall be attached to the land use authorization. The operator or its contractor is responsible for informing all persons who are associated with the project operations that Federal laws protect cultural resources and they will be subject to prosecution for disturbing or destroying any historic or archaeological sites, or collecting any cultural objects, prehistoric or historic from Federal lands.
- Strict adherence to the confidentiality of information concerning the nature and location of archeological resources will be required of any company issued a land use authorization and all of their subcontractors (Archaeological Resource Protection Act, 16 US Code 470hh).

15.2 Best Management Practices

- Evaluation of all BLM activities and BLM authorized activities shall be made in compliance with BLM Manual 8100, The Foundations for Managing Cultural Resources (BLM 2004a), and subsequent 8100 series (BLM 2004b, 2004c, 2004d, 2004e, 2004f, 2004g, and 2004h); Handbook of Guidelines and Procedures for Inventory, Evaluation, and Mitigation of Cultural Resources (BLM 1998, rev. 2007); and the current State Protocol Agreement between BLM and the Utah State Historic Preservation Office.
- When possible, locate projects in areas that are previously disturbed. To comply with the National Historic Preservation Act, the BLM must identify properties that are listed to or eligible for listing to the National Register of Historic Places, evaluate the effects of agency undertakings on historic properties, and avoid or treat adverse effects to properties within the Area of Potential Effect.
- When a NEPA document specifically stipulates the need for an archaeological monitor during construction or a project is located in areas that require an archaeological monitor to be present it is the applicant's responsibility to contract an archaeological consultant holding a current Utah BLM permit and authorized to work in the NCA. Fieldwork authorizations are required prior to any construction monitoring.
- Where proposed projects or development will adversely affect a cultural resource, testing, data recovery or full excavation to recover scientific information may be required as mitigation. The applicant or operator bears the full cost of mitigation and is encouraged to consider avoiding adverse effects through project relocation or redesign rather than mitigating adverse effects.

15.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2004a. Manual 8100: The Foundations for Managing Cultural Resources. Release 8-72. BLM, Washington, DC. December 3, 2004.

_____. 2004b. Manual 8110: Identifying and Evaluating Cultural Resources. 8-73. BLM, Washington, DC. December 3, 2004.

_____. 2004c. Manual 8120: Tribal Consultation Under Cultural Resources. 8-74. BLM, Washington, DC. December 3, 2004.

_____. 2004d. Manual 8120-1: General Procedural Guidance for Native American Consultation. 8-75. BLM, Washington, DC. December 3, 2004.

_____. 2004e. Manual 8130: Planning for Uses of Cultural Resources. 8-76. BLM, Washington, DC. December 3, 2004.

_____. 2004f. Manual 8140: Protecting Cultural Resources. 8-77. BLM, Washington, DC. December 3, 2004.

_____. 2004g. Manual 8150: Permitting Uses of Cultural Resources. 8-78. BLM, Washington, DC. December 3, 2004.

_____. 2004h. Manual 8170: Interpreting Cultural Resources for the Public. 8-79. BLM, Washington, DC. December 3, 2004.

16.0 Tribal Consultation

16.1 Standard Operating Procedures

- The BLM has a responsibility to develop a government-to-government relationship with the tribes: the formal relationship that exists between the Federal Government and tribal governments under federal laws. Tribal governments are considered dependent domestic sovereignties with primary and independent jurisdiction (in most cases) over tribal lands. Concerning proposed BLM plans and actions, at least the level of consideration and consistency review provided to State governments must be afforded to tribal governments.
- The BLM is responsible for consultation under General Authorities defined as "laws, executive orders, and regulations that are not considered 'cultural resource authorities.'" The regulations implementing both Federal Land Policy and Management Act and NEPA require Native American consultation. The American Indian Religious Freedom Act and the Indian Sacred sites order (Executive Order 13007) pertain to the free exercise clause of the First Amendment (BLM H-8120-1 Guidelines for Conducting Tribal Consultation [BLM 2004], Federal Land Policy and Management Act Title II, NEPA Section 102, 40 CFR 1501.2 and 1501.7)
- Tribes must be consulted whenever other governmental entities or the public are formally involved in the BLM's environmental review process in any NEPA documentation that entails public involvement or initial discussions with local or state governments (BLM Handbook H-1790-1, National Environmental Policy Act [BLM 2008a]).
- NHPA Section 106 consultations for cultural resources significant to Indian tribes. Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government. Consultation shall be conducted in a manner sensitive to the concerns and needs of the Indian tribe. (36 CFR 800.2(c)(2)(ii)(C).

16.2 Best Management Practices

- Notification is conducted by simple one-way written means. Consultation is generally construed to mean direct, two-way communication.
- When publishing notices or open letters to the public indicating that the BLM is contemplating an action and that comments are welcome, managers shall send individual letters, certified mail or delivery confirmed to tribes requesting their input on actions being considered. If this is an opening dialogue, prior to having developed a strong working relationship with the tribe, if a timely response is not received the manager shall follow up with personal telephone calls.
- For the benefit of both parties, managers are encouraged to strive for the most efficient and effective method of consultation. Whatever method is chosen, all consultation activities shall be carefully documented in the official record.

- ► Consultation roles can be facilitated but may not be transferred to others. Cultural resource consulting firms working for land use applicants cannot negotiate, make commitments, or otherwise give the appearance of exercising the BLM's authority in consultations.
- ► Owing to their status as self-governing entities, tribes may be notified and invited to participate at least as soon as (if not earlier than) the Governor, state agencies, local governments, and other Federal agencies.
- ► Tribal consultation means dialogue between a BLM manager and an American Indian Tribe. The BLM managers are encouraged to visit tribal councils and appropriate tribal leaders on a recurring basis. This face-to-face meeting helps to develop relationships that can reduce the time and effort spent in later consultation or individual projects. This government-to-government consultation shall be treated with appropriate respect and dignity of position.

16.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2004. Manual 8120: Tribal Consultation Under Cultural Resources. 8-74. BLM, Washington, DC. December 3, 2004.

_____. 2004. Manual 8120-1: General Procedural Guidance for Native American Consultation. 8-75. BLM, Washington, DC. December 3, 2004.

_____. 2008. Handbook H-1790-1: National Environmental Policy Act. Washington, DC. January 2008.

17.0 Geological and Paleontological Resources

17.1 Standard Operating Procedures

- ► Attach lease notices, stipulations, and other requirements to permitted activities to prevent damage to paleontological resources.

18.0 Visual Resources

18.1 Best Management Practices

- ► Impacts to dark night skies will be prevented or reduced through the application of specific mitigation measures identified in activity level planning and NEPA level review. These measures may include directing all light downward, using shielded lights, using only the minimum illumination necessary, using lamp types such as sodium lamps (less prone to atmospheric scattering), using circuit timers, and using motion sensors.
- ► Any facilities authorized will use the best technology available to minimize light emissions
- ► Any new permits/authorizations, including renewals, will be stipulated to use the best technology available to minimize light emissions as compatible with public health and safety.
- ► All new surface-disturbing projects or activities, regardless of size or potential impact, will incorporate visual design considerations during project design as a reasonable attempt to meet the Visual Resource Management (VRM) class objectives for the area and minimize the visual impacts of the proposal. Visual design considerations will be incorporated by:
- ► Using the VRM contrast rating process (required for proposed projects in highly sensitive areas, high impact projects, or for other projects where it appears to be the most effective design or assessment tool), or by
- ► Providing a brief narrative visual assessment for all other projects that require an environmental assessment or environmental impact statement.
- ► Measures to mitigate potential visual impacts could include the use of natural materials, screening, painting, project design, location, or restoration (See Appendix H; BLM Handbook H-8431-1, Visual Resource Contrast Rating; or online at http://www.blm.gov/nstc/VRM/8431.html, for information about the contrast rating process).
- ► Screening facilities from view and avoiding placement of production facilities on steep slopes, hilltops, and ridgelines.
- ► Paint all facilities a color that best allows the facility to blend with the background (Operator-committed BMP).
- ► Gravel color of road shall be similar to adjacent dominant soil colors.
- ► Bury distribution powerlines and flow lines in or adjacent to access roads.
- ► Repeat form, line, color, and texture elements to blend facilities with the surrounding landscape
- ► All above ground facilities including power boxes, building doors, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.

