



U.S. Department of the Interior
Bureau of Land Management

St. George Field Office

Record of Decision and Approved Resource Management Plan Amendment





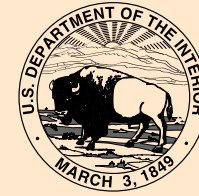
St. George Field Office

**Record of Decision
and
Approved Resource Management Plan Amendment**

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

A handwritten signature in black ink, appearing to read "Edwin L. Roberson". The signature is fluid and cursive, with a long horizontal stroke at the end.

**Edwin L. Roberson
Utah State Director
Bureau of Land Management**



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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In reply to:
1610 (UTC03000)
DOI-BLM-UT-C030-2015-1-EIS

Dear Reader:

I am pleased to announce that after several years of hard work and collaborative efforts, an Amendment to the St. George Field Office Resource Management Plan (Approved RMP Amendment) is complete. This document amends the St. George Field Office RMP (1999) to comply with direction from the Omnibus Public Land Management Act of 2009 (OPLMA) at sections 1977 and 1979. The attached Record of Decision (ROD) and Approved RMP Amendment have been prepared in accordance with the Federal Land Policy and Management Act, OPLMA, and the National Environmental Policy Act.

The Approved RMP Amendment finalizes the management goals, objectives, and decisions that were presented in the Proposed RMP Amendment/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. Four 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 Amendment. 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 Amendment/Final EIS. The protest review did not result in any changes being made in the Proposed RMP Amendment. My approval of this ROD serves as the final decision by the Department of the Interior for the decisions included in the attached Approved RMP Amendment.

The ROD/Approved RMP Amendment is available to the public online at <http://bit.ly/2fhtN3P>. Hard copies of the ROD and Approved RMP Amendment 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 Amendment, 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 Amendment.


Sincerely,

Edwin L. Roberson
Utah State Director
Bureau of Land Management

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Record of Decision

Record of Decision

1.0 INTRODUCTION

This Record of Decision (ROD) approves an amendment to the Bureau of Land Management’s (BLM) *St. George Field Office Record of Decision and Resource Management Plan* (hereinafter SGFO RMP, approved in 1999, amended in 2001), as presented in the approved Resource Management Plan Amendment (Approved RMP Amendment). This document provides background information on the planning process and a rationale for the selection of the management goals, objectives, and decisions that are included in the Approved RMP Amendment.

1.1 Purpose and Need

The purpose of this planning process has been to satisfy specific direction in the Omnibus Public Land Management Act of 2009 (OPLMA) (16 U.S.C 7202, Pub. L.111-11). 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 National Conservation Area (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 SGFO RMP be amended. Section 1979 (a) (1) and (2) of OPLMA directed the Secretary, through the BLM, to “identify areas located in the County where biological conservation is a priority; and undertake activities to conserve and restore plant and animal species and natural communities within such areas.” Satisfying this legislative direction from OPLMA could be accomplished through the administrative designation of new areas of critical environmental concern (ACECs) on public lands, to direct special management attention to biological resources and natural communities that meet specific criteria for both relevance and importance (BLM Manual 1613.1). The identification, evaluation, and designation of new ACECs must be accomplished through a land use planning process, as required by the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq., Pub. L. 94-579 at Section 202 (c) (3)).

The BLM could also have amended the SGFO RMP to achieve the biological conservation objectives directed by OPLMA by identifying priority biological conservation areas and proposing management decisions for those areas where biological resources were in need of protection, but did not meet one or more of the criteria required for ACEC designation. Changes to existing goals, objectives, and management decisions from the SGFO RMP for specific areas of public lands in Washington County can only be made through a land use planning process.

Section 1977 (b) (1) of OPLMA directed the Secretary, through BLM, to “develop a comprehensive travel [and transportation] management plan” (TMP) for public lands in Washington County. The preparation of a TMP required that the SGFO RMP be amended to modify certain motorized off-highway vehicle (OHV) area designations (open, limited or closed), to be in compliance with the *Code of Federal Regulations* (CFR) at 43 CFR 8340.0-5, (f), (g), and (h), respectively, 43 CFR 8342.1 (a-d), and related agency policies.

The three OPLMA-directed 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 SGFO RMP.

1.2 Designation of Areas of Critical Environmental Concern

During this planning effort, BLM solicited input from other federal and state agencies, American Indian Tribes, local governments, and the public in the identification of public lands in Washington County where biological conservation is a priority and where new ACECs should be designated to conserve and restore plant and animal species and natural communities. The BLM then evaluated all nominations for new ACECs against the following criteria of relevance and importance (BLM Manual 1613.1):

Relevance: An area meets the “relevance” criteria if it contains one or more of the following:

- A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity).

- A natural process or system (including but not limited to endangered, sensitive, or threatened plant species, rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian or rare geological feature).

Importance: The resource, system, or process described above must have substantial significance and value in order to satisfy the importance criteria. This generally means that the resource, system, or process is characterized by one or more of the following:

- Has more than locally significant qualities that give it worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
- Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened or vulnerable to adverse change.
- Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of the Federal Land Policy and Management Act.

Pursuant to the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq., Pub. L. 94-579 at Section 202 (c) (3)), and the BLM’s planning regulations, the identification, evaluation, and designation of ACECs must be accomplished through a land use planning process. In order to administratively designate new ACECs for relevant and important biological resources and natural communities, SGFO RMP must be amended.

1.3 Management of Priority Biological Conservation Areas

Through this planning effort, the BLM also evaluated amending the SGFO RMP to propose new management goals, objectives, and decisions for public lands in Washington County where biological resources were in need of protection, but did not meet the criteria of relevance and importance that are required for ACEC designation. The identification of priority biological conservation areas was guided by input from other federal and state agencies, American Indian Tribes, local governments, and the public.

1.4 Off-Highway Vehicle Area Designations

Prior to the development of the TMP, the SGFO RMP needed to be amended to modify certain existing motorized off-highway vehicle (OHV) area designations (Open, Limited or Closed), to be in compliance with

43 CFR 8340.0-5, (f), (g), and (h), respectively, 43 CFR 8342.1 (a-d), and related agency policies. Area designations provide the framework within which individual route designations are made, as BLM prepares the TMP for public lands in Washington County, as directed by OPLMA.

