# LIST OF APPENDICES

- Appendix 1. Best Management Practices for Land Uses
- Appendix 2. Best Management Practices for Raptors and Their Associated Habitats
- Appendix 3. Surface Stipulations Applicable to Oil and Gas Leasing and Other Surface Disturbing Activities
- Appendix 4.Recreation Management for Special Recreation Management Areas and the<br/>Kanab Extensive Recreation Management Area
- Appendix 5. Lands Designated for Potential Disposal Via Federal Land Policy and Management Act Section 203 Sale
- Appendix 6. Kanab Field Office: Coal Unsuitability Report
- Appendix 7. Travel Management/Route Designation Process
- Appendix 8. Wildland Fire Resource Protection Measures and Reasonable and Prudent Measures, Terms and Conditions, and Reporting Requirements Identified Through Section 7 Consultation
- Appendix 9. Conservation Measures, Oil and Gas Lease Notices, and Recovery Plans for Threatened and Endangered Species
- Appendix 10.State of Utah Letter Addressing Air Quality
- Appendix 11. Wild and Scenic Rivers Study Process
- Appendix 12. Letter from State Historic Preservation Officer Related to Section 106 Consultation
- Appendix 13. Letter from U.S. Fish and Wildlife Service Related to the Biological Opinion
- Appendix 14.The Grazing Allotment Forage Allocation
- Appendix 15. RMP Monitoring Plan
- Appendix 16. Utah Standards for Rangeland Health and Guidelines for Grazing Management
- Appendix 17. Hydraulic Considerations for Pipelines Crossing Stream Channels

# MAPS

| Map 1  | Land Ownership                                       |
|--------|--|
| Map 2  | Mule Deer Habitat                                    |
| Map 3  | Elk Habitat  |
| Map 4  | Pronghorn Habitat                                    |
| Map 5  | Priority Areas for Vegetation Treatment              |
| Map 6  | Visual Resource Management                           |
| Map 7  | Non-WSA Lands Managed for Wilderness Characteristics |
| Map 8  | Special Recreation Management Areas                  |
| Map 9  | Off-Highway Vehicle Area Designations                |
| Map 10 | Route Designations                                   |
| Map 11 | Right-of-Way Restrictions                            |
| Map 12 | Locatable Minerals – Recommended Withdrawals         |
| Map 13 | Areas Available for FLPMA Section 203 Sales          |
| Map 14 | Oil and Gas Leasing                                  |
| Map 15 | Areas Unsuitable for Surface Coal Mining             |
| Map 16 | Mineral Material (Salable) Disposal                  |
| Map 17 | Areas of Critical Environmental Concern              |
| Map 18 | Suitable Wild and Scenic Rivers                      |
| Map 19 | General Surface Disturbance Restrictions             |
| Map 20 | Areas with Fragile Soils or Relict Vegetation        |
| Map 21 | Mexican Spotted Owl Critical Habitat                 |
| Map 22 | Greater Sage-Grouse Brooding and Winter Habitat      |
| Map 23 | Desert Big Horn Sheep Habitat                        |
| Map 24 | Paleontological Resource Potential                   |
|        |  |

# **APPENDICES 1–17**

# APPENDIX 1—BEST MANAGEMENT PRACTICES FOR LAND USES

Best management practices (BMP) are those land and resource management techniques determined to be the most effective and practical means of maximizing beneficial results and minimizing conflicts and negative environmental impacts from management actions. BMPs can include structural and nonstructural controls, specific operations, and maintenance procedures. BMPs can be applied before, during, and after activities to reduce or eliminate negative environmental impacts. BMPs are not one-size-fits-all solutions. BMPs should be selected and adapted through interdisciplinary analysis to determine which management practices are necessary to meet the goals and objectives of the Resource Management Plan (RMP). The best practices and mitigation measures for a particular site are evaluated through the site-specific National Environmental Policy Act process and vary to accommodate unique, site-specific conditions and local resource conditions.

BMPs described in this appendix are designed to assist in achieving RMP goals and objectives. These BMPs could apply, where appropriate, to all use authorizations, including projects initiated by the Bureau of Land Management (BLM). BMPs are dynamic and should not be interpreted as specific direction at the same level as RMP decisions. BMPs are selected and implemented as necessary, based on site-specific conditions, to meet resource objectives for specific management actions.

This appendix does not provide an exhaustive list of BMPs. Additional BMPs may be identified during an interdisciplinary process when evaluating site-specific management actions. Implementation and effectiveness of BMPs need to be monitored to determine whether they are achieving RMP goals and objectives. Adjustments to BMPs can be made as necessary to ensure that RMP goals and objectives are being met as well as to conform to changes in BLM regulations, policy, and direction or new scientific information. In addition, project proponents can suggest alternate conditions that could accomplish the same result.

Because the management of environmental impacts is an ongoing process, continual refinement of BMP design is necessary. This process can be described in these five steps: (1) selection of the design of a specific BMP, (2) application of the BMP, (3) monitoring, (4) evaluation, and (5) feedback. Data gathered through monitoring is evaluated and used to identify changes needed in BMP design and application or in the monitoring program.

BMPs have been developed and used by numerous energy companies and state and federal agencies throughout the nation. Development and sharing of BMPs represents a commitment to the idea that smart planning and responsible follow-through manage and, in some cases, reduce impacts on resources, both now and in the future. BMPs developed by other agencies should be considered in addition to those identified in this document. Some of these other BMPs are contained in the following documents and websites:

• Utah's Forest Water Quality Guidelines: A Practical User's Guide for Landowners, Loggers, and Resource Managers (State of Utah, Department of Natural Resources,

Division of Forestry, Fire and State Lands). As of November 2006, an electronic version of this document was available at http://extension.usu.edu/forestry/Management/UtFWQGuide/Assets/PDFDocs/UFWQG BOO.pdf.

- Coalbed Methane Best Management Practices: A Handbook 2006 Update (Western Governors' Association). As of November 2006, an electronic version of this document was available at www.westgov.org/wga/initiatives/coalbed.
- Low-Volume Roads Engineering Best Management Practices Field Guide (U.S. Forest Service). As of November 2006, an electronic version of this document was available at www.blm.gov/bmp/field%20guide.htm.
- Water-Road Interaction Technology Series Documents (U.S. Forest Service). As of November 2006, electronic versions of these documents were available at www.stream.fs.fed.us/water-road.
- National Menu of Stormwater Best Management Practices (U.S. Environmental Protection Agency). As of November 2006, electronic versions of these documents were available at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/con\_site.cfm.
- BLM Vegetation Treatments Using Herbicides Final Programmatic Environmental Impact Statement Record of Decision, September 2007. As of April 2008, an electronic version of this document was available at http://www.blm.gov/wo/st/en/prog/more/veg\_eis.html.
- Technical Information Sheets: Specific and Detailed BMP Guidance (Bureau of Land Management). As of November 2006, an electronic version of this document was available through hyperlinks located at www.blm.gov/bmp/Technical\_Information.htm.
- WO IM 2007-021 Integration of Best Management Practices into Applications for Permit to Drill Approvals and Associated Rights of Way. This document establishes formal BLM policy on the inclusion and use of BMPs with energy development. As of November 2006, an electronic version of this document was available at http://www.blm.gov/wo/st/en/prog/energy/oil\_and\_gas/ best\_management\_practices.html.
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development: The Gold Book (BLM). As of November 2006, an electronic version of this document was available through hyperlinks located at www.blm.gov/bmp/Technical\_Information.htm.

In addition, this appendix contains conservation measures identified jointly by the BLM and the U.S. Fish and Wildlife Service (USFWS) as needed to protect specific threatened or endangered species. These conservation measures are targeted to specific species and must be considered and applied as appropriate.

## POTENTIAL BEST MANAGEMENT PRACTICES

#### Surface Disturbing Activities

• Areas subject to surface disturbance should be evaluated for the presence of cultural resources or values. This is usually accomplished through the completion of a cultural clearance. An on-the-ground inspection by a qualified archaeologist, historian, or paleontologist is required. In cases where cultural resources are found, the preferred

response would be to modify the proposed action to avoid the cultural resource (avoidance). If avoidance is not possible, actions would be taken to preserve the data or value represented by the cultural resource (mitigation).

- Areas subject to surface disturbance would be evaluated for the presence of threatened, endangered, or candidate animal or plant species. This is usually accomplished through the completion of a biological clearance. An on-the-ground inspection by a qualified biologist is required. In cases where threatened, endangered, or candidate species are affected, the preferred response would be to modify the proposed action to avoid the species or its habitat (avoidance). If avoidance of a threatened, endangered, or candidate species or its habitat is not possible, a Section 7 consultation with USFWS would be required and a biological assessment would be prepared to recommend actions to protect the species or its habitat.
- Special design and reclamation measures may be required to protect scenic and natural landscape values. These measures may include transplanting trees and shrubs, mulching and fertilizing disturbed areas, using low-profile permanent facilities, and painting to minimize visual contrasts. Surface disturbing activities may be moved to avoid sensitive areas or to reduce the visual effects of the activities.
- Above-ground facilities requiring painting should be designed to blend in with the surrounding environment.
- Reclamation should be implemented concurrently with construction and site operations to the extent possible. Final reclamation actions should be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer.
- Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds.
- Design pipeline crossings through riparian areas and across stream channels to minimize impacts to these resources.

#### Mineral Exploration and Development

Reduce impacts on wildlife and visual resources by applying the following, as appropriate: Directional drilling of oil and gas wells Drilling of multiple wells from a single pad Closed drilling systems Cluster development Below-ground wellheads Remote well monitoring Piping of produced liquids to centralized tank batteries off site to reduce traffic to individual wells Transportation planning (e.g., to reduce road density and traffic volumes) Compensation mitigation Noise reduction techniques and designs Installation of raptor anti-perch devices in Greater sage-grouse habitat Monitoring of wildlife populations during drilling operations Avoidance of human activity between 8 p.m. and 8 a.m. from March 1 through May 15 within ¼ mile of the perimeter of occupied Greater sage-grouse leks Onsite bioremediation of oil field waste and spills

Removal of trash, junk, waste, and other materials not in current use.

- Reclaim all disturbed surface areas promptly, performing concurrent reclamation as necessary, and minimize the total amount of surface disturbance.
- Strip all surface soil prior to conducting operations, stockpiling, and reapplying during reclamation, regardless of soil quality. Minimize the length of time soil remains in stockpiles and the depth or thickness of stockpiles.
- Strip and separate soil surface horizons where feasible and reapply in proper sequence during reclamation.
- Establish vegetation cover on soil stockpiles that are to be in place longer than 1 year.
- Construct and rehabilitate temporary roads, consistent with intended use, to minimize total surface disturbance.
- Consider temporary measures such as silt fences, straw bales, and mulching to trap sediment in sensitive areas until reclaimed areas are stabilized with vegetation.
- Bury distribution powerlines and/or flow lines in or adjacent to access roads.
- Perform interim reclamation of well locations and access roads after wells are put into production.
- Reshape all areas to be permanently reclaimed to the approximate original contour, providing for proper surface drainage.

#### Road Design and Maintenance

- Keep access roads to a minimum, using them only when necessary.
- Design roads to minimize total disturbance, to conform to topography, and to minimize disruption of natural drainage patterns.
- Design and maintenance of roads will conform to the BLM Manual and American Association of State Highway and Transportation Officials standards where applicable.
- Locate roads on stable terrain (such as ridgetops, natural benches, and flatter transitional slopes near ridges and valley bottoms and moderate sideslopes) and away from slumps, slide-prone areas, concave slopes, clay beds, and where rock layers are parallel to the slope. Locate roads on well-drained soil types; avoid wet areas.
- Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars, and/or insloping to ditches as appropriate. Maintain drain dips, waterbars, road crowns, insloping, and outsloping, as appropriate, during road maintenance. Grade roads only as necessary.
- Slope the road base to the outside edge for surface drainage for local spurs or minor collector roads where low-volume traffic and lower traffic speeds are anticipated. This also is recommended in situations where long intervals between maintenance will occur and where minimum excavation is wanted. Outsloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep sideslopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.
- Construct arterial and collector roads with crown and ditching where traffic volume, speed, and intensity and user comfort are considerations. Recommended gradients range from 0 percent to 15 percent where crown and ditching may be applied, as long as adequate drainage away from the road surface and ditch lines is maintained.
- Construct roads when soils are dry and not frozen, if possible, in soil types with a low sand component. When these types of soils or road surfaces become saturated to a depth

of 3 inches, BLM-authorized activities should be limited or cease unless otherwise approved by the authorized officer.

- Retain vegetation between roads and streams to filter runoff caused by roads.
- Use culverts that pass, at a minimum, a 50-year storm event and/or have a minimum diameter of 24 inches for permanent stream crossings and a minimum diameter of 18 inches for road crossdrains.
- Strip and stockpile topsoil ahead of construction of new roads if feasible. Reapply soil to cuts and fillslopes prior to revegetation.
- Use existing roads whenever possible instead of constructing new roads.

#### Rights-of-Way and Utility Corridors

- Rights-of-way (ROW) and utility corridors should use areas adjoining or adjacent to previously disturbed areas whenever possible.
- Disturbed areas within road ROWs and utility corridors should be stabilized by vegetation practices designed to hold soil in place and minimize erosion. Vegetation cover should be reestablished to increase infiltration and provide additional protection from erosion.
- Sediment barriers should be constructed when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms also may be employed for the removal of sediment from runoff.

#### Noxious Weed Management

- To reduce the potential for the introduction of noxious weeds, all equipment should be cleaned off, by pressure washing, prior to operating on BLM lands. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts is required.
- All seed, hay, straw, mulch, and other vegetation material transported and used on public land weed-free zones for site stability, rehabilitation, or project facilitation should be certified by a qualified federal, state, or county officer as free of noxious weeds and noxious weed seed.

#### Reducing Impacts on Visual Resource Management Class II and Class III Areas

- Bury distribution powerlines and flow lines in or adjacent to access roads.
- Repeat form, line, color, and texture elements to blend facilities with the surrounding landscape.
- Paint all above-ground structures not requiring safety coloration an environmental color that is two shades darker than the surrounding environment.
- Perform final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography.
- Avoid facility placement on steep slopes, ridgetops, and hilltops.
- Reclaim unused well pads within 1 year.

#### **Developed Recreation Sites**

- Construct recreation sites and provide appropriate sanitation facilities to minimize impacts on resource values and public health and safety and to minimize user conflicts of approved activities and access within an area as appropriate.
- Use public education and/or physical barriers (such as rocks, posts, and vegetation) to direct or preclude uses and to minimize impacts on resource values.

#### Riparian/Wetland Areas

- Avoid locating roads, trails, and landings in wetlands.
- Locate, identify, and mark riparian management areas during the design of projects that may cause adverse impacts on riparian management areas.
- Keep open water free from slash.
- Avoid equipment operation in areas of open water, seeps, and springs.
- Use low-ground-pressure equipment (floatation tires or tracks) as necessary to minimize rutting and compaction.

#### Water Developments

- Work in springs and stream beds should be done by hand where possible. If machinery is needed in these areas, select equipment that minimizes disturbance.
- After construction of spring head boxes, troughs, pipelines, and well sites, the areas should be cleaned up and refuse removed.
- Cuts, fills, and excavations should be dressed and seeded to blend with surroundings. Pipelines should be buried where possible.
- Original water sources should be protected, and fenced if required, and an offstream watering supply should be provided near the site.
- The size of storage tanks and troughs should accommodate the expected needs of livestock and wildlife using them.
- Water should be left at the site for wildlife. Wells should be cased to prevent cave-ins, and well sites should be fenced.
- Storage structures should be designed to provide water for wildlife. Drinking ramps should be installed, and their heights should not prohibit young wildlife from obtaining water.

# APPENDIX 2—BEST MANAGEMENT PRACTICES FOR RAPTORS AND THEIR ASSOCIATED HABITATS

## I. INTRODUCTION

Raptors, or *Birds of Prey*, are found on public lands throughout Utah. Approximately 31 species of raptors use public lands for at least a portion of their life cycle. These include 20 diurnal raptors, including the eagles, hawks, falcons, osprey, turkey vulture, and California condor, and 11 mostly nocturnal owl species. At least 16 of the diurnal raptors are known to nest, roost, and forage on public lands; two others are probable nesters within the southern part of the state. The California condor is known to use public lands for roosting and foraging, but is not currently known to nest within the state. The rough-legged hawk is a winter resident that uses public lands for foraging. All of the owl species nest, roost, and forage on public lands in Utah.

Eight of Utah's raptors are considered to be special status species by the Bureau of Land Management (BLM) and currently receive enhanced protection from the BLM, in addition to the regulatory authority provided by the Migratory Bird Treaty Act (MBTA), which covers all raptor species. The Mexican spotted owl is listed as a federally threatened species and is afforded the protection and the Section 7 consultation requirements of the Endangered Species Act (ESA). The bald eagle was removed from the list of threatened and endangered species by the U.S. Fish and Wildlife Service (USFWS) in June 2007. The bald eagle and the golden eagle are protected by the provisions of the Eagle Protection Act. The California condor is a federally endangered species; however, the birds found in southern Utah are part of an Experimental Non-Essential Population reintroduced to northern Arizona under Section 10(j) of the ESA. The BLM is required to treat the condor as a species proposed for listing for ESA Section 7 purposes. The northern goshawk is managed by a multi-agency Conservation Agreement. The ferruginous hawk, short-eared owl, and burrowing owl are listed as Wildlife Species of Concern by the Utah Division of Wildlife Resources (UDWR, May 12, 2006) and are therefore recognized as BLM state-sensitive species under the BLM 6840 Manual. BLM's 6840 policy states, "BLM shall ... ensure that actions authorized, funded, or carried out ... do not contribute to the need for the species to become listed."

Future raptor management on BLM lands in Utah will be guided by the use of these best management practices (BMP), which are BLM-specific recommendations for implementation of the USFWS Utah Field Office's *Guidelines for Raptor Protection From Human and Land Use Disturbances* (Guidelines). The Guidelines were originally developed by USFWS in 1999 and were updated in 2002 to reflect changes brought about by court and policy decisions and to incorporate Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds. The Guidelines were provided to BLM and other land management agencies in an attempt to provide raptor management consistency, while ensuring project compatibility with the biological requirements of raptors and encouraging an ecosystem approach to habitat management.

These BMPs, or specific elements of the BMPs that pertain to a proposal, should be attached as Conditions of Approval (COA) to all BLM use authorizations that have the potential to adversely affect nesting raptors or would cause occupied nest sites to become unsuitable for nesting in subsequent years.

Raptor management is a dynamic and evolving science; consequently, as the science evolves, these BMPs will undergo subsequent revision. As more information becomes available through implementation of these raptor BMPs, and as our knowledge of raptor life-cycle requirements increases, findings will be incorporated into future revisions of the Guidelines. In addition, BLM and the U.S. Department of Energy are initiating a 3-year Raptor Radii study that will test traditional spatial and seasonal nest buffers during oil and gas development activities for a select suite of species. Study results will also be incorporated into new BMP revisions.

To adequately manage raptors and their habitats, and to reduce the likelihood of a raptor species being listed under the ESA, BLM-authorized or BLM-proposed management activities and/or land disturbing actions would be subject to the criteria and processes specified within these BMPs. The implementation of raptor spatial and seasonal buffers under the BMPs would be consistent with Table 2 of the Guidelines, included here as Attachment 2. As specified in the Guidelines, modifications of spatial and seasonal buffers for BLM-authorized actions would be permitted as long as protection of nesting raptors is ensured. State and/or federally listed, proposed, and candidate raptor species, as well as BLM state-sensitive raptor species, should be afforded the highest level of protection through this BMP process; however, all raptor species would continue to receive protection under the MBTA. Modification of the buffers for threatened or endangered species would be considered pending results of Section 7 consultations with USFWS.

As stated in the Guidelines, spatial and seasonal buffers should be considered as the best available recommendations for protecting nesting raptors under a wide range of activities statewide. However, they are not necessarily site-specific to proposed projects. Land managers should evaluate the type and duration of the proposed activity, the position of topographic and vegetative features, the sensitivity of the affected species, the habituation of breeding pairs to existing activities in the proposed project area, and the local raptor nesting density when determining site-specific buffers. BLM would be encouraged to informally coordinate with UDWR and USFWS any time a site-specific analysis shows that an action may have an adverse impact on nesting raptors. The coordination would determine if the impact could be avoided or must be mitigated and, if so, determine appropriate and effective mitigation strategies.

Potential modifications of the spatial and seasonal buffers identified in the Guidelines may provide a viable management option. Modifications would ensure that nest protection would occur, while allowing various management options that may deviate from the suggested buffers within the Guidelines, which if adequately monitored could provide valuable information for incorporation into future management actions.

Seasonal raptor buffers from Attachment 2 should be reviewed by local raptor nesting authorities who are knowledgeable of raptor nesting chronologies within their local areas. For those nesting raptors for which local nesting chronologies remain uncertain, the seasonal buffers provided in Attachment 2 should serve as the default. However, for those raptor species whose known nesting chronologies differ from the seasonal buffers provided in Attachment 2, the local seasonal buffers may be used as a modification of the Guidelines.

Criteria that would need to be met, prior to implementing modifications to the spatial and seasonal buffers in the Guidelines, include the following:

- 1. Completion of a site-specific analysis by a wildlife biologist or other qualified individual (Attachment 1).
- 2. Written documentation by the BLM Field Office wildlife biologist, identifying the proposed modification and affirming that implementation of the proposed modification would not affect nest success or the suitability of the site for future nesting. Modification of the Guidelines would not be recommended if it is determined that adverse impacts on nesting raptors would occur or that the suitability of the site for future nesting would be compromised.
- 3. Development of a monitoring and mitigation strategy by a BLM biologist or other raptor biologist. Impacts of authorized activities would be documented to determine if the modifications were implemented as described in the environmental documentation or COA and were adequate to protect the nest site. Should adverse impacts be identified during monitoring of an activity BLM would follow an appropriate course of action, which may include cessation or modification of activities that would avoid, minimize, or mitigate the impact, or, with the approval of UDWR and USFWS, BLM could allow the activity to continue while requiring monitoring to determine the full impact of the activity on the affected raptor nest. A monitoring report would be completed and forwarded to UDWR for incorporation into the Natural Heritage Program raptor database.

In a further effort to provide additional support and expertise to local BLM field biologists, a network of biologists from various agencies with specific expertise in raptor management has been identified and included as Attachment 3. The personnel identified have extensive backgrounds in raptor management issues and are available, upon request, to assist BLM field biologists on a case-by-case basis. Field biologists are encouraged to use this network, via informal conferences, with one or more of the individuals identified. This coordination should be clearly distinguished from the consultation process required under ESA Section 7. Individuals on the expert panel should not be expected to provide formal advice, but should serve as a sounding board for discussing potential affects of a proposal as well as potential mitigation measures on specific projects that may be useful to BLM biologists.

## II. HABITAT ENHANCEMENT

As recommended in the Guidelines, raptor habitat management and enhancement, both within and outside of buffers, would be an integral part of these BMPs, with the understanding that in order for raptors to maintain high densities and maximum diversity, it is necessary that the habitat upon which they and their prey species depend be managed to promote healthy and productive ecosystems. Habitat loss or fragmentation would be minimized and/or mitigated to the extent practical and may include such measures as drilling multiple wellheads per pad, limiting access roads and avoiding loop roads to well pads, effectively rehabilitating or restoring plugged and abandoned well locations and access roads that are no longer required, rehabilitating or restoring areas affected by wildland fires to prevent domination by non-native invasive annual species, or implementing vegetation treatments and riparian restoration projects to achieve *Standards for Rangeland Health*. In some cases, artificial nesting structures located in areas where preferred nesting substrates are limited, but where prey base populations are adequate and human disturbances are limited, may enhance some raptor populations or may serve as mitigation for impacts occurring in other areas.

#### **III.** PROTECTION OF NEST SITES AND BUFFER ZONES

As stated in the Guidelines, protection of occupied and unoccupied nests is important because not all raptor pairs breed every year, nor do they always use the same nest within a nesting territory. Individual raptor nests left unused for a number of years are frequently reoccupied if all the nesting attributes that originally attracted a nesting pair to a location are still present. Nest sites are selected by breeding pairs for the preferred habitat attributes provided by that location.

Raptor nest buffer zones are established for planning purposes because the nest serves as the focal point for a nesting pair of raptors. The buffer should serve as a threshold for potential adverse impacts on nest initiation and productivity. Actions proposed within these buffer zones are considered potentially impacting, and therefore trigger the need for consideration of site-specific recommendations.

Seasonal (temporal) buffer zones are conservation measures intended to schedule potentially impacting activities to periods outside of the nesting season for a particular raptor species. These seasonal limitations are particularly applicable to actions proposed within the spatial buffer zone of a nest for short duration activities, such as pipeline or powerline construction, seismic exploration activity, vegetative treatments, fence or reservoir construction, or permitted recreational events, where subsequent human activity would not be expected to occur.

Spatial buffer zones are those physical areas around raptor nest sites where seasonal conservation measures or surface occupancy restrictions may be applied, depending on the type and duration of activity, distance and visibility of the activity from the nest site, adaptability of the raptor species to disturbance, etc. Surface occupancy restrictions should be used for actions that would involve human activities within the buffer zone for a long duration (more than one nesting season) and that would cause an occupied nest site to become unsuitable for nesting in subsequent years.

#### Unoccupied Nests

**All Activities, Including All Mineral Leases:** Surface disturbing activities occurring outside of the breeding season (seasonal buffer), but within the spatial buffer, would be allowed during a minimum 3-year nest monitoring period, as long as the activity would not cause the nest site to become unsuitable for future nesting, as determined by a wildlife biologist. Facilities and other permanent structures would be allowed if they meet the above criteria.

Examples of typical surface disturbing actions occurring outside of the seasonal buffer that may not be expected to affect nest production or future nesting suitability include pipelines, powerlines, seismographic exploration, communication sites, an oil or gas well with offsite facilities that does not require routine maintenance, recreation events, fence or reservoir construction, vegetative treatments, and other actions with discrete starting and ending times and for which subsequent human activity or heavy equipment operation within the spatial buffer would not be expected to occur or could be scheduled outside of the seasonal buffer in subsequent years.

Surface disturbing activities that would be expected to potentially affect nest production or nest site suitability include oil and gas facilities requiring regular maintenance, sand and gravel operations, road systems, wind energy projects, mining operations, and other actions requiring continual, random human activity or heavy equipment operation during subsequent nesting seasons.

A nest site that does not exhibit evidence of use, such as greenery in the nest, fresh whitewash, obvious nest maintenance, and the observed presence of adults or young at the nest, for a period of 3 consecutive years (verified through monitoring) would be deemed abandoned and all seasonal and spatial restrictions would cease to apply to that nest. All subsequent authorizations for permanent activities within the spatial buffer of the nest could be permitted. If the nest becomes reoccupied after authorized activities are completed, conservation measures would be considered to reduce potential adverse affects and to comply with the MBTA and the Eagle Protection Act.

The 3-year non-use standard varies from the Guidelines' suggested 7-year non-use standard before declaring nest abandonment. This variation is based upon a similar standard that has been applied for more than 20 years in two administrative areas within Utah. Empirical evidence would suggest that the 3-year non-use standard has been effective in conserving raptor species. The 3-year standard has been applied without legal challenge or violation of "Take" under the MBTA or the Eagle Protection Act.

Because prey base populations are known to be cyclic, and because raptor nest initiation or nesting success can be affected by drought and other random natural events, care should be taken when applying the 3-year non-activity standard. The 3-year nest occupancy monitoring requirement should be viewed as a minimum time period during those years of optimal raptor nesting conditions. During suboptimal raptor nesting years, when nesting habitat may be affected by drought, low prey base populations, fire, or other events, the monitoring standard should be increased to allow raptors the opportunity to reoccupy nesting sites when nesting conditions become more favorable.

#### **Occupied Nests**

All Activities: Land use activities that would have an adverse impact on an occupied raptor nest would not be allowed within the spatial or seasonal buffer.

## IV. CONSIDERATION OF MITIGATION MEASURES

Alternatives, including denial of the proposal, should be identified, considered, and analyzed in a National Environmental Policy Act (NEPA) document anytime an action is proposed within the spatial buffer zone of a raptor nest. Selection of a viable alternative that avoids an impact on nesting raptors should be selected over attempting to mitigate those impacts. If unavoidable impacts are identified, mitigation measures should be applied as necessary to mitigate adverse impacts of resource uses and development on nesting raptors. Monitoring of the effectiveness of

the mitigation measures should be mandatory and should be included as a Condition of Approval.

### V. SPECIFIC STRATEGIES TO BE IMPLEMENTED REGARDING OTHER RESOURCE USES

The following are management strategies designed to reduce or eliminate potential conflicts between raptors and other resource uses. This is a list of examples and is not intended to be an all-inclusive list. In all cases, when an activity on BLM lands is proposed and a NEPA document is developed, the Site-Specific Analysis (Attachment 1) may be implemented to identify and either avoid or mitigate impacts on raptors from the proposal. These strategies apply to both BLM and applicant-generated proposals.

#### A. Cultural Resources

Excavation and studies of cultural resources in caves and around cliff areas should be delayed until a qualified biologist surveys the area to be disturbed or impacted by the activity for the presence of raptors or nest sites. If nesting raptors are present, the project should be rescheduled to occur outside of the seasonal buffer recommended by the Guidelines.

#### **B.** Forestry and Harvest of Woodland Products

Timber harvest would be subject to NEPA analysis and would be conducted in a manner that would avoid impacts on raptor nests. This could also apply to areas identified for wood gathering and firewood sales.

#### C. Hazardous Fuel Reduction/Habitat Restoration Projects

Hazardous fuel reduction projects and shrubsteppe restoration projects should be reviewed for possible impacts on nesting raptors. Removal of trees containing either stick nests or nesting cavities, through prescribed fire or mechanical or manual treatments, should be avoided.

It is important to note that certain raptor species are tied to specific habitat types, and that consideration must be made on a site-specific basis when vegetation manipulation projects are proposed in order to determine which raptor species may benefit and which may be negatively affected by the vegetation composition post-treatment.

#### D. Livestock Grazing

Rangelands and riparian areas should be managed in a manner that promotes healthy, productive rangelands and functional riparian systems. Rangeland Health Assessments should be conducted on each grazing allotment, and rangeland guidelines should be implemented where *Standards for Rangeland Health* are not being met, to promote healthy rangelands.

Locations of sheep camps and other temporary intrusions would be located in areas away from raptor nest sites during the nesting season. Placement of salt and mineral blocks also would be located away from nesting areas.

Season of use, type of livestock, and target utilization levels of key species affect vegetative community attributes (such as percent cover and composition) and influence small mammal and avian species diversity and density. While not all raptor species would be affected in the same way, livestock management practices that maintain or enhance vegetative attributes will preserve prey species density and diversity, which will benefit the raptor resource.

#### E. Off-Highway Vehicle Use

Special Recreation Management Areas (SRMA) that are developed for off-highway vehicle (OHV) use would not be located in areas that have important nesting, roosting, or foraging habitats for raptors.

OHV use would be limited to designated roads, trails, and managed open areas. Lands categorized as open for OHV use should not be in areas important to raptors for nesting, roosting, and foraging.

When proposals for OHV events are received, the area to be impacted would be surveyed by a qualified wildlife biologist to determine if the area is used by raptors. Potential conflicts would be identified and either avoided or mitigated prior to the issuance of any permit.

#### F. Oil and Gas Development

The Code of Federal Regulations (CFR), 43 CFR 3101.1-2, allows for well site location and timing to be modified from that requested by the lessee to mitigate conflicts at the proposed site. It states that the location can be moved up to 200 meters, and the timing of the actual drilling can be delayed for up to 60 days to mitigate environmental concerns. The regulation also allows BLM to move a location more than 200 meters, or delay operations more than 60 days, to protect sensitive resources if supporting rationale and lesser restrictions are ineffective. The Site-Specific Analysis (Attachment 1) would provide the supporting rationale. Provisions also are present within Sections 3 and 6 of the Standard Lease Form, which require compliance with existing laws and would allow BLM to impose additional restrictions at the permitting phase if the restrictions will prevent violation of law, policy, or regulation or avoid undue and unnecessary degradation of lands or resources. (Additional stipulations and mitigations would be applied to coal developments and other energy-related developments as directed by the Guidelines and as directed in Chapter 2 of the Environmental Impact Statement.)

#### G. Realty

Lands proposed for disposal, which include raptor nesting, roosting, or foraging areas, would be analyzed and evaluated for the relative significance of these resources before a decision is made for disposal or retention.

A priority list of important raptor habitat areas, especially for federally listed or state-sensitive raptor species, on state and private lands should be developed and used as lands to be acquired by BLM when opportunities arise to exchange or otherwise acquire lands.

Lands and realty authorizations would include appropriate conservation measures to avoid and/or mitigate impacts on raptors.

#### H. Recreation

Development of biking trails near raptor nesting areas would be avoided.

Rock climbing activities would be authorized only in areas where there are no conflicts with cliff-nesting raptors.

In recreation high-use areas where raptor nest sites have been made unsuitable by existing disturbance or habitat alteration, mitigation to replace nest sites with artificial nest structures in nearby suitable habitat, if it exists, and seasonal protection of nest sites through fencing or other restrictions should be considered.

Dispersed recreation would be monitored to identify where this use may be impacting the nesting success of raptors.

#### I. Wild Horse Program

In areas where wild horse numbers are determined to be in excess of the carrying capacity of the range, removal of horses, as described in the various herd management area plans, would continue in order to prevent further damage to rangelands.

#### VI. INVENTORY AND MONITORING

Each field office should cooperatively manage a raptor database, with UDWR and USFWS, as part of the BLM corporate database. Raptor data should be collected and compiled using the Utah Raptor Data Collection Standards developed by the Utah State Office so that personnel from other agencies can access the data. Appropriate protocols for survey and monitoring should be followed when available. This database should be updated as new inventory and monitoring data becomes available. The data also should be forwarded to UDWR and the Natural Heritage Program, which has been identified as the central repository for raptor data storage for the State of Utah.

Use of seasonal employees and volunteers, as well as Challenge Cost Share projects, should be used to augment the inventory and monitoring of raptor nests within a planning area, with the data entered into the aforementioned databases at the close of each nesting season. Project proponents, such as energy development interests, would be encouraged to participate and help support an annual raptor nest monitoring effort within their areas of interest.

Active nest sites should be monitored during all authorized activities that may have an impact on the behavior or survival of the raptors at the nest site. A qualified biologist would conduct the monitoring and document the impacts of the activity on the species. A final report of the impacts of the project should be placed in the Environmental Assessment file, with a copy submitted to the Natural Heritage Program. The report would be made available for review, should identify which activities may affect raptor-nesting success, and should be used to recommend appropriate buffer zones for various raptor species.

As data is gathered and impact analyses are more accurately documented, adaptive management principles should be implemented. Authorization of future activities should take new information

into account, better protecting raptors, while potentially allowing more development and fewer restrictions if data indicates that current restrictions are beyond those necessary to protect nesting raptors or conversely indicates that current guidance is inadequate for protection of nesting raptors. If monitoring detects an impact on bird behavior, especially one that might result in "take" the activity could be suspended or modified so that the impacts are avoided or removed.