- ► Conduct final reclamation re-contouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography.
- ► To the extent opportunities are practicable, extreme visual contrast created by past management practices or human activities will be minimized. Examples include right-of-way amendments, mineral material sites, abandoned mines, and areas impacted by unauthorized off-road driving.
- ► All new roads will be designed and constructed to a safe and appropriate standard, "no higher than necessary" to accommodate intended vehicular use. Roads will follow the contour of the land where practical.

19.0 Wildland Fire Ecology and Management

19.1 Standard Operating Procedures/Best Management Practices: Fuels Management

- ► Construct fuel breaks or green strips to protect wildland-urban interface communities and important wildlife habitat and provide for firefighter safety by using mechanical, chemical, and biological fire treatment methods.
- ► Construct fuel breaks and green strips in areas containing a good understory of native perennials in order to successfully compete with and deter the establishment and spread of annual species.
- ► Seed green strips in areas that do not have a good understory of desirable native perennials that can successfully compete with annual species.
- ► Where practicable, use large-scale landscape planning to connect fuel breaks and avoid small piecemeal projects.
- ► Maintain fuel breaks and green strips to ensure effectiveness.
- ► Prevent seeded species from being grazed during the first two growing seasons (>18 months) following seeding, or until site-specific analysis and/or monitoring data indicate that vegetation cover, species composition and litter accumulation are adequate to support and protect watershed values, meet vegetation objectives and sustain grazing use.
- ► Provide fire prevention and mitigation outreach information and education to communities surrounding the NCA.

19.2 Standard Operating Procedures

Fire Suppression

- ► Resource Advisors and other applicable specialists shall be utilized to advise the Incident Commander and suppression resources on the natural resource values during the suppression effort.
- ► Avoid applying fire retardant in or near drinking water sources.
- ► Avoid the application of retardant or foam within 300 feet of a waterway or stream channel. Deviations from this procedure are acceptable if life or property is threatened.
- ► Fire lines will not be constructed by heavy equipment within riparian stream zones. If construction is necessary due to threats to life or property, control lines shall terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives on the basis of fire behavior, vegetation/fuel types, and fire fighter safety.
- ► Lands will be temporarily closed to other uses in areas where fire suppression is being implemented.
- ► If it is determined that use of retardant or surfactant foam within 300 feet of a waterway or stream channel is appropriate due to threats to life or property; alternative line construction tactics are not feasible because of terrain constraints, congested areas, or lack of ground personnel; or potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator shall determine whether there have been any adverse effects to federally listed species. If the action agency determines that adverse effects were incurred by federally listed species or their habitats, then the action agency must consult with the Service, as required by 50 CFR 402.05, as soon as practicable.
- ► Minimize/mitigate impacts to cultural resources and pristine vegetative communities.
- ► Vehicle and equipment shall be washed before being assigned to fires to minimize the spread of noxious weeds. Especially out of area equipment. Larger fires with incident management teams assigned may need to have a weed wash station.

Emergency Stabilization and Rehabilitation

- ► Stabilize areas that have low potential to naturally re-vegetate and that have high wind and soil erosion potential. Treatments include the following:

- ► Installing water bars and other drainage diversions, culverts along fire roads, dozer lines, and other cleared areas;
- ► Seeding and planting to provide vegetative cover;
- ► Spreading mulch to protect bare soil and discourage runoff;
- ► Repairing damaged roads and drainage facilities;
- ► Clearing stream channels of structures or debris that is deposited by suppression activities;
- ► Installation of erosion control structures;
- ► Installation of channel stabilization structures;
- ► Fence or restrict areas to livestock and wild horse and burro grazing to promote success of natural re-vegetation or establishment of seeded species;
- ► Lands may be temporarily closed to other uses during emergency stabilization and rehabilitation practices if activities inhibit treatment;
- ► Repair or replace range improvements and facilities; and
- ► Monitor emergency stabilization and rehabilitation treatments.

20.0 Livestock Grazing

20.1 Standard Operating Procedures

- ► Exclude livestock grazing on newly seeded areas to ensure that desired vegetation is well established, until objectives for seeding have been met.
- ► Development of springs and seeps or other projects affecting water and associated resources shall be designed to maintain the associate riparian area and assure attainment of standards.
- ► Disturbance to established rangeland study sites shall be avoided to provide for the continuation of monitoring efforts, which involves comparisons of data to previous records of that site.
- ► Exclosures shall be established in areas where the vegetative potential of the area is questionable or to compare the effectiveness of grazing management.
- ► New fences shall be constructed to BLM standards allowing for the appropriate wildlife passage.
- ► Bird ramps shall be installed in all troughs.
- ► Access routes to functioning range improvements shall be retained to allow for periodic maintenance and prevent cross country travel.
- ► Maintain range developments to maintain or improve distribution.
- ► Rangeland and vegetation monitoring will be conducted to detect changes in grazing use, trend, and range conditions. These data will be used to support and direct grazing management decisions consistent with national policy. These efforts will help ensure that livestock grazing meets objectives for rangeland health and resolves conflicts with wildlife habitats or may provide a benefit to wildlife habitats.
- ► Grazing management decisions will be based on monitoring data, both short-term and long-term, which will be jointly developed by grazing permittees and the appropriate Federal land management agency.
- ► Surface-disturbing activities will be coordinated with livestock grazing permittees to minimize the effects of the surface disturbance on other approved operations. To the maximum extent practicable, this effort will include consulting on scheduling of operations to mutually minimize effects.
- ► Any damage to the function of range improvements (e.g., fence damage, cattle guard cleaning, livestock loss) from other approved operations will be repaired immediately or remedied by the operator causing the damage.

20.2 Best Management Practices

- ► Follow the Grazing Guidelines established along with the Utah Standards for Rangeland Health.
- ► Use grazing systems that contain rotation, deferment, and rest to produce a mosaic of habitat patches and increases the density, height and distribution of native plants.
- ► Avoid re-grazing the same plants in one growing season.
- ► Adjust grazing seasons to benefit both warm and cool season grass species by providing periodic rest from grazing for each type.
- ► Allow for adequate litter cover following grazing use to protect soil surface and enhance soil moisture retention.
- ► Allow for rest/recovery periods before or after grazing during critical growth periods. Recovery shall include the production of seed to allow for the regeneration of desirable plant species.

- ► Adjust intensity, timing and/or duration of grazing during periods of forage drought.
- ► Manage livestock grazing, including dormant season use, to insure adequate residual grass when soil moisture and wildlife habitat are concerns.
- ► Avoid use most years in areas of valuable woody plants during times when they are selected.
- ► Avoid the following grazing management practices:
  - Long seasonal use with no recovery time
  - Heavy use -stresses plants,
  - Little or no regrowth before winter -little stubble for root crown protection
  - Use at the same time every year -repeating the stress
  - No rest or growing season recovery -little recovery with long seasons of use
  - Little or ineffective herding
  - Salt placed in the same locations year after year
  - Livestock left behind after pasture moves
  - Grazing during the critical growth period year after year
- ► When using livestock to control noxious or invasive weeds, match animal dietary preference or tolerance to the target species.
- ► Use the target weed's biology when developing a grazing strategy.
- ► Manage heavy grazing on target weed species to account for any intermixed desirable species.