1.5 Description of the Planning Area

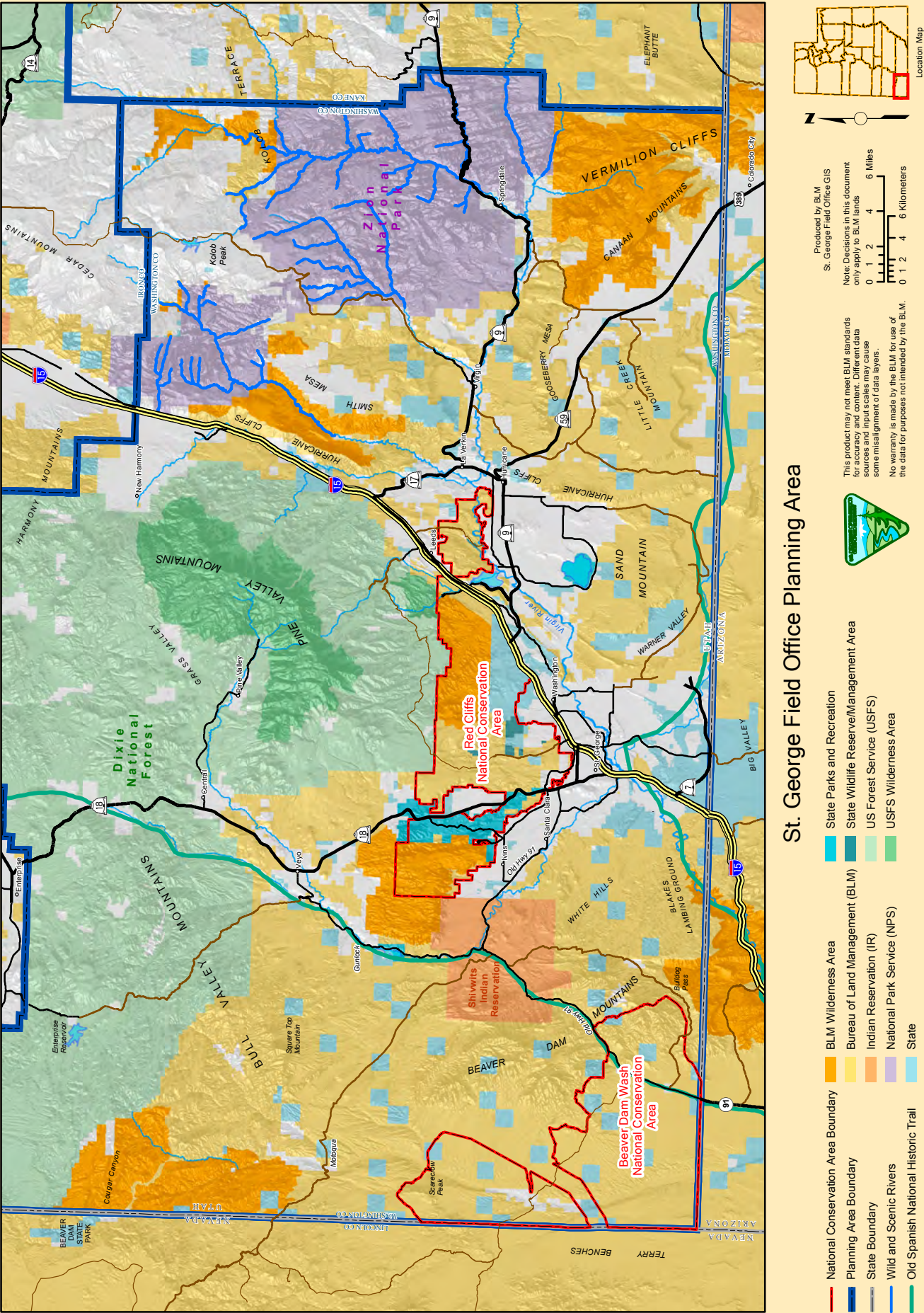
The planning area for the Amendment includes the surface acres managed by the SGFO in Washington County (Map 1). Other federal, state, and tribal-managed lands, as well as private property, occur within the planning area and those acres are displayed in Table 1. Management goals, objectives, and actions proposed in the amendment to the SGFO RMP apply only to BLM administered public lands in the planning area.

In Washington County, the Southern Basin and Range and Colorado Plateau physiographic provinces converge, separated by a transition zone bounded on the east by the Hurricane Fault and on the west by the Gunlock Fault. This convergence of major landforms creates the scenic vistas that typify southwestern Utah. Zion National Park and the Pine Valley Mountains of the Dixie National Forest define the eastern and northern boundaries of the county. To the west lie the valleys and mountains of Nevada, while the undeveloped expanses of the Arizona Strip are visible immediately to the south. Elevations range from approximately 2,200 feet at the Arizona state line, to nearly 10,400 feet in the Pine Valley Mountains. The Virgin River and its many tributaries flow through the county.

Three distinctive floristic provinces—the Mojave Desert, Great Basin Desert, and the Colorado Plateau, also merge here in Washington County. Plant and animal species from each province, many at the extremes of their natural ranges, have adapted and thrived in this biologically rich and diverse ecological transition zone (ecotone). A number of native plants have evolved in this unique environmental setting and grow nowhere else on earth.

Table 1 Surface Acre Administration in Washington County

Agency or Entity	Acre
BLM	628,790
Indian Reservation	28,830
State	88,700
National Park Service	141,990
U.S. Forest Service	423,130
Private	262,440
Total	1,573,880



2.0 OVERVIEW OF THE ALTERNATIVES

Implementing regulations for the National Environmental Policy Act (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 comments 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 U.S. Fish and Wildlife Service (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.

Four alternatives were presented in the Draft RMP Amendment 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 (Environmentally Preferable), and Alternative D. Summaries of each alternative are presented below. These alternatives contained goals, objectives, and management decisions to address the two planning issues that were driven by legislative direction from OPLMA.

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 decisions from 1999 *St. George Field Office RMP Plan* that address ACECs and OHV area designations would remain unchanged. No new ACECs would be administratively designated. The No Action Alternative for the amendment would not have provided the needed management changes to be in compliance with the direction in OPLMA sections 1977 or 1979.

2.2 Alternative B (Preferred Alternative)

Alternative B attempted to balance resource protection and human uses on public lands affected by the RMP Amendment. This alternative proposed to satisfy OPLMA’s mandate related to areas of public land where biological conservation is a priority through two approaches: 1) the administrative designation of three new ACECs for three federally-listed native plant species Dwarf Bearclaw Poppy (*Arctomecon humilis*), Holmgren milkvetch (*Astragalus holmgreniorum*) and Gierisch Globemallow (*Sphaeralcea gierrischii*) and the retention of eight existing ACEC designations; and 2) the implementation of new management decisions for approximately 87,000 acre in the northwestern corner of Washington County, labeled by BLM as the Bull Valley Mountains Multi-Species Management Area, to protect crucial habitat and migration corridors for mule deer, other wildlife species, and diverse predators.

Changes proposed for existing OHV area designations would remove the mountain biking area designations and change the acres designated as Open, Limited, and Closed for cross-country motorized OHV travel, to comply with federal regulations and BLM’s Travel and Transportation Management guidance. The acreage identified as Open to cross-country motorized vehicle travel would be reduced from 80,668 acres under Alternative A (No Action) to 22,062 acres under this alternative.

2.3 Alternative C (Environmentally Preferable)

In the Draft RMP Amendment, Alternative C was considered the environmentally preferable alternative, as it proposed the most intensive and protective management of the resource values. Under this alternative, 14 new ACECs would be designated to provide special management attention to threatened, endangered or BLM Sensitive Species and eight existing ACEC designations would be carried forward as valid management. Management prescriptions proposed for the new ACECs would help to ensure the protection of the relevance and importance values of the ACECs, through higher levels of restrictions on public land allocations and uses.

Like Alternative B, this alternative proposed new management decisions for approximately 87,000 acres of public land in the Bull Valley Multi-Species Management Area, to protect crucial habitat and migration corridors for mule deer, other big game, and their associated predators in northwestern Washington County.

This alternative would revoke existing mountain biking area designation and reduce the number of acres

designated as Open for cross-country motorized OHV travel, to comply with federal regulations and BLM’s Travel and Transportation Management guidance. Alternative C would designate 387,222 acres of public lands as Limited to Designated Routes.

2.4 Alternative D

This alternative in the Draft RMP Amendment would satisfy OPLMA’s biological conservation mandate through the retention of eight existing ACEC designations and the implementation of new management decisions for approximately 87,000 acres of public land, identified as the Bull Valley Mountains Multi-Species Management Area, to protect crucial habitat and migration corridors for mule deer, other wildlife species, and diverse predators in northwestern Washington County.

Existing mountain biking area designations would be revoked under this alternative and the acres designated as Open for cross-country motorized OHV travel would be reduced, when compared to Alternative A (No Action), to comply with federal regulations and BLM’s Travel and Transportation Management guidance.

2.5 Proposed RMP Amendment

The BLM’s land use planning process (described at 43 CFR 1600) provides the discretion to develop the Proposed RMP Amendment by combining components of the four alternatives that were presented in the Draft RMP Amendment and associated Draft EIS.

The Proposed RMP Amendment includes most of the goals, objectives, and management actions identified as BLM’s Preferred Alternative, Alternative B, in the Draft RMP Amendment. However, in response to public comments and input from the Cooperating Agencies, other federal and state agencies, and local governmental entities, the Proposed RMP Amendment did not include new goals, objectives, or management actions related to public lands within the Bull Valley Mountains Multi-species Management Area, as these were determined not to be needed at this time.

3.0 RESULTS OF PROTEST REVIEW

The BLM received a total of four protest letters during the 30 day protest period provided for the Proposed Amendment to the SGFO RMP/Final EIS, in accordance with 43 CFR Part 1610.5.2. Of that total, all were determine to have standing and valid protest issues. The protesting parties were as follows:

- Bryan Thiriot
- The Wilderness Society

- Western Watersheds Project
- Wildlands Defense

The BLM Director resolved all valid protests without making changes to the Proposed RMP/Final EIS.