## ATTACHMENT 1: SITE-SPECIFIC ANALYSIS DATA SHEET

| Observer(s)                                  |  | Date                           |                                  |
|--|--|--------------------------------|----------------------------------|
| 1. Conduct a site visit data sheet according | t to the area of the p<br>to BLM data standa | roposed action and co<br>ards. | mplete the raptor nest site      |
| 2. Area of Interest Doo                      | cumentation (Bold ite                        | ms require completion          | , other information is optional) |
| State  | Office                                       | Managemo                       | ent Unit                         |
| Project ID#                                  |  |                                |                                  |
| Location (Description                        | n)   |                                |                                  |
| Legal T, R_                                  | , Sec, 1/4                                   | 4,, 1/4,                       | or UTM Coordinates               |
| Latitude                                     | Longitude                                    |                                |                                  |
| Description of photos:                       |  |                                |                                  |
| Raptor Species                               | and Disturbance to:                          | Confirmed                      | Unconfirmed                      |
|  | iscu Distui bance to.                        | Perch<br>Roost                 |                                  |
| Line of Site Evaluation                      | on From: Nest<br>Perch<br>Roost              |                                |                                  |
| Extent of Disturbanc                         | e: Permanent                                 | Temporary                      |                                  |
| Distance from Nest/Ro                        | post   | Acreage                        |                                  |

| Length of Time                                | Timing Variations   | Disturbance Frequency              |
|---|---|------------------------------------|
| <b>Other Disturbance Fa</b><br>disturbances)  | actors: Yes (If yes, explain what<br>No                           | and include distances from nest to |
| Approximate Age of I<br>Evidence of Use (Desc | Nest: NewHist   | orical: (Number of Years)          |
| Habitat Values Impac                          | eted:   |                                    |
| Proportion of Habitat                         | t <b>Impacted</b> (Relate in terms of h                           | abitat available):                 |
| Estimated Noise Leve<br>Available Alternative | <b>ls of Project</b> (dB):<br>(s) (e.g., location, season, techno | <br>blogy):                        |
| Associated Activities:                        |   |                                    |
|   |   |                                    |

# Cumulative Effects of Proposal and Other Actions in Habitat Not Associated With the Proposal: \_\_\_\_\_

| Potential for Site Rehabilitation: HighLow  |
|---|
| Notes/Comments:   |
|   |
|   |
|   |
| Summary of Proposed Modifications:  |
| Possible modifications to the spatial and seasonal buffers within the USFWS Utah Field Office Guidelines include the following: |
|   |
|   |
|   |
| Rationale:  |
|   |
|   |
| Summary of Proposed Mitigation Measures:  |
| Possible mitigation measures related to the proposal include the following:   |
|   |
|   |
|   |
|   |
| Rationale:  |
|   |
|   |
|   |
| Summary of Alternatives Considered:   |

Possible alternatives to the proposal include the following:

Rationale:

#### Recommendation to FO Manager Based on Above Findings:

Field Office Wildlife Biologist Date

# ATTACHMENT 2: NESTING PERIODS AND RECOMMENDED BUFFERS FOR RAPTORS IN UTAH

| Species               | Spatial<br>Buffer<br>(miles) | Seasonal<br>Buffer | Incubation<br># Days | Brooding,<br># Days<br>Post-<br>Hatch | Fledging,<br># Days<br>Post-<br>Hatch | Post-Fledge<br>Dependency<br>to Nest, #<br>Days <sup>1</sup> |
|-----------------------|------------------------------|--------------------|----------------------|---------------------------------------|---------------------------------------|--|
| Bald eagle            | 1.0                          | 1/1–8/31           | 34–36                | 21–28                                 | 70–80                                 | 14–20  |
| Golden eagle          | 0.5                          | 1/1-8/31           | 43–45                | 30–40                                 | 66–75                                 | 14–20  |
| Northern goshawk      | 0.5                          | 3/1–8/15           | 36–38                | 20–22                                 | 34–41                                 | 20–22  |
| Northern harrier      | 0.5                          | 4/1-8/15           | 32–38                | 21–28                                 | 42                                    | 7  |
| Cooper's hawk         | 0.5                          | 3/15–8/31          | 32–36                | 14                                    | 27–34                                 | 10   |
| Ferruginous hawk      | 0.5                          | 3/1-8/1            | 32–33                | 21                                    | 38–48                                 | 7–10   |
| Red-tailed hawk       | 0.5                          | 3/15–8/15          | 30–35                | 35                                    | 45–46                                 | 14–18  |
| Sharp-shinned hawk    | 0.5                          | 3/15–8/31          | 32–35                | 15                                    | 24–27                                 | 12–16  |
| Swainson's hawk       | 0.5                          | 3/1–8/31           | 33–36                | 20                                    | 36–40                                 | 14   |
| Turkey vulture        | 0.5                          | 5/1–8/15           | 38–41                | 14                                    | 63–88                                 | 10–12  |
| California condor     | 1.0                          | NN                 | 56–58                | 5–8 weeks                             | 5–6 months                            | 2 months   |
| Peregrine falcon      | 1.0                          | 2/1-8/31           | 33–35                | 14–21                                 | 35–49                                 | 21   |
| Prairie falcon        | 0.25                         | 4/1-8/31           | 29–33                | 28                                    | 35–42                                 | 7–14   |
| Merlin                | 0.5                          | 4/1-8/31           | 28–32                | 7                                     | 30–35                                 | 7–19   |
| American kestrel      | NN <sup>2</sup>              | 4/1-8/15           | 26–32                | 8–10                                  | 27–30                                 | 12   |
| Osprey                | 0.5                          | 4/1-8/31           | 37–38                | 30–35                                 | 48–59                                 | 45–50  |
| Boreal owl            | 0.25                         | 2/1–7/31           | 25–32                | 20–24                                 | 28–36                                 | 12–14  |
| Burrowing owl         | 0.25                         | 3/1–8/31           | 27–30                | 20–22                                 | 40–45                                 | 21–28  |
| Flammulated owl       | 0.25                         | 4/1–9/30           | 21–22                | 12                                    | 22–25                                 | 7–14   |
| Great horned owl      | 0.25                         | 12/1–9/30          | 30–35                | 21–28                                 | 40–50                                 | 7–14   |
| Long-eared owl        | 0.25                         | 2/1-8/15           | 26–28                | 20–26                                 | 30–40                                 | 7–14   |
| Northern saw-whet owl | 0.25                         | 3/1–8/31           | 26–28                | 20–22                                 | 27–34                                 | 7–14   |
| Short-eared owl       | 0.25                         | 3/1-8/1            | 24–29                | 12–18                                 | 24–27                                 | 7–14   |
| Mexican spotted owl   | 0.5                          | 3/1–8/31           | 28–32                | 14–21                                 | 34–36                                 | 10–12  |
| Northern pygmy owl    | 0.25                         | 4/1-8/1            | 27–31                | 10–14                                 | 28–30                                 | 7–14   |
| Western screech owl   | 0.25                         | 3/1–8/15           | 21–30                | 10–14                                 | 30–32                                 | 7–14   |
| Common barn owl       | NN <sup>2</sup>              | 2/1–9/15           | 30–34                | 20–22                                 | 56–62                                 | 7–14   |

The following table is adapted from Table 2 of the Guidelines.

<sup>1</sup> Length of post-fledge dependency period to parents is longer than reported in this table. Reported dependency periods reflect the amount of time the young are still dependent on the nest site (e.g., they return to the nest for feeding). <sup>2</sup> As a result of apparent high population densities and ability to adapt to human activity, a spatial buffer is currently considered

<sup>2</sup> As a result of apparent high population densities and ability to adapt to human activity, a spatial buffer is currently considered not necessary (NN) for maintenance of American kestrel or common barn owl populations. Actions resulting in direct mortality of individual birds and "take" of known nest sites are unlawful.

# ATTACHMENT 3: UTAH RAPTOR MANAGEMENT EXPERTS FROM VARIOUS AGENCIES

The following list of personnel contains individuals from various Utah and federal agencies who are recognized experts in the field of raptor ecology or have extensive field experience in managing raptor resources with competing land uses. The list is provided to inform BLM field biologists and managers of this network of specialized experts who may be able to assist, as time permits, with specific raptor management issues. Individuals in the Utah raptor network also have well-established contacts with an informal extended network of highly qualified raptor ecologists outside the state (e.g., U.S. Geological Survey, state wildlife agencies, and universities) who could provide an additional regional perspective.

This list is not intended to replace or interfere with established lines of communication but rather supplement these lines of communication.

| Utah BLM                   | David Mills       | david_mills@blm.gov         | 435-896-1571 |
|----------------------------|-------------------|-----------------------------|--------------|
| Utah BLM                   | Steve Madsen      | steve_c_madsen@blm.gov      | 801-539-4058 |
| UDWR                       | Dr. Jim Parrish   | jimparrish@utah.gov         | 801-538-4788 |
| UDWR                       | Brian Maxfield    | brianmaxfield@utah.gov      | 435-790-5355 |
| USFWS                      | Laura Romin       | laura_romin@usfws.gov       | 801-975-3330 |
| USFWS                      | Diana Whittington | diana_whittington@usfws.gov | 801-975-3330 |
| U.S. Forest Service        | Chris Colt        | ccolt@fs.fed.us             | 801-896-1062 |
| HawkWatch<br>International | Jeff Smith        | jsmith@hawkwatch.org        | 801-484-6808 |

# ATTACHMENT 4: REFERENCES CITED

Code of Federal Regulations, 43 CFR 3101.1-2, Leasing Regulations.

Endangered Species Act (ESA), 16 U.S.C. 1513-1543.

Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703-712.

- Romin, Laura A., and James A. Muck. 2002. *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances*. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.
- U.S. Department of the Interior, Bureau of Land Management. 1997. Standards for Rangeland Health and Guidelines for Grazing Management on BLM Lands in Utah.
- U.S. Department of the Interior, Bureau of Land Management, 6840 Manual.

# APPENDIX 3—SURFACE STIPULATIONS APPLICABLE TO OIL AND GAS LEASING AND OTHER SURFACE DISTURBING ACTIVITIES

This appendix lists surface stipulations for oil and gas leasing in the Approved Resource Management Plan (RMP). These surface stipulations will also apply, where appropriate and practical, to other surface disturbing activities (and occupancy) associated with land use authorizations, permits, and leases issued on Bureau of Land Management (BLM) lands. The stipulations will not apply to other activities and uses where they are contrary to laws, regulations, or policy for specific land use authorizations. The intent is to manage other activities and uses as consistent as possible with oil and gas leasing.

Surface disturbing activities are those that normally result in more than negligible disturbance to public lands. These activities normally involve disturbance to soils and vegetation to the extent that reclamation is required. They include, but are not limited to, the use of mechanized earth-moving equipment; truck- mounted drilling equipment; geophysical exploration; off-road vehicle travel in areas designated as limited or closed to off-highway vehicle (OHV) use; placement of surface facilities such as utilities, pipelines, structures, and oil and gas wells; new road construction; and use of pyrotechnics, explosives, and hazardous chemicals. Surface disturbing activities will not include livestock grazing, cross-country hiking, driving on designated routes, and minimum impact filming permits.

## DESCRIPTION OF SURFACE STIPULATIONS

Table A0-1 shows resources of concern and stipulations including exceptions, modifications, and waivers. Three surface stipulations could be applied to land use authorizations: (1) no surface occupancy (NSO), (2) timing limitations (TL), and (3) controlled surface use (CSU).

Areas identified as NSO (major constraints) will be closed to surface disturbing activities. NSO areas would be avoidance areas for rights-of-way (ROW) and where necessary will be recommended for withdrawal from operations under the mining laws (locatable minerals) to prevent unacceptable resource impacts. An NSO stipulation cannot be applied to locatable minerals without a withdrawal. A withdrawal is not a land use planning decision because it must be approved by the Secretary of the Interior.

Areas identified as TL (moderate constraints) will be closed to surface disturbing activities during identified time frames. TL areas will be open to operational and maintenance activities, including associated vehicle travel, during the closed period unless otherwise specified in the stipulation.

Areas identified as CSU (moderate constraints) will require proposals to be authorized only according to the controls or constraints specified. The controls will be applicable to all surface disturbing activities.

### **EXCEPTIONS, MODIFICATIONS, AND WAIVERS**

Surface stipulations could be excepted, modified, or waived by the authorized officer. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation. The environmental analysis document prepared for site-specific proposals such as oil and gas development (i.e., applications for permit to drill [APD] or sundry notices) also would need to address proposals to exempt, modify, or waive a surface stipulation. To exempt, modify, or waive a stipulation, the environmental analysis document would have to show that (1) the circumstances or relative resource values in the area had changed following issuance of the lease, (2) less restrictive requirements could be developed to protect the resource of concern, and (3) operations could be conducted without causing unacceptable impacts.

### STANDARD TERMS AND CONDITIONS

All surface disturbing activities are subject to standard terms and conditions. These include the stipulations that are required for proposed actions in order to comply with the Endangered Species Act (ESA). Standard terms and conditions for oil and gas leasing provide for relocation of proposed operations up to 200 meters and for prohibiting surface disturbing operations for a period not to exceed 60 days. The stipulations addressed in Table A0-1 that are within the parameters of 200 meters and 60 days are considered open to oil and gas leasing subject to standard terms and conditions.

# CLOSED AREAS

Areas identified as closed are not available for oil and gas leasing. Areas where restrictions apply to all surface disturbing activities are noted with an asterisk.

| Stipulation<br>Code | Resource<br>of Concern   | Applicable Area  | Stipulation Description  |
|---------------------|--------------------------|--|--|
|                     | Paria Special Recreation | The Paria SRMA (Canyon RMZ and Uplands RMZ) is in the Paria Canyon Wilderness Area, which is closed to oil and gas leasing.<br>Purpose: To protect recreational values such as world-class wilderness trekking, adventure, |  |
| Closed              | Recreation               | – Canyon Recreation<br>Management Zone (RMZ)   | viewing deeply entrenched slickrock canyon, and associated slot canyon features.<br>Exception: None  |
|                     |                          | and Uplands RMZ  | Modification: None<br>Waiver: None   |
| Closed              | Recreation               | Moquith Mountain SRMA –<br>Dunes RMZ   | The Moquith Mountain SRMA – Dunes RMZ will be closed to oil and gas leasing.<br>Purpose: To protect unique, scenic, and expansive sand dunes OHV opportunities.<br>Exception: None<br>Modification: None<br>Waiver: None   |
| Closed              | Recreation               | North Fork Virgin River<br>SRMA  | The North Fork Virgin River SRMA will be closed to oil and gas leasing.<br>Purpose: To protect spectacular, primitive riparian canyon travel with abundant geologic<br>formations and diverse flora and fauna.<br>Exception: None<br>Modification: None<br>Waiver: None              |
| Closed              | Recreation               | Orderville Canyon SRMA   | The Orderville Canyon SRMA is entirely within the WSA and will be closed to leasing.<br>Purpose: To protect spectacular, primitive riparian canyon travel with abundant geologic<br>formations and diverse flora and fauna.<br>Exception: None<br>Modification: None<br>Waiver: None |

| Table A0-1. Proposed RMP | Surface Stipulations an | nd Exception. M   | lodification. and | Waiver Criteria     |
|--------------------------|-------------------------|-------------------|-------------------|---------------------|
|                          | Surface Suparations a   | ia Enception, iii | louincurion, and  | i ai ei ei ei ei ei |

| Closed      | Wild and<br>Scenic Rivers         | Suitable "wild" river<br>corridors   | Manage river segments found suitable and classified as "wild" as closed to oil and gas leasing<br>within ¼ mile of each side of the river or the viewshed from the river, whichever is less.<br>Purpose: To protect the tentative classification and outstandingly remarkable values (ORV).<br>Exception: None<br>Modification: None<br>Waiver: None  |
|-------------|-----------------------------------|--|---|
| Closed      | Wilderness<br>area                | Paria Canyon–Vermilion<br>Cliffs Wilderness area   | The designated Paria Canyon Wilderness area is closed to oil and gas leasing.<br>Purpose: To protect wilderness values.<br>Exception: None<br>Modification: None<br>Waiver: None  |
| Closed      | Wilderness<br>Study Area<br>(WSA) | North Fork Virgin River<br>Orderville Canyon<br>Parunuweap Canyon<br>Canaan Mountain<br>Moquith Mountain | Areas within WSAs are closed to oil and gas leasing.<br>Purpose: To protect wilderness values.<br>Exception: None<br>Modification: None<br>Waiver: None   |
| Major (NSO) | ACEC                              | Cottonwood Canyon<br>ACEC  | The Cottonwood Canyon ACEC, which includes the existing Water Canyon/South Fork Indian<br>Canyon ACEC, will be open to leasing subject to major constraints (NSO).<br>Purpose: To protect relevant and important (R&I) values, including scenic and cultural values<br>and the Fredonia water supply.<br>Exception: An exception could be authorized if the use is consistent and compatible with<br>protection or enhancement of the resource values or would provide suitable opportunities for<br>public enjoyment of these resources.<br>Modification: None<br>Waiver: None |

|                                    |   |  | Sites listed on the National Register of Historic Places will be open to leasing subject to major constraints (NSO).   |
|------------------------------------|---|--|--|
| Major (NSO) Cultural<br>Resources  | Purpose: To protect sites listed on the National Register of Historic Places for the purposes for which they were listed. |  |  |
|                                    | Resources   | Register of Historic Places  | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values or would provide suitable opportunities for public enjoyment of these resources. |
|                                    |   |  | Modification: None   |
|                                    |   |  | Waiver: None   |
|                                    |   | Within ¼ mile or within the  | Cultural sites within 1/4 mile or within the visual horizon, whichever is closer, will be open to leasing subject to major constraints (NSO).  |
|                                    |   | is closer, of cultural sites<br>where the landscape  | Purpose: To protect cultural sites where the landscape features are important in understanding the property or sites where the setting directly contributes to the significance of the property.                           |
| Major (NSO) Cultural<br>Resources* | features are important in<br>understanding the property<br>or sites where setting   | Exception: An exception could be authorized if the use is consistent and compatible with<br>protection or enhancement of the resource values or would provide suitable opportunities for<br>public enjoyment of these resources. |  |
|                                    |   | directly contributes to the significance of the property   | Modification: None   |
|                                    |   |  | Waiver: None   |
|                                    |   |  | Preclude placement of permanent structures or roads within 1 mile of condor nest sites.  |
|                                    |   |  | Purpose: To protect condor nest sites.   |
| Major (NSO) Fish and<br>Wildlife   | Within 1 mile of condor nest sites  | Exception: An exception could be granted if surveys determine that California condor communal roosting or nesting areas are not occupied.  |  |
|                                    |   | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM.                              |  |
|                                    |   | Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been destroyed.  |  |
|                                    |   |  | The areas with Recreation and Public Purposes (R&PP) leases will be open to leasing subject to major constraints (NSO).  |
| Major (NSO) Lands and Realty       |   | Purpose: To protect the purposes for which the R&PP leases were established.   |  |
|                                    | Lands and<br>Realty   | ds and R&PP Leases alty  | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values or would provide suitable opportunities for public enjoyment of these resources. |
|                                    |   |  | Modification: None   |
|                                    |   | Waiver: None   |  |

| Major (NSO)Lands and<br>RealtyCemeteriesPurpose: To protect cemeteries for the purposes they were established and to eliminate<br>potential safety issues and surface use conflicts.<br>Exception: An exception could be authorized if the use is consistent and compatible with<br>protection or enhancement of the resource values or would provide suitable opportunities for<br>public enjoyment of these resources.<br>Modification: None<br>Waiver: NoneMajor (NSO)Lands and<br>RealtyLandfills (existing and<br>closed)Existing and closed landfills will be open to leasing subject to major constraints (NSO).<br>Purpose: To eliminate potential safety issues and surface use conflicts.<br>Exception: An exception could be granted if it can be demonstrated that the action would not<br>result in any surface use conflicts.<br>Modification: None<br>Waiver: NoneMajor (NSO)Lands and<br>RealtyLandfills (existing and<br>closed)Existing and closed landfills will be open to leasing subject to major constraints (NSO).<br>Purpose: To eliminate potential safety issues and surface use conflicts.<br>Modification: None<br>Waiver: NoneMajor (NSO)Lands and<br>RealtyLandfills (existing and<br>closed)Incorporated municipalities will be open to leasing subject to major constraints (NSO).<br>Purpose: To eliminate potential safety issues and surface use conflicts.<br>Modification: None<br>Waiver: None  |                              |                             |   | Cemeteries will be open to leasing subject to major constraints (NSO).   |
|--|------------------------------|-----------------------------|---|--|
| Major (NSO)Lands and<br>RealtyCemeteriesException: An exception could be authorized if the use is consistent and compatible with<br>protection or enhancement of the resource values or would provide suitable opportunities for<br>public enjoyment of these resources.<br>Modification: None<br>Waiver: NoneMajor (NSO)Lands and<br>RealtyLandfills (existing and<br>closed)Existing and closed landfills will be open to leasing subject to major constraints (NSO).<br>Purpose: To eliminate potential safety issues and surface use conflicts.<br>Exception: An exception could be granted if it can be demonstrated that the action would not<br>result in any surface use conflicts.<br>Modification: None<br>Waiver: NoneMajor (NSO)Image: Second  |                              |                             |   | Purpose: To protect cemeteries for the purposes they were established and to eliminate<br>potential safety issues and surface use conflicts.   |
| Image: Modification in Some<br>Waiver: NoneModification: None<br>Waiver: NoneMajor (NSO)Lands and<br>RealtyLandfills (existing and<br>   | Major (NSO)                  | Lands and<br>Realty         | Cemeteries  | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values or would provide suitable opportunities for public enjoyment of these resources. |
| Image: constraint of the second sec |                              |                             |   | Modification: None   |
| Major (NSO) Lands and Realty Landfills (existing and closed landfills will be open to leasing subject to major constraints (NSO).   Purpose: To eliminate potential safety issues and surface use conflicts. Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts.   Modification: None Waiver: None   Incorporated municipalities will be open to leasing subject to major constraints (NSO).   Purpose: To eliminate potential safety issues and surface use conflicts.  |                              |                             |   | Waiver: None   |
| Major (NSO)Lands and<br>RealtyLandfills (existing and<br>closed)Purpose: To eliminate potential safety issues and surface use conflicts.<br>Exception: An exception could be granted if it can be demonstrated that the action would not<br>   |                              |                             |   | Existing and closed landfills will be open to leasing subject to major constraints (NSO).  |
| Major (NSO) Lands and<br>Realty Landfills (existing and<br>closed) Exception: An exception could be granted if it can be demonstrated that the action would not<br>result in any surface use conflicts.<br>Modification: None<br>Waiver: None   Image: Constraint of the subscript of the subsc  |                              |                             |   | Purpose: To eliminate potential safety issues and surface use conflicts.   |
| Modification: None   Waiver: None   Incorporated municipalities will be open to leasing subject to major constraints (NSO).   Purpose: To eliminate potential safety issues and surface use conflicts.   | Major (NSO)                  | Lands and<br>Realty         | Landfills (existing and closed)   | Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts.  |
| Waiver: None   Incorporated municipalities will be open to leasing subject to major constraints (NSO).   Purpose: To eliminate potential safety issues and surface use conflicts.  |                              |                             |   | Modification: None   |
| Incorporated municipalities will be open to leasing subject to major constraints (NSO).<br>Purpose: To eliminate potential safety issues and surface use conflicts.  |                              |                             |   | Waiver: None   |
| Purpose: To eliminate potential safety issues and surface use conflicts.   |                              |                             |   | Incorporated municipalities will be open to leasing subject to major constraints (NSO).  |
|  |                              |                             |   | Purpose: To eliminate potential safety issues and surface use conflicts.   |
| Major (NSO) Lands and Realty Incorporated Municipalities Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts.   | Major (NSO) Lands and Realty | Incorporated Municipalities | Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts. |  |
| Modification: None   |                              |                             |   | Modification: None   |
| Waiver: None   |                              |                             |   | Waiver: None   |
| Airports will be open to leasing subject to major constraints (NSO).   |                              |                             |   | Airports will be open to leasing subject to major constraints (NSO).   |
| Purpose: To eliminate potential safety issues and surface use conflicts.   |                              |                             |   | Purpose: To eliminate potential safety issues and surface use conflicts.   |
| Major (NSO)   Lands and<br>Realty   Airports   Exception: An exception could be granted if it can be demonstrated that the action would not<br>result in any surface use conflicts.  | Major (NSO)                  | Lands and<br>Realty         | Airports  | Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts.  |
| Modification: None   |                              |                             |   | Modification: None   |
| Waiver: None   |                              |                             |   | Waiver: None   |
| Federal facilities will be open to leasing subject to major constraints (NSO).   |                              |                             |   | Federal facilities will be open to leasing subject to major constraints (NSO).   |
| Purpose: To protect federal investment in facilities and to eliminate potential safety issues and surface use conflicts.   |                              |                             |   | Purpose: To protect federal investment in facilities and to eliminate potential safety issues and<br>surface use conflicts.  |
| Major (NSO) Minerals and<br>Energy Federal facilities Exception: An exception could be granted if it can be demonstrated that the action would not<br>result in any surface use conflicts.   | Major (NSO)                  | Minerals and Energy         | s and Federal facilities  | Exception: An exception could be granted if it can be demonstrated that the action would not result in any surface use conflicts.  |
| Modification: None   |                              |                             |   | Modification: None   |
| Waiver: None   |                              |                             |   | Waiver: None   |

|                        |            |   | Developed recreation sites will be open to leasing subject to major constraints (NSO).  |
|------------------------|------------|---|---|
| Major (NSO) Recreation |            | Purpose: To protect federal investment in facilities, provide for recreational use, and protect the viewshed from the facility. |   |
|                        | Recreation | Developed recreation sites  | Exception: An exception could be granted if a viewshed analysis indicates there would be no impairment of the visual resources from the recreation site. Also, an exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values or would provide suitable opportunities for public enjoyment of the applicable resources. |
|                        |            |   | Modification: None  |
|                        |            |   | Waiver: None  |
|                        |            |   | The Kanab Community SRMA – OHV RMZ will be open to leasing subject to major constraints (NSO).  |
| Major (NSO) Recreation |            | Kanab Community SRMA<br>– OHV RMZ   | Purpose: To protect close-to-town OHV travel in an exceptionally scenic setting with a variety of trails for different skill levels.  |
|                        | Recreation |   | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values, would provide a public benefit, or would provide suitable opportunities for public enjoyment of the resources.   |
|                        |            | Modification: None  |   |
|                        |            |   | Waiver: None  |
|                        |            | creation Kanab Community SRMA<br>– Non-Motorized RMZ  | The Kanab Community SRMA – Non-Motorized RMZ will be open to leasing subject to major constraints (NSO).  |
| Major (NSO) Recreation |            |   | Purpose: To protect town-accessible hiking and an equestrian trail network offering outstanding views and varied terrain.   |
|                        | Recreation |   | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values, would provide a public benefit, or would provide suitable opportunities for public enjoyment of the resources.   |
|                        |            |   | Modification: None  |
|                        |            | Waiver: None  |   |

| Major (NSO) | Recreation                    | Moquith Mountain SRMA –<br>Non-Dunes Wooded RMZ<br>– OUTSIDE WSA | The Moquith Mountain SRMA – Non-Dunes Wooded RMZ (outside the WSA) will be open to leasing subject to major constraints (NSO).  |
|-------------|-------------------------------|--|---|
|             |                               |  | Purpose: To protect a scenic and extensive OHV trail network accessing vistas, overlooks, flora and fauna, and cultural sites.  |
|             |                               |  | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values, would provide a public benefit, or would provide suitable opportunities for public enjoyment of the resources.   |
|             |                               |  | Modification: None  |
|             |                               |  | Waiver: None  |
| Major (NSO) | Special<br>Status<br>Species  | Within ½ mile radius of a<br>Greater sage-grouse lek<br>site     | Manage oil and gas leasing as open subject to major constraints (NSO) within ½ mile of a Greater sage-grouse lek site.  |
|             |                               |  | Purpose: To protect occupied lek sites within Greater sage-grouse habitat.  |
|             |                               |  | Exception: An exception may be granted by the Field Manager if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated.   |
|             |                               |  | Modification: The Field Manager may modify the boundaries of the stipulation area if (1) portions of the area do not include lek sites, (2) the lek site(s) have been completely abandoned or destroyed, or (3) occupied lek site(s) occur outside the current defined area, as determined by the BLM.  |
|             |                               |  | Waiver: A waiver may be granted if there are no active lek site(s) in the leasehold and it is determined the site(s) have been completely abandoned or destroyed or occur outside current defined area, as determined by the BLM.   |
|             | Special<br>Status<br>Species* | Within ½ mile of active<br>bald eagle nest sites year-<br>round  | Areas within ½ mile of active bald eagle nest sites will be managed as open to leasing subject to major constraints (NSO).  |
|             |                               |  | Purpose: To protect active bald eagle nest sites.   |
| Major (NSO) |                               |  | Exception: An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the bald eagles and USFWS concurs with this determination. |
|             |                               |  | Modification: The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates and USFWS determines (through applicable provisions of the ESA) that a portion of the area is not being used as bald eagle nesting territory.  |
|             |                               |  | Waiver: May be granted if bald eagles are de-listed and if USFWS determines it is not necessary to protect nesting territories according to the ESA and the Bald Eagle Protection Act or if there is no reasonable likelihood of site occupancy over a minimum 10-year period.  |

| Major (NSO) | Special<br>Status<br>Species* | Within ½ mile of active,<br>suitable, or potential<br>reintroduction Utah prairie<br>dog habitats/sites | Areas within ½ mile of active, suitable, or potential reintroduction Utah prairie dog habitats/sites will be managed as open to leasing subject to major constraints (NSO).  |
|-------------|-------------------------------|---|--|
|             |                               |   | Purpose: To protect active, suitable, or potential reintroduction Utah prairie dog habitats/sites.   |
|             |                               |   | Exception: An exception may be granted if the applicant submits a plan that indicates that impacts of the proposed action can be adequately mitigated, or, if due to the size of the town there is no reasonable location to develop a lease and avoid colonies, the Field Manager will allow for loss of prairie dog colonies and/or habitat to satisfy terms and conditions of the lease.  |
|             |                               |   | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include prairie dog habitat or active colonies are found outside current defined area, as determined by the BLM.  |
|             |                               |   | Waiver: A waiver may be granted if in the leasehold it is determined that habitat no longer exists or has been destroyed.  |
| Major (NSO) | Special<br>Status<br>Species* | Within ½ mile around<br>Mexican spotted owl nests   | Areas within ½ mile around Mexican spotted owl (MSO) nests will be managed as open to leasing subject to major constraints (NSO).  |
|             |                               |   | Purpose: To protect MSO nests.   |
|             |                               |   | Exception: An exception may be granted by the Field Manager if concurrence is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature or conduct of the actions would not impair the primary constituent element determined necessary for the survival and recovery of the MSO and USFWS concurs with this determination. |
|             |                               |   | Modification: The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates and USFWS determines (through applicable provisions of the ESA) that a portion of the area is not being used as critical habitat.   |
|             |                               |   | Waiver: A waiver may be granted if the MSO is de-listed and the critical habitat is determined by USFWS as not necessary for the survival and recovery of the MSO.   |
| Major (NSO) | Vegetation                    | Relict Vegetation (Diana's<br>Throne and Elephant<br>Butte)   | Restrict surface occupancy (NSO) for surface disturbing activities to protect relict vegetation at Diana's Throne and Elephant Butte.  |
|             |                               |   | Purpose: To protect relict vegetation at Diana's Throne and Elephant Butte.  |
|             |                               |   | Exception: Exceptions could be allowed if the use is consistent and compatible with protection or<br>enhancement of the resource values or would provide suitable opportunities for public enjoyment<br>of these resources.  |
|             |                               |   | Modification: None   |
|             |                               |   | Waiver: None   |

| Major (NSO)       | Water*                    | Within 330 feet of riparian<br>areas   | Do not allow new surface disturbing activities within 330 feet of riparian/wetland areas.  |
|-------------------|---------------------------|--|--|
|                   |                           |  | Purpose: To protect riparian areas.  |
|                   |                           |  | Exception: An exception could be authorized if (a) there are no practical alternatives, (b) all long-<br>term impacts could be fully mitigated, or (c) the activity would benefit and enhance the riparian<br>area.                                    |
|                   |                           |  | Modification: None   |
|                   |                           |  | Waiver: None   |
|                   | Wild and<br>Scenic Rivers | Suitable "scenic" river corridors  | Manage oil and gas leasing as open subject to major constraints (NSO) in the East Fork Virgin River segment 37-40a suitable "scenic" river segment (within 1/4 mile of each side of the river or the viewshed from river, whichever is less).          |
|                   |                           |  | Purpose: To protect the tentative classification and ORVs.   |
| Major (NSO)       |                           |  | Exception: An exception could be authorized if the activity would benefit and enhance the tentative classification and ORVs.   |
|                   |                           |  | Modification: None   |
|                   |                           |  | Waiver: None   |
|                   | Wild and<br>Scenic Rivers | Suitable wild and scenic<br>river "recreational"<br>segment East Fork Virgin<br>River (segment 36-37) –<br>OUTSIDE THE WSA | Manage oil and gas leasing as open subject to major constraints (NSO) in the East Fork Virgin River segment 36-37 suitable "recreational" river segment (within ¼ mile of each side of the river or the viewshed from river, whichever is less).       |
|                   |                           |  | Purpose: To protect the tentative classification and ORVs.   |
| Major (NSO)       |                           |  | Exception: An exception could be authorized if the activity would benefit and enhance the tentative classification and ORVs.   |
|                   |                           |  | Modification: None   |
|                   |                           |  | Waiver: None   |
| Moderate<br>(CSU) | Soil                      | Fragile soils areas  | Develop and implement site-specific restrictions and/or mitigations for activities proposed in fragile soil areas on a case-by-case basis. The BLM must approve surface disturbing activities before construction and maintenance would be authorized. |
|                   |                           |  | Allow surface disturbance in fragile soil areas as long as impacts would be mitigated or<br>disturbance would be beneficial to rangeland health.   |
|                   |                           |  | Purpose: To protect fragile soil resources.  |
|                   |                           |  | Exception: An exception could be authorized if the use is consistent and compatible with long-<br>term protection or enhancement of soil resource values.  |
|                   |                           |  | Modification: None   |
|                   |                           |  | Waiver: None   |

| Moderate<br>(CSU) | Special<br>Status<br>Species | Federally listed and<br>candidate plant species<br>occupied and suitable<br>habitat  | Manage oil and gas leasing as open subject to moderate constraints (CSU) in federally listed<br>and candidate plant species-occupied and suitable habitat. In these areas, well placement would<br>be located to not adversely affect the species or its habitat.<br>Purpose: To protect federally listed and candidate plant species-occupied and suitable habitat.<br>Exception: None<br>Modification: If federally listed and candidate plant species are not identified in the habitat,<br>development could occur, but site-specific mitigation requirements could be included in the<br>application for permit to drill.<br>Waiver: None   |
|-------------------|------------------------------|--|--|
| Moderate<br>(CSU) | Visual<br>Resources          | VRM Class II areas   | Surface disturbing activities must meet the objectives of Visual Resource Management (VRM)<br>Class II.<br>Purpose: To protect high-quality visual resources.<br>Exception: The level of change to the landscape should be low; management activities may be<br>seen, but should not attract the attention of the casual observer. Any change to the landscape<br>must repeat the basic elements of form, line, color, and texture found in the predominant natural<br>features of the characteristic landscape. Surface disturbing activities that are determined to be<br>compatible and consistent with the protection or enhancement of the resource values are<br>exempted. Also, recognized utility corridors are exempted only for utility projects, which would be<br>managed according to VRM Class III objectives.<br>Modification: None<br>Waiver: None |
| Moderate<br>(CSU) | Water                        | Culinary water supply in<br>the following areas:<br>T 42 S R 6 W Sections 19,<br>31<br>T 42 S R 7 W Sections 23,<br>24, 25, 26, 27, 34, 35 | Manage oil and gas leasing as open to leasing subject to moderate constraints to protect<br>culinary water supply as directed by the Land Use Agreement for Kanab City Existing Wells in<br>the following sections:<br>T 42 S R 6 W Sections 19, 31<br>T 42 S R 7 W Sections 23, 24, 25, 26, 27, 34, 35<br>In these areas (1) well placement would be located to eliminate potential contamination sources<br>or pollution sources and/or (2) design standards would be implemented to prevent contaminated<br>discharges to ground water.<br>Purpose: To protect culinary water supply as directed by the Land Use Agreement for Kanab<br>City Existing Wells.<br>Exception: If federally listed and candidate plant species are not identified in the habitat, there<br>would be no restrictions.<br>Modification: None<br>Waiver: None                          |
|               | Fish and<br>Wildlife  | Identified big game<br>migration and transitional<br>ranges from October 1 to<br>November 15 | Preclude oil and gas development and ROW construction/reconstruction in identified big game migration and transitional ranges from October 1 to November 15.   |  |  |
|---------------|-----------------------|--|--|--|--|
| Moderate (TL) |                       |  | Purpose: To minimize disturbance within identified big game migration and transitional ranges.   |  |  |
|               |                       |  | Exception: The Field Manager may grant an exception if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated.  |  |  |
|               |                       |  | Modification: The Field Manager may modify the boundaries of the stipulation area if a portion of the area is (1) not being used as big game migration and transitional ranges and (2) if habitat is being used outside of stipulation boundaries for big game migration and transitional ranges and needs to be protected.  |  |  |
|               |                       |  | Waiver: A waiver may be granted if the habitat is determined to be unsuitable for big game migration and transitional ranges and there is no reasonable likelihood of future use as big game migration and transitional ranges.  |  |  |
|               | Fish and<br>Wildlife* | Crucial mule deer and elk<br>winter range from<br>November 15 to April 15                    | Preclude surface disturbing activities in crucial mule deer and elk winter range from November 15 to April 15 unless the activity would improve mule deer or elk habitat.  |  |  |
|               |                       |  | Purpose: To minimize stress and disturbance to deer and elk during critical winter months.   |  |  |
| Moderate (TL) |                       |  | Exception: This stipulation does not apply to the maintenance and operation of existing and ongoing facilities. An exception may be granted by the Field Manager if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated or it is determined the habitat is not being used during the winter period for any given year. |  |  |
|               |                       |  | Modification: The Field Manager may modify the boundaries of the stipulation area if (1) a portion of the area is not being used as crucial winter range by deer/elk, (2) habitat outside of stipulation boundaries is being used as crucial winter range and needs to be protected, or (3) the migration patterns have changed causing a difference in the season of use.         |  |  |
|               |                       |  | Waiver: A waiver may be granted if the winter range habitat is unsuitable or unoccupied during winter months by deer/elk and there is no reasonable likelihood of future winter range use.   |  |  |