20.3 Best Management Practices (Vegetation/Riparian Zone Management Guidelines)

- ► To reduce negative impacts to grazing, determine the critical period(s) of a riparian site, and then limit grazing during the critical period(s) to no more often than once every three or four years. Critical periods and impacts are likely to be either in late spring-early summer, when stream banks are more easily broken down by trampling; or late summer-early fall, when excessive browsing may damage vegetation. Each site has its own critical period that shall be individually determined. Important critical period variables are soil moisture, plant species composition, animal behavior patterns. Site may be grazed every year if use does not occur during the critical period(s). Extended periods of rest or deferment from grazing may be needed to enable recovery of badly degraded sites.
- ► To maintain stream bank stability, limit cattle access to surface water when adjacent stream banks and shorelines are overly wet and susceptible to trampling and sloughing. Stream bank trampling can often be reduced by capitalizing on the natural foraging behavior of cattle. Cattle generally avoid grazing excessively wet sites or in cold-air pockets. Cattle seek out wind-swept ridges, and they graze on upland forage when it is more palatable than forage in riparian areas. Avoid hot season grazing of riparian areas.
- ► To graze a site more than once per growing season, moisture and temperature conditions shall be conducive to plant growth. For such sites, allow a recovery period of at least 30 to 60 days, depending on vegetation type, before re-grazing within the same growing season. Grazing more often and for shorter periods-that is, 3 weeks or less at a time-is preferable to fewer and longer grazing periods.
- ► To control the timing, frequency, and intensity of cattle grazing, managers shall consider creating smaller riparian pastures with similar, or homogenous, features. Adjusting timing, frequency, and intensity of grazing in individual pasture units is more important than adopting a formalized grazing season.
- ► To protect stream banks, prevent cattle from congregation near surface waters. Fencing, supplemental feeding, and herding work best. Provide remote watering systems for cattle. Manage the riparian area as a separate and unique pasture. Inappropriate cattle grazing will usually first be evidenced by excessive physical disturbance to stream banks and shorelines. (Mosley et al. 1997)
- ► On riparian areas that are determined to be non-functioning or functioning at risk as a result of livestock grazing impacts, limits of bank disturbance will be determined and included within the Terms and Conditions of the Grazing Permit. Monitoring of bank disturbance will use the Multiple Indicator Method.
- ► Winter grazing minimizes soil compaction and potential stream bank deterioration and allows maximum growth of vegetation and plant vigor. Livestock use shall not exceed 70% and stubble height shall be at least four to six inches after the grazing period.

- To protect stream banks, discourage trailing up and down the channel by placing logs across trails, perpendicular to the stream channel.
- Adjust intensity, timing and/or duration of grazing during periods of forage drought.

21.0 Recreation

- Special Recreation Permits will contain noxious weed management stipulations (e.g., pre-event inventories to avoid infested areas, event management to avoid or isolate activities that could cause weed introduction or spread, monitoring and treatment of infestations exacerbated by the activity, and other appropriate noxious weed management stipulations).
- Lands may be temporarily closed to other uses during recreation events that are conducted under special recreation permits (e.g., equestrian endurance rides or motorcycle events).

22.0 Lands and Realty

22.1 Standard Operating Procedures

- Power lines shall be constructed in accordance to standards outlined in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996 (Avian Power Line Interaction Committee 2006). Right-of-way applicants shall assume the burden and expense of proving that proposed pole designs not shown in the above publication are "raptor safe." Such proof shall be provided by a raptor expert approved by the BLM Authorized Officer.
- Right-of-ways and other lands and realty authorizations, including power lines, pipelines and transmission corridors will contain noxious and invasive plant management terms or stipulations for all ground-disturbing actions. These will include conducting a pre-disturbance noxious weed inventory, designing to avoid or minimize vegetation removal and weed introduction or spread, managing weeds during the life of the right-of-way or authorization to prevent or minimize weed introduction or spread, abandoning the right-of-way or authorization to establish competitive vegetation on bare ground areas, and monitoring re-vegetation success and weed prevention and control for a reasonable number of years.
- Right-of-ways will be constructed to avoid physical damage to range improvements and rangeland study areas.

22.2 Standard Design Practices

- All construction activities shall be confined to the minimum area necessary. The exterior boundaries of the construction area shall be clearly flagged prior to any surface-disturbing activities.
- Existing roads will be used wherever possible. Additional roads shall be kept to the minimum. Route locations must be approved by the BLM prior to construction.
- Roads will be constructed and maintained to BLM road standards (BLM Manual 9113 [BLM 1985]). All vehicle travel will be within the approved driving surface.

22.3 Stipulations

- The Holder shall notify the BLM Authorized Officer at least 48 hours prior to the commencement construction, reclamation, maintenance, or any surface-disturbing activities under this grant.
- Copies of the right-of-way grant with the stipulations shall be kept on site during construction and maintenance activities. All construction personnel shall review the grant and stipulations before working on the right-of-way or permitted area.
- All facilities shall be labeled with the authorization number, operator, and contact information.
- No signs or advertising devices shall be placed on the premises or on adjacent public lands, except those posted by or at the direction of the BLM Authorized Officer.
- The Holder shall promptly remove and dispose of all waste caused by its activities. The term "waste" as used herein means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, ashes, and equipment. No burning of trash, trees, brush, or any other material shall be allowed.
- The Holder shall notify all existing right-of-way holders in the project area prior to beginning any surface-disturbance or construction activities. The Holder shall obtain an agreement with any existing right-of-way holders or other parties with authorized facilities that cross or are adjacent to those of the holder to assure that no damage to an existing right-of-way or authorized facility will occur. The agreement(s) shall be obtained prior to any use of the right-of-way or existing facility.
- The Holder shall participate in the formation of a Road User's Association for the road if new right-of-ways are granted for use of the existing road. All new users will be required to join the association.

22.4 References

BLM (US Department of the Interior, Bureau of Land Management). 1985. BLM Manual 9113: Roads. Release 9-247. BLM, Washington, DC. June 7, 1985. 83 pp.

23.0 Transportation and Access

23.1 Standard Operating Procedures

- Continue coordination with counties and other agency road entities to promote utilization of best management practices for road maintenance they conduct within NCA boundaries.
- Maintain an inventory of existing road and trail systems.
- BLM Manual 9113, Roads (BLM 1985a) and BLM Handbook 9113-2, Roads – Inventory and Maintenance (BLM 1985b) will be used to guide all maintenance and road construction designs and requirements. Include definitions for functional road classification and maintenance levels for BLM roads.
- All highway right-of-ways and other road authorizations will contain noxious and invasive weed stipulations that include prevention, inventory, treatment, and re-vegetation or rehabilitation. Road abandonment will include at least three years of post-abandonment monitoring and treatment.

23.2 Best Management Practices

NEPA Requirements – No new NEPA analysis will be required for road maintenance activities within the defined maintenance disturbance/easement footprint, which is defined as previously disturbed or maintained. Disturbance outside of the defined maintenance disturbance/easement footprint or road realignment will be subject to additional NEPA compliance.

23.4 References

BLM (United States Department of the Interior, Bureau of Land Management). 1985a. BLM Manual 9113: Roads. Release 9-247. BLM, Washington DC. June 7, 1985. 83 pp.

_____. 1985b. BLM Handbook 9113-2, Roads – Inventory and Maintenance. Release 9-250. BLM, Washington DC. December 19, 1985. 18 pp.