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, tribal, state, and local governments, it is the BLM’s decision to approve the attached RMP Amendment. The amendment was prepared under the authorities of OPLMA; FLPMA; in accordance with 43 CFR, Part 1600, that address the BLM land use planning process; as well as all other applicable federal laws, regulations, and agency policies. An EIS was prepared for this RMP, in compliance with the NEPA of 1969. The Approved RMP Amendment satisfies the legislative direction in OPLMA, at Sections 1977 and 1979.

The Approved RMP Amendment is identical to the Proposed RMP/Final EIS that was issued for review during the September 2, 2016 to October 3, 2016 protest period and all decisions in the Approved RMP Amendment are land use planning decisions that could be protested during that same period.

4.1 What the Decision/RMP Amendment 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 not for certain uses. These include decisions such as and what lands are open, closed, or limited to motorized travel (please note that all acreages presented in the Approved Plan Amendment 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 management decisions in the Approved RMP Amendment are to:

- Designated the following new ACECs:
 - South Hills ACEC – 1,950 acres
 - State Line ACEC – 1,410 acres
 - Webb Hill ACEC – 520 acres
- Designate areas as Open, Limited, or Closed to motorized off-highway vehicle use:
 - Open to Cross Country OHV use – 21,442 acres
 - Limited to Designated Routes – 386,563 acres
 - Closed to OHV use – 112,427 acres

This ROD serves as BLM's final decision, establishing the land use plan decisions outlined in the Approved RMP Amendment, 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 Amendment Does Not Provide

- The RMP decisions only apply to BLM-administered public lands in the St. George Field Office.
- The RMP does not affect 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.

5.0 SUPPLEMENTAL RULES

In some instances, decisions from the Approved RMP Amendment 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 Amendment. 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.

6.0 MANAGEMENT CONSIDERATIONS IN SELECTING THE APPROVED RMP AMENDMENT

The BLM is ultimately responsible for preparing an amendment to an RMP that is consistent with its legal mandates, that reflects its collective professional judgment, and incorporates the best from competing viewpoints and ideas. The Approved RMP Amendment allows the BLM to meet the mandates of OPLMA at Sections 1977 and 1979. The following are the management decisions that address the planning issues included in the Approved RMP Amendment.

6.1 Designation of Areas of Critical Environmental Concern

The Approved RMP Amendment designates three new ACECs, to comply with OPLMA's direction at Section 1979 (a) (1) and (2) that directed the Secretary, through the BLM, to "identify areas located in the County where biological conservation is a priority; and undertake activities to conserve and restore plant and animal species and natural communities within such areas." The designation of these three ACECs is necessary to further the protection, recovery, and delisting of three threatened or endangered native plants, the dwarf bearclaw poppy, Holmgren's milkvetch, and Gierisch globemallow, as the SGFO RMP does not provide sufficient management protections to achieve these goals.

An analysis of current management direction from the SGFO RMP (see Draft EIS, pages 870-880) concluded that this direction provides a high level of protection for the relevance and importance values of the other 11 potential ACECs that were analyzed under Alternative C of the Draft RMP Amendment/Draft EIS. Designation of these potential ACECs is not warranted at this time, as relevance and importance criteria will continue to be adequately protected by the management goals, objectives, and decisions that in are effect today, and that will remain in effect until that RMP undergoes a full revision in the future.

6.2 Management of Priority Biological Conservation Areas

In the Draft RMP Amendment and Draft EIS, the BLM considered and analyzed a range of alternatives that proposed new management decisions for approximately 87,000 acres of public lands, identified as the Bull Valley Mountains Multi-Species Management Area (refer to Table 2-71 of the Draft EIS). The biological values of this area, which include big game and diverse predators, did not meet the relevance and importance criteria for ACEC designation. However, the area was identified as a priority biological conservation area, pursuant to OPLMA at Section 1979 and changes to management goals, objectives and actions were evaluated across three alternatives to conserve these values.

An analysis of current management direction under the SGFO RMP (refer to Table 2-71 of the Draft RMPs/ Draft EIS under Alternative A) concluded that adequate protections, through land use allocations and restrictions, are currently in place to protect these species, their crucial habitats, and important migration corridors. These allocations and restrictions include:

- site-specific restrictions for mineral material sales on 19,457 acres of crucial mule deer winter habitat (Draft RMP, p. 315);
- special stipulations applied to fluid mineral leasing within 24,375 acres (Draft RMP, p. 315).

Under the Approved RMP Amendment, a change in OHV designation from "Open" to cross-country travel to "Limited to Designated Routes" will provide enhanced protection to big game and associated predator species on public lands within the identified Bull Valley Mountains Multi-Species Management Area (see the Comprehensive Travel and Transportation Management section below).

Following a review of the public comments on the Draft RMP and Draft EIS, further coordination with the Cooperating Agencies, and additional review of the potential threats to the biological values of this area, the BLM concluded that no new goals, objectives, or management actions were needed to adequately protect habitats and migration corridors for mule deer, other big game, and predators, on the public lands in the area identified as the Bull Valley Mountains Multi-Species Management Area. In the Proposed Amendment and Final EIS and Approved RMP Amendment, this area was not identified as a priority biological conservation area.

6.3 OHV Area Designations

Prior to the development of the TMP, the SGFO RMP needed to be amended to modify certain existing motorized OHV area designations (Open, Limited, or Closed), to be in compliance with 43 CFR 8340.0-5, (f), (g), and (h), respectively, 43 CFR 8342.1 (a-d), and related agency policies. Area designations provide the framework within which individual route designations are made, as BLM prepares the TMP for public lands in Washington County, as directed by OPLMA.

The Approved RMP Amendment modifies the OHV area designation for approximately 60,000 acres of public land in the Bull Valley Mountains from "Open" to cross-country travel to Limited to Designated Routes. Under the Approved RMP Amendment, the roads and trails in the area would continue to be available for OHV use, but cross-country travel would not be allowed.

This change is needed because public lands here do not comply with BLM standards identified for OHV Open areas, as these areas are intended for intensive cross-country OHV use, in which any type of motorized vehicle is permitted to travel cross-country anywhere in the area, at all times. Because unregulated cross-country use is allowed, open areas are limited to a size that can be effectively managed and geographically identified to offer a quality OHV experience for recreationalists.

The current designation as an Open area also does not comply with BLM policy, articulated in BLM Handbook H-8342, Travel and Transportation Management. This policy states that "[e]xpansive open areas allowing cross-country travel, without a corresponding and identified user need or demand, will not be designated in RMP revisions or new travel management plans." This policy establishes two criteria for open areas: 1) The terrain must be conducive to cross-country travel; and 2) There must be a user demand.

The current Open area in the Bull Valley Mountains meets neither of these criteria. This modification is needed, as the public lands in this area are mountainous terrain, comprised of rocky, heavily-forested, and steep-sided slopes that are not safe for or conducive to cross-country motorized vehicle travel. In 2015, traffic counts in the area totaled less than 4,000 annual visits, a very low visit number, particularly when compared to the Sand Mountain Open OHV Area, which had 120,000 visits in 2015.

7.0 CONSISTENCY AND CONSULTATION REVIEW

Consistency of the Approved RMP Amendment with the adopted or approved plans of other Federal, State, Tribal and local government entities was considered as a factor in selection of the Approved RMP Amendment. The Approved RMP Amendment is consistent with 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 Amendment/Final EIS provides a full discussion of consistency with all involved entities.

7.1 Governor’s Consistency

The 60-day Governor's Consistency Review of the Proposed RMP Amendment 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 three management decision included in the Proposed RMPs/Proposed Plan Amendment/Final EIS that the State of Utah asserted are inconsistent with state or local plans, policies, and programs. None of the issues raised by the Governor apply to the SGFO RMP Amendment.

7.2 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 Amendment that included the goals, objectives, and management decisions contained in the Proposed RMP Amendment and Final EIS would not result in adverse effects to National Register of Historic Places-listed or eligible sites (also known as historic properties); (Appendix B).

7.3 Consultations with American Indian Tribes

Consultations with federally-recognized American Indian Tribes that claim cultural affiliation with the public lands of the St. George Field Office have been ongoing since 2010 related to the development of a RMP Amendment. The reader is referred to Chapter 3 of the Proposed RMP Amendment and Final EIS for more

specific details on these consultations. No federally-recognized American Indian Tribes submitted formal comments on the Draft RMP Amendment and Draft EIS and no protests were filed by Tribes on the Proposed RMP Amendment and Final EIS.