|               | Fish and<br>Wildlife* | Crucial Desert bighorn<br>sheep habitat from April 15<br>to June 15 during lambing<br>season | Preclude surface disturbing activities in crucial Desert bighorn sheep habitat during lambing season (April 15 through June 15).   |  |  |
|---------------|-----------------------|--|--|--|--|
|               |                       |  | Purpose: To minimize disturbance within crucial Desert bighorn sheep habitat during lambing season.  |  |  |
|               |                       |  | Exception: The Field Manager may grant an exception if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated.  |  |  |
| Moderate (TL) |                       |  | Modification: The Field Manager may modify the boundaries of the stipulation area (1) if a portion of the area is not being used as crucial Desert bighorn sheep habitat during lambing season or (2) if habitat outside of stipulation boundaries is being used for crucial Desert bighorn sheep habitat and needs to be protected. |  |  |
|               |                       |  | Waiver: A waiver may be granted if the habitat is determined to be unsuitable for crucial Desert<br>bighorn sheep habitat and there is no reasonable likelihood of future use as crucial Desert<br>bighorn sheep habitat.  |  |  |
|               | Fish and<br>Wildlife* | Crucial pronghorn habitat<br>from May 15 to June 15<br>during fawning season                 | Preclude surface disturbing activities in crucial pronghorn habitat from May 15 through June 15 during fawning season.   |  |  |
|               |                       |  | Purpose: To minimize disturbance within crucial pronghorn habitat during fawning season.   |  |  |
| Moderate (TL) |                       |  | Exception: The Field Manager may grant an exception if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated.  |  |  |
|               |                       |  | Modification: The Field Manager may modify the boundaries of the stipulation area (1) if a portion of the area is not being used as crucial pronghorn habitat during fawning season or (2) if habitat outside of stipulation boundaries is being used for crucial pronghorn habitat and needs to be protected.                       |  |  |
|               |                       |  | Waiver: A waiver may be granted if the habitat is determined as unsuitable for crucial pronghorn habitat and there is no reasonable likelihood of future use as crucial pronghorn habitat.   |  |  |

|               | Fish and<br>Wildlife* | Prohibit disruptive activities<br>within 1 mile of Peregrine<br>falcon nest sites from<br>February 1 to August 31 | Prohibit disruptive activities within 1 mile of Peregrine falcon nest sites from February 1 to August 31.   |  |  |
|---------------|-----------------------|---|---|--|--|
| Moderate (TL) |                       |   | Purpose: To protect Peregrine falcon nest sites.  |  |  |
|               |                       |   | Exception: An exception could be granted if surveys determine that nesting sites are not occupied. During years when a nest site is unoccupied before May 30, the seasonal limitation may be suspended. It may also be suspended once young have fledged and dispersed from the nest.   |  |  |
|               |                       |   | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM. Dates could be adjusted by local Utah Division of Wildlife Resources (UDWR) and BLM biologists based on local knowledge of nesting chronology of raptors. |  |  |
|               |                       |   | Waiver: A waiver may be granted if it is determined that the habitat no longer exists, has been destroyed, or there is no reasonable likelihood of future use.  |  |  |
|               | Fish and              |   | Prohibit disruptive activities to nesting raptors within ½ mile of a raptor nest during the following time periods for the protection of raptor nesting areas:  |  |  |
|               |                       |   | Jan 1–Aug 31: golden eagle  |  |  |
|               |                       |   | Mar 15–Aug 15: red-tailed hawk  |  |  |
|               |                       |   | Mar 15–Aug 31: Cooper's hawk, sharp-shinned hawk  |  |  |
|               |                       |   | Mar 1–Aug 31: Swainson's hawk   |  |  |
|               |                       |   | Apr 1–Aug 15: Northern harrier  |  |  |
|               |                       | Prohibit disruptive activities to nesting raptors within  | Apr 1–Aug 31: merlin, osprey  |  |  |
|               |                       |   | May 1–Aug 15: Turkey vulture  |  |  |
| Moderate (TL) | Wildlife*             | <sup>1</sup> / <sub>2</sub> mile of a raptor nest for   | Purpose: To protect raptor nesting areas.   |  |  |
|               |                       | nesting areas   | Exception: An exception could be granted if surveys determine that nesting sites are not occupied. During years when a nest site is unoccupied before May 30, the seasonal limitation may be suspended. It may also be suspended once young have fledged and dispersed from the nest.   |  |  |
|               |                       |   | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM. Dates could be adjusted by local UDWR and BLM biologists based on local knowledge of nesting chronology of raptors.                                       |  |  |
|               |                       |   | Waiver: A waiver may be granted if it is determined that the habitat no longer exists, has been destroyed, or there is no reasonable likelihood of future use.  |  |  |

|               |            |  | Prohibit disruptive activities to nesting raptors within ¼ mile of a raptor nest during the following time periods for the protection of raptor nesting areas:<br>Dec 1–Sep 31: Great horned owl  |
|---------------|------------|--|---|
|               |            |  | Feb 1–Jul 31: Boreal owl  |
|               |            |  | Feb 1–Aug 15: Long-eared owl  |
|               |            |  | Mar 1–Aug 15: W. Screech owl  |
|               |            |  | Mar 1–Aug 31: N. saw-whet owl   |
|               |            |  | Apr 1–Aug 1: N. Pygmy owl   |
|               |            | Prohibit disruptive activities                                     | Apr 1–Aug 31: Prairie falcon  |
| Moderate (TL) | Fish and   | <sup>1</sup> / <sub>4</sub> mile of a raptor nest for              | Apr 1–Sep 30: Flammulated owl   |
|               | vviidiife^ | the protection of raptor   | Purpose: To protect raptor nesting areas.   |
|               |            | nesting areas  | Exception: An exception could be granted if surveys determine that nesting sites are not occupied. During years when a nest site is unoccupied before May 30, the seasonal limitation may be suspended. It may also be suspended once young have fledged and dispersed from the nest.                                   |
|               |            |  | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM. Dates could be adjusted by local UDWR and BLM biologists based on local knowledge of nesting chronology of raptors. |
|               |            |  | Waiver: A waiver may be granted if it is determined that the habitat no longer exists, has been destroyed, or there is no reasonable likelihood of future use.  |
|               |            |  | Open to leasing subject to moderate constraints (timing limitation stipulation from May 1 to September 30).   |
| Moderate (TL) | Recreation | Escalante SRMA – Close<br>seasonally from May 1 to<br>September 30 | Purpose: To protect town-accessible hiking/equestrian trail network offering outstanding views and varied terrain.  |
|               |            |  | Exception: An exception could be authorized if the use is consistent and compatible with protection or enhancement of the resource values or would provide a public benefit or suitable opportunities for public enjoyment of the resources.  |
|               |            |  | Waiver: None  |

| Moderate (TL) |                               | Preclude disruptive<br>activities within 1 mile of a<br>California condor nest site<br>during breeding season   | Preclude disruptive activities within 1 mile of a California condor nest site during the breeding season. Preclude placement of permanent structures or roads within 1 mile of condor nest sites.  |
|---------------|-------------------------------|---|--|
|               | Special<br>Status<br>Species  |   | Purpose: To protect California condor communal roosting or nesting areas.  |
|               |                               |   | Exception: An exception could be granted if surveys determine that California condor communal roosting or nesting areas are not occupied.  |
|               |                               |   | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM.  |
|               |                               |   | Waiver: A waiver may be granted if it is determined that the habitat no longer exists or has been destroyed.   |
|               |                               |   | Restrict activities or habitat alterations that may disturb nesting bald eagles from January 1 to August 31 within 1 mile of bald eagle nest sites.  |
|               |                               |   | Purpose: To protect active bald eagle nest sites.  |
| Moderate (TL) | Special<br>Status<br>Species* | Restrict activities or habitat<br>alterations that may disturb<br>nesting bald eagles from<br>January 1 to August 31<br>within 1 mile of bald eagle<br>nest sites | Exception: An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the bald eagles and USFWS concurs with this determination. An exception may be granted by the Field Manager where no nesting behavior is initiated prior to June 1. |
|               |                               |   | Modification: The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates and USFWS determines (through applicable provisions of the ESA) that a portion of the area is not being used as bald eagle nesting territories.   |
|               |                               |   | Waiver: A waiver may be granted if bald eagles are de-listed and if USFWS determines it is not necessary to protect nesting territories according to the ESA and the Bald Eagle Protection Act or if there is no reasonable likelihood of site occupancy over a minimum 10-year period.  |

| Moderate (TL) | Special<br>Status<br>Species*  | Restrict activities or habitat<br>alterations that may disturb<br>bald eagles within ½ mile<br>of known winter<br>concentration areas from<br>November 1 to March 31 | Restrict activities or habitat alterations that may disturb bald eagles within ½ mile of known winter concentration areas from November 1 to March 31. In addition, where daily activities must occur within these spatial buffers, and are approved through subsequent consultation with USFWS, activities should be scheduled to occur after 9 a.m. and terminate at least 1 hour before official sunset to ensure that bald eagles using these roosts are allowed the opportunity to vacate their roost in the morning and return undisturbed in the evening. Purpose: To protect active bald eagle winter concentration areas. Exception: An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the bald eagles and USFWS concurs with this determination. Modification: The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates and USFWS determines (through applicable provisions of the ESA) that a portion of the area is not being used as bald eagle winter concentration area. Waiver: A waiver may be granted if bald eagles are de-listed and if USFWS determines it is not necessary to protect nesting territories according to the ESA and the Bald Eagle Protection Act or if there is no reasonable likelihood of site occupancy over a minimum 10-year period. |
|---------------|--|--|---|
| Moderate (TL) | Moderate (TL)Special<br>Status<br>Species*Prohibit surface disturbing<br>activities within ½ mile<br>around special status<br>raptor species nest sites<br>Prohibit surface disturbing<br>activities within ¼ mile<br>around special status<br>raptor species nest sites |  | Prohibit surface disturbing activities within ½ mile around special status raptor species nest sites<br>during the following time periods:<br>Mar 1–Aug 1: Ferruginous hawk<br>Mar 1–Aug 15: N. Goshawk<br>Prohibit surface disturbing activities within ¼ mile around special status raptor species nest sites<br>during the following time periods:<br>Mar 1–Aug 1: Short-eared owl<br>Mar 1–Aug 31: Burrowing owl<br>Purpose: To protect raptor habitat.<br>Exception: An exception could be granted if surveys determine that nesting sites are not<br>occupied.<br>Modification: The Field Manager may modify the boundaries of the stipulation area if portions of<br>the area do not include habitat or are outside the current defined area, as determined by the<br>BLM.<br>Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been<br>destroyed.   |

| Moderate (TL) | Moderate (TL)<br>Special<br>Status<br>Species*<br>Permit no surface<br>disturbing activities from<br>March 1 to August 31 in<br>Mexican spotted owl<br>protected activity centers<br>(PAC), breeding habitats,<br>or designated critical<br>habitat |  | Permit no surface disturbing activities or surface occupancy within ½ mile around MSO nests to<br>protect the species from disturbance. Permit no surface disturbing activities from March 1 to<br>August 31 in PACs, breeding habitats, or designated critical habitat to avoid disturbance to<br>breeding MSOs. If the action occurs entirely outside of the MSO breeding season (March 1 to<br>August 31) and leaves no permanent structure or permanent habitat disturbance, the action may<br>proceed without an occupancy survey. If action would occur during the season restriction (March<br>1 to August 31), surveys according to USFWS protocol for MSO would be required prior to<br>commencement of activities, and if owls are detected, the BLM would reinitiate Section 7<br>consultation with USFWS.<br>Purpose: To protect MSO nests.<br>Exception: An exception could be granted if surveys determine that MSO nest areas are not<br>occupied.<br>Modification: The Field Manager may modify the boundaries of the stipulation area if portions of<br>the area do not include habitat or are outside the current defined area, as determined by the<br>BLM.<br>Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been<br>destroyed. |
|---------------|---|--|--|
| Moderate (TL) | e (TL)<br>Special<br>Status<br>Species*<br>Prohibit surface disturbing<br>activities within ¼ mile of<br>occupied Southwestern<br>willow flycatcher breeding<br>habitat from May 1 through<br>August 15   |  | <ul> <li>Prohibit surface disturbing activities within ¼ mile of occupied Southwestern willow flycatcher breeding habitat from May 1 to August 15.</li> <li>Purpose: To protect Southwestern willow flycatcher breeding habitat.</li> <li>Exception: An exception could be granted if surveys determine that the Southwestern willow flycatcher breeding habitat is not occupied.</li> <li>Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM.</li> <li>Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been destroyed.</li> </ul>   |

|               |                               | Prohibit surface disturbing<br>activities within 2 miles of a<br>Greater sage-grouse lek in<br>the nesting and brood-<br>rearing habitat from<br>March 15 to July 15 | Allow no surface disturbing or otherwise disruptive activities (e.g., construction and maintenance) within 2 miles of a Greater sage-grouse lek in nesting and brood-rearing habitat from March 15 to July 15.  |  |  |
|---------------|-------------------------------|--|---|--|--|
| Moderate (TL) |                               |  | Purpose: To protect Greater sage-grouse lek in nesting and brood-rearing habitat.   |  |  |
|               | Special<br>Status<br>Species* |  | Exception: An exception could be granted if surveys determine that the Greater sage-grouse lek in nesting and brood-rearing habitat is not occupied. An exception may also be granted by the Field Manager if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated or it is determined the lek sites are not active.   |  |  |
|               |                               |  | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM.   |  |  |
|               |                               |  | Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been destroyed.   |  |  |
|               | Special<br>Status<br>Species* | Prohibit surface disturbing<br>activities within Greater<br>sage-grouse winter habitat<br>from December 1 to March<br>14   | Allow no surface disturbing or otherwise disruptive activities in Greater sage-grouse winter habitat from December 1 to March 14.   |  |  |
|               |                               |  | Purpose: To protect Greater sage-grouse wintering habitat.  |  |  |
| Moderate (TL) |                               |  | Exception: An exception could be granted if surveys determine that the Greater sage-grouse lek<br>in winter habitat is not occupied, and that snow depths in the area allow continued sage-grouse<br>use. An exception may also be granted by the Field Manager if the operator submits a plan that<br>demonstrates that impacts from the proposed action can be avoided, sufficiently minimized, or<br>adequately mitigated. |  |  |
|               |                               |  | Modification: The Field Manager may modify the boundaries of the stipulation area if portions of the area do not include habitat or are outside the current defined area, as determined by the BLM.   |  |  |
|               |                               |  | Waiver: A waiver may be granted if it is determined the habitat no longer exists or has been destroyed.   |  |  |

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# APPENDIX 4—RECREATION MANAGEMENT FOR SPECIAL RECREATION MANAGEMENT AREAS AND THE KANAB EXTENSIVE RECREATION MANAGEMENT AREA

### KANAB COMMUNITY SPECIAL RECREATION MANAGEMENT AREA (SRMA)—OFF-HIGHWAY VEHICLE (OHV) RECREATION MANAGEMENT ZONE (RMZ)

**Recreation Niche:** Close-to-town OHV travel in an exceptionally scenic setting with a variety of trails for different skill levels.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, primarily day-use motorized recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Driving OHVs, viewing scenery and wildlife, photography, spending time with friends and family, participating in and/or viewing organized events.

**Experiences:** Savoring the sensory experience of an outdoor setting, relishing group togetherness, enjoying risk-taking adventures, appreciating nature, escaping everyday stress and boredom, enjoying easy and convenient access.

Benefits:

- Personal—Improved OHV skills, bonding with family and friends, stress relief, enhanced awareness and appreciation of natural resources, greater self-reliance, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Enhanced local economy via purchases (gas, groceries, lodging, OHV/outdoor equipment, etc.).
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Mostly middle country, but back country and primitive away from designated routes, with regard to naturalness and facilities.
- Social—Front country along trails with regard to group sizes and contacts, but back country away from trails.
- Administrative—Front country along trails and staging areas at entry portals; back country away from trails.

### KANAB COMMUNITY SRMA—NON-MOTORIZED TRAILS RMZ

**Recreation Niche:** Town-accessible hiking trail network offering outstanding views and varied terrain.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, primarily day-use non-motorized recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Hiking, rock scrambling and climbing, viewing scenery and wildlife, photography, equestrian, spending time with friends and family, participating in and/or viewing organized events.

**Experiences:** Savoring the sensory experience of an outdoor setting, relishing group togetherness, enjoying risk-taking adventures, appreciating nature, escaping everyday stress and boredom, enjoying easy and convenient access.

Benefits:

- Personal—Bonding with family and friends, stress relief, enhanced awareness and appreciation of natural resources, greater self-reliance, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Enhanced local economy via purchases (gas, groceries, lodging, outdoor equipment, etc.).
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Mostly back country along trails, with primitive away from trails, routes, and community.
- Social—Middle country to back country along trails depending on trail traffic; primitive and back country off trail.
- Administrative—Front country at trailheads; middle country along trails; back country and primitive away from trails.

# MOQUITH SRMA—DUNES RMZ

**Recreation Niche:** OHV and non-motorized opportunities on unique, scenic, and expansive sand dunes.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, day-use and multi-day motorized recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these

benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Driving among sand dunes, camping along dune fringes, photography, spending time with friends and family.

**Experiences:** Savoring the sensory experience of an outdoor setting, relishing group togetherness, enjoying risk-taking adventures, appreciating nature, escaping everyday stress and boredom, enjoying easy and convenient access, learning about sand dune ecosystems.

Benefits:

- Personal—Improved OHV skills, bonding with family and friends, stress relief, enhanced awareness and appreciation of natural resources, greater self-reliance, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Enhance local economy via purchases (gas, groceries, lodging, OHV/outdoor equipment, etc.).
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Mostly front country and middle country with regard to naturalness and facilities.
- Social—Rural around campgrounds and staging areas; front country and middle country among dunes.
- Administrative—Front country at campgrounds and staging areas; middle country and back country among dunes.

# MOQUITH SRMA—NON-DUNES WOODED RMZ

**Recreation Niche:** Scenic and extensive OHV trail network accessing vistas, overlooks, flora and fauna, and cultural sites.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, day-use and multi-day motorized and non-motorized recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Driving OHVs; viewing flora and fauna, geology, and cultural sites; hiking; equestrian; camping; hunting; photography; spending time with friends and family.

**Experiences:** Savoring the sensory experience of an outdoor setting, relishing group togetherness, enjoying risk-taking adventures, appreciating nature, escaping everyday stress and boredom.

Benefits:

- Personal—Improved OHV skills, bonding with family and friends, stress relief, enhanced awareness and appreciation of natural resources, greater self-reliance, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Enhanced local economy via purchases (gas, groceries, lodging, OHV/outdoor equipment, etc.).
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Mostly front country and middle country with regard to naturalness and facilities.
- Social—Rural around campground and staging areas; front country and middle country along trails; back country and primitive off trails.
- Administrative—Front country at campgrounds and staging areas; middle country and back country along trails; primitive off trails.

# PARIA SRMA—CANYON RMZ

**Recreation Niche:** World-class wilderness trekking adventure offering deeply entrenched slickrock canyons and associated slot canyon features.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for community residents and regional visitors to engage in world-class, long-distance wilderness trekking in a spectacular geologic showcase of colorful deep canyons, cliffs, and narrow slots while preserving its wilderness character, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization. Other management objectives would continue to be established through the Paria Canyon–Vermilion Cliffs Wilderness Management Plan.

**Primary Activities:** Hiking, rock scrambling and climbing, backpacking, canyoneering, photography, camping, viewing scenic vistas, viewing cultural sites, wilderness exploration.

**Experiences:** Exploring artistic expression, contemplating and shaping spiritual values, savoring the sensory experience of a natural landscape, testing endurance, developing outdoor skills and abilities, enjoying solo exploring and risk-taking adventures, savoring group/family affiliation and bonding, enjoying physical exercise, escaping everyday stress and boredom, feeling good about how natural resources are being managed.

Benefits:

• Personal—Improved physical fitness and health, improved outdoor knowledge and skills, stress relief, enhanced awareness and appreciation of nature, greater self-reliance, closer relationship with nature, renewed human spirit.

- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Contributions to local/regional economy through equipment purchases/rentals and guiding operations.
- Environmental—Increased awareness and protection of natural landscapes; reduced human impacts such as litter, vegetation trampling, and unplanned trails.

Setting Characteristics:

- Physical—Mostly back country, but primitive away from trails, with regard to naturalness and facilities.
- Social—Mostly back country and primitive with regard to group encounters and evidence of use.
- Administrative—Mostly primitive with regard to mechanized/motorized use and visitor services, but back country with regard to management controls.

# PARIA SRMA—UPLANDS RMZ

**Recreation Niche:** Unique, world-class primitive and back country adventure recreation offering unique upland geologic features.

**Recreation Management Objectives:** By the year 2012, manage this zone to provide opportunities for visitors to engage in world-class wilderness hiking in a spectacular geologic showcase of colorful cliffs and eroded formations while preserving its wilderness character, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization). Other management objectives would continue to be established through the Paria Canyon–Vermilion Cliffs Wilderness Management Plan.

**Primary Activities:** Hiking, rock scrambling and climbing, photography, viewing wildlife and scenic vistas, wilderness exploration, equestrian.

**Experiences:** Exploring artistic expression, contemplating and shaping spiritual values, savoring the sensory experience of a natural landscape, testing endurance, developing outdoor skills and abilities, enjoying solo exploring and risk-taking adventures, savoring group/family affiliation and bonding, enjoying physical exercise, escaping everyday stress and boredom, feeling good about how natural resources are being managed.

Benefits:

- Personal—Improved physical fitness and health, improved outdoor knowledge and skills, stress relief, enhanced awareness and appreciation of nature, greater self-reliance, closer relationship with nature, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.

- Economic—Contributions to local/regional economy through equipment purchases/rentals and guiding operations.
- Environmental—Increased awareness and protection of natural landscapes; reduced human impacts such as litter, vegetation trampling, and unplanned trails.

Setting Characteristics:

- Physical—Mostly back country, but primitive away from trails, with regard to naturalness and facilities.
- Social—Mostly back country and primitive with regard to group encounters and evidence of use.
- Administrative—Mostly primitive with regard to mechanized/motorized use and visitor services, but back country with regard to management controls.

# ORDERVILLE CANYON SRMA

**Recreation Niche:** Spectacular, primitive riparian canyon travel with abundant geologic formations and diverse flora and fauna.

**Recreation Management Objectives:** By the year 2012, manage this area to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, primarily multi-day non-motorized canyon-oriented recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Canyoneering, rock scrambling and climbing, hiking, backpacking, hunting, camping, photography, viewing nature and wildlife, equestrian, studying geology.

**Experiences:** Contemplating and shaping spiritual values, savoring the total sensory experience of a natural landscape, testing endurance, developing outdoor skills and abilities, enjoying solo exploring and risk-taking adventures, savoring group/family affiliation and bonding, enjoying physical exercise, escaping everyday stress and boredom, feeling good about how natural resources are being managed.

Benefits:

- Personal—Improved physical fitness and health, improved outdoor knowledge and skills, stress relief, enhanced awareness and appreciation of nature, greater self-reliance, closer relationship with nature, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Contributions to local/regional economy through equipment purchases/rentals and guiding operations.
- Environmental—Increased awareness and protection of natural landscapes; reduced human impacts such as litter, vegetation trampling, and unplanned trails.

Setting Characteristics:

- Physical—Mostly primitive away from trails with regard to naturalness and facilities.
- Social—Mostly back country and primitive with regard to group encounters and evidence of use.
- Administrative—Mostly primitive with regard to mechanized/motorized use and visitor services, but back country with regard to management controls.

# NORTH FORK VIRGIN RIVER SRMA

**Recreation Niche:** Spectacular, primitive riparian canyon travel with abundant geologic formations and diverse flora and fauna.

**Recreation Management Objectives:** By the year 2012, manage this area to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, primarily multi-day non-motorized canyon-oriented recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Canyoneering, rock scrambling and climbing, hiking, backpacking, hunting, camping, photography, viewing nature and wildlife, equestrian, studying geology.

**Experiences:** Contemplating and shaping spiritual values, savoring the sensory experience of a natural landscape, testing endurance, developing outdoor skills and abilities, enjoying solo exploring and risk-taking adventures, savoring group/family affiliation and bonding, enjoying physical exercise, escaping everyday stress and boredom, feeling good about how natural resources are being managed.

Benefits:

- Personal—Improved physical fitness and health, improved outdoor knowledge and skills, stress relief, enhanced awareness and appreciation of nature, greater self-reliance, closer relationship with nature, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Contributions to local/regional economy through equipment purchases/rentals and guiding operations.
- Environmental—Increased awareness and protection of natural landscapes; reduced human impacts such as litter, vegetation trampling, and unplanned trails.

Setting Characteristics:

- Physical—Mostly primitive away from trails with regard to naturalness and facilities.
- Social—Mostly back country and primitive with regard to group encounters and evidence of use.
- Administrative—Mostly primitive with regard to mechanized/motorized use and visitor services, but back country with regard to management controls.

### ESCALANTE SRMA

**Recreation Niche:** Town-accessible hiking/equestrian trail network offering outstanding views and varied terrain.

**Recreation Management Objectives:** By the year 2012, manage this area to provide opportunities for community residents and regional visitors to engage in sustainable, easy-to-access, primarily day-use non-motorized recreation, providing no less than 75 percent of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale, where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = total realization).

**Primary Activities:** Hiking, rock scrambling and climbing, viewing scenery and wildlife, photography, equestrian, spending time with friends and family, participating in and/or viewing organized events.

**Experiences:** Savoring the sensory experience of an outdoor setting; relishing group togetherness; enjoying risk-taking adventures; appreciating nature; escaping everyday stress and boredom; enjoying easy and convenient access; exercising in a healthy, aesthetically pleasing environment.

Benefits:

- Personal—Improved outdoor knowledge and skills; bonding with family and friends; stress relief; enhanced awareness and appreciation of natural resources; greater self-reliance; renewed human spirit; exercising in a healthy, aesthetically pleasing environment.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding, healthier lifestyles.
- Economic—Decreased burden on community heath care system from healthier lifestyles.
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Mostly backcountry along trails, with primitive away from trails and community.
- Social—Middle country to back country along trails depending on trail traffic; primitive and back country off trail.
- Administrative—Front country at trailheads; middle country along trails; back country and primitive away from trails.

# KANAB FIELD OFFICE ERMA

**Recreation Management Objectives:** Manage this Extensive RMA (ERMA) to provide opportunities for a wide variety of motorized, mechanized, non-motorized, and non-mechanized recreational activities largely free from heavily restrictive regulations and management constraints in a variety of settings ranging from open, gently rolling sand dunes to precipitous

sandstone canyons and steep, rocky slopes. Route designations would allow visitors to access most terrain by motorized vehicle, while leaving large expanses of undeveloped back country in which to "lose oneself."

**Primary Activities:** OHV touring; hiking; picnicking; backpacking; hunting; fishing; camping; equestrian; photography; viewing geologic features, nature, and wildlife; participating in and/or viewing organized events.

**Experiences:** Contemplating and shaping spiritual values, savoring the sensory experience of a natural landscape, testing endurance, developing outdoor skills and abilities, enjoying OHV and 4x4 touring, enjoying solo exploring and risk-taking adventures, savoring group/family affiliation and bonding, enjoying physical exercise, escaping everyday stress and boredom, feeling good about how natural resources are being managed.

Benefits:

- Personal—Improved outdoor knowledge and skills, bonding with family and friends, stress relief, enhanced awareness and appreciation of natural resources, greater self-reliance, renewed human spirit.
- Community—Stronger sense of community dependency on public lands, greater family/group bonding.
- Economic—Enhanced local economy via purchases (gas, groceries, lodging, OHV/outdoor equipment, etc.).
- Environmental—Increased awareness and protection of natural landscapes.

Setting Characteristics:

- Physical—Broad range from primitive to rural.
- Social—Entire spectrum from primitive to rural with regard to group encounters and evidence of use.
- Administrative—Mostly primitive and back country with regard to visitor services and management controls.

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# APPENDIX 5—LANDS DESIGNATED FOR POTENTIAL DISPOSAL VIA FEDERAL LAND POLICY AND MANAGEMENT ACT SECTION 203 SALE

Below is a list of the lands designated for potential disposal via Federal Land Policy and Management Act Section 203 sale.

Legal Descriptions:

- T. 31 S., R. 3 W., Sec. 17, E<sup>1</sup>/<sub>2</sub>E<sup>1</sup>/<sub>2</sub>
- T. 33 S., R. 4 E., Sec. 35, SW<sup>1</sup>/4SW<sup>1</sup>/4
- T. 33 S., R. 4 E., Sec. 36, W<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 34 S., R. 2 W., Sec. 22 (all public lands within Widtsoe Township)
- T. 34 S., R. 2 E., Sec. 34
- T. 34 S., R. 2 E., Sec. 35
- T. 34 S., R. 5 W., Sec. 22, W<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>,S<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 34 S., R. 5 W., Sec. 23, SW<sup>1</sup>/4SW<sup>1</sup>/4SW<sup>1</sup>/4E<sup>1</sup>/2SW<sup>1</sup>/4SW<sup>1</sup>/4, E<sup>1</sup>/2SW<sup>1</sup>/4
- T. 34 S., R. 5 W., Sec. 27, E<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 35 S., R. 2 E., Sec. 3
- T. 35 S., R. 2 E., Sec. 11, a portion of NW<sup>1</sup>/4S<sup>1</sup>/2SE<sup>1</sup>/4 (all public land outside Grand Staircase– Escalante National Monument [GSENM])
- T. 35 S., R. 2 E., Sec. 15, a portion of N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> (all public land outside GSENM)
- T. 35 S., R. 2 E., Sec. 17, a portion of NW<sup>1</sup>/4NW<sup>1</sup>/4SE<sup>1</sup>/4SE<sup>1</sup>/4 (all public land outside GSENM)
- T. 35 S., R. 2 E., Sec. 20, a portion of W<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> (all public land outside GSENM)
- T. 35 S., R. 3 E., Sec. 5 (beginning at a Utah State Park aluminum pipe and cap monument, said point being N89°49'37"W 450.67 feet along the Section Line [Basis of Bearing] from the South Quarter Corner of Section 5, Township 35 South, Range 3 East, Salt Lake Base and Meridian; thence N89°49'37"W 1086.66 feet along said Section Line to PK nail and washer in the top of a sandstone ridge; thence N0°00'22"E 205.28 feet to a metal fence post; thence S89°49'37"E 1086.66 feet parallel with said Section Line to a Utah State Park aluminum pipe and cap monument; thence S0°00'22"W 205.28 feet to a Utah State Park monument and the point of beginning)
- T. 35 S., R. 3 E., Sec. 18, W<sup>1</sup>/<sub>2</sub>W<sup>1</sup>/<sub>2</sub>
- T. 35 S., R. 3 E., Sec. 19, NW<sup>1</sup>/4NW<sup>1</sup>/4
- T. 35 S., R. 3 E., Sec. 19, W<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>, S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 1 E., Sec. 4, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 4, S<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>, W<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 9, S<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 10, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 10, S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 11, N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 11, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, W<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 14, E<sup>1</sup>/<sub>2</sub>, E<sup>1</sup>/<sub>2</sub>W<sup>1</sup>/<sub>2</sub>, NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 15, E<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 15, N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 E., Sec. 15, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 36 S., R. 3 W., Sec. 7, W<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 21, N<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>

- T. 37 S., R. 2 W., Sec. 22, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 27, E<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 29, N<sup>1</sup>/<sub>2</sub> NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 29, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 30, S<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 31, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 37 S., R. 2 W., Sec. 31, NW<sup>1</sup>/4NW<sup>1</sup>/4
- T. 37 S., R. 2 W., Sec. 31, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 1 W., Sec. 5, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 1 W., Sec. 8, W<sup>1</sup>/<sub>2</sub>W<sup>1</sup>/<sub>2</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 2 W., Sec. 6, Lot 2
- T. 38 S., R. 2 W., Sec. 11, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, W<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 2 W., Sec. 12, W<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, S<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 2 W., Sec. 13, N<sup>1</sup>/<sub>2</sub> N<sup>1</sup>/<sub>2</sub>
- T. 38 S., R. 2 W., Sec. 14, NE<sup>1</sup>/<sub>4</sub>, W<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>, all public land outside GSENM in the NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 2 W., Sec. 15, all public land outside GSENM in the SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 38 S., R. 3 W., Sec. 1, Lots 3 and 4, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 4<sup>1</sup>/<sub>2</sub> W., Sec. 27, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 4<sup>1</sup>/<sub>2</sub> W., Sec. 34, Lot 4
- T. 39 S., R. 4<sup>1</sup>/<sub>2</sub> W., Sec. 35, W<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 5 W., Sec. 21, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 5 W., Sec. 35, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, E<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 6 W., Sec. 23, N<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 6 W., Sec. 24, N<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 25, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>, W<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 28, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 30, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 30, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 31, E<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 34, S<sup>1</sup>/<sub>2</sub>N<sup>1</sup>/<sub>2</sub>
- T. 39 S., R. 7 W., Sec. 35, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 7 W., Sec. 35, S<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 4, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 7, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, S<sup>1</sup>/<sub>2</sub>N<sup>1</sup>/<sub>2</sub>
- T. 39 S., R. 8 W., Sec. 8, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 9, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 17, N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 18, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 8 W., Sec. 34, S<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 9 W., Sec. 1, Lot 3, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 39 S., R. 9 W., Sec. 12, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>,
- T. 39 S., R. 9 W., Sec. 14, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>,
- T. 39 S., R. 9 W., Sec. 29, W<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 4 W., Sec. 3, S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 4 W., Sec. 4, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 4 W., Sec. 9, E<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 4 W., Sec. 10, N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 4 W., Sec. 15, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 6 W., Sec. 29, SW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 7 W., Sec. 1, Lot 3, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>

- T. 40 S., R. 8 W., Sec. 1, Lot 3
- T. 40 S., R. 7 W., Sec. 5, Lots 1, 5, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 3, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 4, Lots 1, 2, 3, 4
- T. 40 S., R. 8 W., Sec. 5, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, E<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 8, N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 11, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 20, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 30, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 8 W., Sec. 31, W<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 9 W., Sec. 5, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 9 W., Sec. 22, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 9 W., Sec. 23, E<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 40 S., R. 9 W., Sec. 25, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 41 S., R. 7 W., Sec. 8, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 41 S., R. 7 W., Sec. 9, Lots 1 through 8, E<sup>1</sup>/<sub>2</sub>E<sup>1</sup>/<sub>2</sub>, S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 42 S., R. 5 W., Sec. 27, S<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>2</sub>
- T. 42 S., R. 5 W., Sec. 34, NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, S<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 42 S., R. 6 W., Sec. 31, NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 42 S., R. 7 W., Sec. 23 (lands south of Hancock Road)
- T. 42 S., R. 7 W., Sec. 24 (lands south of Hancock Road)
- T. 42 S., R. 7 W., Sec. 25, W<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 42 S., R. 7 W., Sec. 26 (lands south and east of Hancock Road)
- T. 43 S., R. 4<sup>1</sup>/<sub>2</sub> W., Sec. 30 (the southernmost portion of Sec. 30, which lies south of the old highway—too small to show up on maps)
- T. 44 S., R. 5 W., Sec. 1, Lot 4, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 5 W., Sec. 4, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 6 W., Sec. 6, Lots 3, 4, 5, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 6 W., Sec. 8, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 7 W., Sec. 1, Lots 1, 2, 3, 4, N<sup>1</sup>/<sub>2</sub>S<sup>1</sup>/<sub>2</sub>, SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 7 W., Sec. 11, N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 7 W., Sec. 12, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 8 W., Sec. 3, S<sup>1</sup>/<sub>2</sub> (areas outside the Moquith Mountain WSA)
- T. 44 S., R. 8 W., Sec. 4, W<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>, S<sup>1</sup>/<sub>2</sub> (areas outside the Moquith Mountain WSA)
- T. 44 S., R. 8 W., Sec. 5
- T. 44 S., R. 8 W., Sec. 6, Lots 1 through 4, E<sup>1</sup>/<sub>2</sub>, E<sup>1</sup>/<sub>2</sub>W<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 8 W., Sec. 7, Lots 1 through 5, N<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>
- T. 44 S., R. 8 W., Sec. 8, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>N<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 8 W., Sec. 9, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>N<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 8 W., Sec. 10, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>N<sup>1</sup>/<sub>2</sub> (areas outside the Moquith Mountain WSA)
- T. 44 S., R. 9 W., Sec. 1
- T. 44 S., R. 9 W., Sec. 3
- T. 44 S., R. 9 W., Sec. 4
- T. 44 S., R. 9 W., Sec. 9, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>, N<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 9 W., Sec. 10, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>, N<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 9 W., Sec. 11, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>, N<sup>1</sup>/<sub>2</sub>
- T. 44 S., R. 9 W., Sec. 12, Lots 1 through 4, N<sup>1</sup>/<sub>2</sub>, N<sup>1</sup>/<sub>2</sub>

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# APPENDIX 6—KANAB FIELD OFFICE: COAL UNSUITABILITY REPORT

# INTRODUCTION

Bureau of Land Management (BLM) regulations regarding coal management on public lands are found in Title 43 of the Code of Federal Regulations (CFR), Part 3400. During land use planning, BLM is required to review federal lands and assess whether there are areas unsuitable for all coal mining or for certain stipulated methods of coal mining. This report addresses the 20 criteria of coal unsuitability as defined in 43 CFR 3461.5 and applies these criteria to the known recoverable coal resource areas (KRCRA) for the Alton, Kaiparowits, and Kolob coal fields. Unsuitability decisions were based on these criteria and applied to federally owned coal estates within the Kanab Field Office (KFO) Decision Area (KDA). Currently there are no active coal leases within the KDA, but one lease application is presently being processed/analyzed in the Alton Amphitheater.