APPENDIX E

Utah Standards for Rangeland Health and Guidelines for Grazing Administration

The BLM has developed the following Fundamentals of Rangeland Health and their companion rules-Standards for Rangeland Health and Guidelines for Grazing Management for BLM in Utah ([BLM-UT-GI-97-001-4000] U.S. Department of Interior, Bureau of Land Management, Utah State Office 1997).

FUNDAMENTALS OF RANGELAND HEALTH

As provided by regulations, developed by the Secretary of the Interior on February 22, 1995, the following conditions must exist on BLM lands:

1. Watersheds are in, or making significant progress toward, properly functioning physical condition, including their upland, riparian –wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, and timing and duration of flow.
2. Ecological processes, including the hydrologic cycle nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
3. Water quality complies with State water quality standards and achieves, or is making significant progress towards achieving established BLM management objectives such as meeting wildlife needs.
4. Habitats; are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered Species, Federal proposed, Category 1 and 2 Federal candidate and other special status Species.

In 1997, the BLM in Utah developed rules to carry out the Fundamentals of Rangeland health. These are called Standards for Rangeland health and Guidelines for grazing management.

Standards spell out conditions to be achieved on BLM Lands in Utah, and Guidelines describe practices that will be applied in order to achieve the Standards.

STANDARDS FOR RANGELAND HEALTH

Standard 1. Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.

As indicated by:

1. Sufficient cover and litter to protect the soil surface from excessive water and wind erosion; to promote infiltration; detain surface flow; and retard soil moisture loss by evaporation;
2. The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies;
3. The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the desired plant community IDPCI, where identified in a land-use plan, or (2) where the PVC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Standard 2. Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate, and landform.

As indicated by:

1. Stream bank vegetation consisting of or showing a trend toward species with root masses capable of withstanding high stream flow events. Vegetative cover adequate to protect stream banks and dissipate stream flow energy associated with high-water flows. Protect against accelerated erosion, capture sediment, and provide for groundwater recharge.
2. Vegetation reflecting: Desired Plant Community. Maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.
3. Revegetating point bars: Lateral stream movement associated with natural sinuosity: channel width, depth, pool frequency, and roughness appropriate to landscape position.
4. Active floodplain.

Standard 3. Desired species, including native, threatened.

As indicated by:

1. Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.
2. Habitats connected at a level to enhance species survival.
3. Native species reoccupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of nonnative species.
4. Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community DPC, where identified in a land use plan conforming to these Standards, or (2) where the DPC is identified a community that equally sustains the desired level of productivity and properly functioning ecologic processes.

Standard 4. BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah Water Quality Standards (R.317-2) for surface and groundwater.

As indicated by:

1. Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters.
2. Macro-invertebrate communities that indicate water quality meets aquatic objectives.
3. Because BLM Lands provide forage for grazing of wildlife and domestic livestock, the following rules have been developed to assure that such grazing is consistent with the Standards listed here.
4. BLM will continue to coordinate monitoring water quality activities with other Federal, State and technical agencies.

GUIDELINES FOR GRAZING MANAGEMENT

Grazing management practices will be implemented that:

1. Maintain sufficient residual vegetation and litter on both upland and riparian sites to protect the soil from wind and water erosion and support ecological functions;
2. Promote attainment or maintenance of proper functioning condition riparian/wetland areas, appropriate stream channel morphology, desired soil permeability and permeability and infiltration, and appropriate soil conditions and kinds and amounts of plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow.
3. Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow;
4. Maintain viable and diverse populations of plants and animals appropriate for the site,
5. Provide or improve within the limits of site potentials, habitat for Threatened or Endangered Species;
6. Avoid grazing management conflicts with other species that have the potential of becoming protected or special status species;
7. Encourage innovation, experimentation and the ultimate development of alternatives to improve rangeland management practices;
8. Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the Standards.

Any spring or seep developments will he designed and constructed to protect ecological process and functions and improve livestock, wild horse, and wildlife distribution.

New rangeland projects for grazing will be constructed in a manner consistent with the standards. Considering economic circumstances and site limitations, existing rangeland projects and facilities that conflict with the achievement or maintenance of the standards will be relocated and/or modified.

Livestock salt blocks and other nutritional supplements will be located away from riparian/wetland areas or other permanently located, or other natural water sources. It is recommended that the locations of these supplements be moved every year.

The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands nonintrusive, nonnative plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) can not achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established native species.

When rangeland manipulations are necessary, the best management practices, including biological processes, fire, and intensive grazing, will be utilized prior to the use of chemical or mechanical manipulations.

When establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience is to be considered. Aesthetic and scenic values, water, campsites, and opportunities for solitude are among those considerations.

Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein, and other supplements) for the purpose of substituting for inadequate natural forage will not be conducted on BLM lands other than in (a) emergency situations where no other resource exists and animal survival is in jeopardy, or (b) situations where an authorized officer determines such a practice will assist in meeting a standard or attaining a management objective.

In order to eliminate, minimize, or limit the spread of noxious weeds, (a) only hay cubes, hay pellets, or certified weed-free hay will be fed on BLM lands, and (b) reasonable adjustments in grazing methods, methods of transport, and animal husbandry practices will be applied.

To avoid contamination of water sources and in advertent damage to non-target species, aerial application of pesticides will not be allowed within 100 feet of a riparian wetland area unless the product is registered for such use by the EPA.

On rangelands where a standard is not being met, and conditions are moving toward meeting the standard, grazing may be allowed to continue. On lands where a standard is not being met, conditions are not improving toward meeting the standard or other management objectives, and livestock grazing is deemed responsible, administrative action with regard to livestock will be taken by the authorized officer pursuant to CUR 4180.2(c).

Where it can he determined that more than one kind of grazing animal is responsible for failure to achieve a standard, and adjustments in management are required. Those adjustments will be made to each kind of animal, based on interagency cooperation as needed in proportion to their degree of responsibility.

Rangelands that have been burned, reseeded, or otherwise treated to alter vegetative composition will be closed to livestock grazing as follows: (1) burned rangelands, whether by wildfire or prescribed burning, will be ungrazed for a minimum of one complete growing season following the burn; and (2) rangelands that have been reseeded or otherwise chemically or mechanically treated will be ungrazed for a minimum of two complete growing seasons

Conversions in kind of livestock (such as from sheep to cattle) will be analyzed in light of rangeland health standards. Where such conversions are not adverse to achieving a standard, or they are not in conflict with BLM land-use plans, the conversion will be allowed.