7.4 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 Amendment. 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 Amendment 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 Amendment, 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.

8.0 PUBLIC INVOLVEMENT

One of BLM’s primary objectives during development of the RMP Amendment to the St. George RMP 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 Amendment/EIS, and the Proposed RMP Amendment/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 National Conservation Area and the Red Cliffs National Conservation Area and to amend the approved SGFO RMP (1999) to address specific direction in 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 Environmental Protection Agency (EPA) each published a Notice of Availability (NOA) in the *Federal Register*, announcing the availability of the Draft RMP Amendment 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.

The BLM received four protest letters during the 30 day protest period provided for the Proposed RMP Amendment in September of 2016, in accordance with 43 CFR Part 1610.5.2. All of the protests were determine to have standing and valid protest issues. The BLM Director resolved all protests without making changes to the Proposed RMP/Final EIS.

During implementation of the Approved RMP Amendment, 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 with the other federal and state agencies, Tribal governments, and local government entities and elected officials on the management of public lands.

9.0 AVAILABILITY OF THE PLAN

The ROD/Approved RMP Amendment is available to the public online at <http://bit.ly/2fhtN3P>. Hard copies of the ROD and Approved RMP Amendment 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 amendment to the 1999 *St. George Field Office Record of Decision and Resource Management Plan*.

December 21, 2016



Edwin L. Roberson
Utah State Director



Approved RMP Amendment

Approved Resource Management Plan Amendment

1.0 INTRODUCTION

The Approved RMP Amendment amends the SGFO RMP to address the administrative designation of new ACECs and modifications to OHV area designations, as presented in the Proposed RMP Amendment 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 MANAGEMENT DECISIONS

This section of the Approved RMP Amendment presents the goals and objectives, land use allocations, and management actions established for the amendment to the SGFO RMP. The management decisions are given a three letter prefix and number; acreages included under decisions were developed using GIS data and should be considered estimations that will be refined as management decisions are implemented.

3.1 Areas of Critical Environmental Concern Goal

Biological conservation and restoration mandates from OPLMA (Section 1979) for priority biological areas are satisfied through the administrative designation of new ACECs.

Objectives

Identify and evaluate areas where the relevance and importance criteria, as stated at 43 CFR 1610.7.2, are met for the administrative designation of ACECs to satisfy

biological conservation and restoration mandates from OPLMA (Section 1979).

Re-evaluate existing ACECs when developing new or revised RMPs to determine if special management attention through this administrative designation continues to be required.

Management Actions - General

ACE-1: Designate the following new ACECs:

- a) South Hills ACEC (1,950 acres);
- b) State Line ACEC (1,410 acres);
- c) Webb Hill ACEC (520 acres).

(Map 2)

ACE-2: Continue to manage the following as ACECs:

- a) Red Bluff ACEC (6,166 acres);
- b) Warner Ridge/Fort Pearce ACEC (4,286 acres);
- c) Santa Clara/Gunlock ACEC (2,002 acres);
- d) Santa Clara River/Land Hill ACEC (1,664 acres);
- e) Lower Virgin River ACEC (1,806 acres);
- f) Little Creek Mountain ACEC (19,331 acres);
- g) Canaan Mountain ACEC (33,955 acres);
- h) Upper Beaver Dam Wash ACEC (33,108 acres).

(Map 2)

Management Prescriptions Applicable to All Newly-Designated ACECs

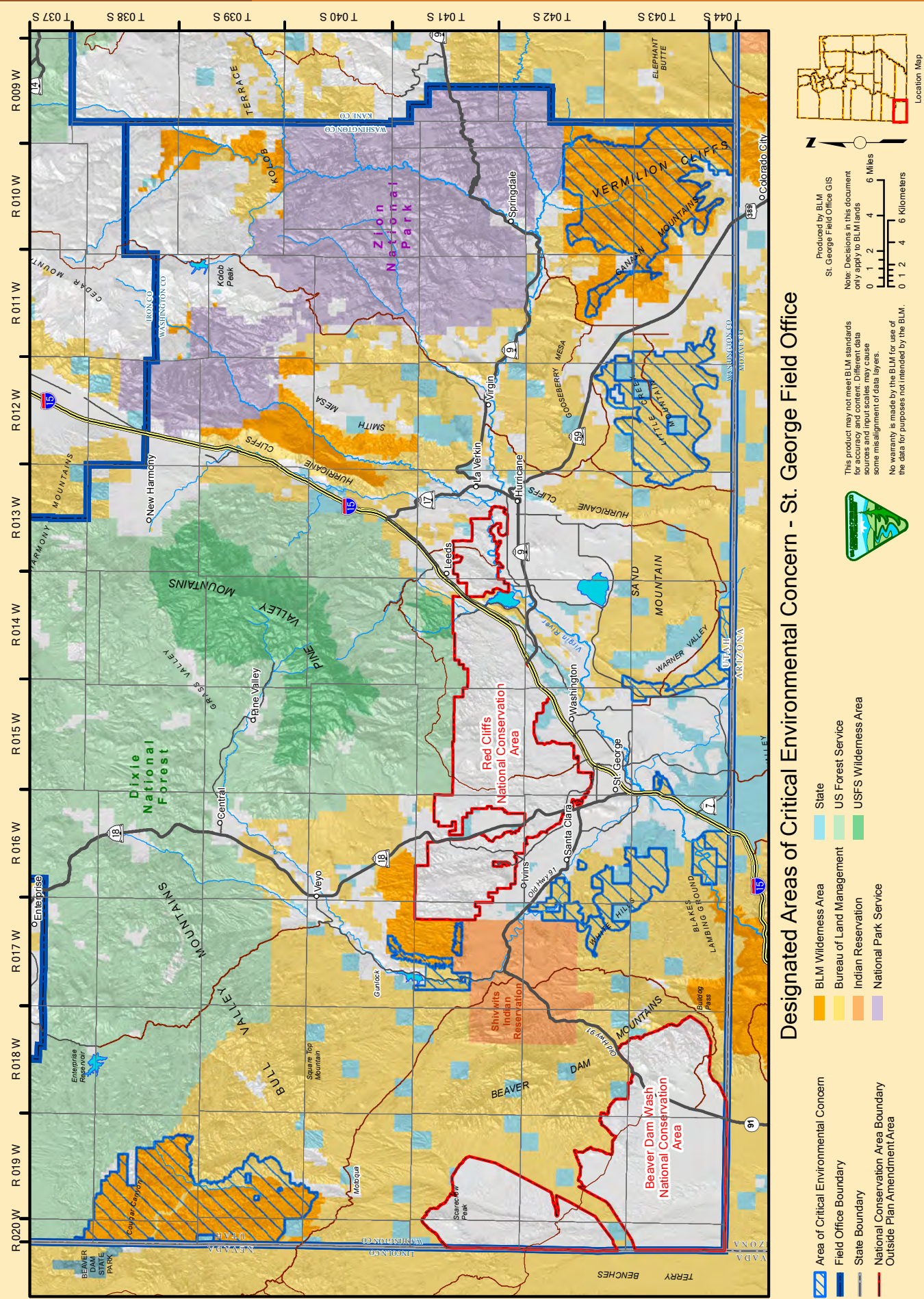
Lands and Realty Management

ACE-3: Public lands in ACECs will be retained in federal ownership.

ACE-4: Non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC.

ACE-5: All ACECs are subject to valid and existing rights. Unless otherwise restricted by law, allow renewal and transfer of existing land use authorizations within ACECs, if otherwise designated as Avoidance or Exclusion areas.

ACE-6: Land use authorizations that could result in the irreparable damage of relevant and important values within ACECs will not be authorized. Ground disturbing military maneuvers and landfills will not be authorized in ACECs.



Designated Areas of Critical Environmental Concern - St. George Field Office

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0 1 2 4 6 Miles
0 1 2 4 6 Kilometers

Location Map

Native Vegetation Management: Woodland Products Harvesting and Collection

ACE-7: Commercial and personal use woodland products harvesting (green wood, dead and down, poles, and Christmas trees) and firewood gathering is prohibited.

Livestock Grazing Management

ACE-8: Unless previously made unavailable for livestock grazing in the SGFO 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.

Minerals Management: Locatable Minerals

ACE-9: 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 are required for development in ACECs.

Minerals Management: Saleable Minerals

ACE-10: ACECs are closed to mineral materials disposal.