# **GEOLOGIC SETTING**

KPA coals are located within Late Cretaceous sedimentary strata of the Dakota and Straight Cliffs formations. The Alton and Kolob coal fields are in the Dakota Formation and the Kaiparowits coal field is in the John Henry Member of the Straight Cliffs Formation. The depositional environment for both the Dakota and Straight Cliffs coals was a coastal plain setting along the Western Interior Seaway. The Dakota coals were deposited approximately 95 million years ago during the onset (transgression) of the Western Interior Seaway. Kaiparowits coals were deposited approximately 85 million years ago as the Western Interior Seaway regressed from the area. Rivers originating along the Sevier Mountain belt and Mogollon highlands provided a steady supply of sediment for burial of the rich coastal mires.

# LANDS CONSIDERED

The recoverable coal resources within the Kanab Planning Area (KPA) cross a number of surface ownership boundaries, including BLM, U.S. Forest Service (USFS), National Park Service (NPS), State of Utah, and private lands, and are located within Kane and Garfield counties. This report considers approximately 149,168 acres of federally owned coal within the KRCRA (Map 1) of the KDA.

# COAL RESOURCES

The Kanab Field Office Mineral Potential Report (BLM/Utah Geological Survey 2006) identifies an in-ground coal resource for the KPA of approximately 10 billion tons. Approximately 200 million tons have been identified as surface minable in the Alton coal field. Generally, Dakota Formation coals range from a subbituminous B rank in the Alton coal field to subbituminous A rank in the Kolob coal field. The sulfur content varies, but averages about 1.2 percent. The in-place ash content generally ranges between 10 percent and 15 percent. Heat content for Dakota Formation coals varies from about 7,500 to 9,500 BTU/lb. In the Kaiparowits field, the coal rank decreases from high-volatile C bituminous to subbituminous from south to

north in the KPA. The ash and sulfur levels of the Straight Cliffs coals average about 10 percent and 0.7 percent, respectively. The heat content of Kaiparowits coal ranges from about 7,420 to 10,300 BTU/lb (BLM/UGS 2006).

Table A0-1 through Table A0-3 identify the coal resources based on the depth of cover and the mapped quadrangle. Shallower depths of cover, which have the potential for surface mining, are presented in Table A0-1.

| Quadrangla       | Depth of Cover |             |              |              |         |  |
|------------------|----------------|-------------|--------------|--------------|---------|--|
| Quadrangle       | 0–200 ft       | 200–1000 ft | 1000–2000 ft | 2000–3000 ft | TOTAL   |  |
| Alton            | 95.3           | 212.1       | 114.3        | 98.9         | 520.6   |  |
| Bald Knoll       | 52.7           | 152.9       | 48.8         | 42.3         | 296.7   |  |
| Orderville NE-SE | 38.3           | 96.9        | 0.0          | 0.0          | 135.2   |  |
| Skutumpah Creek  | 16.9           | 183.4       | 107.4        | 17.8         | 325.5   |  |
| TOTAL            | 203.2          | 645.3       | 270.5        | 159.0        | 1,278.0 |  |
| PERCENT          | 15.9%          | 50.5%       | 21.2%        | 12.4%        | 100.0%  |  |

#### Table A0-1. Alton Coal Field

Identified coal resource for the Alton coal field within the KPA by depth of cover and quadrangle (in millions of tons; from BLM/UGS 2006)

| Quadrangla           | Depth of Cover |              |              |         |  |  |
|----------------------|----------------|--------------|--------------|---------|--|--|
| Quadrangle           | 0–1000 ft      | 1000–2000 ft | 2000–3000 ft | TOTAL   |  |  |
| Orderville Canyon NE | 62.4           | 305.6        | 193.2        | 561.2   |  |  |
| Orderville Canyon SE | 258.7          | 143.0        | 0.0          | 401.7   |  |  |
| Orderville SW        | 132.2          | 257.0        | 8.4          | 397.6   |  |  |
| TOTAL                | 453.3          | 705.6        | 201.6        | 1,360.5 |  |  |
| PERCENT              | 33.3%          | 51.9%        | 14.8%        | 100.0%  |  |  |

Identified coal resource for the Kolob coal field within the KPA by depth of cover and quadrangle (in millions of tons; from BLM/UGS 2006)

| Township/<br>Range | Depth of Cover |              |              |              |           |         |  |
|--------------------|----------------|--------------|--------------|--------------|-----------|---------|--|
|                    | Minable        |              |              | Deep         |           | TOTAL   |  |
|                    | 0–1000 ft      | 1000–2000 ft | 2000–3000 ft | 3000–6000 ft | > 6000 ft | TOTAL   |  |
| 33S, 2W            | 0.0            | 0.0          | 0.0          | 0.0          | 0.0       | 0.0     |  |
| 33S, 1W            | 0.0            | 0.0          | 0.0          | 0.0          | 0.0       | 0.0     |  |
| 33S, 1E            | 0.0            | 94.9         | 655.4        | 1,046.6      | 0.0       | 1,796.9 |  |
| 33S, 2E            | 10.5           | 48.8         | 93.3         | 7.3          | 0.0       | 159.9   |  |
| 34S, 2W            | 7.5            | 121.2        | 113.1        | 74.4         | 0.0       | 316.2   |  |

| Township/<br>Range | Depth of Cover |              |              |              |           |         |  |
|--------------------|----------------|--------------|--------------|--------------|-----------|---------|--|
|                    | Minable        |              |              | Deep         |           | TOTAL   |  |
|                    | 0–1000 ft      | 1000–2000 ft | 2000–3000 ft | 3000–6000 ft | > 6000 ft | TOTAL   |  |
| 34S, 1W            | 0.0            | 0.0          | 45.3         | 49.9         | 0.0       | 95.2    |  |
| 34S, 1E            | 33.2           | 589.7        | 284.5        | 278.9        | 0.0       | 1,186.3 |  |
| 34S, 2E            | 1.4            | 45.0         | 0.0          | 0.0          | 0.0       | 46.4    |  |
| 35S, 2W            | 111.3          | 150.2        | 165.6        | 249.0        | 0.0       | 676.1   |  |
| 35S, 1W            | 0.0            | 0.0          | 0.0          | 405.7        | 54.4      | 460.1   |  |
| 35S, 1E            | 20.0           | 190.5        | 188.9        | 356.4        | 6.9       | 762.7   |  |
| 36S, 2W<br>(N½)    | 65.5           | 42.6         | 7.9          | 0.1          | 0.0       | 116.1   |  |
| 36S, 1W<br>(N½)    | 9.7            | 22.5         | 101.8        | 151.8        | 7.4       | 293.2   |  |
| 36S, 1E            | 104.2          | 217.8        | 189.5        | 948.8        | 0.0       | 1,460.3 |  |
| TOTAL              | 363.3          | 1,523.2      | 1,845.3      | 3,568.9      | 68.7      | 7,369.4 |  |
| PERCENT            | 4.9%           | 20.7%        | 25.0%        | 48.4%        | 0.9%      | 100.0%  |  |

Identified coal resource for the Kaiparowits Plateau coal field within the KPA by depth of cover and township (in millions of tons; from BLM/UGS 2006)

# EVALUATION OF THE COAL UNSUITABILITY CRITERIA

This report assesses KDA coal resources for unsuitability based on the 20 criteria outlined in 43 CFR 3461.5. Underground mining of coal deposits is exempt from the criteria, where there would be no surface coal mining operations as stated at 3461.1.1(a). Surface mining operations include surface operations and surface impacts incident to an underground mine as stated in 43 CFR 3400.0-5(mm). In addition, where underground mining would include surface operations and surface impacts on federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless an exception or exemption applies (43 CFR 3461.1(b)). Each criterion is subject to exceptions and/or exemptions as prescribed in the regulations.

#### **Criterion Number 1**

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System; National Wildlife Refuge System; National System of Trails; National Wilderness Preservation System; National Wild and Scenic Rivers System; National Recreation Areas; lands acquired with money derived from the Land and Water Conservation Fund; National Forests; and Federal lands in incorporated cities, towns, and villages.

• <u>Exceptions.</u> (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th Meridian, that surface mining may be in compliance with the Multiple-

Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.

• <u>Exemptions</u>. The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

A number of land systems specified in Criterion 1 are applicable under the unsuitability criteria.

#### National Forests

All National Forest lands are considered unsuitable for surface coal mining operations. An exception to this criterion would allow surface operations based on the specific criteria outlined above. The Dixie National Forest prepared a Coal Unsuitability Study in 1983, and found that only 10 acres met the conditions of the exception. The study was based on areas identified as high- and moderate-potential coal lands that did not have significant forest cover. However, National Forest lands are outside of the KDA and are not included in the BLM unsuitability decision.

#### National Recreation Areas

There are about 2,120 acres of federal coal in the Kaiparowits coal field that underlie the Glen Canyon National Recreation Area. Under Criterion 1, this federal coal is unsuitable for surface coal mining, however, it is not included in the BLM unsuitability decision because the lands are outside of the KDA.

#### National Wild and Scenic Rivers System

There are about 230 acres of lands that are considered suitable for inclusion in the National Wild and Scenic Rivers System.

#### Incorporated Cities, Towns, and Villages

Approximately 3,000 acres of federal coal in the Alton and Kolob coal fields within the KRCRA underlie the towns of Alton, Orderville, and Glendale. Because of possible damage to private property caused by subsidence and surface mining, these areas are determined to be unsuitable and will not be further considered for future leasing. The breakdown of the number of acres within each town is as follows:

| Alton      | 101 acres   |
|------------|-------------|
| Glendale   | 1,742 acres |
| Orderville | 1,162 acres |

Exemptions for valid existing rights do not apply.

**Summary: Criterion 1**—Approximately 3,237 acres are determined to be unsuitable based on the conditions set forth in this criterion.

#### **Criterion Number 2**

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

- <u>Exceptions.</u> A lease may be issued, and mining operations approved, in such areas if the surface management agency determines that: (i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or (ii) The right-of-way or easement was granted for mining purposes; or (iii) The right-of-way or easement was issued for a purpose for which it is not being used; (iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or (v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.
- <u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are only 17 recorded rights-of-way (ROW), totaling approximately 30 acres of land, within the KRCRA. The exception (parts (i), (iv), and (v)) of this criterion offers protection for the ROWs and their improvements from the potential adverse effects of mining or associated surface facilities and, therefore, will not be considered unsuitable.

There are a large number of roads that will be evaluated in the future for Revised Statute (RS) 2477 standing. This could greatly affect the number of ROWs within the KRCRA. It is likely that the criterion exception would also apply in these cases.

**Summary: Criterion 2**—No acres are determined to be unsuitable based on the conditions set forth in this criterion.

#### **Criterion Number 3**

The terms used in this criterion have the meaning set out in the Office of Surface Mining Reclamation and Enforcement regulations at Chapter VII of Title 30 of the Code of Federal Regulations. Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

• <u>Exceptions</u>. A lease may be issued for lands: (i) Used as mine access roads or haulage roads that join the right-of-way for a public road; (ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated; (iii) If after public notice and opportunity for public hearing in the locality, a written finding is made by the authorized

officer that the interests of the public and the landowners affected by mining within 100 feet of a public road will be protected; (iv) For which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.

• <u>Exemptions.</u> The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

Criterion 3 identifies approximately 3,200 acres of land within the KRCRA that have been found to be unsuitable. Data was not available to ascertain the location of all public buildings, community or institutional buildings, or occupied dwellings. Therefore, municipality boundaries were used to identify the areas of unsuitability. There are still a number of homes and summer cabins on private lands outside of these boundaries that are underlain by federal coal in the Alton and Kolob fields. A survey of the exact locations was not conducted. Because many of these structures are located in areas that would be mined primarily by underground methods, the underground exemption could possibly be applied. If the exemption could not be applied, mining would not be allowed within 300 feet of any such dwelling. A survey of existing dwellings would be made if leasing of federal coal is considered. The owners of the dwellings would be given the opportunity to give written permission for mining. If permission is not obtained, the area would then be designated unsuitable and the exact acreage calculated. Until that time, the area will be considered suitable.

The Alton Cemetery is underlain by surface minable coal. This area is unsuitable because surface mining is prohibited within 100 feet of a cemetery. This involves only about 1 acre.

As mentioned above in Criterion 2, the total acreage determined to be unsuitable could increase significantly in the future based on administrative determinations regarding RS 2477 road assertions.

The exemptions for valid existing rights do not apply because there are presently no authorized coal leases within the KRCRA.

**Summary: Criterion 3**—Approximately 3,200 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining based on the conditions set forth in this criterion.

#### Criterion Number 4

Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

• <u>Exemptions</u>. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

There is one Wilderness Study Area (WSA) that partially overlies the KRCRA. Therefore, approximately 45 acres within the Parunuweap Canyon WSA are considered unsuitable.

The exemptions for valid existing rights do not apply because there are presently no authorized coal leases within the KRCRA.

**Summary: Criterion 4**—Approximately 45 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining based on the conditions set forth in this criterion.

#### Criterion Number 5

Scenic Federal lands designated by visual resource management analysis as Class I (areas of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.
- <u>Exemptions.</u> This criterion does not apply to lands: to which the operator has made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977, or which include operations on which a permit has been issued.

There are presently no Visual Resource Management (VRM) Class I lands within the KRCRA. This will change in the future with the new KFO Resource Management Plan (RMP) based on BLM policy set forth in the Washington Office Instruction Memorandum 2000-096, which directs BLM to assign VRM Class I designations to all WSA lands. Therefore, after authorization of the new RMP, 45 acres in the Parunuweap Canyon WSA that fall within the KRCRA (Criterion 4) will become unsuitable for surface mining.

**Summary: Criterion 5**—No acres are determined to be unsuitable at this time.

#### Criterion Number 6

Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

• <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Southern Utah University in conjunction with the Utah Division of Wildlife Resources (UDWR) and the KFO BLM are studying Greater sage-grouse in the Alton area. The study incorporates

approximately 5,800 acres within the Alton Amphitheater. The purpose of the study is to determine locations and suitability for sage-grouse brooding and winter habitats. This study is scheduled to be complete in 2008. The schedule would not conflict with future mining/leasing and, therefore, the project area is considered suitable under this criterion.

**Summary: Criterion 6**—No acres are determined to be unsuitable.

#### **Criterion Number 7**

All publicly or privately owned places which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

- <u>Exceptions</u>. All or certain stipulated methods of coal mining may be allowed if, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, they are approved by the surface management agency, and, where appropriate, the State or local agency with jurisdiction over the historic site.
- <u>Exemptions.</u> This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

This criterion applies to districts, sites, objects, and other items of historical, architectural, archaeological, or cultural significance in or eligible for inclusion in the National Register of Historic Places. Although no sites within the KRCRA have been included in the National Register, there are a large number of known and documented archaeological sites that have been determined eligible. The exception for stipulated coal mining methods that will not result in adverse impacts is applicable; however, mitigation may be required for eligible sites where adverse impacts cannot be avoided. The State Historic Preservation Officer has identified possible subsidence problems associated with underground mining. Stipulations would be necessary in any future leases to mitigate the adverse effects of subsidence.

Summary: Criterion 7—No acres are determined to be unsuitable at this time.

#### **Criterion Number 8**

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that: (i) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or (ii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).
- <u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

There are no designated natural areas or National Natural Landmarks designated under 43 CFR 2070 within the KRCRA.

**Summary: Criterion 8**—No acres are determined to be unsuitable.

#### **Criterion Number 9**

Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

- <u>Exceptions.</u> A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.
- <u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are approximately 33,972 acres of federally designated critical habitat for the Mexican spotted owl (MSO) within the boundaries of the KRCRA. In informal consultation with the U.S. Fish and Wildlife Service (USFWS), BLM mapped areas that contain only the primary constituent elements for MSO habitat, as defined by the *Mexican Spotted Owl Recovery Plan* (USFWS 2001, FR 8530, vol. 66 no. 22). These areas were identified using professional judgment and by buffering the 2000 Willey MSO habitat model by ½ mile. The areas identified include approximately 4,380 acres of habitat that would be considered unsuitable for surface coal mining or surface facilities. In the event of future leasing, BLM would inventory coal areas for threatened and endangered (T&E) plant and animal species in conjunction with a site-specific environmental impact statement (EIS) analysis. Critical habitat designations for T&E plant or animal species will likely change in the future, at which time the determination of suitability would be revised.

Past surveys include a general reconnaissance for T&E plants in the entire southern Utah coal area by Dr. Stanley Welch in 1977. Moderately intensive surveys were conducted by Dr. Kent Ostler in 1979 on about 56,500 acres on the Utah Power and Light Company preference right lease application area, the El Paso Coal Company leases, and the Resources Company leases. A moderately intensive survey on about 26,800 acres in the Alton coal field was conducted by Dr. Robert Foster in 1979. UDWR inventoried the coal areas of southern Utah for T&E animals in 1977 and 1978. The process included a literature search and field inventories. In 1979 and 1980, BLM conducted an essential habitat inventory for the Utah prairie dog, peregrine falcon, and bald eagle in southern Utah. Several bald eagle sightings were made on the Alton and Kolob coal fields, and one concentration area was located (Criterion 12). No peregrine falcons or Utah prairie dogs were identified closer than 10 miles from the KRCRA (Escalante and Zion Unit Resource Analyses; Johnson 1979; UDWR 1977; USFWS 1978, 44 FR 7096, December 10, 1979).

The exception in this criterion could allow for surface mining and surface facilities within these areas only after the USFWS determined that the proposed activity is not likely to jeopardize the continued existence of the MSO or other listed species in the future and/or their critical habitats.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 9**—Approximately 4,380 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining in the KDA. Exception(s) to this criterion may be applicable subject to site-specific analysis and consultation with USFWS.

#### Criterion Number 10

Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.
- <u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

The State of Utah does not maintain an official state T&E species list; therefore, no state-listed T&E plant or animal species or critical habitat exists for this criterion.

**Summary: Criterion 10**—No acres are determined to be unsuitable.

#### Criterion Number 11

A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

- <u>Exceptions</u>. A lease may be issued if: (i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or (ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved. (iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.
- <u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

In 2003, UDWR identified an active bald eagle nest within the KPA adjacent to the KRCRA. When including a 1-mile buffer zone, a portion of the KRCRA is intersected. Nests are considered active for a period of 7 years after discovery of a nest in use. Exercising (iii) of the exception above, the buffer has been modified because the natural topography provides adequate protection for the nest site. Approximately 20 acres of land remain unsuitable after the readjustment. Leasing may be feasible within the area determined to be unsuitable if the condition of exceptions (i and ii) are met. The underground exemption could also be applied on possible future leasing. Future leases would stipulate that no surface facilities could be built within a 1-mile radius of an active nest site and that surface operations could be conducted only between September 1 and December 31 of each year (Utah Field Office *Guidelines for Raptor Protection From Human and Land Use Disturbances* [USFWS 1999]). Future inventories by UDWR and BLM may identify additional eagle nests within the coal areas that would render the nest and buffer areas unsuitable.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 11**—Approximately 20 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining. The exception in this criterion may be applicable subject to site-specific analysis and consultation with USFWS.

#### Criterion Number 12

Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.
- <u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

BLM and UDWR inventories have identified a bald eagle winter concentration area of approximately 1,160 acres on Table Bench along the North Fork of the Virgin River. The wintering area is used from about November 1 to March 15 each year. The rough surface topography and the deep coals have led to the determination that only underground methods would be used to mine this area. The exception and underground exemption could be applied to possible future leases and surface facilities to restrict activities that could adversely disturb the eagles during the winter concentration period. Future inventories by BLM and UDWR may identify other bald eagle concentration areas within the coal areas, which could affect suitability (BLM 1978 and 1979, Zion Unit Analysis; UDWR 1977; Johnson 1979).

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 12**—Approximately 1,160 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining. The exception in this criterion may be applicable subject to site-specific analysis.

#### Criterion Number 13

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

- <u>Exceptions</u>. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.
- <u>Exemptions.</u> This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

BLM and UDWR inventories conducted in the late 1970s and early 1980s identified several prairie falcon nesting sites within the KPA, two of which were located within the KRCRA (BLM 1978, 1979 Zion and Escalante Unit Resource Analyses; UDWR 1977, 1978; Hoffman 1978; Johnson 1979; BLM field inventories 1976, 1977, 1978, and 1980). No recent surveys have been conducted to verify this data. Because of the amount of time that has passed since the data was collected and the likelihood of a change of status, no lands are designated as unsuitable under this criterion. A more thorough analysis would be required at the time of coal leasing to adequately address this criterion. Future inventories by UDWR and BLM or site-specific lease analysis may identify new falcon nests within coal areas. At that time the lands would be designated unsuitable unless the exception could be applied.

**Summary: Criterion 13**—No acres are determined to be unsuitable.

#### Criterion Number 14

Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.
- <u>Exemptions.</u> This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Several Bird Habitat Conservation Areas have been identified by the Intermountain West Joint Venture (IWJV) along the East Fork of the Virgin River, East Fork of the Sevier River (Parker Mountain), and Escalante River in and adjacent to the KRCRA. In consultation with USFWS, BLM determined that high-priority habitats for migratory birds exist along these corridors, defined as a <sup>1</sup>/<sub>2</sub>-mile buffer zone from the outer edge of the bank. Approximately 8,376 acres of the KRCRA would be affected and considered unsuitable. Future leasing within these areas could occur if site-specific consultation with USFWS determined that such operations would not adversely affect the migratory bird habitat during the periods of use.

The underground exemption does not apply in this criterion because of the potential to affect hydrologic systems and riparian habitat.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 14**—Approximately 8,120 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining. The exception in this criterion may be applicable subject to site-specific analysis and consultation with USFWS.

#### Criterion Number 15

Federal lands which the surface management agency and the state jointly agree are habitat for resident species of fish, wildlife and plants of high interest to the state and which are essential for maintaining these priority wildlife and plant species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include: (i) Active dancing and strutting grounds for Greater sage-grouse, sharp-tailed grouse, and prairie chicken; (ii) Winter ranges crucial for deer, antelope, and elk; (iii) Migration corridor for elk; and (iv) Extremes of range for plant species.

- <u>Exceptions.</u> A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.
- <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are approximately 18,330 acres of crucial elk winter range; 12,780 acres of crucial mule deer winter range; 8,735 acres of Greater sage-grouse breeding, nesting, and brood-rearing habitat; and 12 acres classified as leks on federal coal lands within the KRCRA. The State of Utah and BLM agree that elk, mule deer, and sage-grouse habitats should remain suitable because site-specific analyses would occur before coal field leasing. Presently there is an EIS underway as part of a coal leasing application in the Alton Amphitheater. High-interest habitat issues will be addressed in this EIS.
| State Sensitive Species Habitat (acres of habitat by ownership) | USFS   | BLM   | State<br>Surface | Private<br>Surface |
|---|--------|-------|------------------|--------------------|
| Elk   | 17,015 | 1,235 |                  | 80                 |
| Mule Deer   | 8,445  | 2,530 | 680              | 1,125              |
| Sage-Grouse Breeding, Nesting, and Brood-Rearing                | 5,735  | 1,940 |                  | 1,060              |
| Sage-Grouse Lek   |        | 12    |                  |                    |

Table A0-4. State Sensitive Species Habitat

Neither the BLM nor the State of Utah has high-interest plant species of concern within the KRCRA.

The first exception and underground exemption in this criterion would apply.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 15**—No acres are determined to be unsuitable.

#### Criterion Number 16

Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

• <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Data for this criterion is not presently available to adequately delineate riverine and special floodplains. Limited 100-year flood hazard maps are available from the U.S. Department of Housing and Urban Development, but the data is not adequate to determine the threat assessment. A more thorough analysis will be required at the time of coal leasing to adequately address this criterion.

**Summary: Criterion 16**—No acres are determined to be unsuitable.

#### Criterion Number 17

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

• <u>Exceptions</u>. A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit

determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

• <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

No lands within the KRCRA have been committed for use as municipal watersheds.

**Summary: Criterion 17**—No acres are determined to be unsuitable.

# Criterion Number 18

Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands <sup>1</sup>/<sub>4</sub> mile from the outer edge of the far banks of the water, shall be unsuitable.

- <u>Exceptions</u>. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.
- <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

In the State of Utah, the designation "High Quality Waters" is the equivalent of National Resource Waters, and therefore waters with this designation receive additional regulatory protection.

Within the KPA, the State of Utah has designated Category 1 High Quality Waters in the following drainages:

- 1. North Fork of the Virgin River and tributaries, from the confluence with the East Fork of the Virgin River to its headwaters
- 2. East Fork of the Virgin River and tributaries, from the confluence with the North Fork of the Virgin River to its headwaters
- 3. East Fork of the Sevier River and tributaries, from the Kingston diversion to its headwaters
- 4. Kanab Creek and tributaries, from the irrigation diversion at the confluence with Reservoir Canyon to its headwaters (Utah Administrative Code R317-2-12).

Consistent with Criterion 18 and state rules, BLM has determined that protection of High Quality Waters can be achieved through the use of the unsuitability designation, best management practices (BMP), and the state permitting process. Buffers were established for springs and perennial and intermittent streams, as follows:

• Perennial streams: <sup>1</sup>/<sub>4</sub> mile (1,320 feet; 402 meters) slope distance from the outer edge of the bank

- Intermittent streams: 330 feet (100 meters) slope distance from the outer edge of the bank
- Springs: 330 feet (100 meters) slope distance from the edge of the saturated area.

The locations of springs and perennial and intermittent stream reaches were determined based on interviews with employees of the BLM KFO and NPS (Sharrow, personal communication) as well as with a local landowner who has extensive knowledge of the area (Esplin, personal communication). Their input was used to edit the U.S. Geological Survey (USGS) digital line graphs dataset that covers the KPA. Stream segments that would be perennial or intermittent if it were not for irrigation diversions were classified according to their potential condition rather than their altered condition.

Approximately 13,760 acres are determined to be unsuitable because of proximity to National Resource Waters. It is likely that additional perennial/intermittent streams and springs are present that were not mapped. If such waterways are determined to exist after the publication of this report, they would be buffered and protected as described above.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 18**—Approximately 12,988 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining.

# Criterion Number 19

Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in §3400.0—5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

• <u>Exemptions.</u> This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

There is insufficient data at this time to determine either suitability or unsuitability of any area for coal development under this criterion. Identification of alluvial valley floors (AVF) is accomplished by the surface management agency in consultation with the state according to the definition in the Surface Mining Control and Reclamation Act of 1977 (SMCRA) (PL 95-87), the standards in 30 CFR 822, the Office of Surface Mining (OSM) AVF guidelines, and approved state programs under SMCRA.

The AVF guidelines provide a sequential procedure for identifying AVFs. The first phase is a reconnaissance investigation that identifies probable AVFs using available regional or generalized data. The second phase is more detailed, and involves test drilling and mapping of

geologic, vegetation, and soils data, leading to a determination that an area meets the criteria outlined in the regulations (30 CFR 78 19(c)(2)). The third phase requires more detailed descriptions of the AVFs identified in phase two, and involves water monitoring for a sufficient period of time to be able to describe seasonal fluctuations.

In response to a petition to designate certain lands in the study area as unsuitable for surface coal mining, OSM completed the first phase of an AVF investigation in the Alton coal field area (OSM 1983). The following list represents areas identified as possible AVFs within the KRCRA, but additional analysis would be required before leasing:

- 1. Kanab Creek, upper and lower
- 2. Sink Valley Wash
- 3. Unnamed tributary north of Alton and west of Kanab Creek
- 4. Thompson Creek
- 5. Mill, Tenny, and Skutumpah Creeks
- 6. Lower Johnson Wash
- 7. Yellow Creek
- 8. Upper Paria drainage
- 9. East Fork of the Sevier River.

AVFs may exist within the decision area, but initial mapping of AVFs has occurred only within the Alton area and at a reconnaissance level. Approximately 3,850 acres were identified as possible AVFs using data obtained from an investigation conducted by Jack Schmidt (1980) and BLM geographic information system (GIS) data layers. No lands within the planning area are designated as unsuitable under this criterion. A more detailed investigation would be required at the time of lease analysis.

The exemption for ongoing mining operations does not apply because there are no active leases or operations within the planning area.

Summary: Criterion 19—No acres are determined to be unsuitable.

# Criterion Number 20

Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the planning area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

- <u>Exceptions</u>. A lease may be issued when: (i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis, plan, or supplement to a comprehensive land use plan, for the area in which such land is included, or (ii) After consultation with the state or affected Indian tribe, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.
- <u>Exemptions.</u> This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Neither the State of Utah nor Indian tribes have proposed any criteria that would affect the coal lands under review, although in 1980 Secretary of Interior Andrus signed a decision designating certain areas in the viewshed of Bryce Canyon National Park unsuitable for surface coal mining and surface impacts incident to underground mining. Approximately 31,620 acres fall within the KRCRA, and these are determined to be unsuitable.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply because there are no active leases or operations within the planning area.

**Summary: Criterion 20**—Approximately 10,614 acres are determined to be unsuitable for surface coal mining and surface impacts incident to underground mining.

# SUMMARY OF THE UNSUITABILITY EVALUATION

The coal resources with development potential within the KPA have been evaluated based on the 20 criteria of unsuitability. Based on the criteria, the coal resources that are considered unsuitable for surface coal mining or surface operations and impacts incident to underground mining are shown on Map 2. These resources have been determined to be unsuitable based on Criteria 1, 3, 4, 9, 11, 12, 14, 15, 18, and 20. As a result of this analysis, there are approximately 35,538 acres within the KDA that are determined to be unsuitable for surface coal mining or operations and surface impacts incident to underground mining.

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# MAP 1. FEDERAL COAL OWNERSHIP WITHIN KRCRA



# MAP 2. COAL RESOURCES CONSIDERED UNSUITABLE FOR SURFACE MINING



# APPENDIX 7—TRAVEL MANAGEMENT/ROUTE DESIGNATION PROCESS

The Kanab Field Office (KFO) used the following process for route designation alternatives during development of the Kanab Resource Management Plan (RMP) and Environmental Impact Statement (EIS). This process included route inventory, interdisciplinary team (ID team) assessment, and cooperating agency coordination.

# **ROUTE INVENTORY**

The KFO conducted a complete route inventory in 2005 and 2006 to develop a route baseline for use in the planning process. Bureau of Land Management (BLM) employees with global positioning system (GPS) equipment digitized the routes while traveling on off-highway vehicles (OHV) and by foot. The digitized route data was verified and prepared for interdisciplinary review. In addition, Garfield County provided route data in a geographic information system (GIS) data layer. Data from the BLM inventory was overlaid with the Garfield County route data, and discrepancies were identified, reviewed, and resolved through ground-truthing and resource specialist review. Kane County provided paper maps with route data. These maps were reviewed, and any additional routes were ground-truthed with GPS and BLM employees. Where GPS data was incomplete, recent aerial photography was inspected to complete GIS datagaps. While inventorying the routes, staff collected surface type and primary and secondary usage associated with each route.

# INTERDISCIPLINARY TEAM ASSESSMENT

Team members reviewed the route inventory during a series of ID team meetings. The team made the following assumptions:

- Prohibit motorized vehicle cross-country travel, except in designated open areas
- Close routes (permanently, seasonally, or temporarily) or relocate as appropriate to address resource concerns
- Evaluate parallel, duplicative, or redundant routes for potential closure
- Where routes, trails, or other facilities have been abandoned, provide for restoration and revegetation of the site
- Prohibit motorized use of designated closed routes, except for BLM administrative and emergency use
- Sign and map designated routes as motorized or non-motorized; travel maps should be user friendly and easily accessible
- Existing route designations may be changed pursuant to land management objectives
- The travel management plan should be flexible about the location of new routes needed to provide access for new activities or to new areas or to reduce resource and/or user conflicts
- Where and when appropriate, plan, develop, and designate (in cooperation with user groups and cooperating agencies) new routes and trails that enhance and expand recreational opportunities and encourage responsible use.

The ID team applied the following factors to the route inventory and used other BLM inventories and natural and cultural resource information to identify routes for designation. The team considered the following:

- Environmental sensitivity of the areas surrounding the route, including soil type/condition, riparian areas and their condition, wilderness study areas (WSA), and weeds
- Wildlife habitat sensitivity of the areas surrounding the route, including designated critical habitat, sensitive status species habitat, or crucial habitat
- Current and anticipated visitor use levels and travel and transportation needs and desires
- Management objectives for the area and the potential for user and resource conflicts
- Access needs for BLM-permitted or authorized activities (e.g., range permittees, recreation permittees, and mineral developments)
- Access needs for non-BLM-administered lands
- Cultural resources and specific sites that require protection
- How route designation could be used to reduce existing or anticipated conflict between users
- How route designation would affect setting, recreation activity, and experience opportunities in the area.

# PLAN MAINTENANCE AND CHANGES TO ROUTE DESIGNATIONS

The RMP includes indicators that guide future plan maintenance, amendments, or revisions related to OHV area designations or the approved road and trail system within "Limited" areas. Future conditions may require the designation or construction of new routes or closure of routes to better address resources and resource use conflicts. Actual route designations within the "Limited" category can be modified without completing a plan amendment, although compliance with the National Environmental Policy Act of 1969 (NEPA) is still required.

As Instruction Memorandum (IM) 2004-061 notes, plan maintenance can be accomplished through additional analysis and land use planning (e.g., activity level planning). The BLM will collaborate with affected and interested parties in evaluating the designated road and trail network for suitability for active OHV management and envisioning potential changes in the existing system or adding new trails that would help meet current and future demands. In conducting such evaluations, the following factors would be considered:

- Routes suitable for various categories of OHVs (e.g., motorcycles, all-terrain vehicles [ATVs], dune buggies, and 4-wheel-drive touring vehicles) and opportunities for joint trail use
- Needs for parking, trailheads, informational and directional signs, mapping and profiling, and development of brochures or other materials for public dissemination
- Opportunities to tie into existing or planned route networks
- Measures needed to meet the objectives stated in the RMP (e.g., cultural resources, soil resources, special status species, and recreation)
- Public land roads or trails determined to cause considerable adverse effects or to constitute a nuisance or threat to public safety would be considered for relocation or

closure and rehabilitation after appropriate coordination with applicable agencies and partners

• Those areas managed as closed will not be available for new motorized designation or construction.

Regulations at 43 Code of Federal Regulations (CFR) 8342.2 require the BLM to monitor the effects of OHV use. Changes should be made to the Travel Plan based on the information obtained through monitoring. Site-specific NEPA documentation is required for changing the route designations in this Travel Plan.

# COOPERATING AGENCY COORDINATION

BLM managers and planners met with cooperating agency representatives to review the inventory and discuss concerns. Maps provided at each meeting were used throughout the discussions. Specifically, Kane County and Garfield County representatives raised concerns regarding routes they claimed under Revised Statute (RS) 2477. In addition, duplicative routes, routes with maintenance concerns, maintenance standards, and access to the counties' resources were discussed in relation to the route inventory.

# IMPLEMENTATION PROCESS

Implementation decisions are actions that the BLM takes to implement land use plans (LUP) and generally constitute the BLM's final approval for allowing on-the-ground actions to proceed. These types of decisions, which are based on site-specific planning and NEPA analyses, are subject to the administrative remedies set forth in the regulations that apply to each BLM resource management program. Implementation decisions are not subject to protest under the planning regulations; rather, they are subject to various administrative remedies. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations after the BLM resolves the protests to LUP decisions and makes a decision to adopt or amend the Approved RMP.

The travel planning and implementation process includes the following:

- Monitoring the transportation system and modifying as appropriate
- A map of roads and trails for all travel modes
- Notations of any limitation for specific roads and trails
- Criteria to select or reject roads and trails in the final travel management network, add new roads or trails, and specify limitations
- Guidelines for management, monitoring, and maintenance of the transportation system
- Needed easements and rights-of-ways (to be issued to the BLM or others) to maintain the existing road and trail network providing public land access.

The Approved RMP completes the initial route designation component of the Travel Management Plan and implementation process. These routes would be the initial basis for signing and enforcement. The Field Office will prioritize additional implementation actions, resources, and geographic areas based on the Approved RMP goals and objectives and in accordance with the guidelines noted above.

# APPENDIX 8—WILDLAND FIRE RESOURCE PROTECTION MEASURES AND REASONABLE AND PRUDENT MEASURES, TERMS AND CONDITIONS, AND REPORTING REQUIREMENTS IDENTIFIED THROUGH SECTION 7 CONSULTATION

The existing land use plans (LUP) that constitute Alternative A (No Action Alternative) were amended September 26, 2005, with the *Finding of No Significant Impact and Decision Record (UT-USO-04-01) Utah Land Use Plan Amendment for Fire and Fuels Management*. The decisions from that document have been brought forward in their entirety. A majority of the decisions are located in the Management Common to All Alternatives section of the Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement (EIS) Chapter 2 under the Wildland Fire Ecology heading. This appendix contains the remainder of the decisions, in the form of resource protection measures and terms and conditions identified through Section 7 consultation, that were too long to be easily integrated into Chapter 2 of the Proposed RMP/Final EIS.