APPENDIX F

Migratory Birds and Birds of Conservation Concern

Table F-1 RCNCA Migratory Birds And Birds Of Conservation Concern

RCNCA Migratory Birds And Birds Of Conservation Concern			
Common Name	Scientific Name	Occurrence	Count 1962-2010
American Avocet	*Recurvirostra americana*	Verified	1
American Bittern	*Botaurus lentiginosus*	Verified	2
American Coot	*Fulica americana*	Verified	32251
American Goldfinch	*Carduelis tristis*	Verified	2178
American Kestrel	*Falco sparverius*	Verified	1480
American Pipit	*Anthus rubescens*	Verified	10113
American Robin	*Turdus migratorius*	Verified	8448
American White Pelican	*Pelecanus erythrorhynchos*	Verified	7
American Wigeon	*Anas americana*	Verified	13772
Anna's Hummingbird	*Calypte anna*	Verified	12
Ash-throated Flycatcher	*Myiarchus cinerascens*	Verified	1
Barn Swallow	*Hirundo rustica*		0
Belted Kingfisher	*Megaceryle alcyon*	Verified	206
Black-and-white Warbler	*Mniotilta varia*	Verified	1
Black-chinned Hummingbird	*Archilochus alexandri*	Verified	1
Black-chinned Sparrow	*Spizella atrogularis*	Verified	1
Black-crowned Night-Heron	*Nycticorax nycticorax*	Verified	68
Black-headed Grosbeak	*Pheucticus melanocephalus*	Verified	1
Black-throated Sparrow	*Amphispiza bilineata*	Verified	5
Blue-gray Gnatcatcher	*Polioptila caerulea*	Verified	30
Blue-winged Teal	*Anas discors*	Verified	14
Bonaparte's Gull	*Chroicocephalus philadelphia*	Verified	1
Brewer's Blackbird	*Euphagus cyanocephalus*	Verified	39591
Brewer's Sparrow	*Spizella breweri*	Verified	70
Brown-headed Cowbird	*Molothrus ater*	Verified	912
Bufflehead	*Bucephala albeola*	Verified	1207
Burrowing Owl	*Athene cunicularia*	Verified	18
California Gull	*Larus californicus*	Verified	138
Canada Goose	*Branta canadensis*	Verified	5431
Canvasback	*Aythya valisineria*	Verified	925
Cassin's Finch	*Carpodacus cassinii*	Verified	210
Cattle Egret	*Bubulcus ibis*	Verified	7
Cedar Waxwing	*Bombycilla cedrorum*	Verified	1983
Chipping Sparrow	*Spizella passerina*	Verified	17
Cinnamon Teal	*Anas cyanoptera*	Verified	15
Clark's Grebe	*Aechmophorus clarkii*	Verified	10
Common Goldeneye	*Bucephala clangula*	Verified	574
Common Loon	*Gavia immer*	Verified	9
Common Merganser	*Mergus merganser*	Verified	1657

RCNCA Migratory Birds And Birds Of Conservation Concern			
Common Name	Scientific Name	Occurrence	Count 1962-2010
Common Moorhen	*Gallinula chloropus*	Verified	70
Common Yellowthroat	*Geothlypis trichas*	Verified	23
Cooper's Hawk	*Accipiter cooperii*	Verified	369
Costa's Hummingbird	*Calypte costae*	Verified	5
Dark-eyed Junco	*Junco hyemalis*	Verified	15434
Double-crested Cormorant	*Phalacrocorax auritus*	Verified	108
Dunlin	*Calidris alpina*	Verified	2
Eared Grebe	*Podiceps nigricollis*	Verified	292
Ferruginous Hawk	*Buteo regalis*	Verified	274
Fox Sparrow	*Passerella iliaca*	Verified	14
Gadwall	*Anas strepera*	Verified	516
Golden Eagle	*Aquila chrysaetos*	Verified	145
Golden-crowned Kinglet	*Regulus satrapa*	Verified	15
Golden-crowned Sparrow	*Zonotrichia atricapilla*	Verified	14
Great Blue Heron	*Ardea herodias*	Verified	340
Great Egret	*Ardea alba*	Verified	14
Greater White-fronted Goose	*Anser albifrons*	Verified	20
Green Heron	*Butorides virescens*	Verified	10
Green-tailed Towhee	*Pipilo chlorurus*	Verified	3
Green-winged Teal	*Anas crecca*	Verified	910
Hermit Thrush	*Catharus guttatus*	Verified	35
Herring Gull	*Larus argentatus*	Verified	3
House Wren	*Troglodytes aedon*	Verified	11
Killdeer	*Charadrius vociferus*	Verified	1762
Lark Sparrow	*Chondestes grammacus*	Verified	11
Least Sandpiper	*Calidris minutilla*	Verified	29
Lesser Goldfinch	*Spinus psaltria*	Verified	4054
Lesser Scaup	*Aythya affinis*	Verified	1010
Lincoln's Sparrow	*Melospiza lincolnii*	Verified	122
Loggerhead Shrike	*Lanius ludovicianus*	Verified	590
Long-billed Dowitcher	*Limnodromus scolopaceus*	Verified	1
Long-eared Owl	*Asio otus*	Verified	21
Mallard	*Anas platyrhynchos*	Verified	9549
Marsh Wren	*Cistothorus palustris*	Verified	702
Merlin	*Falco columbarius*	Verified	133
Mountain Bluebird	*Sialia currucoides*	Verified	1131
Mourning Dove	*Zenaida macroura*	Verified	10072
Northern Flicker	*Colaptes auratus*	Verified	1578
Northern Harrier	*Circus cyaneus*	Verified	831
Northern Pintail	*Anas acuta*	Verified	479
Northern Shoveler	*Anas clypeata*	Verified	4315
Orange-crowned Warbler	*Oreothlypis celata*	Verified	178

RCNCA Migratory Birds And Birds Of Conservation Concern			
Common Name	Scientific Name	Occurrence	Count 1962-2010
Peregrine Falcon	*Falco peregrinus*	Verified	20
Phainopepla	*Phainopepla nitens*	Verified	2
Pied-billed Grebe	*Podilymbus podiceps*	Verified	793
Pine Siskin	*Spinus pinus*	Verified	1004
Plumbeous Vireo	*Vireo plumbeus*	Verified	1
Prairie Falcon	*Falco mexicanus*	Verified	137
Red-breasted Merganser	*Mergus serrator*	Verified	4
Redhead	*Aythya americana*	Verified	1062
Red-naped Sapsucker	*Sphyrapicus nuchalis*	Verified	155
Red-shouldered Hawk	*Buteo lineatus*	Verified	3
Red-tailed Hawk	*Buteo jamaicensis*	Verified	1761
Red-winged Blackbird	*Agelaius phoeniceus*	Verified	112112
Ring-billed Gull	*Larus delawarensis*	Verified	7102
Ring-necked Duck	*Aythya collaris*	Verified	16405
Ross's Goose	*Chen rossii*	Verified	34
Ruby-crowned Kinglet	*Regulus calendula*	Verified	2063
Ruddy Duck	*Oxyura jamaicensis*	Verified	9415
Sage Sparrow	*Amphispiza belli*	Verified	619
Sage Thrasher	*Oreoscoptes montanus*	Verified	8
Sandhill Crane	*Grus canadensis*	Verified	2
Savannah Sparrow	*Passerculus sandwichensis*	Verified	2243
Say's Phoebe	*Sayornis saya*	Verified	1498
Sharp-shinned Hawk	*Accipiter striatus*	Verified	347
Short-eared Owl	*Asio flammeus*	Verified	1
Snow Goose	*Chen caerulescens*	Verified	41
Snowy Egret	*Egretta thula*	Verified	3
Song Sparrow	*Melospiza melodia*	Verified	3261
Sora	*Porzana carolina*	Verified	45
Spotted Sandpiper	*Actitis macularius*	Verified	4
Spotted Towhee	*Pipilo maculatus*	Verified	771
Swainson's Hawk	*Buteo swainsoni*	Verified	2
Swainson's Thrush	*Catharus ustulatus*	Verified	1
Swamp Sparrow	*Melospiza georgiana*	Verified	9
Townsend's Solitaire	*Myadestes townsendi*	Verified	66
Turkey Vulture	*Cathartes aura*	Verified	5
Vermilion Flycatcher	*Pyrocephalus rubinus*	Verified	31
Vesper Sparrow	*Pooecetes gramineus*	Verified	98
Virginia Rail	*Rallus limicola*	Verified	155
Western Bluebird	*Sialia mexicana*	Verified	297
Western Kingbird	*Tyrannus verticalis*	Verified	1
Western Meadowlark	*Sturnella neglecta*	Verified	12643
Western Sandpiper	*Calidris mauri*	Verified	1