3.1.1 South Hills ACEC: Endangered Species: Dwarf Bearclaw Poppy and Holmgren Milkvetch

ACE-11: Designate and manage as a 1,950-acre ACEC to protect populations and habitat for dwarf bearclaw poppy (*Arctomecon humilis*) and Holmgren milkvetch (*Astragalus holmgreniorum*).

Management Prescriptions

Lands and Realty Management

ACE-12: Retain 100% of public lands in federal ownership.

ACE-13: Manage as Exclusion area for linear, site-type, and material site Right-of-ways (ROWs).

Native Vegetation Management

ACE-14: Manage as closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

ACE-15: Collection of native seeds, cuttings, biological soil crust communities and species for scientific research, conservation, and for use in future restoration projects would be authorized, as long as this activity is compatible with resource management objectives. 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.

Noxious Weeds and Invasive Species Management

ACE-16: 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.

Minerals Management: Fluid Mineral Leasing

ACE-17: Open to fluid mineral leasing with No Surface Occupancy Stipulation.

Recreation Management

ACE-18: Closed to dispersed camping.

ACEC-19: 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.

ACE-20: Targets must be constructed of wood, cardboard, paper or similar unbreakable materials. All targets must be removed and properly disposed.

ACE-21: Special Recreation Permits may be issued for commercial, organized group, and competitive events, subject to site-specific analysis under NEPA and Section 7 consultations.

Comprehensive Travel and Transportation Management

ACE-22: OHV area designation is Limited to Designated Routes.

Visual Resource Management

ACE-23: Manage as VRM Class II.

3.1.2 State Line Proposed ACEC: Endangered Species: Holmgren's Milkvetch and Gierisch Globemallow

ACE-24: Designate and manage a 1,410-acre ACEC to protect populations and habitat for Holmgren milkvetch and Gierisch globemallow (*Sphaeralcea gierischii*).

Management Prescriptions

Lands and Realty Management

ACE-25: Manage as an Exclusion area for linear, site-type, and material site ROWs.

Native Vegetation Management

ACE-26: Closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

ACE-27: Collection of native seeds, cuttings, biological soil crust communities and species for scientific research, conservation, and for use in future restoration projects would be authorized, as long as this activity is compatible with resource management objectives. 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.

Noxious Weeds and Invasive Species Management

ACE-28: Herbicides to control exotic invasive annuals or noxious weeds could be approved for use on a case-by-case basis in the ACEC. Consultations would be conducted with USFWS to identify appropriate herbicide, application methods, as well as other project protocols and monitoring requirements.

Minerals Management-Fluid Minerals Leasing

ACE-29: Open to fluid mineral leasing with No Surface Occupancy Stipulation.

Recreation Management

ACE-30: Closed to dispersed camping.

ACE-31: SRPs may be issued for commercial, organized group, and competitive events, subject to site specific analysis under NEPA and Section 7 consultations.

Comprehensive Travel and Transportation Management

ACE-32: OHV area designation is Limited to Designated Routes.

Visual Resource Management

ACE-33: Manage as VRM II.

3.1.3 Webb Hill Proposed ACEC: Endangered Species: Dwarf Bearclaw Poppy

Management Prescriptions

Lands and Realty Management

ACE-34: Retain 100% of public lands in federal ownership.

ACE-35: Manage as Exclusion area for linear, site-type, and material site ROWs.

Native Vegetation Management

ACE-36: Closed to native seed, plants, and plant materials harvesting for commercial purposes and personal use.

ACE-37: Collection of native seeds, cuttings, biological soil crust communities and species for scientific research, conservation, and for use in future restoration projects would be authorized, as long as this activity is compatible

with resource management objectives. 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.

Noxious Weed and Invasive Species Management

ACE-38: Approved herbicides to control exotic invasive annuals or noxious weeds could be authorized for use on a case-by-case basis in the ACEC. Consultations would be conducted with the USFWS to identify appropriate herbicide, application methods, as well as other project protocols and monitoring requirements.

Minerals Management-Fluid Minerals Leasing

ACE-39: Closed to fluid mineral leasing.

Minerals Management-Saleable Minerals

ACE-40: Closed to mineral materials disposal.

Recreation Management

ACE-41: Closed to dispersed camping.

ACE-42: Do not grant SRPs for commercial, organized group, and competitive events.

ACE-43: Non-motorized recreation use will continue to be limited to designated trails.

Comprehensive Travel and Transportation Management

ACE-44: OHV area designation Limited to Designated Routes.

Visual Resource Management

ACE-45: Manage as VRM Class II.

3.2 Comprehensive Travel and Transportation Management

Goal

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.

Objectives

Sustain or expand, where needed, a variety of existing motorized, mechanized, and non-motorized trail and travel opportunities to meet public and administrative needs.

Public access, resource management, and regulatory needs are considered through transportation planning, incorporating consideration of access needs and the effects of and interaction among all forms of travel,

including motorized, mechanized, and non-motorized/non-mechanized travel.

Provide opportunities for sustainable motorized, mechanized, and non-motorized/non-mechanized recreation on public lands.

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.

OHV Area Designations

CTT-2: Individual route designations are implementation level decisions that will be addressed in the TMP and tiered to the OHV Area Designations in this plan.

CTT-3: Open to Cross-Country OHV use: 21,442 acres

Limited to Designated Routes: 386,563 acres

Closed to OHV use: 112,427 acres

(Map 3)

A map of the existing transportation system can be found at the BLM ePlanning website <http://bit.ly/2av3Q1i>.

CTT-4: Upon completion of the TMP, all acres under Limited to Existing Routes category will shift to the Limited to Designated Routes category.

CTT-5: All cross-country (off-transportation system) motorized or mechanized travel would be prohibited, with the following exceptions:

- a) Designated Open OHV Areas;
- b) Minimum necessary for administration of the area;
- c) For emergency purposes;
- d) Minimum necessary for the exercise of a valid existing right or authorized use.

CTT-6: In areas designated as Limited to Existing Routes or Limited to Designated Routes, allow motorized

vehicles to pull off of a route up to 100 feet to either side of the route centerline for the purpose of parking or camping, except in areas designated as closed to camping.

CTT-7: Within designated ACECs (outside of designated wilderness areas), unless otherwise posted, OHV area designation is Limited to Designated Routes with use of the shoulder and immediate roadside to allow for vehicle passage, emergency stopping, or parking.