# RESOURCE PROTECTION MEASURES IDENTIFIED IN THE UTAH LAND USE PLAN AMENDMENT FOR FIRE AND FUELS MANAGEMENT

| Applicable Fire Management Practices:   |                              |                              |  |
|---|------------------------------|------------------------------|--|
| SUP: Wildfire Suppression   | RX: Prescribed Fire          | ESR: Emergency Stabilization |  |
| WFU: Wildland Fire Use for Resource Benefit   | NF: Non-Fire Fuel Treatments | and Rehabilitation           |  |
| Air   |                              |                              |  |
| A-1 Evaluate weather conditions, including wind speed and atmospheric stability, to predict impacts from smoke from prescribed fires and wildland fire use. Coordinate with Utah Department of Environmental Quality for prescribed fires and wildland fire use. (RX, WFU)  |                              |                              |  |
| A-2 When using chemical fuels reduction methods, follow all label requirements for herbicide application. (NF)  |                              |                              |  |
| Soil and Water  |                              |                              |  |
| SW-1 Avoid heavy equipment use on highly erosive soils (soils with low soil loss tolerance), wet or boggy soils, and slopes greater than 30 percent, unless otherwise analyzed and allowed under appropriate National Environmental Policy Act (NEPA) evaluation with implementation of additional erosion control and other soil protection mitigation measures. (SUP, WFU, RX, NF, ESR)   |                              |                              |  |
| SW-2 There may be situations where high-intensity fire will occur on sensitive and erosive soil types during wildland fire, wildland fire use, or prescribed fire. If significant areas of soil show evidence of high-severity fire, evaluate the area for soil erosion potential and downstream values at risk and implement appropriate or necessary soil stabilization actions such as mulching or seeding to avoid excessive wind and water erosion. (SUP, WFU, RX) |                              |                              |  |
| SW-3 Complete necessary rehabilitation on firelines or other areas of direct soil disturbance, including but not limited to waterbarring firelines, covering and mulching firelines with slash, tilling and/or subsoiling compacted areas, scarification of vehicle tracks, off-highway vehicles (OHV) closures, and seeding and/or mulching for erosion protection. (SUP, WFU, RX)   |                              |                              |  |
| SW-4 When using mechanical fuels reduction treatments, limit tractor and heavy equipment use to periods of low soil moisture to reduce the risk of soil compaction. If this is not practical, evaluate sites post-treatment and, if necessary, implement appropriate remediation, such as subsoiling, as part of the operation. (NF)  |                              |                              |  |
|   |                              |                              |  |

| Applicable Fire Management Practices:  |  |  |  |  |
|--|--|--|--|--|
| SUP: Wildfire Suppression  | RX: Prescribed Fire  | ESR: Emergency Stabilization<br>and Rehabilitation             |  |  |
| SW-5 Treatments such as chaining, plowing, and roller chopping shall be conducted as much as practical on the contour to reduce soil erosion (Bureau of Land Management [BLM] Record of Decision [ROD] 13 Western States Vegetation Treatment EIS 1991). (NF, ESR)   |  |  |  |  |
| SW-6 When using chemical fuel reduction treatments follow all label directions, additional mitigations identified in project NEPA evaluation, and the Approved Pesticide Use Proposal. At a minimum, provide a 100-foot-wide riparian buffer strip for aerial application, 25 feet for vehicle application, and 10 feet for hand application. Any deviations must be in accordance with the label. Herbicides would be applied to individual plants within 10 feet of water where application is critical (BLM ROD 13 Western States Vegetation Treatment EIS 1991). (NF)  |  |  |  |  |
| SW-7 Avoid heavy equipment in riparian or wetla resource advisor before using heavy equipment  | and areas. During fire suppression of in riparian or wetland areas. (SUP,                  | or wildland fire use, consult a<br>WFU, RX, NF, ESR)           |  |  |
| SW-8 Limit ignition within native riparian or wetla  | nd areas. Allow low-intensity fire to  | burn into riparian areas. (RX)                                 |  |  |
| SW-9 Suppress wildfires consistently with compl<br>quality impaired (303(d) listed) water bodies. Do   | iance strategies for restoring or main not use retardant within 300 feet of                | intaining the restoration of water<br>water bodies. (SUP, WFU) |  |  |
| SW-10 Plan and implement projects consistent with compliance strategies for restoring or maintaining the restoration of water quality impaired (303(d) listed) water bodies. Planned activities shall take into account the potential impacts on water quality, including increased water yields that can threaten fisheries and aquatic habitat; improvements at channel crossings; channel stability; and downstream values. Of special concern are small headwaters of moderate to steep watersheds, erosive or saline soils, multiple channel crossings, at-risk fisheries, and downstream residents. (RX, NF, ESR)  |  |  |  |  |
| Vegetation   |  |  |  |  |
| V-1 When restoring or rehabilitating disturbed rangelands, non-intrusive, non-native plant species are appropriate for use when native species: (1) are not available; (2) are not economically feasible; (3) cannot achieve ecological objectives as well as non-native species; and/or (4) cannot compete with already established native species (Noxious Weeds Executive Order 13112 2/3/1999; BLM Manual 9015; BLM ROD 13 Western States Vegetation Treatment EIS 1991). (RX, NF, ESR)  |  |  |  |  |
| V-2 In areas known to have weed infestations, aggressive action will be taken in rehabilitating firelines, seeding and follow-up monitoring, and treatment to reduce the spread of noxious weeds. Monitor burned areas and treat as necessary. All seed used will be tested for purity and for noxious weeds. Seed with noxious weeds will be rejected (ROD 13 Western States Vegetation Treatment EIS 1991). (SUP, WFU, RX, NF, ESR)  |  |  |  |  |
| Special Status Species   |  |  |  |  |
| SSS-1 Initiate emergency Section 7 consultation determination that wildfire suppression may pose adverse modification of designated critical habitation and the suppression of the superscript of the super | with United States Fish and Wildlife<br>a potential threat to any listed thre<br>at. (SUP) | e Service (USFWS) upon the<br>atened or endangered species or  |  |  |
| SSS-3 Prior to planned fire management actions, survey for listed threatened and endangered and non-listed sensitive species. Initiate Section 7 consultation with USFWS as necessary if proposed project may affect any listed species. Review appropriate management, conservation, and recovery plans and include recovery plan direction into project proposals. For non-listed special status plant and animal species, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves non-listed sensitive species and their habitats and ensure that any action authorized, funded, or carried out by the BLM does not contribute to the need for any species to become listed. (RX, NF, ESR)  |  |  |  |  |
| SSS-4 Follow terms and conditions identified in t  | he Biological Opinion (see section   | below). (SUP, WFU, RX, NF, ESR)                                |  |  |
| Fish and Wildlife  |  |  |  |  |
| FW-1 Avoid treatments during nesting, fawning, spawning, or other critical periods for wildlife or fish. (RX, NF, ESR)   |  |  |  |  |
| FW-2 Avoid if possible or limit the size of wildland fires in important wildlife habitats such as mule deer winter range<br>and riparian and occupied Greater sage-grouse habitat. Use resource advisors to help prioritize resources and develop<br>Wildland Fire Situation Analyses and Wildland Fire Implementation Plans when important habitats may be impacted.<br>(SUP, WFU)  |  |  |  |  |

| Applicable Fire Management Practices:  |   |  |  |  |
|--|---|--|--|--|
| SUP: Wildfire Suppression  | RX: Prescribed Fire   | ESR: Emergency Stabilization   |  |  |
| WFU: Wildland Fire Use for Resource Benefit  | NF: Non-Fire Fuel Treatments  | and Rehabilitation   |  |  |
| FW-3 Minimize wildfire size and frequency in sagebrush communities where sage-grouse habitat objectives will not be met if a fire occurs. Prioritize wildfire suppression in sagebrush habitat with an understory of invasive, annual species. Retain unburned islands and patches of sagebrush unless there are compelling safety, private property, and resource protection or control objectives at risk. Minimize burnout operations (to minimize burned acres) in occupied sage-grouse habitats when there are no threats to human life and/or important resources. (SUP)   |   |  |  |  |
| FW-4 Establish fuel treatment projects at strategic locations to minimize size of wildfires and to limit further loss of sagebrush. Fuel treatments may include greenstripping to help reduce the spread of wildfires into sagebrush communities. (RX, NF)   |   |  |  |  |
| FW-5 Use wildland fire to meet wildlife objectives. Evaluate impacts on sage-grouse habitat in areas where wildland fire use for resource benefit may be implemented. (WFU, RX)  |   |  |  |  |
| FW-6 Create small openings in continuous or dense sagebrush (more than 30 percent canopy cover) to create a mosaic of multiple-age classes and associated understory diversity across the landscape to benefit sagebrush-dependent species. (WFU, RX, NF)  |   |  |  |  |
| FW-7 On sites that are currently occupied by forests or woodlands, but historically supported sagebrush communities, implement treatments (fire, cutting, chaining, seeding, etc.) to reestablish sagebrush communities. (RX, NF)  |   |  |  |  |
| FW-8 Evaluate and monitor burned areas and continue management restrictions until the recovering and/or seeded plant community reflect the desired condition. (SUP, WFU, RX, ESR)  |   |  |  |  |
| FW-9 Use the ESR program to apply appropriate post-fire treatments within crucial wildlife habitats, including sage-<br>grouse habitats. Minimize seeding with non-native species that may create a continuous perennial grass cover and<br>restrict establishment of native vegetation. Seed mixtures shall be designed to reestablish important seasonal habitat<br>components for sage-grouse. Leks shall not be reseeded with plants that change the vegetation height previously<br>found on the lek. Forbs shall be stressed in early and late brood-rearing habitats. In situations of limited funds for ESR<br>actions, prioritize rehabilitation of sage-grouse habitats. (ESR) |   |  |  |  |
| Cultural Resources   |   |  |  |  |
| CR-1 Cultural resource advisors shall be contact (SUP)   | ted when fires occur in areas contai  | ining sensitive cultural resources.                                    |  |  |
| CR-2 Wildland fire use is discouraged in areas c<br>being prepared to cover the finding of adverse et  | ontaining sensitive cultural resource<br>ffects on cultural resources associa | es. A programmatic agreement is ted with wildland fire use. (WFU)      |  |  |
| CR-3 Potential impacts of proposed treatment sh<br>Act (NHPA) and the Utah Statewide Protocol. Th  | nall be evaluated for compliance wit<br>nis shall be conducted prior to the p | th the National Historic Preservation roposed treatment. (RX, NF, ESR) |  |  |
| Paleontology   |   |  |  |  |
| P-1 Planned projects shall be consistent with BLM Manual and Handbook H-8270-1, Chapter III (A) and III (B), to avoid areas where significant fossils are known or predicted to occur or to provide for other mitigation of possible adverse effects. (RX, NF, ESR)  |   |  |  |  |
| P-2 In the event that paleontological resources are discovered in the course of surface fire management activities, including fires suppression, efforts shall be made to protect these resources. (SUP, WFU, RX, NF, ESR)   |   |  |  |  |
| Forestry   |   |  |  |  |
| F-1 Planned projects shall be consistent with Healthy Forest Restoration Act Section 102(e)(2) to maintain or contribute to the restoration of old-growth stands to a pre-fire-suppression condition and to retain large trees contributing to old-growth structure. (SUP, WFU, RX, NF)  |   |  |  |  |
| F-2 During planning, evaluate opportunities to us  | se forest and woodland products pri   | ior to implementing prescribed fire                                    |  |  |

activities. Include opportunities to use forest and woodland product sales to accomplish non-fire fuel treatments. In forest and woodland stands, consider developing silvicultural prescriptions concurrently with fuel treatment prescriptions. (RX, NF)

| Applicable Fire Management Practices:   |                              |                              |  |
|---|------------------------------|------------------------------|--|
| SUP: Wildfire Suppression   | RX: Prescribed Fire          | ESR: Emergency Stabilization |  |
| WFU: Wildland Fire Use for Resource Benefit   | NF: Non-Fire Fuel Treatments | and Rehabilitation           |  |
| Livestock Grazing   |                              |                              |  |
| LG-1 Coordinate with permittees regarding the requirements for non-use or rest of treated areas. (SUP, WFU, RX, NF, ESR)  |                              |                              |  |
| LG-2 Rangelands that have been burned by wildfire, prescribed fire, or wildland fire use will be ungrazed for a minimum of one complete growing season following the burn. (SUP, WFU, RX)   |                              |                              |  |
| LG-3 Rangelands that have been reseeded or otherwise treated to alter vegetative composition, chemically or mechanically, will be ungrazed for a minimum of two complete growing seasons. (RX, NF, ESR)   |                              |                              |  |
| Recreation and Visitor Services   |                              |                              |  |
| Rec-1 Wildland fire suppression efforts will preferentially protect Special Recreation Management Areas and recreation site infrastructure in line with fire management goals and objectives. (SUP)   |                              |                              |  |
| Rec-2 Vehicle tracks created off established routes will be obliterated after fire management actions in order to reduce unauthorized OHV travel. (SUP, WFU, RX, NF, ESR)   |                              |                              |  |
| Lands and Realty  |                              |                              |  |
| LR-1 Fire management practices will be designed to avoid or otherwise ensure the protection of authorized rights-of-<br>way (ROW) and other facilities located on the public lands, including coordination with holders of major ROW systems<br>within ROW corridors and communication sites. (WFU, RX, NF, ESR)  |                              |                              |  |
| LR-2 Fire management actions must not destroy, deface, change, or remove to another place any monument or witness tree of the Public Land Survey System. (SUP, WFU, RX, NF, ESR)  |                              |                              |  |
| Hazardous Waste   |                              |                              |  |
| HW-1 Recognize hazardous wastes and move fire personnel to a safe distance from dumped chemicals, unexploded ordnance, drug labs, wire burn sites, or any other hazardous wastes. Immediately notify the BLM Field Office HAZMAT coordinator or state HAZMAT coordinator upon discovery of any hazardous materials, following the BLM hazardous materials contingency plan. (SUP, WFU, RX, NF, ESR) |                              |                              |  |
| Mineral Resources   |                              |                              |  |
| M-1 A safety buffer shall be maintained between fire management activities and at-risk facilities. (SUP, WFU, RX)   |                              |                              |  |
| Wilderness and Wilderness Study Areas   |                              |                              |  |
| Wild-1 The use of earth-moving equipment must be authorized by the Field Office manager. (SUP, WFU, RX, ESR)  |                              |                              |  |
| Wild-2 Fire management actions will rely on the most effective methods of suppression that are least damaging to wilderness values, other resources, and the environment, while requiring the least expenditure of public funds. (SUP, WFU)   |                              |                              |  |
| Wild-3 A resource advisor shall be consulted when fire occurs in Wilderness Areas and Wilderness Study Areas (WSA). (SUP, WFU)  |                              |                              |  |

# U. S. FISH AND WILDLIFE SERVICE INCIDENTAL TAKE STATEMENT, INCLUDING REASONABLE AND PRUDENT MEASURES, TERMS AND CONDITIONS, AND REPORTING REQUIREMENTS FOR ESA SPECIES OF THE BIOLOGICAL OPINION

The USFWS has completed a biological opinion on the Proposed Action alternative and terms and conditions have been identified as part of that opinion. Together, the resource protection measures and the terms and conditions were incorporated into the Proposed Action to reduce resource conflicts. Species that were addressed in the complete statement contained in the Finding of No Significant Impact and Decision Record (UT-USO-04-01) Utah Land Use Plan Amendment for Fire and Fuels Management that do not occur within the decision area or are not affected by management in the EIS alternatives are not include in the Incidental Take Statement below.

#### Incidental Take Statement

Section 9 of the ESA, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR 173). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include but are not limited to breeding, feeding, or sheltering (50 CFR 17.3).

No exemption from Section 9 of the Act is granted in this biological opinion. The Bureau of Land Management's (BLM) implementation of the Land Use Plan Amendment and Five Fire Management Plans is likely to adversely affect listed species. The likelihood of incidental take, and the identification of reasonable and prudent measures (RPM) and terms and conditions to minimize such take, will be addressed in project-level and possibly programmatic-level consultations. Any incidental take and measures to reduce such take cannot be effectively identified at the level of proposed action because of the uncertainty of wildland fire, broad geographic scope, and the lack of site-specific information. Rather, incidental take and RPMs may be identified adequately through subsequent actions subject to Section 7 consultations at the project and/or programmatic scale.

Even though actual take levels are unquantifiable, take will occur through harm and harassment. Therefore, we are providing the following RPMs and terms and conditions to minimize overall take. Implementation of these RPMs and terms and conditions during project planning will also expedite site-specific Section 7 consultation.

#### Reasonable and Prudent Measures

The USFWS believes that the following RPMs are necessary and appropriate to minimize impacts of incidental take on Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, Mexican spotted owl (MSO), and Siler pincushion cactus:

- 1. The BLM shall implement measures to minimize mortality or injury of federally listed species due to proposed project activities without placing firefighter personnel at risk. The species that were determined likely to be adversely affected by project activities included Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, MSO, and Siler pincushion cactus.
- 2. The BLM shall implement measures to minimize harm to federally listed species through destruction of their suitable or designated critical habitats without placing firefighter personnel at risk. The species' habitats that were determined likely to be

adversely affected by project activities included Utah prairie dog, Southwestern willow flycatcher, California condor, bald eagle, MSO, and Siler pincushion cactus.

# Terms and Conditions

To be exempt from the prohibitions of Section 9 of the Act, the BLM must comply with the following terms and conditions, which implement the RPMs described above and outline reporting/monitoring requirements. These terms and conditions are non-discretionary. The following terms and conditions apply to all species covered under this biological opinion and are to be implemented in addition to the Applicant Committed Measures described in the Proposed Action.

#### General Terms and Conditions

- 1. To implement RPM 1:
  - a. Before the beginning of each fire season, a threatened and endangered species education program will be presented to all personnel anticipated to be within federally listed species habitats during suppression activities. This program will contain information concerning the biology and distribution of listed species throughout the Fire Management Plan Planning Area, their legal status, fire suppression goals, and restrictions within suitable and critical habitat. Following training, each individual will sign a completion sheet to be placed on file at the local BLM office.
  - b. All project employees (including fire fighting personnel) shall be informed as to the definition of "take," the potential penalties (up to \$200,000 in fines and 1 year in prison) for taking a species listed under the ESA, and the terms and conditions provided in this biological opinion.
  - c. A qualified resource advisor will be assigned to each wildfire that occurs in or threatens listed species habitat. The resource advisor's role is to help define goals and objectives for fire suppression efforts and to inform the Incident Commander (IC) of any restrictions, but he or she does not get involved in specific suppression tactics. Resource advisors shall oversee fire suppression and suppression rehabilitation activities in order to ensure that protective measures endorsed by the IC are implemented.
  - d. For pre-planned projects, the authorized officer shall designate an individual as a contact representative who will be responsible for overseeing compliance with the Applicant Committed Measures and terms and conditions contained in this biological opinion, and providing coordination with USFWS. The representative will have the authority to halt activities that may be in violation of these conditions, unless human health and safety or structures are at risk.
  - e. Project-related personnel shall not be permitted to have pets accompany them to the project site.
  - f. If available, maps shall be provided to local dispatch centers showing general locations of listed species. Local BLM or Utah Division of Wildlife Resources (UDWR) biologists shall be consulted for specific locations if fires occur within or near the general locations delineated on the map.

- g. In occupied habitat, pre- and post-monitoring of federally listed species' responses to the pre-planned treatments will be conducted.
- 2. To implement RPM 2:
  - a. Fingers or patches of unburned vegetation within burned areas shall not be burned out as a fire suppression measure unless required for safety concerns or due to high reburn potential.
  - b. Emergency stabilization and rehabilitation efforts must focus on areas where there is a potential of non-native species to spread, particularly within suitable habitat for federally listed species.
  - c. The specific seed mix and areas to be seeded within suitable habitat for federally listed and sensitive species will be determined through coordination and Section 7 consultation with the USFWS.
  - d. In occupied habitat burned by wildland fire, the recovery of vegetation shall be monitored, including establishment and monitoring of paired plots, inside and outside of the burned area unless the BLM and the USFWS concur that monitoring is not required.
  - e. Site-specific projects under the Land Use Plan Amendment and Fire Management Plans will maintain, protect, or enhance the primary constituent elements of designated critical habitat in all implementation activities.
  - f. The effectiveness of suppression activities and threatened and endangered species conservation measures shall be evaluated after a fire in coordination with the USFWS. Procedures shall be revised as needed.
  - g. In occupied habitat, pre- and post-monitoring of federally listed species' habitat responses to the pre-planned treatments will be conducted.
  - h. Temporarily close burned areas to off-highway vehicles (OHV) within occupied habitat after a wildland fire event until vegetation and soils recover. Consultation with the USFWS may determine that an area may remain open if there is no threat to the species or habitat.
  - i. Consult with the USFWS to determine the need to obscure decommissioned trails and roads and illegal OHV trails within occupied habitat after a wildland fire event to prevent the trails and roads from re-opening.

# Utah Prairie Dog

The following terms and conditions are in addition to the general terms and conditions listed above and apply to the Utah prairie dog:

- 1. To implement RPMs 1 and 2:
  - a. Wildfires will be suppressed before they reach a prairie dog colony ("prairie dog colony" refers to any occupied Utah prairie dog colony) or after they exit a colony. Active suppression efforts will not occur within a colony unless human health and safety or structures are at risk.
  - b. Only hand lines will be authorized within colonies.
  - c. Normally, only water shall be used on fires that occur within prairie dog colonies. If the fire IC decides that the situation requires use of chemical retardants to protect life and property, they may be used. The chemical composition will be supplied to the USFWS during emergency consultation.

- d. All vehicles shall stay on existing roads within colonies except as stated in (e). Storage of equipment and materials shall not occur within <sup>1</sup>/<sub>4</sub> mile of colonies. Vehicle maintenance shall not occur within these areas.
- e. The resource advisor, biologist, or biological monitor (someone who is either qualified with a biological background or has been trained by the resource advisor) ensures that prairie dogs and their burrows are protected or avoided by walking in front of engines, tracked vehicles, or other firefighting-related vehicles within occupied prairie dog colonies.
- f. Vehicles shall not exceed a speed of 10 miles per hour (cross-country) in occupied Utah prairie dog colonies unless a higher speed is determined to be prudent for safety reasons.
- g. Within colonies, precautions shall be taken to ensure that contamination of the site by fuels, motor oils, grease, etc. does not occur and that such materials are contained and properly disposed of off site. Inadvertent spills of petroleum-based or other toxic materials shall be cleaned up and removed immediately unless they occur during an emergency event (wildfire suppression). In which case the spill shall be cleaned up as soon as practical after the emergency situation is controlled.
- h. Camps associated with fire suppression activities shall be situated outside occupied habitat.
- i. If a dead or injured Utah prairie dog is located, initial notification must be made to the USFWS Division of Law Enforcement, Cedar City, Utah at telephone 435-865-0861 or to the Cedar City office of the UDWR at telephone number 435-865-6100. Instruction for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state.

#### Southwestern Willow Flycatcher

The following terms and conditions are in addition to the general terms and conditions listed above and apply to the Southwestern willow flycatcher:

- 1. To implement the RPM 1:
  - a. Prior to planned project activities, potentially affected habitat will be surveyed according to USFWS protocol (A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol; Technical Report NPS/NAUCPRS/NRTR-97/12).
  - b. Except where fires are active in occupied habitat, minimize unnecessary low-level helicopter flights during the breeding season (April 1 to September 30). If safety allows, approach bucket dip sites at a 90-degree direction to rivers to minimize flight time over the river corridor and occupied riparian habitats. Locate landing sites for helicopters at least ¼ mile from occupied flycatcher habitat unless human safety or property dictates otherwise.
  - c. Minimize use of chainsaws or bulldozers to construct firelines through occupied or suitable habitat except where necessary to reduce the overall acreage of occupied habitat or other important habitat areas that would otherwise be burned.

- d. Implement activities to reduce hazardous fuels or improve riparian habitats (prescribed burning or vegetation treatments) within occupied or unsurveyed suitable habitat for Southwestern willow flycatchers only during the non-breeding season (October 1 to March 31).
- 2. To implement RPM 2:
  - a. Riparian fuel reduction actions shall be considered as experimental and initially conducted only in unoccupied habitats until the success and ramifications are better understood. Efficacy of these actions as a fire management tool, and effects on bird habitat quality, shall be tested in a scientifically explicit, controlled fashion (Appendix L in USFWS 2002).
  - b. In occupied or suitable flycatcher habitat, creation of firebreaks might render the habitat unsuitable (Appendix L in USFWS 2002). As long as human safety and property allows, firebreaks shall be conducted in unoccupied sites, outside of proposed critical habitat, or within proposed critical habitat under the following situations:
  - c. The habitat does not meet the Primary Constituent Elements of the proposed critical habitat as listed in 69 FR 60706-60786, October 12, 2004.
  - d. The firebreak is a minimal fireline necessary to prevent unacceptable losses of occupied habitat.
  - e. The firebreak is between fuel concentrations and flycatcher breeding sites to prevent fires from spreading into breeding sites (Appendix L in USFWS 2002).
  - f. Prescribed fire shall be avoided in occupied habitat and considered only as experimental management techniques if dealing with suitable unoccupied habitat (Appendix L in USFWS 2002).
  - g. Fires in occupied habitat and adjacent buffer zones shall be rapidly suppressed if safety allows.

# California Condor and Bald Eagle

The following terms and conditions are in addition to the general terms and conditions listed above and apply to the California condor and bald eagle:

- 1. To implement RPM 1:
  - a. If California condors or bald eagles are found inhabiting (nesting) within the action area of a pre-planned project, a buffer of 1 mile surrounding the nesting area will be designated as non-treatment zones (Romin and Muck 2002).
  - b. If California condors are observed within <sup>1</sup>/<sub>4</sub> mile of an open water source, such as an inflatable storage tank or "pumpkin," the water storage tank will be covered when not in use.

#### Mexican Spotted Owl

The following terms and conditions are in addition to the general terms and conditions listed above and apply to the MSO:

- 1. To implement RPM 1:
  - a. Pre-planned fuels reduction projects within MSO designated critical habitat shall be designed to enhance habitat requirements for the MSO as well as for the valuable prey species they rely upon.
- 2. To implement RPM 2:
  - a. Fire suppression shall be considered for wildfires in designated critical habitat.

#### Threatened or Endangered Plants

The following terms and conditions are in addition to the general terms and conditions listed above and apply to the federally listed plants:

- 1. To implement RPM 1:
  - a. Do not allow wildland fire use within occupied habitat unless agreed to by the BLM and the USFWS.
  - b. When feasible (and human life or property are not put at risk) firebreaks shall be constructed down-slope of plants and populations; if firebreaks must be sited up-slope, buffers of 100 feet minimum between surface disturbances and plants and populations will be incorporated.
- 2. To implement RPM 2:
  - a. Do not allow wildland fire use within occupied habitat unless agreed to by the BLM and the USFWS.
  - b. For pre-planned projects within known or potential habitat, site inventories shall be conducted to determine habitat suitability prior to initiation of project activities at a time when the plant can be detected.
  - c. For riparian/wetland-associated species, avoid loss or disturbance of riparian habitats.
  - d. Limit disturbances to and within suitable habitat by staying on designated routes where feasible.
  - e. Limit new access routes created by the project.
  - f. Following a wildland fire event, place signing to limit all-terrain vehicle (ATV) travel in sensitive burned areas.

#### Siler Pincushion Cactus

The following terms and conditions are in addition to the general terms and conditions listed above as well as the terms and conditions for threatened and endangered plant species. These terms and conditions apply specifically to the Siler pincushion cactus:

- 1. To implement RPMs 1 and 2:
  - a. Follow and implement the restrictions on pesticide use within suitable Siler pincushion cactus habitat developed by the Environmental Protection Agency (EPA). These limitations were excerpted from the EPA's Pesticides: Endangered Species Protection Program (http://www.epa.gov/oppfead l/endanger/arizona/cocon.htm#brady):
    - i. If the active ingredient is 2,4-D (all forms), ATRAZINE, CLOPYRALID, DICAMBA (all forms), DICHLORPROP (2,4-DP), HEXAZINONE, MCPA (all forms), PARAQUAT, PICLORAM (all forms), or TEBUTHIURON, do not apply

this pesticide in the species habitat. For ground applications do not apply within 20 yards of the habitat, or within 100 yards for aerial applications.

- ii. If the active ingredient is OXYFLUORFEN (granular or non-granular), do not apply this pesticide in the species habitat. For ground applications do not apply within 100 yards of the habitat, or within <sup>1</sup>/<sub>4</sub> mile for aerial applications.
- iii. If the active ingredient is either METRIBUZIN or SULFOMETURON METHYL, do not apply this pesticide on rights-of-way in the species habitat.

#### Closing

The USFWS believes that an unquantifiable amount of incidental take will occur in the form of harm and harassment as a result of the proposed actions. The RPMs, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed actions. The BLM must immediately provide an explanation of the causes of the taking and review with the USFWS the need for possible modification of the RPMs.

#### **Reporting Requirements**

Upon locating dead, injured, or sick listed species, immediate notification must be made to the USFWS Salt Lake City Field Office at 801-975-3330 and the USFWS Division of Law Enforcement, Ogden, Utah, at 801-625-5570. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to the USFWS. Instructions for proper care, handling, transport, and disposition of such specimens will be issued by the USFWS Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state.

The BLM shall submit a report to the USFWS on or before December 1 of each year in which fire management activities occurred within occupied habitat. For the listed and candidate species covered under this consultation, the report shall include (1) the amount of potential and/or occupied habitat affected by wildfire (i.e., stream miles burned, percentage of drainage burned, and fire severity map); (2) to the extent possible, the number of individuals killed from direct and indirect effects of wildfire; (3) any habitat and/or population monitoring efforts from past wildfire events; (4) a copy of the burned area emergency stabilization and rehabilitation plan; (5) implementation and effectiveness monitoring of burned area emergency stabilization and rehabilitation plan; (6) implementation and effectiveness monitoring the effectiveness of the SOPs; and (8) any recommendations for additional SOPs. The first report shall be due to the USFWS on December 1, 2005. The address for the Utah Fish and Wildlife Office is:

Field Supervisor, U.S. Fish and Wildlife Service 2369 West Orton Circle, Suite 50 West Valley City, Utah 84119 Telephone: 801-975-3330

# ADDITIONAL RESOURCE PROTECTION MEASURES DEVELOPED BY THE BLM AND THE USFWS

In addition to the resource protection measures listed in the LUP amendment, the following conservation measures were developed through the Section 7 consultation process. These resource protection measures were identified in the USFWS Biological Opinion (page 42). That document states that "the BLM has incorporated these measures … by reference to their [Biological Assessment]." Species that were addressed in these measures that do not occur within the decision area or are not affected by management in the EIS alternatives are not included. Additional resource protection measures are as follows:

- Manage natural and prescribed fire regimes to protect or improve Utah prairie dog habitat.
- Within Utah prairie dog habitat, reseeding would be implemented according to the Utah Prairie Dog Recovery Plan.
- Manage prescribed fire and wildland fire use within MSO protected activity centers (PAC) to ensure protection of nesting, roosting, and foraging habitats.
- Wildland fire suppression would be prioritized for use in MSO PACs. When feasible, fire camps associated with suppression efforts would be built outside of the PACs and nest protection areas.
- For treatments within suitable habitat for listed species, pre- and post-monitoring would take place as determined on a case-by-case basis.
- Incorporate the standards and guidelines recommended by the Inland Native Fish Strategy (USFS 1995).
- As per the decision of the resource advisor, avoid construction of firelines using mechanized equipment across the stream channel. If used, the mechanized equipment would terminate at and not cross the stream channel.
- Avoid transferring water from one watershed into another for the purpose of water drops because this could aid in the spread of waterborne diseases such as whirling disease.
- Avoid retardant use in any riparian wetland communities.
- Restricted use of mechanical treatments and hand tools.
- Per-burn acreage limitations of 5 to 100 acres, as long as human life or property are not threatened.
- Prior to planned fire management actions, survey for listed threatened and endangered and non-listed sensitive species. Review appropriate management, conservation, and recovery plans and include recovery plan direction into project proposals, if listed. Ensure that any proposed project conserves non-listed sensitive species and their habitats and ensure that any action authorized, funded, or carried out by the BLM does not contribute to the need for any species to become listed.

# APPENDIX 9—CONSERVATION MEASURES, OIL AND GAS LEASE NOTICES, AND RECOVERY PLANS FOR THREATENED AND ENDANGERED SPECIES

# SPECIFIC THREATENED/ENDANGERED SPECIES CONSERVATION MEASURES

The Utah Bureau of Land Management (BLM) is committed to the conservation of federally listed species. Pursuant to the Endangered Species Act (ESA), this means that the BLM will use methods and procedures necessary for improving the status of federally listed species and their habitats to a point at which the provisions of the ESA are no longer necessary. This effort includes ensuring that BLM actions requiring permit or approval are consistent with the objectives of approved recovery plans for listed species.

This list of conservation measures is part of the programmatic Section 7 consultation effort concerning existing land use plans (LUP) (Alternative A) in the decision area. To address the potential impacts of common land uses and to minimize the potential for their occurrence, the BLM, in coordination with the U.S. Fish and Wildlife Service (USFWS), has developed the following list of species-specific conservation measures for all future proposed actions involving BLM Utah.

Future implementation proposals that are determined to have potential for impacts on these listed species should incorporate these conservation measures where applicable and appropriate. Where these measures are incorporated into future proposals, there is a greater likelihood that the BLM will meet the standard of "may affect, but not likely to adversely affect" species listed under the ESA. Where the BLM determines that deviation, modification, or waiver of these conservation measures would be prudent or necessary, early coordination and Section 7 consultation with USFWS would be necessary. The BLM will reinitiate Section 7 consultation at the project level as necessary to ensure proper management of listed species.

# Bald Eagle (Haliaeetus leucocephalus)

The following list of measures provides species-specific guidance, intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the bald eagle. This list is not comprehensive. Additional conservation measures or other modified versions of these measures may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of Section 7 consultation with the USFWS:

- 1. The BLM will place restrictions on all authorized (i.e., permitted) activities that may adversely impact bald eagles, their breeding habitat, roosting sites, and known winter concentration areas in order to avoid or minimize potential impacts:
  - Measures have been adapted from guidance published in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin & Muck 2002), as well as coordination between the BLM and USFWS.

Measures include, but may not be limited to seasonal/daily timing limitations and/or spatial buffers as follows:

- Temporary activities<sup>1</sup> or habitat alterations that may disturb nesting bald eagles will be restricted from January 1 to August 31 within 1 mile of bald eagle nest sites. Exceptions may be granted where no nesting behavior is initiated prior to June 1.
- Temporary activities or habitat alterations that may disturb bald eagles will be restricted within ½ mile of known winter concentration areas from November 1 to March 31. Where daily activities must occur within these spatial buffers and are approved through subsequent consultation, activities should also be properly scheduled to occur after 9 a.m. and terminate at least 1 hour before official sunset to ensure that bald eagles using these roosts are allowed the opportunity to vacate their roost in the morning and return undisturbed in the evening.
- No permanent<sup>2</sup> infrastructure will be placed within 1 mile of bald eagle nest sites or within <sup>1</sup>/<sub>2</sub> mile of bald eagle winter concentration areas.
- Where activities are authorized within breeding habitats or known winter concentration areas, monitoring efforts would document what, if any, impacts occur during project implementation, and to what extent the species was affected. The results of these monitoring efforts would be carried forward in the design and implementation of future projects as part of the adaptive management process.
- 2. For all project-related survey and monitoring actions:
  - Reports must be provided to affected field offices within 15 days of completion of survey or monitoring efforts. Reports must follow field office guidance for BLMspecified formats for written and automated databases.
  - Any detection of bald eagle presence during survey or monitoring efforts must be reported to the authorized officer within 48 hours of detection.
- 3. Appropriately timed surveys in suitable bald eagle nesting habitat or identified concentration areas shall be conducted in accordance with approved protocols prior to any activities that may disturb bald eagles. Surveys would be conducted only by BLM-approved individuals or personnel.
- 4. BLM shall, in coordination with cooperating agencies and/or partners (e.g., Utah Division of Wildlife Resources [UDWR] and USFWS), verify annual status (active versus inactive) of all known bald eagle nests and other identified concentration areas on BLM-administered lands.
- 5. When project proposals that may affect threatened and endangered species are received, the BLM will coordinate with the USFWS at the earliest possible date so that the USFWS can provide necessary information to minimize or avoid the need to redesign projects at a later date to include conservation measures that may be determined as appropriate by the USFWS.
- 6. BLM-administered lands within 1 mile of bald eagle nests, or identified communal winter roosts, should not be exchanged or sold. If it is imperative that these lands be transferred out of BLM ownership, then every effort should be made to include conservation easements or voluntary conservation restrictions to protect the bald eagles and support their conservation.

<sup>&</sup>lt;sup>1</sup> Temporary activities are defined as those that are completed prior to the start of the following raptor breeding season, leaving no permanent structures, and resulting in no permanent habitat loss.

<sup>&</sup>lt;sup>2</sup> Permanent activities continue for more than one breeding season and/or cause a loss of habitat or displace individuals through disturbances (e.g., creation of a permanent structure including, but not limited to, well pads, roads, pipelines, and electrical power lines).