RCNCA Migratory Birds And Birds Of Conservation Concern			
Common Name	Scientific Name	Occurrence	Count 1962-2010
White-crowned Sparrow	*Zonotrichia leucophrys*	Verified	131551
White-winged Dove	*Zenaida asiatica*	Verified	108
Williamson's Sapsucker	*Sphyrapicus thyroideus*	Verified	1
Wilson's Snipe	*Gallinago delicata*	Verified	29
Wilson's Warbler	*Cardellina pusilla*	Verified	2
Wood Duck	*Aix sponsa*	Verified	293
Yellow Warbler	*Setophaga petechia*	Verified	1
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Verified	19
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	Verified	25
Yellow-rumped Warbler	*Setophaga coronata*	Verified	1659

APPENDIX G

Special Recreation Management Area

Red Cliffs Special Recreation Management Area
Recreation Setting Characteristics Matrix

PHYSICAL COMPONENTS Qualities of the Landscape				
Physical Component	Primitive	Backcountry	Frontcountry	Rural
Remoteness	Within ½ mile of paved municipal roads, highways, and unpaved County roads. Primitive routes are present.	Within ¼ mile of paved municipal roads, highways, and unpaved County roads. Mechanized routes with natural surfacing are present.	Adjacent to paved municipal roads, highways, and unpaved County roads Unpaved utility roads and mechanized routes with natural surfacing are present.	Paved municipal roads, highways, and unpaved County roads are present.
Naturalness	Undisturbed, natural appearing landscape. Boundary corresponds with designated wilderness.	Mostly natural landscape with some modifications. Transmission lines and water utility structures visible in some locations.	Landscape partially modified with development dominating the natural landscape in a few areas. Paved and unpaved roads and utility developments are typically visible.	Natural landscape considerably modified. Utility development, paved highways, municipal subdivisions, and campgrounds dominate the landscape.
Facilities	Trails are unmaintained primitive routes, typically in washes. No structures present.	Mix of maintained and unmaintained trails. Trail structures consist of infrequent directional and regulatory signs.	Maintained and marked trails. Trail structures consist of frequent directional, regulatory, and interpretive signs.	Facilities consist of paved roads, campgrounds, restrooms, day-use areas, fenced parking, and interpretive kiosks.

SOCIAL COMPONENTS Qualities Associated with Use				
Social Component	Primitive	Backcountry	Frontcountry	Rural
Contacts (average for other groups)	0 to 3 encounters per day on primitive routes.	1 to 6 encounters per day and designated trails.	2 to 12 encounters per day on designated trails.	5 to 40 encounters per day in campgrounds and at developed trailheads.
Group Size (average for other groups)	1 to 3 people per group.	1 to 6 people per group.	2 to10 people per group.	2 to 15 people per group.
Evidence of Use	Alteration of the natural terrain consists of user created trails. Sounds of other visitors rare.	Alteration of the natural terrain limited to designated trails with some widening of the tread. Sounds of other visitors infrequent.	Alteration of the natural terrain limited to designated trails. Trail braiding is common. Sounds of people frequently heard.	Large areas of alteration prevalent. Paved surfaces common. Sounds of people constantly heard.

Existing Setting

Prescribed Setting

Recreation Setting Characteristics Matrix (continued)

OPERATIONAL COMPONENTS Conditions Created by Management and Controls over Recreation Use				
Operational Component	Primitive	Backcountry	Frontcountry	Rural
Access (types of travel allowed)	Foot and horse travel only. Off trail travel allowed	Four-wheel drive vehicles on administrative roads. Mountain bike, foot, and horse travel on designated trails. No off-trail travel allowed.	Two-wheel drive vehicles on administrative roads. Mountain bike, foot, and horse travel on designated trails. No off-trail travel allowed.	Ordinary highway auto and truck traffic on paved and unpaved, graded roads. Off trail travel allowed by non-motorized users.
Visitor Services and Interpretation	Detailed maps and brochures available off-site. Staff is not present.	Detailed maps and brochures available off-site. Staff is rarely present.	Detailed maps and brochures available off-site. Directional, regulatory, and interpretive signs are common. Staff is occasionally present.	Detailed maps and brochures available on and off-site. Directional, regulatory, and interpretive kiosks at all entry points. Staff is consistently present.
Managment Controls (signing)	No posting or signing of rules, regulations, or ethical standards. Directional signing is minimum required for public safety.	Basic regulations clearly posted at heavy traffic locations. Directional signs posted at critical trail junctions.	Detailed rules, regulations, and ethical standards clearly posted at multiple locations. Directional signs evident at critical locations and along trail routes.	Comprehensive rules, regulations, and ethical standards clearly posted at all access points. Directional signing evident on roads and at trailheads.
Managment Controls (camping)	Dispersed camping allowed. Limited to backpacking and horsepacking.	Dispersed camping allowed at designated sites only.	Dispersed camping not allowed.	Camping allowed in the Red Cliffs Campground and Sand Cove Primitive Campground only. Dispersed camping not allowed.
Management Controls (law enforcement)	Law enforcement and non-LEO Park Rangers rarely patrol. Respond to incidents and rescues only.	Law enforcement and non-LEO Park Rangers patrol infrequently. Respond to incidents and rescues.	Law enforcement and non-LEO Park Rangers patrol occasionally. Respond to incidents and rescues.	Law enforcement and non-LEO Park Rangers patrol on a regular basis. Respond to incidents and rescues.
Management Controls (monitoing)	Annual wilderness impact monitoring conducted.	Monitoring conducted annually to determine maintenance needs and collect information on the extent of visitor impacts.	Monitoring conducted monthly to bi-annually depending on location to determine maintenance needs and collect information on the extent of visitor impacts.	Monitoring conducted daily to weekly in high use areas to determine maintenance needs and collect information on the visitor impacts.

Existing Setting

Prescribed Setting

Red Cliffs Special Recreation Management Area
RMZ Supporting Information

Introduction

The enabling legislation for the Red Cliffs NCA is Public Law 111-11 of 2009 (OPLMA). It stated that the purpose of the Red Cliffs National Conservation area was: "to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the National Conservation Area."

The enabling legislation clearly recognized recreation as one of the values of the NCA.

Even though it lacked an official BLM Special Recreation Management Area (SRMA) designation, the NCA has been effectively managed as an SRMA since the adoption of the Public Use Plan (PUP) for the Red Cliffs Desert Reserve in June 2000. This document was tiered to the Washington County Habitat Conservation Plan and it recognized the value of this open space for dispersed, non-motorized recreation opportunities. It also recognized that recreational use needs to be intensively managed in order to protect the critical desert tortoise habitat that was the driving force behind the Reserve. Because of the overlap of critical habitat, urban interface, and existing recreation management, SRMA status is proposed in all action alternatives.

SMRA Objectives

Objective Statement—Red Cliffs NCA

The Red Cliffs SRMA offers high quality sustainable recreation opportunities and visitor services, while conserving and protecting other resource values of the NCA.

RMZ Objectives: Rural

The Rural RMZ offers high quality, sustainable, family-friendly activities and educational opportunities, while conserving and protecting other resource values of the NCA.

Activities

- ► Car camping at the Red Cliffs Recreation Area
- ► Day-use activities like picnicking and visiting interpretive displays
- ► Exploring interpreted archaeological and paleontological sites

Experiences

- ► Participating in self-education activities
- ► Enjoying family and friends

Benefits

- ► Stronger ties with family and friends
- ► Greater respect for cultural heritage
- ► Temporary freedom from urban life

RMZ Objectives: Frontcountry

The Frontcountry RMZ offers high quality sustainable non-motorized recreation opportunities, while conserving and protecting other resource values of the NCA.