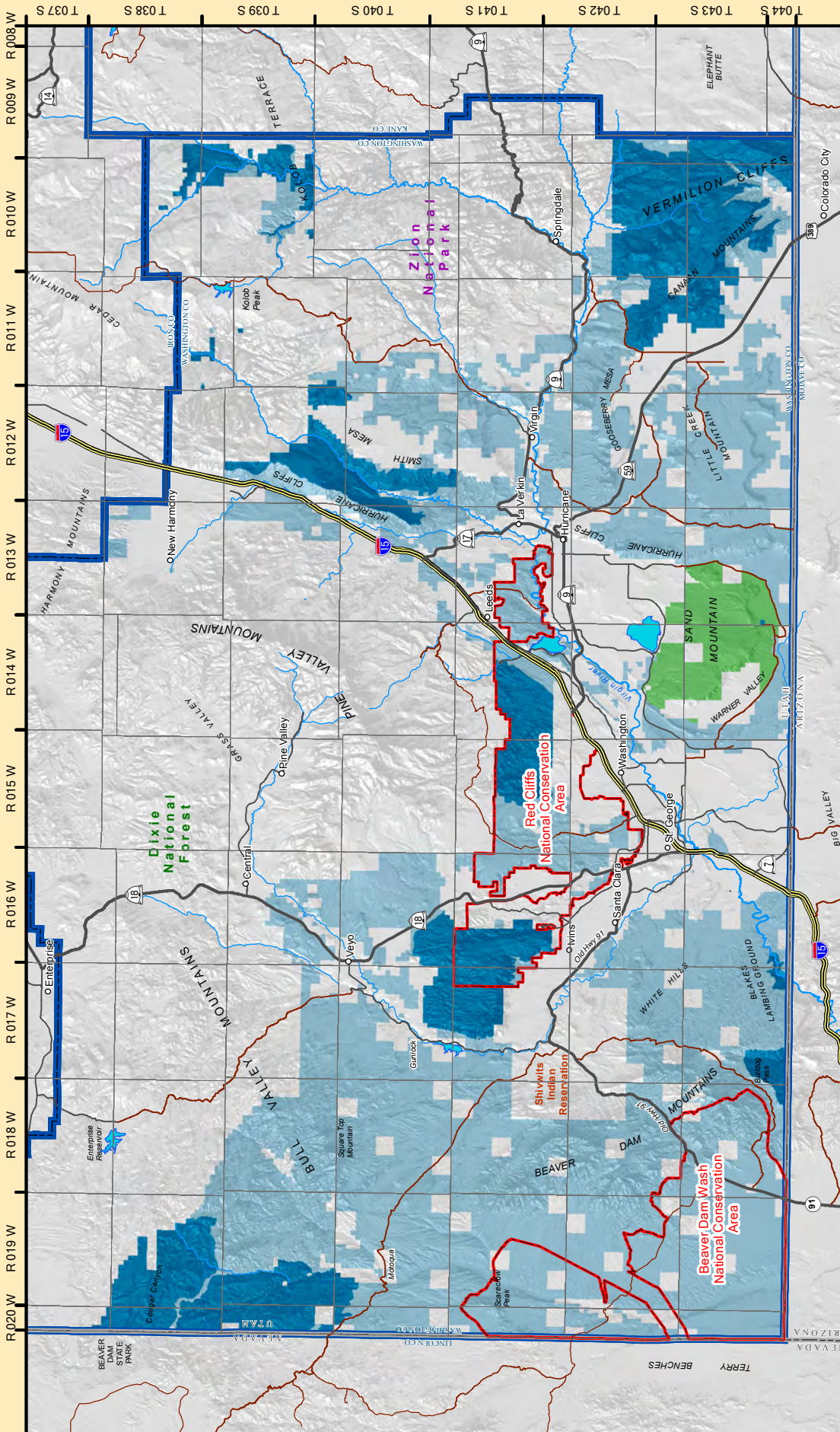
CTT-8: Use of non-motorized, wheeled game carriers to retrieve game kills or collect antlers would be allowed in all areas except designated wilderness. Use of motorized vehicles for game retrieval or antler collection would be prohibited.

CTT-9: Remove existing mountain bike area designations.

Management Actions - Public Education and Interpretation

CTT-10: 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-11: 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.



Off Highway Vehicle Area Designations - St. George Field Office

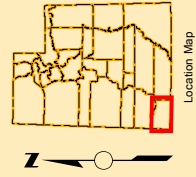
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	Closed to Motorized Vehicles		National Conservation Area Boundary (Outside Plan Amendment Area)
	Limited to Designated Routes		Field Office Boundary
	Open to All Vehicles		State Boundary



References

References

BIBLIOGRAPHY

Bureau of Land Management St. George Field Office. 1999. *St. George Field Office Record of Decision and Resource Management Plan*. St. George, UT: Author.

Bureau of Land Management St. George Field Office. 2016. *Proposed Resource Management Plans Beaver Dam Wash National Conservation Area Red Cliffs National Conservation Area Proposed Amendment to the St. George Field Office Resource Management Plan and Final Environmental Impact Statement*. St. George, UT: Author



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.

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.

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

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).

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.

D

Designated routes: Specific roads and trails identified by the BLM where some type of use is appropriate and allowed.

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

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.

Exchange: A transaction whereby the Federal Government receives land or interests in land in exchange for other land or interests in land.

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.

Firearm: A weapon, especially a portable gun or pistol, from which a projectile can be discharged by an explosion caused by igniting gunpowder.

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 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.

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.

I

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.

L

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.

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).

M

Management decision: A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Mechanical transport: Any vehicle, device, or contrivance for moving people or material in or over land, water, snow, or air that has moving parts.

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.

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.

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.

Natural regeneration: The growth of trees (or other plants) from seeds, roots or bulbs without cultivation by humans.

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.

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.

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

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.

Plant materials: Materials derived from plants or vegetation, including firewood (fuelwood), posts & poles, wildings and boughs.

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

Restoration: The process by which areas are brought back to a former, original or specific desired condition or appearance.

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.

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

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.

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.

State Historic Preservation Office: Office in State or territorial government that administers the preservation programs under the National Historic Preservation Act.

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.

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).

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.

W

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.

ABBREVIATIONS-ACRONYMS

ACECs	Areas of Critical Environmental Concern
BA	Biological Assessment
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
CFR	Code of Federal Regulations
Draft EIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Final EIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NOA	Notice of Availability
NOI	Notice of Intent
OHV	Off-Highway Vehicle
OPLMA	Omnibus Public Land Management Act
Pub. L.	Public Law
ROW	Right-of-way
ROD	Record of Decision
Secretary	Secretary of the Interior
SHPO	State Historic Preservation Officer
SGFO	St. George Field Office
TMP	Comprehensive Travel and Transportation Management Plan
UDWR	Utah Division of Wildlife Resources
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service



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 significantly 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 (including 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 under 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



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, 2016.

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



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).

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 (<i>Astragalus ampullaroides</i>)*	X		X
Dwarf bear-poppy (<i>Arctomecon humilis</i>)			X
Gierisch Globemallow (<i>Sphaeralcea gierischii</i>)*			X
Holmgren milkvetch (<i>Astragalus holmgreniorum</i>)*			X
Siler pincushion cactus (<i>Pediocactus sileri</i>)			X
Desert tortoise (<i>Gopherus agassizii</i>)*	X	X	X
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	X	X	X
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	X	X	X
Mexican spotted owl (<i>Strix occidentalis lucida</i>)*			X
California condor (<i>Gymnogyps californianus</i>)	X	X	X
Virgin River chub (<i>Gila seminuda</i>)*	X		X
Woundfin (<i>Plagopterus argentissimus</i>)*	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 of 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 special 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 Tibbitts 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 chemistry 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 occidentalis*)

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 Columbia, 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 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-detectable 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 ephedra (*Ephedra torreyana*), nodding buckwheat (*Eriogonum cernuum*), desert trumpet (*E. inflatum*), desert pepperweed (*Lepidium fremontii*) and burrobrush (*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 produce 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 and 16 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 Tschamtkc 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 (Dadkash 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 dammersi*, *Anthophora* spp., *Eucera quadricincta*, *Bombus morrisoni*, *Hoplitis ginellei*, *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 (Bricnholt *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/km² in 2013 (UDWR 2014). There are approximately 38,787 acres (157 km²) 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 14.5 miles 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 ft² 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/km² 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.

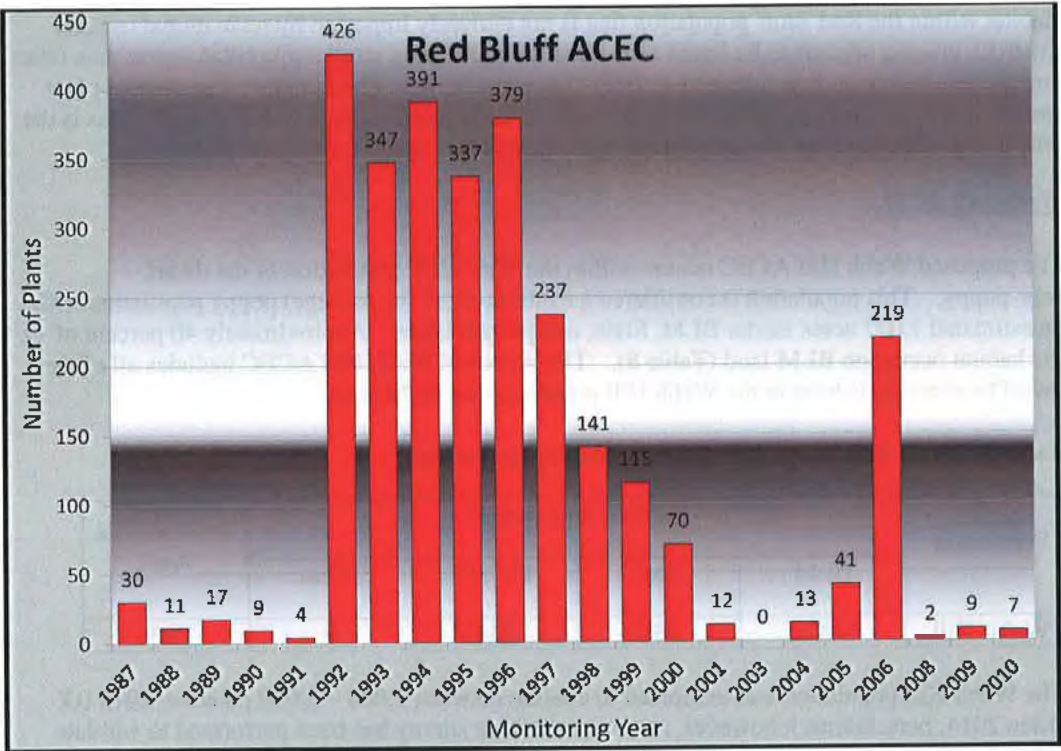


Figure 1. Red Bluff plant abundance at BLM monitoring transects.