- 7. Proponents of BLM-authorized actions will be advised that roadside carrion can attract foraging bald eagles and potentially increase the risk of vehicle collisions with individual bald eagles feeding on carrion. When carrion occurs on the road, appropriate officials will be notified for necessary removal.
- 8. Power lines will be built to standards and guidelines identified in the *Avian Protection Plan* (APP).
- 9. The BLM will make educational information available to project proponents and the general public pertaining to the following topics:
  - Appropriate vehicle speeds and the associated benefit of reduced vehicle collisions with wildlife
  - Use of lead shot (particularly over water bodies)
  - Use of lead fishing weights
  - General ecological awareness of habitat disturbance
- 10. Because bald eagles are often dependent on aquatic species as prey items, the BLM will periodically review existing water quality records (e.g., Utah Department of Environmental Quality [UDEQ], UDWR, and U.S. Geological Survey [USGS]) from monitoring stations on or near important bald eagle habitats (i.e., nests, roosts, and concentration areas) on BLM lands for any conditions that could adversely affect bald eagles or their prey. If water quality problems are identified, the BLM will contact the appropriate jurisdictional entity to cooperatively monitor the condition and/or take corrective action.

# Mexican Spotted Owl (Strix occidentalis lucida)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Mexican spotted owl (MSO). This list is not comprehensive. Additional conservation measures or other modified versions of these measures may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of Section 7 consultation with the USFWS:

- 1. The BLM will place restrictions on all authorized (permitted) activities that may adversely affect the MSO in identified protected activity centers (PAC), breeding habitat, or designated critical habitat in order to reduce the potential for adverse impacts to the species:
  - Restrictions and procedures have been adapted from guidance published in the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin & Muck 2002), as well as coordination between the BLM and USFWS. Measures include:
    - Surveys, according to USFWS protocol, will be required prior to any disturbancerelated activities that have been identified to have the potential to impact MSO, unless current species occupancy and distribution information is complete and available. All surveys must be conducted by USFWS-certified individuals and approved by the BLM authorized officer:
      - ♦ Assess habitat suitability for nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the appropriate conservation

measures below if project activities occur within  $\frac{1}{2}$  mile of suitable owl habitat, dependent in part on whether the action is temporary<sup>3</sup> or permanent<sup>4</sup>:

- For all temporary actions that may impact owls or suitable habitat:
  - If action occurs entirely outside of the owl breeding season and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.
  - If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity should be delayed until outside of the breeding season.
  - Eliminate access routes created by a project through such means as raking out scars, revegetation, and gating access points.
- For all permanent actions that may impact owls or suitable habitat:
  - Survey two consecutive years for owls according to established protocol prior to commencing activity.
    - a. If owls are found, no actions will occur within <sup>1</sup>/<sub>2</sub> mile of identified nest site. If nest site is unknown, no activity will occur within the designated PACs.
    - b. Avoid placing permanent structures within <sup>1</sup>/<sub>2</sub> mile of suitable habitat unless surveyed and not occupied.
    - c. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at <sup>1</sup>/<sub>2</sub> mile from suitable habitat, including canyon rims (Delaney et al. 1997). Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a <sup>1</sup>/<sub>2</sub>-mile buffer for suitable habitat, including canyon rims.
    - d. Limit disturbances to and within suitable owl habitat by staying on designated routes.
    - e. Limit new access routes created by the project.
- 2. The BLM will, as a condition of approval (COA) on any project proposed within identified PACs and designated critical habitat or within spatial buffers for MSO nests (½ mile), ensure that project proponents are notified as to their responsibilities for rehabilitation of temporary access routes and other temporary surface disturbances created by their project according to individual BLM field office standards and procedures or those determined in the project-specific Section 7 consultation.
- 3. The BLM will require monitoring of activities in designated critical habitat, identified PACs, or breeding habitats wherein it has been determined that there is a potential for take. If any adverse impacts are observed to occur in a manner or to an extent that was not considered in the project-specific Section 7 consultation, then consultation must be reinitiated:
  - Monitoring results should document what, if any, impacts on individuals or habitat occur during project construction/implementation. In addition, monitoring should

<sup>&</sup>lt;sup>3</sup> Temporary activities are defined as those that are completed prior to the start of the following raptor breeding season, leaving no permanent structures, and resulting in no permanent habitat loss.

<sup>&</sup>lt;sup>4</sup> Permanent activities continue for more than one breeding season and/or cause a loss of owl habitat or displace owls through disturbances (e.g., creation of a permanent structure including but not limited to well pads, roads, pipelines, and electrical powerlines).

document successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management, and as such would be carried forward in the design and implementation of future projects.

- 4. For all survey and monitoring actions:
  - Provide reports to the affected field offices within 15 days of completion of survey or monitoring efforts.
  - Report any detection of MSO during survey or monitoring activities to the authorized officer within 48 hours.
- 5. The BLM will, in areas of designated critical habitat, ensure that any physical or biological factors (i.e., the primary constituent elements), as identified in determining and designating such habitat, remain intact during implementation of any BLM-authorized activity.
- 6. For all BLM actions that "may adversely affect" the primary constituent elements in any suitable MSO habitat, the BLM will implement measures as appropriate to minimize habitat loss or fragmentation, including rehabilitation of access routes created by the project through such means as raking out scars, revegetation, and gating access points.
- 7. Where technically and economically feasible, use directional drilling from single drilling pads to reduce surface disturbance, and minimize or eliminate need to drill in canyon habitats suitable for MSO nesting.
- 8. Prior to surface disturbing activities in MSO PACs, breeding habitats, or designated critical habitat, specific principles should be considered to control erosion. These principles include:
  - Conduct long-range transportation planning for large areas to ensure that roads will serve future needs. This will result in less total surface disturbance.
  - Avoid surface disturbance in areas with high erosion hazards to the extent possible. Avoid mid-slope locations, headwalls at the source of tributary drainages, inner valley gorges, and excessively wet slopes such as those near springs. In addition, areas where large cuts and fills would be required should be avoided.
  - Locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.
- 9. Project developments should be designed and located to avoid direct or indirect loss or modification of MSO nesting and/or identified roosting habitats.
- 10. Water production associated with BLM-authorized actions should be managed to ensure maintenance or enhancement of riparian habitats.

# Utah Prairie Dog (*Cynomys parvidens*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Utah prairie dog. This list is not comprehensive. Additional conservation measures or other modified versions of these measures may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of Section 7 consultation with the USFWS:

1. Surveys according to approved protocols and procedures will be required prior to surface disturbance unless species occupancy and distribution information is complete, current,

and available. Surveys would be conducted by BLM-approved biologists. In the event species occurrence is verified, the project proponent may be required to modify operational plans, at the discretion of the authorized officer, to include additional, appropriate protection measures or practices for the minimization of impacts on the Utah prairie dog and its habitat.

- The BLM will restrict surface disturbing activities within <sup>1</sup>/<sub>2</sub> mile of active Utah prairie dog colonies when and where necessary, upon the recommendation of BLM Field Office (FO) staff biologists to BLM management and as necessary in coordination or consultation with USFWS.
- No permanent surface disturbance or facility will be allowed within <sup>1</sup>/<sub>2</sub> mile of potentially suitable Utah prairie dog habitat, as identified and mapped by the BLM or UDWR since 1976.
- 4. Unavoidable surface disturbing activities in Utah prairie dog habitat should be conducted between April 1 and September 30 (the period when prairie dogs are most likely to be found above ground). BLM projects will be designed to avoid direct disturbance to Utah prairie dog populations and habitat wherever possible. Designs should consider flow of water, slope, buffers, possible fencing, and pre-activity flagging of critical areas for avoidance.
- 5. Reclamation and restoration efforts in Utah prairie dog habitat will be conducted using native seed unless otherwise specified in coordination with USFWS.
- 6. As funding allows, the BLM should complete a comprehensive assessment locating and mapping off-highway vehicle (OHV) use areas that interface with Utah prairie dog populations. Comparison of geographic information system (GIS) layers for Utah prairie dog populations and OHV use should give BLM personnel another tool to manage and/or minimize impacts from OHV use near known Utah prairie dog populations and habitat. Based on the information that is developed via GIS applications, appropriate actions should be taken to prevent OHV use in occupied territories.
- 7. The BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.
- 8. Where technically and economically feasible, the use of directional drilling or drilling of multiple wells from a single pad will be required to reduce surface disturbance in Utah prairie dog habitat.
- 9. For existing facilities, BLM and facility operators will consider if fencing infrastructure on well pads (e.g., drill pads, tank batteries, and compressors) would be needed to protect equipment from burrowing activities. In addition, BLM and project proponents should consider if future surface disturbing activities would be required at the site.
- 10. The BLM will provide educational information for project proponents and the general public pertaining to appropriate vehicle speeds and the associated benefit of reduced vehicle collisions with wildlife, and to improve general ecological awareness of habitat disturbance.
- 11. Project-related vehicle maintenance activities will be conducted in maintenance facilities. Should it become necessary to perform vehicle or equipment maintenance on site, these activities will not be conducted on identified Utah prairie dog colonies or within a 350-foot distance from colonies. Precautions shall be taken to ensure that contamination of maintenance sites by fuels, motor oils, grease, etc. does not occur and such materials are

contained and properly disposed of off site. Inadvertent spills of petroleum-based or other toxic materials shall be cleaned up and removed immediately.

- 12. The BLM will coordinate with interested private and governmental agencies and landowners to identify voluntary opportunities to modify current land stewardship practices that may have detrimental impacts on the Utah prairie dog and its habitat.
- 13. BLM-authorized equipment and vehicles planned for use within Utah prairie dog habitat will be cleaned to minimize the spread of noxious weeds or other undesirable vegetation types.

# Southwestern Willow Flycatcher (*Empidonax trailii extimus*)

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Southwestern willow flycatcher. This list is not comprehensive. Additional conservation measures or other modified versions of these measures may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of Section 7 consultation with the USFWS:

- 1. Surveys will be required prior to operations that "may adversely affect" Southwestern willow flycatcher unless species occupancy data and distribution information is complete and available. Surveys will be conducted only by BLM-approved personnel. In the event species occurrence is verified, project proponents may be required to modify operational plans at the discretion of the authorized officer. Modifications may include appropriate measures for minimization of adverse effects on Southwestern willow flycatcher and habitat.
- 2. The BLM will monitor and restrict, when and where necessary, authorized or casual use activities that "may adversely affect" Southwestern willow flycatcher, including but not limited to recreation, mining, and oil and gas activities. Monitoring results should be considered in the design and implementation of future projects.
- 3. To monitor the impacts of BLM-authorized projects determined "likely to adversely affect" Southwestern willow flycatcher, the BLM should prepare a short report describing progress, including success of implementation of all associated mitigation. Reports shall be submitted annually to the USFWS Utah Field Office by March 1 beginning 1 full year from date of implementation of the proposed action. The report shall list and describe the following items:
  - Any unforeseen adverse effects resulting from activities of each site-specific project (may also require reinitiation of formal consultation)
  - If and when any level of anticipated incidental take is approached (as allowed by separate Incidental Take Statements of site-specific Formal Section 7 consultation efforts)
  - If and when the level of anticipated take (as allowed by separate Incidental Take Statements from site-specific formal consultations) is exceeded
  - Results of annual, periodic monitoring that evaluates the effectiveness of the reasonable and prudent measures or terms and conditions of the site-specific consultation.
- 4. The BLM should avoid granting activity permits or authorizing development actions in Southwestern willow flycatcher habitat. Unoccupied potential habitat should be protected

in order to preserve them for future management actions associated with the recovery of the Southwestern willow flycatcher.

- 5. The BLM will ensure that the project design incorporates measures to avoid direct disturbance to populations and suitable habitats where possible. At a minimum, project designs should include consideration of water flows, slope, seasonal and spatial buffers, possible fencing, and pre-activity flagging of critical areas for avoidance.
- 6. The BLM will continue to address illegal and unauthorized OHV use and activity upon BLM-administered lands. To protect, conserve, and recover the Southwestern willow flycatcher in areas of heavy unauthorized use, temporary closures or use restrictions beyond those which are already in place may be imposed. As funding allows, the BLM should complete a comprehensive assessment of all OHV use areas that interface with Southwestern willow flycatcher populations. Comparison of Southwestern willow flycatcher populations and OHV use areas using GIS would give BLM personnel another tool to manage and/or minimize impacts.
- 7. All surface disturbing activities should be restricted within a <sup>1</sup>/<sub>4</sub> mile buffer from suitable riparian habitats, and permanent surface disturbances should be avoided within <sup>1</sup>/<sub>2</sub> mile of suitable Southwestern willow flycatcher habitat:
  - Unavoidable ground disturbing activities in occupied Southwestern willow flycatcher habitat should be conducted only when preceded by current year survey, should only occur between August 16 and April 30 (the period when Southwestern willow flycatchers are not likely to be breeding), and should be monitored to ensure that adverse impacts on Southwestern willow flycatcher are minimized or avoided and to document the success of project-specific mitigation/protection measures. As monitoring is relatively undefined, project-specific requirements must be identified.
- 8. The BLM will properly consider nesting periods for Southwestern willow flycatcher when conducting horse-gathering operations in the vicinity of habitat.
- 9. The BLM will ensure that plans for water extraction and disposal are designed to avoid changes in the hydrologic regime that would be likely to result in loss or undue degradation of riparian habitat.
- 10. Native species will be preferred over non-native for revegetation of habitat in disturbed areas.
- 11. The BLM will coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may impact the Southwestern willow flycatcher and its habitats.
- 12. Limit disturbances to within suitable habitat by staying on designated routes.
- 13. Ground disturbing activities will require monitoring throughout the duration of the project to ensure that adverse impacts on Southwestern willow flycatcher are avoided. Monitoring results should document what if any impacts on individuals or habitat occur during project construction/implementation. In addition, monitoring should document the successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management and as such would be carried forward in the design and implementation of future projects.
- 14. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in Southwestern willow flycatcher habitat.

- 15. Habitat disturbances (e.g., organized recreational activities requiring special use permits or drilling activities) will be avoided within <sup>1</sup>/<sub>4</sub> mile of suitable Southwestern willow flycatcher habitat from May 1 to August 15.
- 16. Grazing allotments that contain habitat for the species will be managed with consideration for recommendations provided by the *Southwestern Willow Flycatcher Recovery Plan* and other applicable research.

# OIL AND GAS LEASE NOTICES FOR SPECIAL STATUS SPECIES HABITAT

The BLM recognizes that nondiscretionary statutes such as the ESA may require conditions of approval that affect lease economics or even require disapproval of certain operations. Instruction Memorandum (IM) 2002-174 directs all BLM State Offices to "include the [following] lease stipulation on oil and gas leases where threatened, endangered, or other special status species or critical habitat is known or strongly suspected." Management actions in Chapter 2 include actions that would implement the following language:

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. 1531 et seq., including completion of any required procedure for conference or consultation.

IM 2002-174 also directs State Offices to "provide a separate notification to prospective lessees identifying the particular special status species that are present on the lease parcel offered. This information is to be provided through a lease notice and not by lease stipulation (unless otherwise provided in current LUPs). This stipulation would now be attached to most oil and gas leases issued by the Bureau, including areas identified in LUPs as open to standard lease terms and conditions."

Utah IM-UT-2005-089 identifies interim policy for ESA Section 7 consultation procedures for the issuance of oil and gas lease parcels that will help ensure that Utah BLM is in compliance with ESA consultation requirements for this program. In December 2004, the BLM and USFWS personnel completed work on a set of lease notices for specific listed species that are to be attached to oil and gas leases offered in the state. On December 13, 2004, Section 7 consultation was initiated with the submission of a memorandum to the USFWS containing the lease notices. USFWS responded with a memorandum dated December 16, 2004, concurring with the BLM determination that use of the species-specific lease notices on appropriate lease parcels "may affect," but would be "not likely to adversely affect" listed species in the state. The following species-specific lease notice or notices should be attached, as appropriate, to any oil or gas lease that may contain a listed species or its habitat prior to the lease being offered for sale.

#### Lease Notice—Bald Eagle

The lessee/operator is given notice that the lands in this parcel contain nesting/winter roost habitat for the bald eagle, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent and whether it occurs within or outside the bald eagle breeding or roosting season. A *temporary* action is completed prior to the following breeding or roosting season, leaving no permanent structures and resulting in no permanent habitat loss. A *permanent* action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances (i.e., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the ESA. Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Adhering to these measures could reduce the scope of Section 7 consultation at the permit stage.

Current avoidance and minimization measures include the following:

- 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals and according to protocol.
- 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
- 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat.
- 4. Temporary activities within 1 mile of nest sites will not occur during the breeding season of January 1 to August 31 unless the area has been surveyed according to protocol and determined to be unoccupied.
- 5. Temporary activities within <sup>1</sup>/<sub>2</sub> mile of winter roost areas (e.g., cottonwood galleries) will not occur during the winter roost season of November 1 to March 31 unless the area has been surveyed according to protocol and determined to be unoccupied.
- 6. No permanent infrastructure will be placed within 1 mile of nest sites.
- 7. No permanent infrastructure will be placed within  $\frac{1}{2}$  mile of winter roost areas.
- 8. Remove big game carrien to 100 feet from lease roadways occurring within bald eagle foraging range.
- 9. Avoid loss of or disturbance to large cottonwood gallery riparian habitats.
- 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Use directional drilling to avoid direct impacts on large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
- 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be revegetated with native species.

Additional measures may also be employed to avoid or minimize effects on the species between the lease sale stage and lease development stage. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

#### Lease Notice—Mexican Spotted Owl

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

Current avoidance and minimization measures include the following:

- 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals.
- 2. Assess habitat suitability for nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the conservation measures below if project activities occur within ½ mile of suitable owl habitat. Determine potential effects of actions on owls and their habitat:
  - a. Document type of activity, acreage and location of direct habitat impacts, and type and extent of indirect impacts relative to location of suitable owl habitat.
  - b. Document if action is temporary or permanent.
- 3. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
- 4. Water production will be managed to ensure riparian habitat is maintained or enhanced.
- 5. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for MSO nesting.
- 6. For all temporary actions that may impact owls or suitable habitat:
  - a. If the action occurs entirely outside the owl breeding season (March 1 to August 31) and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.
  - b. If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity must be delayed until outside of the breeding season.
  - c. Rehabilitate access routes created by the project through such means as raking out scars, revegetation, and gating access points.
- 7. For all permanent actions that may impact owls or suitable habitat:
- a. Survey two consecutive years for owls according to accepted protocol prior to commencing activities.
- b. If owls are found, no actions will occur within <sup>1</sup>/<sub>2</sub> mile of identified nest site. If nest site is unknown, no activity will occur within the designated PAC.
- c. Avoid drilling and permanent structures within <sup>1</sup>/<sub>2</sub> mile of suitable habitat unless surveyed and not occupied.
- d. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at <sup>1</sup>/<sub>2</sub> mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a <sup>1</sup>/<sub>2</sub>-mile buffer for suitable habitat, including canyon rims.
- e. Limit disturbances to and within suitable habitat by staying on approved routes.
- f. Limit new access routes created by the project.

### Lease Notice—California Condor

The Lessee/Operator is given notice that the lands located in this parcel contain potential habitat for the California Condor, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease if the area is known or suspected to be used by condors. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A <u>temporary</u> action is completed prior to the following important season of use, leaving no permanent structures and resulting in no permanent habitat loss. This would include consideration for habitat functionality. A <u>permanent</u> action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e. creation of a permanent structure requiring repetitious maintenance, or emits disruptive levels of noise).

The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of, and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage.

Current avoidance and minimization measures include the following:

- 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM, and must be conducted according to approved protocol.
- 2. If surveys result in positive identification of condor use, all lease activities will require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures will be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.

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

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

### Lease Notice—Utah Prairie Dog

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

Current avoidance and minimization measures include the following:

1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals.

- 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
- 3. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in prairie dog habitat.
- 4. Surface occupancy or other surface disturbing activity will be avoided within <sup>1</sup>/<sub>2</sub> mile of active prairie dog colonies.
- 5. Permanent surface disturbance or facilities will be avoided within ½ mile of potentially suitable, unoccupied prairie dog habitat, identified and mapped by UDWR since 1976.
- 6. The lessee/operator should consider if fencing infrastructure on the well pad (e.g., drill pads, tank batteries, and compressors) would be needed to protect equipment from burrowing activities. The operator should also consider if future surface disturbing activities would be required at the site.
- 7. Within occupied habitat, set a 25-mph speed limit on operator-created and -maintained roads.
- 8. Limit disturbances to and within suitable habitat by staying on designated routes.
- 9. Limit new access routes created by the project.

### Lease Notice—Southwestern Willow Flycatcher

The lessee/operator is given notice that the lands in this parcel contain riparian habitat that falls within the range for Southwestern willow flycatcher, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A temporary action is completed prior to the following breeding season, leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of habitat or displaces flycatchers through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the ESA. Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Adhering to these measures could reduce the scope of Section 7 consultation at the permit stage.

Current avoidance and minimization measures include the following:

- 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals and according to protocol.
- 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.

- 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat.
- 4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
- 5. Drilling activities will maintain a 300-foot buffer from suitable riparian habitat year long.
- 6. Drilling activities within <sup>1</sup>/<sub>4</sub> mile of occupied breeding habitat will not occur during the breeding season of May 1 to August 15.
- 7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat.
- 8. Revegetate with native species all areas of surface disturbance within riparian areas and/or adjacent uplands.

### Lease Notice—Listed Plant Species

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

- 1. Site inventories:
  - a. Must be conducted to determine habitat suitability.
  - b. Are required in known or potential habitat for all areas proposed for surface disturbance prior to initiation of project activities, at a time when the plant can be detected, and during appropriate flowering periods.
  - c. Documentation should include but not be limited to individual plant locations and suitable habitat distributions.
  - d. All surveys must be conducted by qualified individuals.
- 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
- 3. Project activities must be designed to avoid direct disturbance to populations and to individual plants:
  - a. Designs will avoid concentrating water flows or sediments into plant occupied habitat.
  - b. Construction will occur down-slope of plants and populations where feasible; if well pads and roads must be sited up-slope, buffers of 100 feet minimum between surface disturbances and plants and populations will be incorporated.
  - c. Where populations occur within 200 feet of well pads, establish a buffer or fence the individuals or groups of individuals during and post-construction.
  - d. Areas for avoidance will be visually identifiable in the field (e.g., flagging, temporary fencing, or rebar).

- e. For surface pipelines, use a 10-foot buffer from any plant locations:
  - i. If on a slope, use stabilizing construction techniques to ensure the pipelines do not move toward the population.
- 4. For riparian/wetland-associated species (e.g., Ute ladies-tresses), avoid loss or disturbance of riparian habitats:
  - a. Ensure that water extraction or disposal practices do not result in change of hydrologic regime.
- 5. Limit disturbances to and within suitable habitat by staying on designated routes.
- 6. Limit new access routes created by the project.
- 7. Place signing to limit all-terrain vehicle (ATV) travel in sensitive areas.
- 8. Implement dust abatement practices near occupied plant habitat.
- 9. All disturbed areas will be revegetated with native species composed of species indigenous to the area.
- 10. Post-construction monitoring for invasive species will be required.
- 11. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in plant habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
- 12. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.

### Lease Notice—Welsh's Milkweed

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

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

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

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

- b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
- c. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
- d. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from June 1st to August 15th (flowering period); dust abatement applications will be comprised of water only,
- e. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- f. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- g. Construction activities will not occur from June 1st through August 15th within occupied habitat,
- h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- i. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- j. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
- 5. Occupied Welsh's milkweed habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the 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.
- 6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Welsh's milkweed is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

### Siler Pincushion Cactus

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

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

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

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

- 1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Siler pincushion cactus habitat is present.
- 2. Within suitable habitat, site inventories will be conducted to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Inventories:
  - a. Must be conducted by qualified individual(s) approved by BLM using accepted survey protocols,
    - i. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected and during appropriate flowering periods. Inventories should be conducted between Mrch 1st to May 15th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower,
  - b. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
  - c. Will include, but not be limited to, plant species lists and habitat characteristics, and
  - d. Will be valid until April 1st the following year.
- 3. Design project infrastructure to minimize impacts within suitable habitat:
  - a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
  - b. Reduce well pad size to the minimum needed, without compromising safety,

- c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
- d. Limit new access routes created by the project,
- e. Roads and utilities should share common right-of-ways where possible,
- f. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
- g. Place signing to limit off-road travel in sensitive areas, and
- h. Stay on designated routes and other cleared/approved areas.
- i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.
- 4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
  - a. Follow the above recommendations (#3) for project design within suitable habitats,
  - b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
  - c. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
  - d. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 1st to June 15th (flowering period); dust abatement applications will be comprised of water only,
  - e. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
  - f. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
  - g. Construction activities will not occur from April 1st through June 15th within occupied habitat,
  - h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
  - i. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
  - j. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
- 5. Occupied Siler pincushion cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the 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.

6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Siler pincushion cactus is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation.

### ENDANGERED SPECIES RECOVERY PLANS AND CONSERVATION AGREEMENTS

In addition to the conservation measures and lease notices discussed above, documents such as species-specific recovery plans and conservation strategies, agreements, and plans contain management plans and strategies to protect special status species. These documents are developed using the most current science, but as monitoring and current scientific findings provide further information, they are subject to revision, amendment, or update. As such, the list of documents applicable for the decision area could be increased or decreased based on species listing, condition, distribution, and so forth. Documents for species within the decision area include, but are not limited to, the following:

- Mexican Spotted Owl Recovery Plan, 1995
- Northern States Bald Eagle Recovery Plan, 1983
- American Peregrine Falcon Recovery Plan, 1984
- Utah Prairie Dog Recovery Plan, 1991
- Utah Prairie Dog Interim Conservation Strategy, 1997
- Welsh's Milkweed Recovery Plan, 1992
- Siler Pincushion Cactus Recovery Plan, 1986
- Autumn Buttercup Recovery Plan, 1991
- Northern Goshawk Conservation Agreement, 1998
- Conservation Agreement and Strategy for the Coral Pink Sand Dunes Tiger Beetle, 1997
- Range-Wide Conservation Agreement for Roundtail Chub, Bluehead Sucker, and Flannelmouth Sucker, 2004
- Recovery Plan for the California Condor, 1996
- Final Recovery Plan for the Southwestern Willow Flycatcher, 2002
- Interim Conservation Plan for Ambersnails of the Southwestern United States (DRAFT), Year Unknown.

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### APPENDIX 10—STATE OF UTAH LETTER ADDRESSING AIR QUALITY



Quality Task Force Report of Mitigation Options, DRAFT: Version 7, June 22, 2007. These standards are 2 g/bhp-hr for engines less than 300 HP and 1 g/bhp-hr for engines over 300 HP.

The State of Utah will continue to work with the BLM and others through efforts such as the Four Corners Task Force to address these issues. The state appreciates your cooperation in working to protect air quality related values. If you have any questions about our position, please contact me at (801) 537-9802.

Sincerely,

John Harja Director Public Lands Policy Coordination 5110 State Office Building Salt Lake City, Utah 84114-1107 (801) 537-9802 Cheryl Heying Director Division of Air Quality 150 North, 1950 West Salt Lake City, Utah 84114 (801) 536-4000

- 2 -

### APPENDIX 11—WILD AND SCENIC RIVERS STUDY PROCESS

### I. INTRODUCTION

The Wild and Scenic Rivers Act (October 2, 1968, Public Law 90-542) establishes the National Wild and Scenic Rivers System (NWSRS), which is intended to preserve free-flowing rivers with outstandingly remarkable values (ORV) in their natural condition for the benefit of present and future generations, balancing the nation's water resource development policies with river conservation and recreation goals.

The Wild and Scenic Rivers Act states, "In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas..." [Section 5(d) (1)]. Federal agencies consider potential rivers by evaluating a river's eligibility, tentative classification, and suitability for designation under the Wild and Scenic Rivers Act. This study process is part of the resource management planning effort for the Kanab Field Office.

Eligibility and tentative classification are determined by an inventory of existing conditions. Eligibility involves an evaluation of whether a river or river segment is free-flowing and possesses one or more ORVs. If found eligible, a river is analyzed as to its current level of development (e.g., water resources projects, shoreline development, and accessibility) and segmented accordingly. Each river segment is given one of three tentative classifications— "wild," "scenic," or "recreational"—based on the degree of development. The final procedural step, suitability, provides the basis for determining whether to recommend a river as part of the National Wild and Scenic Rivers System (NWSRS).

On December 13, 1994, an interagency agreement was signed by the Bureau of Land Management (BLM) (Utah State Office), the U.S. Department of Agriculture (USDA) Forest Service (Intermountain Region), and the National Park Service (Rocky Mountain Region). The agreement calls for the three agencies to "work cooperatively to define common criteria and processes for use in determining the eligibility and suitability of Utah rivers for potential inclusion by Congress in the [national system of Wild and Scenic Rivers]." The product of this agreement is the *Wild and Scenic River Review in the State of Utah: Process and Criteria for Interagency Use*, also known as the Utah Wild and Scenic River "Blue Book," published in June 1996. This publication supplements the Wild and Scenic Rivers Act by providing clear, specific criteria for identifying eligible rivers, including identification and evaluation of ORVs.

Guidance used for this study is also contained in the Wild and Scenic Rivers–Policy and Program Direction for Identification, Evaluation, and Management, Bureau of Land Management Manual–8351. In June 2004, the BLM issued IM-2004-196, which clarified policy in BLM Manual–8351 with respect to eligibility criteria and protective management. In addition, various technical papers published by the Interagency Wild and Scenic Rivers Coordination Council related to the evaluation of rivers were used. These publications may be found at www.nps.gov/rivers/publications.html.

### **II. ELIGIBILITY AND TENTATIVE CLASSIFICATION**

### **Eligibility Determination Considerations**

For a river to be eligible for inclusion in the national system of rivers, the Wild and Scenic Rivers Act specifies that certain criteria (discussed below) must be met. These criteria apply not only to each potentially eligible river but also to their immediate environment, which is defined as a river corridor extending, on average, <sup>1</sup>/<sub>4</sub> mile from both sides of the high water mark. For purposes of the eligibility inventory, attention was not given to land ownership other than to ensure that at least some portion of a river segment crosses federal lands administered by the Kanab Field Office. The status of land ownership, however, is evaluated as a consideration in the suitability step of the study process, and is presented in detail in Section III of this appendix.

#### **Free-Flowing Character**

To be considered a free-flowing river, it must be a flowing body of water, or estuary, or section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes [Section 16 (a)]. A river can be any size or length, and does not have to be floatable or boatable. For purposes of eligibility determination, a river's flow is sufficient as long as it sustains or complements the ORV for which the river is found to be eligible. The body of water must be existing or flowing in a natural condition without major modification of the waterway, such as channelization, impoundment, diversion, straightening, rip-rapping, or other modification. However, some minor modifications can be allowed, such as low dams, diversion works, and minor structures [Section 16 (b)]. The river can lie between impoundments or major dams.

#### **Outstandingly Remarkable Values**

The Wild and Scenic Rivers Act specifies that rivers "with their immediate environment, must possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value" [Section 1 (b)].

The "Blue Book" further describes values and characteristics of each that are used to determine which values are outstandingly remarkable and at least regionally significant. The following summarizes the characteristics of each value that would render it rare, unique, or exemplary:

- Scenic: Diversity of view, special features, seasonal variations, and cultural features
- **Recreational:** Diversity of use, experience quality, length of season, access, level of use, attraction, sites and facilities, and associated opportunities
- Geologic: Feature abundance, diversity of features, and educational /scientific importance
- Fish: Habitat quality, diversity of species, values of species, abundance of fish, natural reproduction, size and vigor of fish, quality of experience, cultural/historic importance, recreational importance, and access
- Wildlife: Habitat quality, diversity of species, abundance of species, natural reproduction, size and vigor of fish, quality of experience, cultural/historic importance, recreational importance, and access
- **Historic:** Significance, site integrity, education/interpretation, and listing in or eligibility for listing in the National Register of Historic Places (NRHP)
- **Cultural:** Significance, current uses, number of cultures, site integrity, education/interpretation, and listing in or eligibility for listing in NRHP

• **Ecologic:** Species diversity, ecological function, rare communities, and educational/scientific features.

Because these values must be at least regionally significant to be considered outstandingly remarkable, a region of comparison is necessary to guide the evaluation of a value's significance. On May 8, 2002, an interagency team consisting of representatives of various National Forests, National Parks, and BLM offices within Utah concluded that using applicable ecological sections, or combinations of these sections, would be the most appropriate way to delineate regions of comparison. Ecological sections are basically subunits of physiographic provinces such as the Colorado Plateau.

Ecological sections provide clear parameters of major ecological systems as defined by geology, topography, climate, and so on, and are typically the most distinct, visible features of the landscape. They offer an excellent context with relative consistency of scenic, wildlife, and other values for comparison, and are large enough to encompass areas with similar values without forcing comparison of disparate values.

Team members relied on professional expertise, personal knowledge of the river segments, and field visits to determine if values were outstandingly remarkable. The interdisciplinary team generally defined the region of comparison as the Colorado Plateau. The region of comparison is intended to guide the evaluation, but it can vary for different resource considerations. The interdisciplinary team included an archeologist, hydrologist, geologist, rangeland specialists, wildlife biologist, recreation planner, realty specialist, landscape architect, land use planner, and geographic information system (GIS) specialist. If a segment was free-flowing and had at least one ORV, it was considered eligible. The team determined that 15 river segments were preliminarily eligible for congressional designation as Wild and Scenic Rivers.

### Tentative Classification

Eligible rivers are given a tentative classification. The Wild and Scenic Rivers Act provides for three possible classifications: "wild," "scenic," or "recreational." These classifications, when applied to eligible rivers, are based on the type and degree of human development associated with the river and adjacent lands present at the time of inventory. They also prescribe what management activities would be allowed to occur along a river, as long as no ORV is compromised. The tentative classifications are based on the following:

- Wild: Rivers classified as "wild", which is the most restrictive Wild and Scenic River classification, are rivers that are free of impoundments and those that are generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.
- Scenic: Rivers classified as "scenic" are rivers that are generally free of impoundments, with shorelines or watersheds that are still largely primitive and shorelines that are largely undeveloped, but accessible in places by roads.
- **Recreational:** Rivers classified as "recreational" classification, which is the least restrictive Wild and Scenic River classification, are rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have substantial evidence of human activity.

The BLM may consider alternative tentative classifications at the time of evaluating suitability, as per BLM Manual 8351.33C, to resolve potential conflicts with other management objectives (whether BLM's or those of another official entity), provide continuity of management prescriptions, or on the basis of other management considerations within the river area. Final classification of a river segment is determined if and when a river is designated for entry into the national system.

### Eligibility Determinations Process

The eligibility of the Paria River segment located within the Paria Canyon–Vermilion Cliffs Wilderness was determined in a previous study. The segment of the Paria River in Utah was found to be eligible in the Final Arizona Statewide Wild and Scenic Rivers Legislative Environmental Impact Statement, December 1994.

### Coordination

In November 1997, a Memorandum of Understanding (MOU) was signed between the State of Utah and the BLM by former governor, Mike Leavitt, and former BLM state director, William Lamb, to establish a cooperative effort for Wild and Scenic River study processes for BLM field offices in Utah. In addition, Kane County previously established a cooperative agreement with the BLM for land use planning in a MOU signed February 2004. Likewise, Garfield County agreed to cooperate in a similar MOU signed July 2004. These agreements enabled the BLM to expand the interdisciplinary team of specialists formed for this study process to include representatives from these governments.

### Identification of Rivers for Review

The role of federal land management agencies is to review rivers under their jurisdictions to determine their eligibility, tentative classification, and suitability for congressional designation. A river means a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes. The evaluation process began with the solicitation of public nominations for eligible rivers. During that process, no nominations were received from the public. The interdisciplinary team then considered all drainages crossing public lands within the Kanab Field Office decision area, as depicted on BLM 1:100,000 scale topographic maps. These drainages were reviewed to determine if they were (1) free-flowing and (2) contained any potential ORVs as defined in the Wild and Scenic Rivers Act. In addition, the BLM used information from the Utah Rivers Council and the National Rivers Inventory. In all, 50 drainages were reviewed.

### Rivers Studied—Not Considered Further

The following rivers were considered potentially eligible in the initial review of the decision area. However, they were found to be ephemeral, not free-flowing, or void of any ORVs. As directed by IM-2004-196 (*Clarification of Policy in the BLM Manual Section 8351, Wild and Scenic Rivers, with Respect to Eligibility Criteria and Protective Management*), segments "should not be ephemeral (flow lasting only few days out of a year)."

• Johnson Wash—Ephemeral, not free-flowing.

- Fisher Canyon—Ephemeral, no ORVs.
- Robinson Creek—Ephemeral, no ORVs.
- Sink Valley Wash—Ephemeral, no ORVs.
- Trail Canyon—Ephemeral, no ORVs.
- Pugh Canyon—Ephemeral, no ORVs.
- Toms Canyon—Not free-flowing due to diversions.
- Maranger Canyon—Ephemeral, no ORVs.
- Willis Canyon (Complex)—Ephemeral, no ORVs.
- Oak Canyon—Ephemeral, no ORVs.
- Dairy Canyon—Ephemeral, no ORVs.
- Steep Trail Spring Canyon—No ORVs.
- Red Hollow—Not free-flowing, no ORVs.
- Dry Wash—Ephemeral, no ORVs.
- Lydia's Canyon—Not free-flowing, no ORVs.
- Smith Creek—Not free-flowing, no ORVs.
- Limekiln Creek—No ORVs.
- Peterson Wash—Ephemeral, no ORVs.
- Sanford Creek—No ORVs.
- Butler Wash—Ephemeral, no ORVs.
- Bunting Canyon—Ephemeral, no ORVs.
- Panguitch Creek—Mostly private, only 660 feet on BLM lands.
- Escalante Creek—Only 2,300 feet on land outside the Grand Staircase–Escalante National Monument (GSENM), character not the same as what was found suitable in GSENM plan. Was found not eligible in GSENM planning process.
- Buckskin Gulch—Ephemeral.
- Wire Pass—Ephemeral.
- Varney Griffin—No ORVs.