Activities

- ► Hiking, biking, and horseback riding on easily accessible trails
- ► Rock climbing just minutes from the urban interface

Experiences

- ► Enjoying a wide variety of recreational opportunities
- ► Having the ability to participate in outdoor activities so close to town
- ► Getting much needed exercise

Benefits

- ► Improving outdoor skills and abilities

- Gaining greater self-confidence
- Escaping everyday responsibilities

RMZ Objectives: Backcountry

The Backcountry RMZ offers challenging, and sustainable backcountry, non-motorized opportunities, while conserving and protecting other resource values of the NCA.

Activities

- Hiking, biking, and horseback riding on long, challenging trails

Experiences

- Testing endurance
- Sharing challenging outdoor adventure with friends
- Experiencing a wide variety of outdoor environments

Benefits

- Stronger ties with family and friends
- Temporary freedom from urban life
- Increased adaptability to outdoor challenges

RMZ Objectives: Primitive

The Primitive RMZ offers remote, adventurous, and sustainable non-motorized opportunities, while conserving and protecting other resource values of the NCA.

Activities

- Hiking and horseback riding on rugged, challenging, and remote terrain
- Traditional rock climbing on remote crags

Experiences

- Enjoying strenuous physical exercise
- Enjoying risk-taking activities
- Developing self-sufficiency

Benefits

- Stronger ties with friends through shared experiences
- Greater environmental awareness
- Increased adaptability to outdoor challenges

Recreation Setting Characteristic Descriptions: Rural

Physical Components

This RMZ contains all roads, trailheads and access points for the NCA, including paved municipal roads, highways, and unpaved County roads. It includes highly developed areas like the Red Cliffs Recreation Area. Power lines, water facilities, paved highways, and municipal subdivisions are immediately adjacent and dominate the landscape. Facilities in this RMZ consist of paved roads, campgrounds, restrooms, day-use areas, fenced parking, and interpretive kiosks.

Social Components

Visitors to this RMZ can expect people to be everywhere, even during the week. 5-40 encounters per day in campgrounds and at developed trailheads is common. Group sizes range from 2-15 people per group with the larger groups primarily in developed day-use areas. Large areas of alteration prevalent and paved surfaces are common. Sounds of other visitors are everywhere. Comprehensive signage that contains rules, regulations, and ethical standards are clearly posted at all access points.

Operational Components

Visitors to this RMZ can expect a steady stream of highway auto and truck traffic on paved and unpaved, graded roads. This RMZ has the highest number of operational controls. Detailed maps and brochures available both on

and off-site. Directional, regulatory, and interpretive kiosks can be found at all trailheads and entry points. Staff is consistently present and Law enforcement and non-LEO Park Rangers patrol on a regular basis. Directional signing is evident on roads and at trailheads. Camping is allowed in the Red Cliffs Campground and Sand Cove Primitive Campground only. Dispersed camping is not allowed. Monitoring is conducted daily to weekly in high use areas to determine maintenance needs and collect information on the visitor impacts.

Recreation Setting Characteristic Descriptions: Frontcountry

Physical Components

This RMZ is accessed from the roads and trailheads in the Rural Zone. It is adjacent to paved municipal roads, highways, and unpaved County roads. It contains unpaved utility roads that are used for administrative access to electrical and water utilities. The landscape is partially modified with development dominating the natural landscape in a few areas. Paved and unpaved roads and utility developments are visible from many areas within the zone. Mechanized routes with natural surfacing that are maintained and marked are the primary recreational component. Trail structures consist of frequent directional, regulatory, and interpretive signs.

Social Components

Visitors to this RMZ can expect between 2-12 encounters per day on designated trails, with group sizes ranging from 2-10 people per group. Larger groups are often part of commercial hiking, biking, and climbing permit holders and are accompanied by guides. Alteration of the natural terrain limited to designated trails. Because use is typically heavy, trail braiding is common, particularly where equestrian use is common. Sounds of people frequently heard but considerably less than the Rural Zone.

Operational Components

Two-wheel drive vehicles that service water and power utilities are common on administrative roads. Mountain bike, foot, and horse travel is allowed on designated trails only. Because this zone is primarily within critical desert tortoise habitat, no off-trail travel or dispersed camping is allowed. Detailed maps and brochures are available off-site and directional, regulatory, and interpretive signs are common. Detailed rules, regulations, and ethical standards clearly posted at multiple locations. Directional signs evident at critical locations and along trail routes. Law enforcement and non-LEO Park Rangers patrol this zone occasionally, but primarily respond to incidents and rescues. Monitoring is conducted monthly to biannually depending on location to determine maintenance needs and collect information on the extent of off-trail impacts.

Recreation Setting Characteristic Descriptions: Backcountry

Physical Components

This RMZ is accessed primarily from the Frontcountry Zone and in some locations, directly from the Rural Zone. It is within ¼ mile of paved municipal roads, highways, and unpaved County roads. It contains a few unpaved utility roads that are used for administrative access to electrical and water utilities. The landscape is mostly natural with some modifications. Transmission lines and water utility structures are visible in some locations. A mix of maintained and unmaintained, natural surface mechanized routes are the primary recreation component. Trail structures consist of infrequent directional and regulatory signs.

Social Components

Visitors to this RMZ can expect between 1-6 encounters per day on designated trails, with group sizes ranging from 1–6 people per group. Larger groups are rare in this zone. Alteration of the natural terrain limited to designated trails with some widening of the tread. Sounds of other people are infrequent. Solitude can be found in this zone.

Operational Components

Four-wheel drive vehicles that service water and power utilities are occasionally seen on administrative roads. Mountain bike, foot, and horse travel is allowed on designated trails only. Because this zone is partially within critical desert tortoise habitat, no off-trail travel is allowed. Dispersed camping may be allowed in designated sites only. Detailed maps and brochures available off-site and basic regulations are posted at heavy traffic locations. Directional signs are the minimum required for public safety. Law enforcement and non-LEO Park Rangers patrol infrequently

and their main interaction with this zone is response to incidents and rescues. Monitoring is conducted annually depending on location to determine maintenance needs and collect information on the extent of off-trail impacts.

Recreation Setting Characteristic Descriptions: Primitive

Physical Components

This RMZ corresponds with designated wilderness. It is accessed primarily from the Frontcountry and Backcountry Zones and in one location, directly from the Rural Zone. It is within ½ mile of paved municipal roads, highways, and unpaved County roads. The landscape is undisturbed and natural appearing. Primitive, unmaintained routes are present, and are primarily in washes or across slickrock. No structures are present.

Social Components

Visitors to this RMZ can expect between 0-3 encounters per day on primitive routes, with group size ranging from 1 to 3 people per group. Alteration of the natural terrain consists of user created trails. Sounds of other visitors are rare. Solitude can be found throughout this zone.

Operational Components

Travel is limited to foot and horse traffic only, and off trail travel allowed. Dispersed camping is allowed but limited to backpacking and horsepacking. Detailed maps and brochures are available off-site. Rules, regulations, and ethical standards are posted outside the wilderness boundary. Law enforcement and non-LEO Park Rangers rarely patrol and their main interaction with this zone is response to incidents and rescues. Annual wilderness character monitoring conducted.

Management Actions and Allowable Use Decisions

Recreation and Visitor Services Program

The key component of SRMA management used to protect setting characteristics will be the development of a Recreation Master Plan. The RAMP will identify specific management actions for recreational activities and visitor services within the SRMA and would include, but is not limited to:

- Non-motorized trail standards;
- Motorized routes;
- Rock climbing;
- Developed camping;
- Dispersed camping;
- Architectural design standards ;
- Recreational impact monitoring standards and procedures.