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.

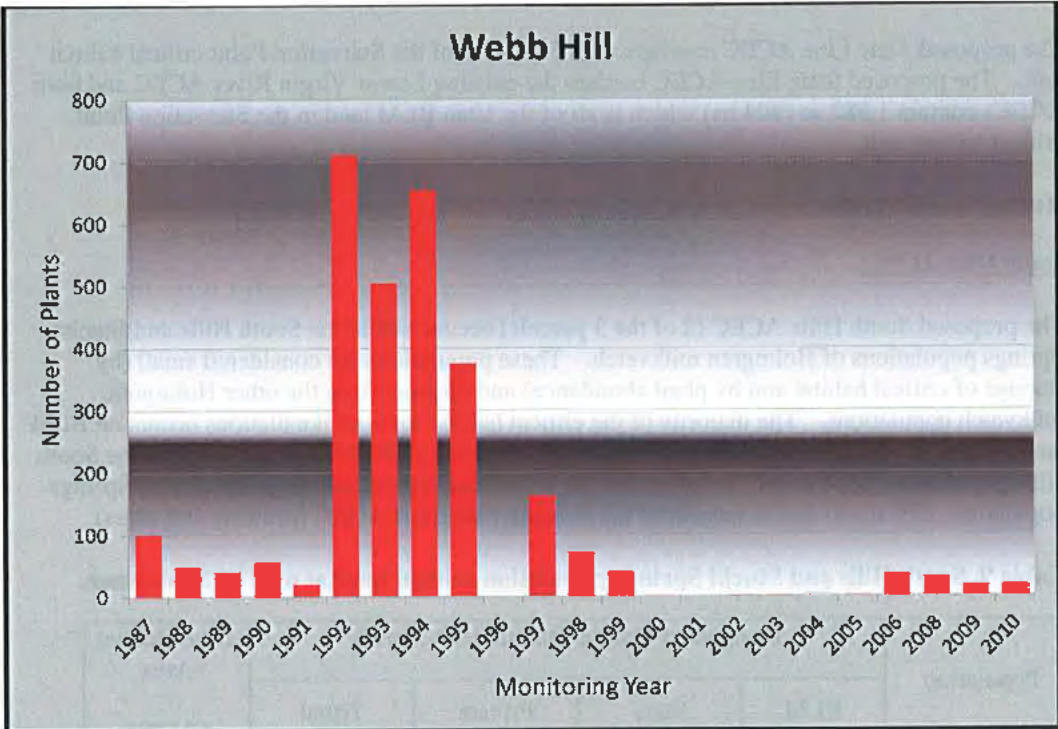


Figure 2. Webb Hill plant abundance at BLM monitoring transects.

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 UDWB 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 (Secgmillar 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 mycoplasma 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 tortoise 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.

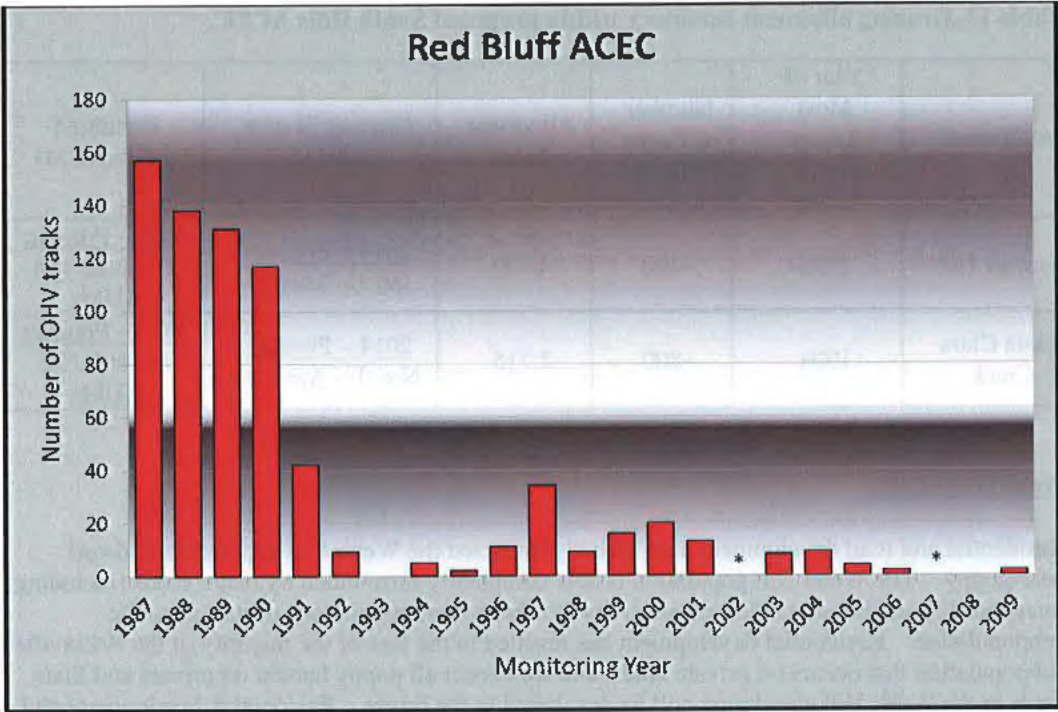


Figure 3. Red Bluff ACEC OHV tracks in BLM monitoring transects. * indicates no monitoring was performed that year.

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.

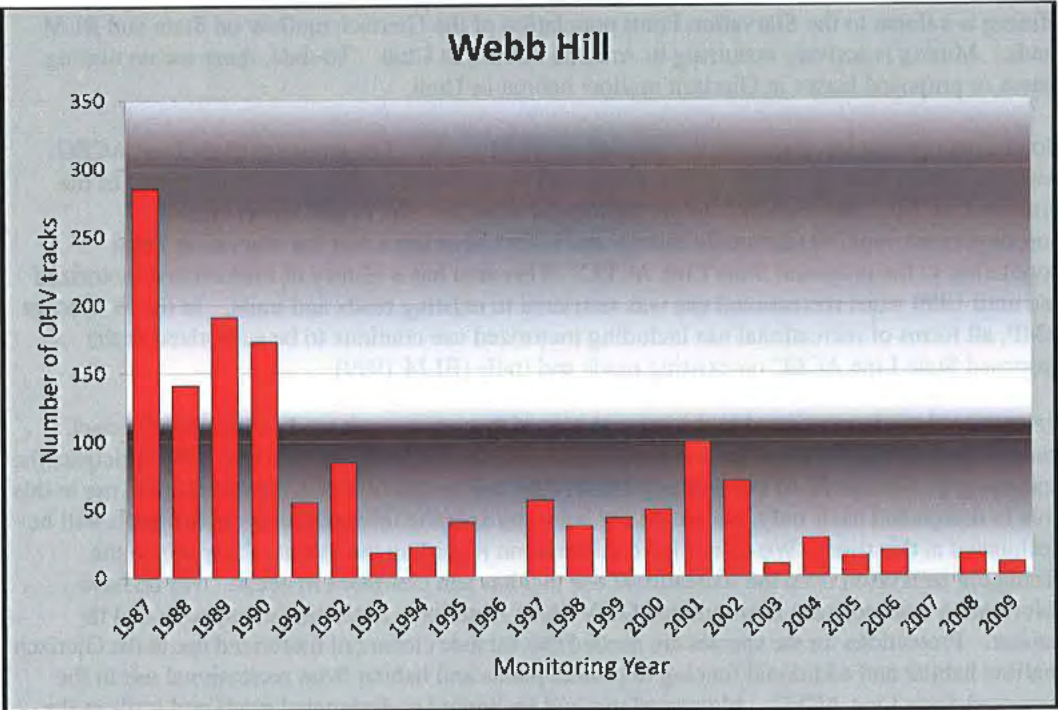


Figure 4. Webb Hill OHV tracks in BLM monitoring transects.