### Potentially Eligible Rivers Considered

From among all of the streams identified, focus was narrowed by the interdisciplinary team to those identified as potentially eligible. Following the review of 50 drainages, 34 river segments were identified as potentially eligible or requiring further review. Table A13-5 is a list of these segments and the evaluation of findings.

#### Table A13-5. Summary of All Potentially Eligible River Segments Considered, and Identification of Outstandingly Remarkable Values

| Segment Description  | County | Drainage<br>Type' | Free-<br>Flowing <sup>ii</sup> | Potential<br>Outstandingly<br>Remarkable<br>Value(s) |
|--|--------|-------------------|--------------------------------|--|
| North Fork Virgin River—Segment 48-49<br>Section 31-33 (northeast of Zion National Park<br>[NP]).                      | Kane   | Perennial         | Yes                            | Scenic<br>Geologic<br>Wildlife<br>Recreational       |
| North Fork Virgin River—Segment 46-47<br>Section 34 up to private land boundary in<br>northwest quarter of Section 24. | Kane   | Perennial         | Yes                            | Scenic<br>Wildlife<br>Recreational                   |

| Segment Description   | County | Drainage<br>Type <sup>i</sup> | Free-<br>Flowing <sup>ii</sup> | Potential<br>Outstandingly<br>Remarkable<br>Value(s)                                       |
|---|--------|-------------------------------|--------------------------------|--|
| East Fork Virgin River—Segment 36-41 private property to Zion NP boundary.  | Kane   | Perennial                     | Yes                            | Scenic<br>Geologic<br>Wildlife<br>Fish<br>Historic<br>Ecologic<br>Recreational<br>Cultural |
| Orderville Gulch (Esplin Gulch)—Segment 44-<br>45 Zion NP boundary to the falls; Esplin Gulch<br>Segment 45-45A.  | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Wildlife<br>Ecologic                                 |
| Bob Creek (tributary of Orderville Gulch)—<br>Segment 42-43 from diversion to Bob Creek in<br>Section 6.  | Kane   | Perennial                     | Yes                            | Scenic   |
| <u>Meadow Creek / Mineral Gulch</u> —Segments<br>33-35 and 35-38 south of Highway 9 to<br>confluence with Mineral Gulch, then to<br>confluence with East Fork Virgin River. | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic   |
| Deep Creek—Segment 50-51 from<br>Washington County line to BLM boundary in<br>Section 30.   | Kane   | Perennial                     | Yes                            | Scenic   |
| Kanab Creek—Segment 7-8 south of Alton at Alton Sink Valley Road to the falls.  | Kane   | Perennial                     | No                             | None   |
| Kanab Creek—Segment 8-9 from falls to BLM boundary in northeast corner in Section 32.   | Kane   | Intermittent                  | Yes                            | Scenic<br>Recreational<br>Wildlife   |
| Kanab Creek—Segment 9-10 from Point 9 to dam north of Kanab.  | Kane   | Perennial                     | Yes                            | Scenic<br>Wildlife   |
| <u>Cottonwood Creek</u> —Segment 28-29<br>beginning in Section 10 at BLM boundary,<br>ending at confluence with Indian Canyon.  | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Wildlife<br>Cultural   |
| <u>Cottonwood Creek</u> —Segment 31-32<br>beginning at confluence with Indian Canyon to<br>BLM boundary in Section 3.   | Kane   | Perennial                     | No                             | None   |
| Indian Canyon—Segment 26-27 from head of canyon to confluence with Cottonwood Creek.  | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Ecologic   |

| Segment Description   | County | Drainage<br>Type <sup>i</sup> | Free-<br>Flowing <sup>ii</sup> | Potential<br>Outstandingly<br>Remarkable<br>Value(s)       |
|---|--------|-------------------------------|--------------------------------|--|
| South Fork Indian Canyon—Segment 22-23<br>from head of South Fork Indian Canyon to<br>BLM boundary in northeast corner of Section<br>20.                            | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Wildlife<br>Cultural<br>Ecologic |
| North Branch of South Fork Indian Canyon<br>Segment 23-24 from point where canyon<br>deepens to BLM boundary in southeast corner<br>of Section 17.                  | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Cultural<br>Ecologic |
| Water Canyon—Segment 20-21 beginning at head of canyon to BLM boundary in Section 21.   | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Ecologic             |
| Hell Dive Canyon—Segment 30-31 from point<br>where canyon deepens to confluence with<br>Cottonwood Creek.   | Kane   | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Cultural<br>Ecologic |
| <u>Thompson Creek</u> —Segment 5-6 beginning at<br>BLM boundary just south of confluence with<br>Birch Creek to BLM boundary at south end of<br>Section 19.         | Kane   | Perennial                     | Yes                            | None   |
| Mill Creek (tributaries)—Segment 2-4<br>beginning at BLM boundary in southeast<br>corner of Section 34 to BLM boundary in<br>eastern part of Section 20.            | Kane   | Perennial                     | Yes                            | None   |
| <u>Mill Creek (tributaries)</u> —Segment 1-3 Mineral<br>Creek from BLM property line in Section 4 to<br>confluence with Mill Creek.                                 | Kane   | Perennial                     | Yes                            | None   |
| Hog Canyon (tributaries)—Segment 16-19<br>beginning at headwaters to TV Hill Road in<br>Section 10.   | Kane   | Intermittent                  | Yes                            | None   |
| Hog Canyon (tributaries)—Segment 17-18<br>South Fork Hog Canyon, beginning at<br>headwaters in Section 12 to confluence with<br>main stem Hog Canyon in Section 11. | Kane   | Intermittent                  | Yes                            | None   |
| Hog Canyon (tributaries)—Segment 14-15<br>North Fork Hog Canyon beginning at<br>Crocodile Road in Section 34 to confluence<br>with main stem.                       | Kane   | Intermittent                  | Yes                            | None   |
| Tiny Canyon—Section 10-11 beginning at BLM boundary in Section 6 to confluence with Kanab Creek.  | Kane   | Perennial                     | Yes                            | Wildlife   |

| Segment Description   | County   | Drainage<br>Type <sup>'</sup> | Free-<br>Flowing <sup>ii</sup> | Potential<br>Outstandingly<br>Remarkable<br>Value(s) |
|---|----------|-------------------------------|--------------------------------|--|
| Paria River—Segment 68-69 beginning at<br>Wilderness/GSENM boundary to Arizona<br>border; entire segment is within Paria<br>Canyon–Vermilion Cliffs Wilderness. | Kane     | Perennial                     | Yes                            | Scenic<br>Recreational<br>Geologic<br>Wildlife       |
| Sevier River—Segment 53-55 beginning at BLM boundary in Section 6 north to BLM boundary in Section 8.   | Garfield | Perennial                     | No                             | None   |
| Sevier River—Segment 52-53 from BLM boundary in Section 8 to BLM boundary in northeast part of Section 15 north of Hatch.                                       | Garfield | Perennial                     | No                             | None   |
| <u>Three Mile Creek</u> —Segment 56-57 beginning<br>at the Dixie National Forest boundary in<br>Section 11 to BLM boundary in Section 7.                        | Garfield | Perennial                     | Yes                            | Fish   |
| Sandy Creek—Segment 58-59 beginning at BLM boundary in Section 35 to State boundary in Section 35.  | Garfield | Perennial                     | Yes                            | None   |
| Bear Creek—Segment 60-61 from BLM boundary in Section 6 to BLM boundary in Section 9.   | Garfield | Perennial                     | No                             | None   |
| <u>Choke Cherry Creek</u> —Segment 54-55 from<br>BLM boundary in Section 11 to confluence<br>with Sevier River.   | Garfield | Perennial                     | Yes                            | None   |
| Birch Creek—Segment 64-65 from BLM boundary in Section 11 to BLM boundary in Section 17.  | Garfield | Perennial                     | Yes                            | None   |
| North Creek (tributaries)—Segment 66-67<br>from BLM boundary to BLM boundary in<br>Section 9-16.  | Garfield | Perennial                     | Yes                            | None   |
| <u>Upper Valley Creek</u> —Segment 58-59 from<br>BLM boundary in Section 4 to BLM boundary<br>in Section 17 just upstream of confluence with<br>Birch Creek.    | Garfield | Perennial                     | No                             | None   |

Notes:

i - Drainages were identified as one of three types:

Perennial—Stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

• Intermittent—Stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

• Ephemeral—Stream that flows only in direct response to precipitation, and whose channel is above the water table at all times.

ii "Free-flowing"—Means existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modifications of the waterway. The existence, however, of low dams, diversion works, or other minor structures at the time any river is proposed for inclusion in the National Wild and Scenic River System shall not bar its consideration for such inclusion.

### Identification of Outstandingly Remarkable Values

Following interdisciplinary team review of the 34 segments, 18 segments were identified as being free-flowing, being either perennial or intermittent, and potentially possessing one or more ORVs. Table A13-6 identifies and describes the ORV analysis of these 18 segments.

| North Fork Virgin River  | Values evaluated and determined outstandingly remarkable:   |
|--|---|
| Segment 48-49 Section 31-33 (northeast of Zion NP).<br>Eligible in Section 31-32<br>Tentative Classification: Wild | <ul> <li>Scenic—Entire segment is rated as Class A scenery.</li> <li>Recreational—Used for hiking (which requires a permit to enter Zion NP, the Narrows). Segment is highly valued for hiking, backpacking, nature study, and photography in an exceptionally scenic, wilderness-quality setting.</li> <li>Wildlife—Possible neotropical migratory bird habitat (Migratory Bird Treaty Act, Executive Order 13186). Spotted owl (threatened species) designated critical habitat cooperatively managed with Zion NP.</li> </ul>  |
|  | Value evaluated, not determined outstandingly remarkable:   |
|  | • <b>Geologic</b> —All exposed formations can be seen in several other canyons in the area, and are not rare or unique.   |
| North Fork Virgin River<br>Segment 46-47 Section 34 up to private land   | Values evaluated, none determined outstandingly remarkable:   |
| boundary in northwest quarter of Section 24.   | <ul> <li>Scenic—Entire segment is rated as Class A scenery, but the scenery is not notable, scarce, or exemplary when compared with other scenery in the region.</li> <li>Wildlife— Spotted owl designated critical habitat is present; however, per BLM-M-8351 Section .3(c) ('Contiguous habitat conditions are such that the biological needs of the species are met') the habitat in this corridor is not contiguous and does not meet the needs of the species in this area.</li> <li>Recreational—Not much recreational use due to large amounts of private property.</li> </ul>  |
| East Fork Virgin River   | Values evaluated and determined outstandingly remarkable:   |
| Segment 36-41 private land to Zion NP boundary.  | • Scenic—Entire segment is rated as Class A scenery.  |
| Eligible   | <ul> <li>Cultural—Numerous cultural resource sites considered<br/>eligible for listing in NRHP within the river canyon, plus<br/>dense concentrations of Virgin Anasazi sites situated on<br/>benches above the canyon.</li> </ul>  |
| Tentative Classification: Wild, Scenic, and<br>Recreational  | <ul> <li>Recreational—Segment is highly valued for hiking, backpacking, nature study, and photography in an exceptionally scenic, wilderness-quality setting.</li> <li>Fish—Habitat and populations of sensitive fish.</li> <li>Wildlife—Possible neotropical migratory bird habitat (Migratory Bird Treaty Act, Executive Order 13186), sensitive amphibian habitat. Spotted owl designated critical habitat.</li> <li>Historic—John Wesley Powell exploration in the river canyon in 1872.</li> <li>Ecologic—Unique plant community (hanging gardens).</li> <li>Value evaluated, not determined outstandingly remarkable:</li> <li>Geologic—All exposed formations can be seen in several other canyons in the area, and are not rare or unique.</li> </ul> |

| Orderville Gulch (Esplin Gulch)  | Values evaluated and determined outstandingly remarkable:  |
|--|--|
| Segment 44-45 Zion NP boundary to the falls;<br>Esplin Gulch Segment 45-45A.<br>Eligible<br>Tentative Classification: Wild   | <ul> <li>Scenic—Entire segment is rated as Class A scenery.</li> <li>Recreational—Segment is heavily used and highly valued for hiking, photography, and canyoneering. Opportunities in a canyon setting very similar to those in adjacent Zion NP.</li> <li>Wildlife—Possible neotropical migratory bird habitat (Migratory Bird Treaty Act, Executive Order 13186). Spotted owl nesting habitat.</li> <li>Ecologic—Unique plant community (hanging gardens).</li> <li>Value evaluated, not determined outstandingly remarkable:</li> <li>Geologic—All exposed formations can be seen in several other canyons in the area, and are not rare or unique.</li> </ul>  |
| Bob Creek (tributary of Orderville Gulch)  | Values evaluated, none determined outstandingly  |
|  | remarkable:  |
| Segment 42-43 from diversion to Bob Creek in Section 6.  | <ul> <li>Scenic—Entire segment is rated as Class A scenery, but<br/>the scenery is not notable, scarce, or exemplary when<br/>compared with other scenery in the region.</li> </ul>  |
| Meadow Creek / Mineral Gulch   | Values evaluated and determined outstandingly remarkable:  |
| Segments 33-35 and 35-38 south of Highway 9 to<br>confluence with Mineral Gulch, then to<br>confluence with East Fork Virgin River.  | <ul> <li>Scenic—Majority of segment is Class A scenery. Scenic<br/>values of sculptured slickrock and ledges untouched by<br/>human influence.</li> </ul>  |
| Eligible   | <ul> <li>Recreational—Segment is popular with visitors seeking<br/>exceptionally scenic hiking, backpacking, photography, and<br/>nature study opportunities in a dramatic, deep canyon<br/>setting where solitude abounds.</li> </ul>   |
| Tentative Classification: Wild   | Value evaluated, not determined outstandingly remarkable:  |
|  | <ul> <li>Geologic—All exposed formations can be seen in several<br/>other canyons in the area, and are not rare or unique.</li> </ul>  |
| Deep Creek   | Value evaluated and determined outstandingly remarkable:   |
| Segment 50-51 from Washington County line to   | • Seconia Entire comment is reted as Class A scopery   |
| BLM boundary in Section 30.  | access is limited due to surrounding private property.   |
| BLM boundary in Section 30.  | access is limited due to surrounding private property.   |
| Eligible Tentative Classification: Wild  | access is limited due to surrounding private property.   |
| BLM boundary in Section 30.         Eligible         Tentative Classification: Wild         Kanab Creek         Segment 8-9 from the falls to BLM boundary in northeast corner in Section 32.  | <ul> <li>Scenic—Entre segment is rated as class A scenery, access is limited due to surrounding private property.</li> <li>Values evaluated, none determined outstandingly remarkable:</li> <li>Scenic—Deep gorge carved in Navajo Sandstone with mature ponderosa pine: approximately 50% of segment is in</li> </ul>   |
| BLM boundary in Section 30.         Eligible         Tentative Classification: Wild         Kanab Creek         Segment 8-9 from the falls to BLM boundary in northeast corner in Section 32.         Not Eligible   | <ul> <li>Scenic—Entre segment is rated as class A scenery, access is limited due to surrounding private property.</li> <li>Values evaluated, none determined outstandingly remarkable:</li> <li>Scenic—Deep gorge carved in Navajo Sandstone with mature ponderosa pine; approximately 50% of segment is in Class A scenery, but the scenery is not especially outstanding when compared with other scenery in the region.</li> <li>Recreational—Most recreation use is by local residents and is similar in nature to that occurring in several other similar settings near Kanab.</li> <li>Wildlife—Little riparian vegetation. No Southwestern willow flycatcher habitat. Within Paunsaguant deer herd management area.</li> </ul>  |
| BLM boundary in Section 30.         Eligible         Tentative Classification: Wild         Kanab Creek         Segment 8-9 from the falls to BLM boundary in northeast corner in Section 32.         Not Eligible         Kanab Creek   | <ul> <li>Scenic—Entre segment is rated as class A scenery, access is limited due to surrounding private property.</li> <li>Values evaluated, none determined outstandingly remarkable:</li> <li>Scenic—Deep gorge carved in Navajo Sandstone with mature ponderosa pine; approximately 50% of segment is in Class A scenery, but the scenery is not especially outstanding when compared with other scenery in the region.</li> <li>Recreational—Most recreation use is by local residents and is similar in nature to that occurring in several other similar settings near Kanab.</li> <li>Wildlife—Little riparian vegetation. No Southwestern willow flycatcher habitat. Within Paunsaguant deer herd management area.</li> <li>Values evaluated, none determined outstandingly</li> </ul>             |
| BLM boundary in Section 30.         Eligible         Tentative Classification: Wild         Kanab Creek         Segment 8-9 from the falls to BLM boundary in northeast corner in Section 32.         Not Eligible         Kanab Creek         Segment 9-10 from Point 9 to dam north of | <ul> <li>Scenic—Entre segment is rated as class A scenery, access is limited due to surrounding private property.</li> <li>Values evaluated, none determined outstandingly remarkable:</li> <li>Scenic—Deep gorge carved in Navajo Sandstone with mature ponderosa pine; approximately 50% of segment is in Class A scenery, but the scenery is not especially outstanding when compared with other scenery in the region.</li> <li>Recreational—Most recreation use is by local residents and is similar in nature to that occurring in several other similar settings near Kanab.</li> <li>Wildlife—Little riparian vegetation. No Southwestern willow flycatcher habitat. Within Paunsaguant deer herd management area.</li> <li>Values evaluated, none determined outstandingly remarkable:</li> </ul> |

| Kanab.   | compared with other scenery in the region.  |
|--|---|
|  | <ul> <li>Wildlife—Neotropical migratory bird habitat; however, it is<br/>not exemplary when compared with other habitat in the</li> </ul> |
| Not Eligible                                   | region.   |
|  | Recreational—Most recreation use is by local residents.   |
| Cottonwood Creek                               | Values evaluated and determined outstandingly remarkable:   |
| Segment 28-29 beginning in Section 10 at BLM   | Recreational—Canyon offers exceptional non-motorized/   |
| boundary ending at confluence with Indian      | non-mechanized recreation opportunities in an enticing  |
| ouriyon.                                       | <ul> <li>Cultural—Two eligible sites within segment, but NRHP-</li> </ul>   |
| Eligible                                       | listed site 42Ka1581 Cottonwood Canyon Cliff Dwellings  |
|  | and four nearby rock art sites, are found in a tributary  |
| Tentative Classification: Wild                 | Wildlife—Neotropical migratory bird habitat (Migratory Bird   |
|  | Treaty Act, Executive Order 13186).   |
|  | Value evaluated, not determined outstandingly remarkable:   |
|  | Scenic—Class A scenery; scenery is not especially     patable correct or symplemy when compared with other                                |
|  | scenery in the vicinity of Kanab.   |
| Indian Canvon                                  | Values evaluated and determined outstandingly remarkable:   |
| Segment 26-27 from head of canyon to           | Scenic—Deep, narrow canyon, Class A scenery,  |
| confluence with Cottonwood Creek.              | Recreational—Canyon offers non-motorized/non-   |
|  | mechanized recreation opportunities (e.g., hiking,  |
| Eligible                                       | canyoneering, photography, and nature study) in a highly scenic and diverse canyon setting  |
|  | <ul> <li>Ecologic—Unique plant community (hanging gardens).</li> </ul>  |
| Tentative Classification: Wild                 | Value evaluated, not determined outstandingly remarkable:   |
|  | Geologic—All exposed formations can be seen in several  |
|  | other canyons in the area, and are not rare or unique.  |
| South Fork Indian Canyon                       | Values evaluated and determined outstandingly remarkable:   |
| Segment 22-23 from head of South Fork Indian   | • Scenic—Deep, narrow canyon, Class A scenery.  |
| Section 20.                                    | <ul> <li>Recreational—Canyon offers exceptional non-motorized/<br/>non-mechanized recreation opportunities (e.g. biking)</li> </ul>       |
|  | canyoneering, photography, and nature study) in a highly  |
| Eligible                                       | scenic and diverse canyon setting.  |
|  | Ecologic—Unique plant community (nanging gardens).     Value evaluated not determined outstandingly remarkable.                           |
| Tentative Classification: Wild                 | • Coolegie All expected formations can be seen in several   |
|  | other canyons in the area, and are not rare or unique.  |
| North Branch of South Fork Indian Canyon       | Values evaluated and determined outstandingly remarkable:   |
| Segment 24-25 from point where canyon          | Scenic—Deep, narrow canyon, Class A scenery.  |
| deepens to BLM boundary in southeast corner of | Recreational—Canyon offers exceptional non-motorized/   |
| Section 17.                                    | non-mechanized recreation opportunities (e.g., hiking,  |
| Eligible                                       | scenic and diverse canyon setting.  |
|  | Cultural—One recorded site, 42Ka1576 South Fork Indian  |
| Tentative Classification: Wild                 | Canyon Pictographs, eligible for listing in NRHP.     Ecologic—Unique plant community (hanging gardons);                                  |
|  | Zion jamesia (sensitive plant) is present.  |
|  | Value evaluated, not determined outstandingly remarkable:   |
|  | Geologic—All exposed formations can be seen in several  |
|  |   |

| Water Canyon   | Values evaluated and determined outstandingly remarkable:  |
|--|--|
| Segment 20-21 from point where canyon<br>deepens to BLM boundary in Section 21.<br>Eligible<br>Tentative Classification: Wild                                | <ul> <li>Scenic—Deep, narrow canyon, Class A scenery.</li> <li>Recreational—Canyon offers non-motorized/mechanized recreation opportunities (e.g., hiking, canyoneering, photography, and nature study) in a highly scenic and diverse canyon setting.</li> <li>Ecologic—Unique plant community (hanging gardens); Zion jamesia (sensitive plant) is present.</li> </ul> |
|  | Value evaluated, not determined outstandingly remarkable:  |
|  | • <b>Geologic</b> —All exposed formations can be seen in several other canyons in the area, and are not rare or unique.  |
| Hell Dive Canyon   | Values evaluated and determined outstandingly remarkable:  |
| Segment 30-31 from point where canyon deepens to confluence with Cottonwood Creek.   | <ul> <li>Scenic—Deep, narrow canyon, Class A scenery.</li> <li>Recreational—Canyon offers exceptional non-motorized/<br/>non-mechanized recreation opportunities (e.g., hiking,<br/>canyoneering, photography, and nature study) in a highly</li> </ul>  |
| Tentative Classification: Wild   | <ul> <li>scenic and diverse canyon setting.</li> <li>Cultural—One recorded rockshelter/rock art/structural site, eligible for listing in NRHP.</li> <li>Ecology—Unique plant community (hanging gardens); Zion jamesia (sensitive plant) is present.</li> </ul>  |
|  | Value evaluated, not determined outstandingly remarkable:  |
|  | <ul> <li>Geologic—All exposed formations can be seen in several<br/>other canyons in the area, and are not rare or unique.</li> </ul>  |
| Paria River  | Value determined outstandingly remarkable:   |
| Segment 68-69 beginning at Wilderness/GSENM<br>boundary to Arizona border; entire segment is<br>within Paria Canyon–Vermilion Cliffs Wilderness.<br>Eligible | <ul> <li>Scenic—Class A scenery.</li> <li>Wildlife—Neotropical migratory bird habitat (Migratory Bird Treaty Act, Executive Order 13186).</li> <li>Recreational—Wilderness hiking and backpacking; opportunities for primitive experience and solitude in a dramatic, narrow desert canyon setting.</li> </ul>   |
| Tentative Classification: Wild   |  |
| Three Mile Creek   | Value evaluated and determined outstandingly remarkable:   |
| Segment 56-57 beginning at the Dixie National<br>Forest boundary in Section 11 to BLM boundary<br>in Section 7.  | Fish—Bonneville cutthroat trout (sensitive species) present.   |
| Eligible   |  |
|  |  |

### Summary of Rivers Determined Eligible

Following analysis of the ORVs, 15 segments (identified in Table A13-7) were determined to be either perennial or intermittent, free-flowing, and possessing ORVs, judged regionally or nationally significant, and, therefore, declared eligible for inclusion in the NWSRS. These eligible segments are analyzed in the Draft RMP/EIS for their potential suitability for inclusion in the NWSRS.

| Segment<br>Name                                | Outstandingly Remarkable<br>Value(s)                                    | Miles in<br>Decision<br>Area | River<br>Corridor<br>(acres) | River<br>Corridor in<br>Decision<br>Area (acres) | % of River<br>Corridor in<br>Decision<br>Area |
|--|---|------------------------------|------------------------------|--|---|
| North Fork Virgin<br>River                     | scenic, recreational, wildlife  | 2.2                          | 500                          | 430  | 86  |
| East Fork Virgin<br>River (three<br>segments)  | scenic, cultural, recreational,<br>fish, wildlife, historical, ecologic | 13.5                         | 2,510                        | 2,510  | 100   |
| Orderville Gulch<br>(Esplin Gulch)             | scenic, recreational, wildlife, ecologic                                | 3.2                          | 640                          | 590  | 92  |
| Meadow<br>Creek/Mineral<br>Gulch               | scenic, recreational  | 9.2                          | 1,780                        | 1,760  | 99  |
| Deep Creek                                     | scenic  | 0.7                          | 210                          | 130  | 62  |
| Cottonwood<br>Creek                            | recreational, cultural, wildlife  | 1.1                          | 320                          | 280  | 87  |
| Indian Canyon                                  | scenic, recreational, ecologic  | 0.7                          | 160                          | 140  | 88  |
| South Fork<br>Indian Canyon                    | scenic, recreational, ecologic  | 1.8                          | 490                          | 450  | 92  |
| North Branch of<br>South Fork<br>Indian Canyon | scenic, recreational, cultural,<br>ecologic                             | 0.4                          | 110                          | 90   | 82  |
| Water Canyon                                   | scenic, recreational, ecologic  | 3.2                          | 710                          | 710  | 100   |
| Hell Dive Canyon                               | scenic, recreational, cultural, ecologic                                | 1.4                          | 350                          | 350  | 100   |
| Paria River                                    | scenic, wildlife, recreational  | 4.8                          | 1,090                        | 1,020  | 100   |
| Three Mile Creek                               | fish  | 3.7                          | 850                          | 770  | 91  |
| Totals   |   | 45.9                         | 9,720                        | 9,200  | 95  |

Table A13-7. Rivers Determined Eligible for Designation into the NWSRS

### III. SUITABILITY

### Determination of Suitability

Rivers determined to be eligible for inclusion into the NWSRS are further evaluated to determine their suitability for inclusion into the national system.

The purpose of the suitability step of the study process is to determine whether eligible rivers would be appropriate additions to the national system by considering tradeoffs between corridor development and river protection. Suitability considerations include the environmental and economic consequences of designation and the manageability of a river if it were designated by Congress.

The EIS evaluates impacts that would result if the eligible rivers were determined suitable and managed to protect their free-flowing nature, tentative classification, and ORVs. It also addresses

impacts that would result if the eligible rivers are determined not suitable and their values are not provided protective management. The range of alternatives include the no action alternative (Alternative A), which does not address or provide for decisions on suitability, but leaves rivers eligible, and Alternative C, which finds all eligible rivers suitable. Alternative D finds none of the eligible rivers suitable; Alternative B finds some eligible rivers suitable. Alternative tentative classifications are also evaluated.

In addition to the impact analysis addressed by alternative, the following suitability considerations are applied to each eligible river:

- Characteristics that do or do not make the area a worthy addition to the national system
- Status of land ownership and use in the area
- Uses, including reasonably foreseeable potential uses, of the area and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the national system of rivers; and the values that could be foreclosed or diminished if the area is not protected as part of the national system
- Interest by federal, tribal, state, local, and other public entities in designation or nondesignation of a river, including the extent to which the administration of the river, including the costs thereof, *can be shared by the above mentioned entities*
- Ability of the agency to manage and protect the values of a river area if it were designated, and other mechanisms to protect identified values other than Wild and Scenic Rivers designation
- The estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it were included in the national system
- The extent to which administration costs will be shared by local and state governments.

### Coordination

A series of interdisciplinary meetings was held from October 2005 through September 2006 during the suitability step of the study process. Cooperating agencies also participated in the process and attended the meetings. In addition to numerous internal meetings, a series of meetings and field trips were held in summer 2006 to review potentially eligible/suitable segments with cooperating agencies.

### Suitability Study

Public comments received on the *Draft Evaluation Report: Wild and Scenic River Eligibility Kanab Resource Management Plan* have been used to improve the documentation of the suitability considerations presented below, and to document the impacts that would result from the various alternatives. The actual determination of whether or not each eligible river segment is suitable is a decision that will be made in the Record of Decision for the Kanab Resource Management Plan (RMP).

### North Fork Virgin River—Segment 48-49

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, and wildlife values. These values are described in detail below.

#### Scenic

This entire segment is rated Class A scenery. The lack of man-made structures; variety of natural shapes, textures, and colors; and the gradual transition from a relatively open valley stream setting to a deeply entrenched, prominent slot canyon make the North Fork Virgin River exceptionally scenic and photogenic.

#### Recreational

Because the North Fork serves as the main entrance to the Zion Narrows trek within Zion National Park (NP), the main recreation activity involves trekkers accessing the park. The outstanding scenery and wilderness-like setting make the trek along the river unique and exceptionally satisfying. Day use activities include hiking into portions of the canyon, nature photography, wildlife viewing, and occasional hunting. Private land upstream of the BLM segment limits off-highway-vehicle (OHV) use to only an occasional authorized vehicle. There is no motorized travel allowed beyond the east boundary of the North Fork Virgin River Wilderness Study Area (WSA).

#### Wildlife

This segment includes possible neotropical migratory bird habitat. It is also Mexican spotted owl designated critical habitat.

#### 2. Land ownership and current use

Ownership within the eligible segment corridor is 86 percent federally managed public lands.

This segment is used by recreationists to access the narrows within Zion NP. The upper reach of this segment, above the canyon narrows, is used for livestock grazing and dispersed recreation. Private land ownership upstream of the WSA limits motorized access to the river segment.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Current recreational uses would be preserved by congressional designation, protecting the values associated with the non-motorized uses and perceived natural condition and scenic values. Recreational enhancements would be limited to increased signage and management if designated.

The North Fork Virgin River WSA includes 46 percent of the public lands along this segment. These lands have been recommended by the BLM to Congress for wilderness designation. Designation of this stream into the NWSRS would be compatible with and would enhance wilderness use and management of the area.

Congressional designation would provide permanent protection specifically for the free-flowing condition of the river, its water quality, and its ORVs. This would be in addition to protection already afforded by the WSA status. Failure to include the river segment in the NWSRS, on the other hand, would not necessarily diminish the values on the basis of which the river was determined eligible inasmuch as the area's WSA status would continue. Furthermore, many of the other land use prescriptions (e.g., Special Recreation Management Area [SRMA] designation) being considered in the EIS would also preserve and enhance such values if implemented. Such prescriptions would be temporary, however, and could be changed through plan amendment or plan revision.

Inclusion of a river into the NWSRS could preclude the construction of dams or other waterrelated projects if they would occur within the designated segment and have direct and/or adverse effects on the ORVs (e.g., scenic, recreational, and wildlife) or free-flowing condition. None are currently proposed. Other projects on federal lands within the designated river area, such as construction of roads, pipelines, or other structures, would not be allowed, and the lands would be closed to mineral location if Congress were to classify this segment as "wild." However, considering the area's WSA status, no such development is currently proposed or foreseeable within the federal portion of this segment. Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish scenic, recreational, or wildlife values within the designated segment. None are currently proposed.

### 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

The National Park Service (NPS) has recommended the river portion that extends within Zion NP for Wild and Scenic River designation. Administration of recreation resources and activities within the segment could be shared with Zion NP.

Local and state agencies and water users oppose designation primarily over their concerns that current and potential water use of this or any eligible stream could be affected. However, there are no current or foreseen uses that would be affected. Some private citizens and regional and national conservation groups have promoted the suitability of this stream for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation. Kane County comments state, "If determined suitable the County suggests the segment begin at the WSA boundary where it incises into the canyon rather than at the proposed location in the valley."

### 5. Manageability of the river if designated, and other means of protecting values

Land status and classification level would not create problems for manageability. The BLM would be capable of managing this segment if it were designated, particularly with adequate funding. Wild and Scenic River designation would increase the Utah BLM's ability to compete

for agency dollars, and with increased funding and focused management, the agency's ability to deal with recreational management of the area would improve. Designation would promote national and public recognition of the values associated with this segment and further the goals and policy established by Congress in the Wild and Scenic Rivers Act.

The free-flowing nature of this stream is not currently at risk, and the identified ORVs on public lands could be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. These prescriptions would be associated with the North Fork Virgin River WSA. The river corridor within the WSA is managed according to the Interim Management Policy (IMP). Protection would also be afforded by designation of the North Fork Virgin River SRMA. The status of the WSA, SRMA, and other management prescriptions is subject to change due to congressional action or revised land use plans. Therefore, the protection these designations afford the river values is subject to change. However, the isolation of the stream due to the very limited public access and the extreme topography inevitably provides additional protection.

### 6. The estimated costs of administering the river, including costs for acquiring lands

Costs could be reduced due to shared management with the NPS. Possible costs could be incurred due to acquisition of a small portion of the segment currently in private ownership. However, Kane County has a "no net loss" policy regarding private property, and would be unsupportive of BLM attempts to acquire private land. There is a concern about private riparian lands in the corridor. Other costs could be related to a management plan, if shared management with the NPS is not feasible.

## 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### East Fork Virgin River—Segment 37-41

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, cultural, historic, fish, wildlife, and ecologic values. These values are described in detail below.

### Scenic

This entire segment is rated as Class A scenery, and is characterized by colorful sandstone canyon rims rising several hundred feet above the river valley floor. The river meanders frequently along a ribbon of riparian vegetation. Streamside cliffs and distant slopes and precipices range from light buff shades to dark reds and browns, all sprinkled with various greens and yellows of the many trees, shrubs, forbs, and grasses of Parunuweap Canyon. Spring and early summer blossoms add touches of red, orange, yellow, and pale blue wildflowers. Signs

of human occupation or disturbance along the river segment are rare, so the scenery is thoroughly primitive, spectacularly wild, and wholly natural in appearance.

#### Recreational

The East Fork Virgin River flows directly into the southeastern portion of Zion NP, and the scenery is very similar to that portion of the park. Typical recreation use consists of backpackers conducting multi-day trips from the upper reach of the river within the Parunuweap WSA to the exit route near Checkerboard Mesa in the park. Day hikes to various portions of the river segment are also common. All-terrain vehicle (ATV) riders occasionally reach the river shores, although motorized travel is restricted by WSA interim management to only one or two sites along the entire river segment. Canyoneering, wildlife viewing, and nature study are frequent attractions to visitors. Hunting is allowed, but is not often encountered along the river segment because of the lack of easy motorized access and the steep slopes and cliffs along the river bank the farther downstream one travels.

#### Cultural

There are numerous cultural resource sites considered eligible for listing in the NRHP within the river canyon, and there are dense concentrations of Virgin Anasazi sites situated on the benches above the canyon. Older and younger sites are present as well. These sites, especially those within the narrow confines of the canyon, are an important scientific resource that contributes to the ORVs of this river segment.

#### Historic

John Wesley Powell explored this river canyon in 1872.

#### Fish

This segment includes habitat and populations of native fish. It is also the upland watershed for sensitive fisheries downstream of the Zion NP boundary.

#### Wildlife

This segment includes possible neotropical migratory bird habitat and sensitive amphibian habitat. It is also Mexican spotted owl designated critical habitat.

### Ecologic

This segment contains unique plant communities (hanging gardens).

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 100 percent federally managed public lands.

This segment has been used for accessing the Fat Man's Misery portion of Zion NP; however, Zion NP does not permit use through its portion of Parunuweap Canyon. There are high levels of non-motorized recreation use on the public lands portions of the canyon. Lands associated with

this segment are also used for livestock grazing. There are two routes (ways) within proximity to the river. Although one route is not currently used for crossing the river, the historic route of the other road crosses the river several times in the space of about 3 miles, just upstream from this river segment.

This entire segment is within the Parunuweap WSA and is managed according to the (IMP). The IMP does not allow for new developments or surface-disturbing activity.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Designation of this segment as a "wild" river segment could create conflict with use along identified routes (ways).

Uses and values that would be affected by congressional designation are also addressed in the cumulative impacts section of the EIS.

All of the public lands within this segment of the East Fork Virgin River are within the Parunuweap Canyon WSA. This portion of the WSA has been recommended by BLM to Congress for wilderness designation. Designation of this stream into the NWSRS would be compatible with and enhance wilderness use and management of the area.

Congressional designation would provide permanent protection specifically of the free-flowing condition of the river, its water quality, and its ORVs. This would be in addition to the protection already afforded by the WSA status. Failure to include this segment of the East Fork Virgin River in the NWSRS, on the other hand, would not necessarily diminish the values on the basis of which the river was determined eligible, inasmuch as the area's WSA status would continue and other land use prescriptions (e.g., Parunuweap SRMA) being considered in the Draft RMP/EIS would also preserve and enhance such values if implemented. Such prescriptions would be temporary, however, and could be changed.