Other Programs

Section 1974 (a) of OPLMA mandates the Secretary, to develop a comprehensive management plan for the Red Cliffs NCA to achieve the following Congressionally-defined purposes:

To conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the NCA

OPLMA specifically restricts allowable uses by withdrawing the public lands of this NCA, subject to valid existing rights, from:

- all forms of entry, appropriation, and disposal under the public land laws;
- location, entry, and patenting under the mining laws; and
- operation of the mineral leasing, mineral materials, and geothermal leasing laws.

These Congressional actions, combined with the existing Washington County Habitat Conservation Plan provide overarching protection for recreation settings in the Red Cliffs SRMA. It restricts all recreation activities outside the Rural Zone to non-motorized modes of travel.

Implementation Decisions

The primary implementation decision required for the long term success of the Red Cliffs SRMA is completion of the St. George field Office Travel Management Plan. The travel planning effort is on a separate, but parallel track to this land use planning effort and its release will follow closely behind this plan.

There is an implementation decision in Chapter 2 that states “Construct new trails in the Rural, Frontcountry, or Backcountry Zones, as shown in the Travel Management Plan for Alternative (B, C, D).” This is an implementation decision and it was included because the travel plan is certainly the most anticipated part of the current SGFO planning efforts. In the NCA, the travel plan is considered crucial because it proposes a complete overhaul of the existing non-motorized trail network.

The travel plan for the NCA mirrors the aspirational goals of the individual alternatives in this plan. But it also recognizes the reality that the NCA is the urban interface for the greater St. George metropolitan area and recreational visits will continue to grow. The travel plan is based on the assumption that in order to eliminate illegal trail use and protect critical habitat, the trail system must provide the experience that visitors are seeking. To do this, some new trail construction has to occur.

APPENDIX H

Criteria for the Placement of Natural Surface Trails

The following criteria are used to determine suitable locations for new trails and trail reroutes within the Beaver Dam Wash and Red Cliffs NCAs. This document utilizes terminology from the Recommended Standardized Trail Terminology for Use in Colorado (COTI 2005).

These criteria are to be followed as guidelines. Not all of the criteria can be met on every segment of every trail. Their purpose is to help create sustainable, low maintenance trails that provide quality recreation experiences on the basis of predetermined trail management objectives (TMOs). Specialty trails requiring higher maintenance may be allowed in appropriate locations.

1. Know and understand trail management objectives. TMO's provide the framework for what the trail will look like, who will be using the trail, and how the trail will be managed. Different TMO's may allow different applications of the criteria below.
2. Create loops and avoid dead end trails. All trails should begin and end at a trailhead or another trail. A well-planned stacked loop trail system offers a variety of trail options. Easier, shorter loops are arranged close to the trailhead, with longer, more challenging loops extending further beyond the trailhead. Occasionally, destination trails to a point of interest will require an out-and-back trail, but only if they cannot be reasonably incorporated into a loop.
3. Identify control points and use them to guide trail design and layout. Control points are specific places or features that influence where the trail goes. Basic control points include the beginning and end of the trail, property boundaries, intersections, drainage crossings, locations for turns, and other trails.
4. Positive control points are places where you want users to visit, including scenic overlooks, historic sites, waterfalls, rock outcroppings, lakes, rivers and other natural features or points of interest. If the trail does not incorporate these features, users will likely create unsustainable social trails to get to them.
5. Negative control points are places you want users to avoid, such as low-lying wet areas, flat ground, extremely steep cross slopes or cliffs, unstable soils, environmentally sensitive areas, sensitive archaeological sites, safety hazards, and private property.
6. Knowing these control points provides a design framework. Try to connect the positive control points while avoiding the negative control points
7. Use cross slope and avoid flat ground whenever possible. The trail tread should generally run perpendicular to the cross slope and should utilize frequent grade reversals. This is the best way to keep water off the trail. Use curvilinear design principles to create a trail that follows the natural contours of the topography, sheds water, blends with the surrounding terrain, and provides fun recreation opportunities.
8. The following grade guidelines will help determine appropriate tread locations.
9. The Half Rule: "A trail's grade shouldn't exceed half the grade of the hillside or sideslope (cross slope) that the trail traverses. If the grade does exceed half the sideslope, it's considered a fall-line trail. Water will flow down a fall-line trail rather than run across it. For example, if you're building across a hillside with a (cross slope) of 20 percent, the trail-tread grade should not exceed 10 percent" (IMBA 2004). Steeper cross slopes allow more flexibility for sustainable tread grades while flat or low angle cross slopes can be problematic. There is an upper limit to this rule. Sustaining a 24 percent tread grade, even on a 50 percent cross slope is unlikely. Additionally, trail segments may break this rule on durable tread surfaces such as solid rock.
10. The Ten Percent Average Guideline: The average trail grade over the length of the trail should be 10 percent or less for greatest sustainability. Short sections of the trail may exceed this, but the overall grade should remain at 10 percent or less.
11. Maximum Sustainable Grade: This is the upper grade limit for those short trail segments that push the limits of the previous two guidelines. It is determined by a site-specific analysis that is based on TMO's, environmental conditions, and observations of existing trails – what's working, and what's not?

12. Grade Reversals: Frequent changes in the direction of tread grade (gentle up and down undulations) will ensure that water is forced off the trail at frequent intervals.
13. Locate trails in stable soils. Avoid clays, deep loam and soils that do not drain rapidly. Consider season of use and type of use. The capabilities of motorized vehicles to function in wet/muddy conditions make it imperative to avoid unstable or poorly drained soils. Trails that are less likely to be used when wet may be located in less-desirable soils if necessary. In western Colorado's arid environment, the best soil conditions for trails are those with high rock content.
14. Drainage crossings are key control points and should be selected carefully. Consider both the trail's impact on the drainage (erosion and sedimentation), and the drainage's impact on the trail (changing tread surface, water channeling onto trail). The trail should descend into and climb out of the drainage to prevent water from flowing down the trail. Avoid long or steep entries into drainages. Design grade reversals into the trail on each side of the approach to minimize water and sediment entering from the trail. Look for drainage crossings on rock.
15. Dry washes can be excellent travel ways. They are well defined, contain noise, and are periodically resurfaced by flowing water. As long as the wash does not support riparian vegetation and has no major safety problems, like water falls, they are well suited to be part of a recreational trail system.
16. Avoid switchbacks. Switchbacks are difficult, time-consuming, and expensive to construct, and require regular maintenance. Users often cut them, causing avoidable impacts. Utilizing curvilinear design principles eliminates the need for most switchbacks. Climbing turns are easier to construct and maintain and utilize natural terrain features (benches, knolls, rock outcrops) to change the direction of a trail.
17. Avoid ridge tops. Ridge tops are often primary transportation corridors for wildlife, and were often used by Native Americans as travel routes. Noise from ridge top trails is broadcast over a wide area. Locate trails on side hills, off ridge tops, using ridges and watersheds as natural sound barriers to isolate noise.
18. Use vegetation and other natural features to conceal the trail and absorb noise. This can be difficult in a desert environment. Try to minimize the visual impact of the trail by following natural transitions in vegetation or soil type. A trail near the base of a sideslope or on rimrock is usually less visible than a mid-slope trail. Denser vegetation will hide a trail, lessen noise transmission, and can dissipate the energy of falling raindrops on the bare soil of the trail tread.
19. Carefully design intersections to avoid safety problems. When locating a bicycle or motorized vehicle trail be aware of sighting distance and sight lines. Collisions can be avoided if riders can see each other. Avoid four way intersections. Offsetting the cross traffic helps reduce speeds and reduces the risk of collisions.

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