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 litter 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 litter 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 milkvetch 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 its 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 mortality 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 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 negatively 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 immobile 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 its 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 mortality 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 energetic costs, 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 vegetation, 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 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 Webb 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 jurisdiction. 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 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 Gillette 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 Geirish mallow populations in the proposed State Line ACEC.

Geirish mallow is palatable to livestock; Holmgren's milkvetch and dwarf bear-poppy are not. Livestock eat the flowering stalks of the Geirish 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 Geirish 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; Goelt 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; Goelt 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)

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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.

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- 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:
 - o 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.
 - o Temporary or permanent structures will not be sited within 0.25 mile of suitable habitat.
 - o Aerial application of herbicides or insecticides will not occur at any time of the year within 0.5 miles of suitable habitat.
 - o Mechanical or manual application of herbicides or insecticides will not occur between April 15-August 15 within 0.25 miles of suitable habitat.
 - o 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.
 - o No burning will occur within 0.5 miles of suitable habitat between April 15-August 15.
 - o No general livestock grazing will occur within suitable habitat.
 - o No back-burning will occur within 0.5 miles of suitable habitat between April 15-August 15.
 - o 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 than 10 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 Meisner, 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 Meisner, 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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Holmgren 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 Söckendorff 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 untrammelled 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 Desert Reserve Management Zones and the Proposed Northern Transportation Route

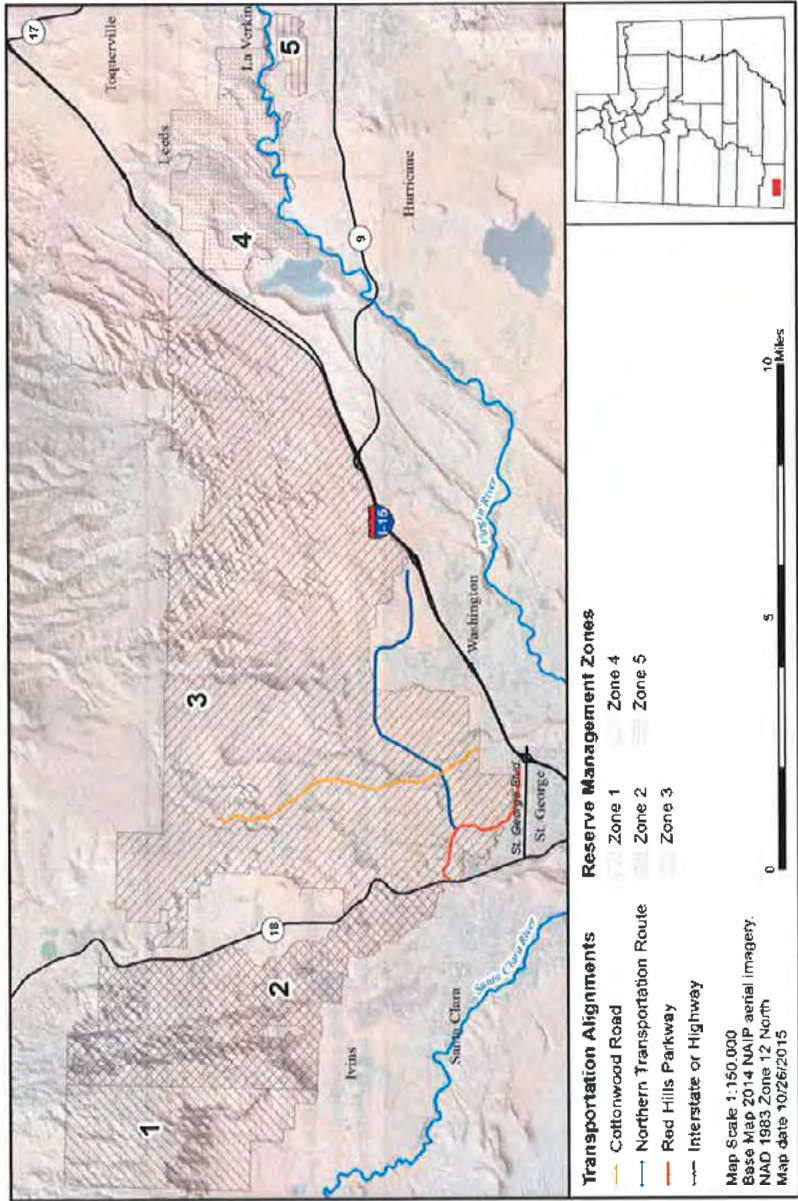


Figure 2. Subunits in Zone 3 of the Red Cliffs Desert Reserve

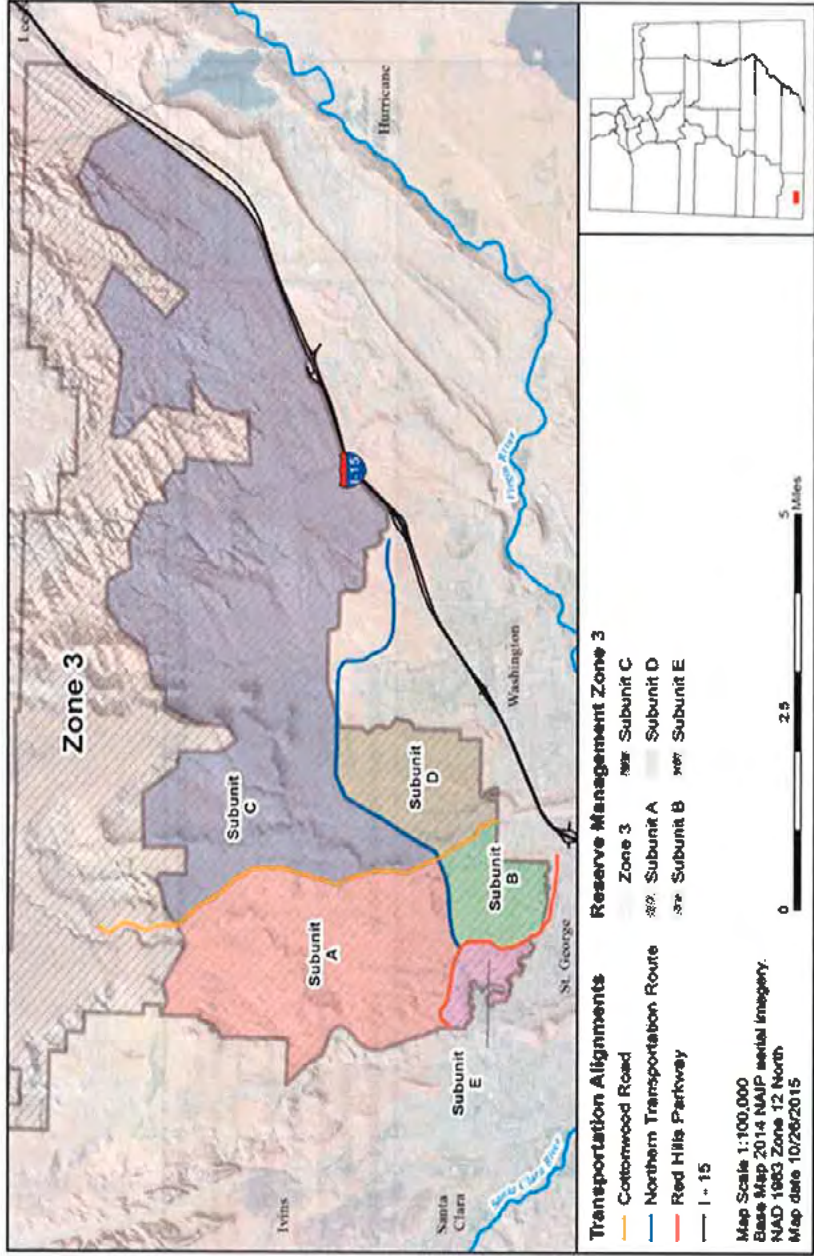


Figure 3. Land Ownership along the Proposed Northern Transportation Route