Inclusion of a river into the NWSRS could preclude construction of dams or other water-related projects if they would occur within the designated segment and would have direct and/or adverse effects on the ORVs or free-flowing condition. None are currently proposed. Other projects on federal lands within the designated river area, such as construction of roads, pipelines, or other structures, would not be allowed, and the lands would be closed to mineral location if Congress were to classify this segment as "wild." However, considering the area's WSA status, no such development is currently proposed or foreseeable. Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish scenic, recreational, cultural, historic, fish, wildlife, or ecologic values within the designated segment. None are currently proposed.

### 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

The NPS has recommended the river portion that extends within Zion NP for WSR designation. Administration of recreational resources and activities within the segment could be shared with Zion NP.

State and local governments might support congressional designation of this segment, but not upstream of the identified routes (ways). Kane County representatives have noted that the county would be more comfortable supporting designation of the lower portion of the segment where the canyon is void of roads or development.

Local and state agencies and water users oppose designation primarily over their concerns that current and potential water use of this or any eligible segments could be affected. However, there are no current or foreseen uses of the river segment that would be affected. Some private citizens and regional and national conservation groups have promoted the suitability of this segment for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

### 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for North Fork Virgin River Segment 48-49 above. The river segment would be manageable due to public land ownership, but identified routes (ways) could create conflicts in management.

The free-flowing nature of this stream is not currently at risk, and the identified ORVs on public lands could be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. These prescriptions would be associated with the Parunuweap Canyon WSA. The river corridor within the WSA is managed according to the IMP. Protection would also be afforded river values by the proposed Parunuweap SRMA. The status of the WSA, SRMA, and other management prescriptions is subject to change due to congressional action or revised land use plans. Therefore, the protection these designations afford the river values is subject to change. However, the isolation of the stream due to the very limited public access and the extreme topography inevitably provides additional protection.

### 6. The estimated costs of administering the river, including costs for acquiring lands

The initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration costs thereafter would involve plan implementation, and may include additional studies and monitoring as well as additional BLM presence in the area. Long-term costs would be related primarily to enforcement. Costs could be reduced by sharing management with the NPS. Other costs could be related to a management plan, if shared management with the NPS is not feasible.

### 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### East Fork Virgin River—Segment 36-37

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, cultural, historic, fish, wildlife, and ecologic values. These values are described in detail below.

#### Scenic

This entire segment is rated as Class A scenery, and is characterized by colorful sandstone canyon rims rising several hundred feet above the river valley floor. The river meanders frequently along a ribbon of riparian vegetation. Streamside cliffs and distant slopes and precipices range from light buff shades to dark reds and browns, all sprinkled with various greens and yellows of the many trees, shrubs, forbs, and grasses of Parunuweap Canyon. Spring and early summer blossoms add touches of red, orange, yellow, and pale blue wildflowers. Signs of human occupation or disturbance along the river segment are limited to vehicle tracks crossing the river at several locations, so the scenery is heavily primitive, wild, and natural in appearance.

### Recreational

The East Fork Virgin River flows directly into the southeastern portion of Zion NP, and the scenery is similar to that portion of the park. Typical recreation use consists of backpackers conducting multi-day trips from the upper reach of the river within the Parunuweap WSA to the exit route near Checkerboard Mesa in the park. Day hikes to various portions of the river segment are also common. ATV riders traverse the stream channel along the entire river segment. Wildlife viewing and nature study are frequent attractions to visitors. Hunting and OHV touring are other popular activities along this segment.

### Cultural

There are numerous cultural resource sites considered eligible for listing in the NRHP within the river canyon, and there are dense concentrations of Virgin Anasazi sites situated on the benches above the canyon. Older and younger sites are present as well. These sites, especially those within the narrow confines of the canyon, are an important scientific resource that contributes to the ORVs of this river segment.

### Historic

John Wesley Powell explored the river canyon in 1872.

#### Fish

This segment includes habitat for and populations of sensitive fish.

#### Wildlife

This segment has possible neotropical migratory bird habitat and sensitive amphibian habitat. It is also Mexican spotted owl designated critical habitat.

### Ecologic

This segment contains unique plant communities (hanging gardens).

#### 2. Land ownership and current use

Ownership within the eligible segment corridor is 100 percent federally managed public lands. The road within the corridor is adjacent to the river, crosses it several times, and is currently open to motorized recreation. The area is also popular for hunting, nature study, and horseback riding. Livestock grazing occurs along this segment and on adjacent lands; there are also range improvements to support livestock grazing. The segment is completely within the Parunuweap Canyon WSA and is managed according to the IMP.

Present within or along the majority of this segment of the East Fork Virgin River is a historical OHV route. Thus, vehicle-based recreation occurs often on the route, except for during periods of high runoff during spring snowmelt or flash flood events.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Designation as "recreational" would not diminish motorized use on the route or hunting. Uses and values that would be affected by congressional designation are also addressed in the cumulative impacts section of the EIS.

The entire reach of this segment of the East Fork Virgin River is within the Parunuweap Canyon WSA. This portion of the WSA has been recommended by BLM to Congress for wilderness designation. Designation of this segment into the NWSRS would be compatible with and would enhance wilderness use and management of the area. Congressional designation would provide permanent protection specifically of the free-flowing condition of the river, its water quality, and its ORVs. This would be in addition to protection already afforded to the river corridor by the WSA status. Within the WSA, failure to include this segment in the NWSRS, on the other hand, would not necessarily diminish the values for which the segment was determined eligible, inasmuch as the area's WSA status would continue, and other land use prescriptions (e.g., SRMA designation) being considered in the EIS would also preserve and enhance such values if implemented. Such prescriptions would be temporary, however, and could be changed through plan amendment or plan revision.

Inclusion of a river into the NWSRS could preclude construction of dams or other water-related projects if they would occur within the designated segment and would have direct and/or adverse

effects on the ORVs (scenic, recreational, cultural, historic, fish, wildlife, and ecologic) or freeflowing condition. Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish those ORVs within the designated segment. No such projects inside or immediately outside of the river area are currently proposed.

### 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

The NPS has recommended the river portion that extends within Zion NP for WSR designation.

Local and state agencies and water users oppose designation primarily over their concerns that current and potential water use of this or any eligible stream could be affected. However, there are no current or foreseen uses of the East Fork Virgin River that would be affected. Some private citizens and regional and national conservation groups have promoted the suitability of this stream for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

### 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for North Fork Virgin River Segment 48-49 above. The free-flowing nature of this segment is not currently at risk, and the identified ORVs could, for the most part, be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. These prescriptions would be associated with visual and cultural resource management and the Parunuweap SRMA. Protection is also currently afforded this portion of the segment corridor by Parunuweap Canyon WSA. The river corridor within the WSA is managed according to the IMP. The status of the WSA, SRMA, and other management prescriptions is subject to change due to congressional action or revised land use plans. Therefore, the protection they afford the river values is subject to change.

### 6. The estimated costs of administering the river, including costs for acquiring lands

Costs would be the same as those for the lower East Fork of Virgin River Segment 48-49.

### 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### Orderville Gulch (Esplin Gulch)—Segment 44-45

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, geologic, wildlife, and ecologic values. These values are described in detail below.
### Scenic

This entire segment is rated Class A scenery. This segment is similar in scenic qualities to those of adjacent Zion NP. The proposed segment has a slot waterfall just less than 100 feet in height.

### Recreational

The outstanding scenery and wilderness-like setting make the trek along the river unique and exceptionally satisfying. Day use activities include hiking into portions of the canyon, nature photography, wildlife viewing, and occasional hunting. Private land upstream of the BLM segment limits OHV use to only an occasional authorized vehicle. There is no motorized travel allowed beyond the east boundary of the Orderville Canyon WSA. The trailhead parking area is located on private property that will probably be developed in the future. The trail below the waterfall is very primitive and steep. The segment enters Zion NP at the Kanab Field Office decision area boundary.

### Wildlife

This segment contains designated critical habitat for the Mexican spotted owl and is adjacent to the protected activity center (PAC) for the Mexican spotted owl.

### Ecologic

This segment contains unique plant communities (hanging gardens).

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 92 percent federally managed public land. This segment is used by recreationists to access the Orderville Canyon Narrows hike in Zion NP. The upper reach of this segment, above the canyon narrows, is used for livestock grazing and dispersed recreation. Private land ownership upstream of the WSA could limit motorized access to the river segment.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Current recreational uses would be preserved by congressional designation, protecting the values associated with the non-motorized uses and the perceived natural condition and scenic values. Recreational enhancements would be limited to increased signage and management if designated.

The Orderville Canyon WSA includes 84 percent of the public lands along this segment. These lands have been recommended by BLM to Congress for wilderness designation. Designation of this stream into the NWSRS would be compatible with and would enhance wilderness use and management of the area.

Congressional designation would provide permanent protection specifically of the free-flowing condition of the river, its water quality, and its ORVs. This would be in addition to protection

already afforded to the lower portions of the corridor by the WSA status. Failure to include this segment of Esplin Gulch in the NWSRS, on the other hand, would not necessarily diminish the values for which the river was determined eligible, inasmuch as the area's WSA status would continue. Furthermore, many of the other land use prescriptions (e.g., SRMA designation) being considered in the EIS would also preserve and enhance such values if implemented. Such prescriptions would be temporary, however, and could be changed through plan amendment or plan revision.

See last paragraph under suitability consideration #3 for the North Fork Virgin River Segment 48-49 above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

The lower reaches of the Orderville Canyon drainage, of which Esplin Gulch is a tributary, extend within Zion NP, and the NPS has recommended for designation. Administration of recreation within the segment could be shared with Zion NP.

Local and state agencies and water users oppose designation primarily over their concerns that current and potential water use of this or any eligible stream could be affected. However, there are no current or foreseen uses that would be affected. Some private citizens and regional and national conservation groups have promoted the suitability of this stream for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for North Fork Virgin River Segment 48-49 above.

The free-flowing nature of this stream is not currently at risk, and the identified ORVs on public lands could be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. These prescriptions would be associated with the Orderville Canyon WSA. The river corridor within the WSA is managed according to the IMP. Protection would also be afforded by designation of the Orderville Canyon SRMA. The status of the WSA, SRMA, and other management prescriptions is subject to change due to congressional action or revised land use plans. Therefore, the protection these designations afford the river values is subject to change. However, the isolation of the stream due to the very limited public access and the extreme topography inevitably provides additional protection.

## 6. The estimated costs of administering the river, including costs for acquiring lands

See suitability consideration #6 for North Fork Virgin River Segment 48-49 above.

## 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### Meadow Creek / Mineral Gulch—Segments 33-35 and 35-38

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic and recreational values. These values are described in detail below.

### Scenic

The majority of this segment is class A scenery; with sculpted slickrock and canyon ledges untouched by human influence. Scenic values closely resemble those of side canyons of the East Fork Virgin River, of which Meadow Creek / Mineral Gulch is a tributary. Steep, towering canyon walls frame the winding creek bottom, with no road access and no human structures anywhere along the segment. Approximately 1 <sup>1</sup>/<sub>2</sub> miles upgradient from the East Fork Virgin River is a series of slot canyons.

### Recreational

Recreation use tends to be light because physical access is difficult. Activities and uses probably consist mainly of occasional hikers and backpackers and a few adventurous hunters. The wild, pristine nature of the canyon offers exceptional solitude and superb opportunities for photography and wildlife and nature study.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 99 percent federally managed public lands.

Current uses include primitive types of recreation. The area is located within a livestock allotment, but difficult accessibility results in low use levels. This river segment is within the Parunuweap Canyon WSA and is managed according to the IMP. The IMP does not allow for new developments or surface-disturbing activity.

## 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Uses and values that would be affected by congressional designation are also addressed in the cumulative impacts section of the EIS.

The area is popular for hunting. Livestock grazing occurs along this segment and on adjacent lands. There are range improvements to support livestock grazing. Designation could result in

increased use that could change some recreation experiences and detract from solitude opportunities.

The Meadow Creek / Mineral Gulch segment corridor is 89 percent within the Parunuweap Canyon WSA. The portion of the WSA that includes this segment has been recommended by BLM to Congress for wilderness designation. Designation of this stream into the NWSRS would be compatible with and enhance wilderness use and management of the area.

See last two paragraphs under suitability consideration #3 for North Fork Virgin River Segment 48-49 above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

Zion NP has not expressed any interest in designation. The current level of use is lower than that in the lower East Fork Virgin River.

State and local governments are unsupportive of congressional designation of this stream. Local and state agencies and water users oppose designation primarily over concerns that potential water use of this or any eligible stream could be affected. However, there are no current or foreseen water uses of Meadow Creek / Mineral Gulch that would be affected. Some private citizens and regional and national conservation groups have promoted the suitability of this stream for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for North Fork Virgin River Segment 48-49 above.

The BLM would be capable of managing this stream if it were designated, particularly with adequate funding. The BLM currently has little to no on-the-ground presence; however, the remoteness and difficult access have kept visitation light. Resources are fragile and could suffer degradation if visitation were to increase significantly with designation. Wild and Scenic River designation would increase the Utah BLM's ability to compete for agency dollars. With increased funding and focused management, the agency's ability to deal with recreational management of the area would improve. Designation would promote national and public recognition of the values associated with this stream and further the goals and policy established by Congress in the Wild and Scenic Rivers Act.

The free-flowing nature of this stream is not currently at risk, and the identified ORVs could be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. These prescriptions would be associated with the Parunuweap SRMA. Protection is also currently afforded river values by the Parunuweap Canyon WSA. The river corridor within the WSA is managed according to the IMP. The status of the WSA, SRMA, and other management prescriptions is subject to change due to

congressional action or revised land use plans. Therefore, the protection they afford the river values is subject to change.

## 6. The estimated costs of administering the river, including costs for acquiring lands

The initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration costs thereafter would involve plan implementation, and may include additional studies and monitoring as well as additional BLM presence in the area.

## 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### Deep Creek—Segment 50-51

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic values. The entire segment is rated as Class A scenery. This segment has scenery reminiscent of the North Fork of the Virgin River, just outside of the Zion NP boundary.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 62 percent federally managed public lands.

Uses include recreation (particularly horseback riding, hunting, and hiking), livestock grazing, and wildlife habitat.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Uses and values that would be affected by congressional designation are also addressed in the cumulative impacts section of the EIS.

Inclusion of a river into the NWSRS could preclude construction of dams or other water-related projects if they would occur within the designated segment and would have direct and/or adverse effects on the outstandingly remarkable scenic values or free-flowing condition. Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish scenic values within the designated segment.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

State and local governments are unsupportive of congressional determination of this stream. Local and state agencies, water users, and municipalities oppose designation primarily over their concerns that current and potential water use of this or any eligible stream could be affected. Some private citizens and regional and national conservation groups, however, have promoted the suitability of this stream for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

Land status and classification level would create problems for manageability because the segment is isolated and surrounded by private land. Although there are portions of this river upstream and downstream that are recommended for designation in the NWSRS, none of those are directly contiguous. The physical isolation and lack of legal public access would provide the greatest degree of protection to this area.

## 6. The estimated costs of administering the river, including costs for acquiring lands

The initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration costs thereafter would involve plan implementation, and may include additional studies and monitoring as well as a BLM presence in the area. If other portions of the river were designated, cost-sharing with the other agencies could reduce administrative costs.

## 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs of designated streams.

### Cottonwood Creek—Segment 28-29

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

Cottonwood Creek possesses outstandingly remarkable recreational, cultural, and wildlife values. These values are described in detail below.

### Recreational

Cottonwood Creek offers exceptional non-motorized/non-mechanized recreation opportunities in a scenic, enticing canyon setting. The variety of topography, vegetation, geology, and wildlife create a setting that is highly attractive to both day use hikers and overnight campers.

### Cultural

There are two sites eligible for listing in the NRHP within the segment. NRHP -listed site 42Ka1581 Cottonwood Canyon Cliff Dwellings is within the segment corridor.

### Wildlife

This segment includes neotropical migratory bird habitat; it is also a limited deer use area.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 87 percent federally managed public lands.

This segment is adjacent to the Moquith Mountain WSA, and 9 percent of the corridor is within the WSA, providing for primitive recreation. While the segment is not totally within the WSA, the corridor offers a scenic, solitary backcountry experience. The river segment is used for occasional recreational activities, including hunting, hiking, camping, wildlife viewing, and nature photography. There are no motorized routes along the segment. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years. Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water source.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Congressional designation would provide permanent protection specifically of the free-flowing condition of the river, its water quality, and its ORVs. Designation of this river into the NWSRS would be compatible with and would enhance wilderness use and management of the Moquith Mountain WSA.

Inclusion of a river into the NWSRS could preclude construction of dams or other water-related projects if they would occur within the designated segment and would have direct and/or adverse effects on the ORVs or free-flowing condition. This could conflict with current water use of the surface water collection system and would prevent or restrict future water development. Other projects on federal lands within the designated river area, such as construction of roads, pipelines, or other structures, would not be allowed, and the lands would be closed to mineral location if Congress were to classify this segment as "wild." Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish recreational, cultural, or wildlife values within the designated segment. In addition to limiting future water developments for the town of Fredonia, congressional designation of this segment would advertise the canyons to the public, creating additional visitation, which would potentially impact the town's water quality.

On the other hand, failure of Congress to include this segment in the NWSRS would not necessarily diminish the values on the basis of which the river was determined eligible because of the SRMA and Area of Critical Environmental Concern (ACEC) designations proposed for the canyon and the overlap and/or presence of the Moquith Mountain WSA. Likewise, the

Cottonwood Canyon ACEC provides for the protection of certain values within the river corridor. Furthermore, the proposed Moquith Mountain SRMA would protect certain resources that contribute to the recreational values within the river segment. However, the status of the WSA, proposed SRMA, ACEC, and other management prescriptions are subject to change due to congressional action or future revisions to land use plans. Such prescriptions would be temporary, however, and could be changed through plan amendment or plan revision.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

Local and state agencies, municipalities, and water users oppose designation primarily over their concerns that current and potential water use of this or any eligible segment in this area could be affected. These organizations have expressed concerns that existing water rights and developments could be affected and that opportunities for future water development could be foreclosed, not only within the designated river segments but also upstream or downstream of these segments. Some private citizens and regional and national conservation groups have encouraged or promoted the suitability of this segment for congressional designation. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

The BLM would be capable of managing this segment if it were designated, particularly with adequate funding. Congressional designation of this segment into the NWSRS would increase the BLM's ability to compete for agency dollars, and with increased funding and focused management, the agency's ability to deal with recreational and other management of the area would improve. Designation would promote national and public recognition of the values associated with this segment and further the goals and policy established by Congress in the Wild and Scenic Rivers Act.

Designation of this segment would not result in a substantial change in management of the river corridor from current management. Other protective management prescriptions currently in place that would complement NWSR management if the segment were designated are those for OHV use, fluid minerals leasing, SRMAs, ACECs, WSAs, riparian habitat, and visual resources. The current management would provide a large degree of continuity and make the adjustment into management of a "wild" and "scenic" area easy because current objectives are similar to those that would result from congressional designation.

The free-flowing nature of this segment is not currently at risk, and the identified ORVs could be effectively managed with existing and other land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented. However, the status of the WSA, SRMA, ACEC, and other management prescriptions are subject to change due to congressional action or revised land use plans. Therefore, the protection they afford the river values is subject to change.

## 6. The estimated costs of administering the river, including costs for acquiring lands

The initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration costs thereafter would involve plan implementation, and may include additional studies and monitoring as well as additional BLM presence in the area. Funding is not expected to be sought for acquisition of adjacent private land (given willing sellers) because it would not be necessary to acquire these lands to adequately manage the designated segments.

## 7. The extent to which administration costs will be shared by local and state governments

Local governments have made it clear that they would not share management costs if this segment were designated.

### Indian Canyon—Segment 26-27

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, and ecologic values. These values are described in detail below.

### Scenic

This canyon has Class A scenery, is picturesque, and is tightly confined in slickrock walls that are punctuated with enticing alcoves and dramatic amphitheaters. The lively small stream adds a water feature, and brilliant green vegetation winds through a landscape of colorful rimrock.

### Recreational

Indian Canyon offers non-motorized, non-mechanized recreational opportunities in an exceptionally scenic canyon characterized by slickrock cliffs, ledges and pour-overs, scattered ponderosa pines, and many alcoves and recesses fringed with pockets of scrub oak and riparian vegetation.

### Ecologic

This segment contains unique plant communities (hanging gardens).

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 88 percent federally managed public lands.

This segment is adjacent to the Moquith Mountain WSA, with 17 percent of the corridor within the WSA, providing for primitive recreation. Although the segment is not totally within the WSA, the corridor offers a scenic, solitary backcountry experience. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years.

Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water source.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

See information under suitability consideration #3 for the Cottonwood Canyon segment above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

See information under suitability consideration #4 for the Cottonwood Canyon segment above.

## 5. Manageability of the river if designated, and other means of protecting values

See information under suitability consideration #5 for the Cottonwood Canyon segment above.

## 6. The estimated costs of administering the river, including costs for acquiring lands

See information under suitability consideration #6 for the Cottonwood Canyon segment above.

## 7. The extent to which administration costs will be shared by local and state governments

See information under suitability consideration #7 for the Cottonwood Canyon segment above.

### South Fork Indian Canyon—Segment 22-23

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, and ecologic values. These values are described in detail below.

### Scenic

This canyon has Class A scenery, is picturesque, and is tightly confined in slickrock walls that are punctuated with enticing alcoves and dramatic amphitheaters. The lively small stream adds a water feature, and brilliant green vegetation winds through a landscape of colorful rimrock.

### Recreational

The South Fork Indian Canyon offers non-motorized, non-mechanized recreational opportunities in an exceptionally scenic canyon characterized by slickrock cliffs, ledges and pour-overs, scattered ponderosa pines, and many alcoves and recesses fringed with pockets of scrub oak and riparian vegetation.

#### Ecologic

This segment contains unique plant communities (hanging gardens).

#### 2. Land ownership and current use

Ownership within the eligible segment corridor is 92 percent federally managed public lands.

This segment corridor is 100 percent contained within the Moquith Mountain WSA and is managed according to the IMP, which provides for primitive recreation. Uses also include livestock grazing, recreation, and wildlife habitat. The existing Water Canyon/South Fork Indian Canyon ACEC also overlaps 9 percent of the segment corridor. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years. Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water source.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

See information under suitability consideration #3 for the Cottonwood Canyon segment above.

### 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

See information under suitability consideration #4 for the Cottonwood Canyon segment above.

## 5. Manageability of the river if designated, and other means of protecting values

See information under suitability consideration #5 for the Cottonwood Canyon segment above.

## 6. The estimated costs of administering the river, including costs for acquiring lands

See information under suitability consideration #6 for the Cottonwood Canyon segment above.

## 7. The extent to which administration costs will be shared by local and state governments

See information under suitability consideration #7 for the Cottonwood Canyon segment above.

### North Branch of South Fork Indian Canyon—Segment 24-25

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, cultural, and ecologic values. These values are described in detail below.

### Scenic

This canyon has Class A scenery, is picturesque, and is tightly confined in slickrock walls that are punctuated with enticing alcoves and dramatic amphitheaters. The lively small stream adds a water feature, and brilliant green vegetation winds through a landscape of colorful rimrock.

### Recreational

The North Branch of South Fork Indian Canyon offers non-motorized, non-mechanized recreational opportunities in an exceptionally scenic canyon characterized by slickrock cliffs, ledges and pour-overs, scattered ponderosa pines, and many alcoves and recesses fringed with pockets of scrub oak and riparian vegetation.

### Cultural

This segment corridor contains one recorded cultural site, 42Ka1576 South Fork Indian Canyon Pictographs, that is eligible for listing in the NRHP. This is a significant rock art panel and is a popular local attraction and cultural interpretive site.

### Ecologic

This segment contains unique plant communities (hanging gardens). The sensitive plant species *Zion jamesia* is also present.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 82 percent federally managed public lands.

This segment corridor is 100 percent contained within the Moquith Mountain WSA and is managed according to the IMP, which provides for primitive recreation. Uses also include livestock grazing, recreation, and wildlife habitat. Primary recreational uses include rock art viewing, nature study, photography, and hiking. Local tourism boards promote this area for its prehistoric rock art and other cultural and historical values.

The existing Water Canyon/South Fork Indian Canyon ACEC also overlaps 6 percent of the segment corridor. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years. Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water source.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

See information under suitability consideration #3 for the Cottonwood Canyon segment above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing.

See information under suitability consideration #4 for the Cottonwood Canyon segment above.

### 5. Manageability of the river if designated, and other means of protecting values

See information under suitability consideration #5 for the Cottonwood Canyon segment above.

## 6. The estimated costs of administering the river, including costs for acquiring lands

See information under suitability consideration #6 for the Cottonwood Canyon segment above.

## 7. The extent to which administration costs will be shared by local and state governments

See information under suitability consideration #7 for the Cottonwood Canyon segment above.

### Water Canyon—Segment 20-21

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, and ecologic values. These values are described in detail below.

### Scenic

This canyon has Class A scenery, is picturesque, and is tightly confined in slickrock walls that are punctuated with enticing alcoves and dramatic amphitheaters. The lively small stream adds a water feature, and brilliant green vegetation winds through a landscape of colorful rimrock.

### Recreational

The South Fork Indian Canyon offers non-motorized, non-mechanized recreational opportunities in an exceptionally scenic canyon characterized by slickrock cliffs, ledges and pour-overs, scattered ponderosa pines, and many alcoves and recesses fringed with pockets of scrub oak and riparian vegetation.

### Ecologic

This segment contains unique plant communities (hanging gardens). The sensitive plant species *Zion jamesia* is also present.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 100 percent federally managed public lands.

This segment corridor is 100 percent within the Moquith Mountain WSA and is managed according to the IMP, which provides for primitive recreation. The IMP does not allow for new developments or surface-disturbing activity. Uses also include livestock grazing, recreation, and wildlife habitat. Other uses include more primitive types of recreation, such as hiking and camping by scout groups.

The existing Water Canyon/South Fork Indian Canyon ACEC also overlaps 17 percent of the segment corridor. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years. Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water-source.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

See information under suitability consideration #3 for the Cottonwood Canyon segment above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

See information under suitability consideration #4 for the Cottonwood Canyon segment above.

## 5. Manageability of the river if designated, and other means of protecting values

See information under suitability consideration #5 for the Cottonwood Canyon segment above.

## 6. The estimated costs of administering the river, including costs for acquiring lands

See information under suitability consideration #6 for the Cottonwood Canyon segment above.

## 7. The extent to which administration costs will be shared by local and state governments

See information under suitability consideration #7 for the Cottonwood Canyon segment above.

### Hell Dive Canyon—Segment 30-31

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

This segment possesses outstandingly remarkable scenic, recreational, cultural, and ecologic values. These values are described in detail below.

### Scenic

This canyon has Class A scenery, is picturesque, and is tightly confined in slickrock walls that are punctuated with enticing alcoves and dramatic amphitheaters. The lively small stream adds a water feature, and brilliant green vegetation winds through a landscape of colorful rimrock.

### Recreational

The South Fork Indian Canyon offers non-motorized, non-mechanized recreational opportunities in an exceptionally scenic canyon characterized by slickrock cliffs, ledges and pour-overs, scattered ponderosa pines, and many alcoves and recesses fringed with pockets of scrub oak and riparian vegetation.

### Cultural

One recorded rockshelter/rock art/structural site, 42Ka1695, in this segment is considered eligible for listing in the NRHP. No other sites have been documented in this canyon, but there is potential for finding additional sites in the cliffs and overhangs in the vicinity.

### Ecologic

This segment contains unique plant communities (hanging gardens). The sensitive plant species *Zion jamesia* is also present.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 100 percent federally managed public lands.

This segment corridor is 88 percent within the Moquith Mountain WSA and is managed according to the IMP, which provides for primitive recreation. The IMP does not allow for new developments or surface-disturbing activity. Uses include recreation, particularly horseback riding and hiking, livestock grazing, and wildlife habitat. Although the area is open to livestock grazing, no use has occurred in the Water Canyon Allotment for several years. Fredonia has permitted water and public lands development rights dating to at least the 1940s. This segment corridor is used as a surface-water collection area for the Fredonia water-source.

#### 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

See information under suitability consideration #3 for the Cottonwood Canyon segment above.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

See information under suitability consideration #4 for the Cottonwood Canyon segment above.

## 5. Manageability of the river if designated, and other means of protecting values

See information under suitability consideration #5 for the Cottonwood Canyon segment above.

### 6. The estimated costs of administering the river, including costs for acquiring lands

See information under suitability consideration #6 for the Cottonwood Canyon segment above.

## 7. The extent to which administration costs will be shared by local and state governments

See information under suitability consideration #7 for the Cottonwood Canyon segment above.

### Paria River—Segment 68-69

### 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

The Paria River possesses outstandingly remarkable scenic, recreational, and wildlife values. These values are described in detail below.

### Scenic

Scenery within the Paria River canyon includes sheer, towering walls of colorful sandstone that frame overhead skies and a ribbon of water accented by wildflowers, intermittent scatterings of shrubs and grasses, and occasional cottonwood trees. Late summer thunderstorms provide contrasts in lighting, color, and texture. The deeply entrenched canyon wilderness also provides spectacular nighttime views through canyon walls reaching several hundred feet above the river bottom.

### Recreational

The Paria River canyon offers the opportunity for spectacular hiking and backpacking in a unique, deeply entrenched, desert canyon far from the sights and sounds of civilization. Permits for overnight trips through the Paria are sought by visitors throughout the United States and overseas. The colorful, sheer sandstone cliffs bordering lush riparian vegetation provide exceptional photo opportunities. Wildlife viewing leads to frequent sightings of Desert bighorn sheep and a variety of raptors for visitors to this site. Day hikers can access portions of the canyon a few miles downstream from the White House campground and trailhead. Overnight visitors typically start their trek at White House and continue for 3 to 5 days, hiking the 38-mile stretch that terminates at Lee's Ferry on the Colorado River. Because the number of permits is regulated on a daily basis, backpackers have excellent opportunities to experience solitude and primitive, unconfined recreation in a unique setting.

### Wildlife

The Paria River is important to numerous avian wildlife species, notably the peregrine falcon. The area also contains suitable habitat for the Mexican spotted owl, the Southwestern willow flycatcher, and the California condor. This river segment provides excellent nesting and roosting habitat for the Mexican spotted owl and the peregrine falcon, although their presence has not been confirmed to date. The river segment corridor is also important lambing habitat for Desert bighorn sheep.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 100 percent federally managed public lands. This segment corridor is 100 percent within the Paria Canyon–Vermilion Cliffs Wilderness Area and is managed according to the Wilderness Act and the Wilderness Management Plan, which specify managing the area for naturalness and providing opportunities for primitive recreation and solitude.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

Designation of this segment into the NWSRS would be compatible with and would enhance wilderness use and management of the area. Congressional designation would provide permanent protection specifically of the free-flowing condition of the river, its water quality, and its ORVs. This would be in addition to protection already afforded to the segment corridor by the wilderness area. A river management plan would be prepared on designation. As part of that effort, current activities may be monitored to ensure that activities are consistent with the goals of the designation.

Failure to include this segment in the NWSRS, on the other hand, would not necessarily diminish the values on the basis of which the segment was determined eligible, inasmuch as the area's wilderness area status would continue, and other land use prescriptions (e.g., SRMA designation) being considered in the EIS would also preserve and enhance such values if implemented. Such prescriptions would be temporary, however, and could be changed through plan amendment or plan revision.

Inclusion of a river in the NWSRS could preclude construction of dams or other water-related projects if they would occur within the designated segment and would have direct and/or adverse effects on the ORVs or free-flowing condition. Water-related projects proposed outside the segment would be precluded only if they would invade or unreasonably diminish those ORVs within the designated segment. No such projects inside or immediately outside of the river area are currently proposed.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

State and local governments are unsupportive of congressional designation of this stream. Some private citizens and regional and national conservation groups have promoted congressional

designation of this river. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for the North Fork Virgin River Segment 48-49 above.

If the eligible segment of Paria Canyon was found to be not suitable and subsequently not designated by Congress, the ORVs (scenic, recreational, and wildlife) for which the segment is found to be eligible would not necessarily diminish. The proposed Paria Canyon SRMA would be managed to offer a certain degree of protection to recreational values. Protection is also currently afforded ORVs by the existing wilderness designation. The wilderness, including this entire river segment, is managed according to the *Wilderness Management Plan for Paria Canyon–Vermilion Cliffs Wilderness*, which allows for no new permanent developments or surface-disturbing activities. The status of the SRMA and other management prescriptions are subject to change due to congressional action or revised land use plans. Therefore, the protection they afford the river values is subject to change.

## 6. The estimated costs of administering the river, including costs for acquiring lands

The initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration costs thereafter would involve plan implementation, and may include additional studies and monitoring as well as additional BLM presence in the area. Costs could be reduced if management were shared with the Grand Staircase-Escalante National Monument and the Arizona Strip Field Office, both of which manage segments upstream and downstream.

## 7. The extent to which administration costs will be shared by local and state governments

State and local governments have made it clear that they would not share management costs if the Paria River were designated.

### Three Mile Creek—Segment 56-57

## 1. Characteristics that would or would not make it a worthy addition to the National Wild and Scenic Rivers System

Three Mile Creek possesses an outstandingly remarkable fish value. Bonneville cutthroat trout (sensitive species) are present.

### 2. Land ownership and current use

Ownership within the eligible segment corridor is 91 percent federally managed public lands. Uses include ranching, livestock grazing, wildlife habitat, and occasional recreational fishing.

# 3. Uses, including reasonably foreseeable uses, that would be enhanced or curtailed if designated; and values that would be diminished if not designated

A primary objective for the management of species managed by the Utah Division of Wildlife Resources (UDWR) is to enhance streams' coldwater fisheries habitat and populations. Designation would directly contribute to these objectives and also provide for protection of the other values within the stream corridor.

Inclusion of this segment in the NWSRS could preclude construction of dams or other waterrelated projects within the designated segment. This would enhance the viability of the Bonneville cutthroat trout population and protect the free-flowing condition. Other projects on federal lands within the designated river area, such as construction of roads, recreational facilities, or other structures, may be allowed along the segment classified by Congress as "recreational."

Failure to include Three Mile Creek in the NWSRS, on the other hand, would not necessarily diminish the values for which the river was determined eligible, inasmuch as management implemented in coordination with the UDWR would also preserve and enhance such values.

## 4. Interest of federal, public, state, tribal, local, or other public entity in designation or non-designation, including administration sharing

State and local governments are unsupportive of congressional designation of this stream. These governments oppose designation primarily over their perceptions that existing water rights could be affected and that opportunities for future water development could be foreclosed. The Kaibab band of the Southern Paiute Tribe supports any potential Wild and Scenic River designation.

## 5. Manageability of the river if designated, and other means of protecting values

See initial paragraph under suitability consideration #5 for the North Fork Virgin River Segment 48-49 above.

Cooperative management of Three Mile Creek by the BLM and the UDWR would be necessary if the stream were to be congressionally designated. This would be expected to be productive because current federal and state objectives for the area are consistent. The free-flowing nature of this stream is not currently at risk, and the identified ORVs on public lands could be effectively managed under land use prescriptions being considered in the EIS, if designation does not occur and if the management prescriptions are implemented.

## 6. The estimated costs of administering the river, including costs for acquiring lands

Initial costs of administration for the first 3 years would involve preparing a management plan. Yearly administration cost thereafter would involve plan implementation, and may include additional studies, monitoring, and additional BLM presence in the area. The BLM would make efforts to work cooperatively with the State of Utah to manage Three Mile Creek on designation.

## 7. The extent to which administration costs will be shared by local and state governments

Local governments have made it clear that they would not share management costs if Three Mile Creek were designated. Any cooperative management of Three Mile Creek between the BLM and the UDWR would potentially require commitments from both entities for adequate funding.

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### APPENDIX 12—LETTER FROM STATE HISTORIC PRESERVATION OFFICER RELEATED TO SECTION 106 CONSULTAION



State of Utah

JON M. HUNTSMAN, JR. Governor GARY R. HERBERT

Lieutenant Governor

July 17, 2008



BUREAU OF LAND MANAGEM

GRAND STAIRCASE . ESCALANTE NATIONAL MONUMENT

SENT

Matt Zweifel Archaeologist Grand Staircase-Escalante National Monument and Kanab Field Office 190 East Center Street Kanab UT 84741

State History PHILIP F. NOTARIANNI

**Division** Direct

RE: Kanab Field Office RMP Matrix

In reply, please refer to Case No. 07-1848

Dear Mr. Zweifel:

The Utah State Historic Preservation Office received your request for our comment on the above referenced project.

We concur with your determinations made by BLM in the Kanab Field Office RMP. [Reference SHPO RMP letter 6-25-08MZ.docx.].

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) 533-3555 or jdykman@utah.gov.

As/ever.

James L. Dykman Acting Deputy State Historic Preservation Officer Archaeology



**RESEARCH CENTER & COLLECTIONS** 

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### APPENDIX 13—LETTER FROM U.S. FISH AND WILDLIFE SERVICE RELATED TO THE BIOLOGICAL OPINION

|   | United States Department<br>FISH AND WILDLIFE S<br>UTAH FIELD OFFICE<br>2369 WEST ORTON CIRCLE, SI<br>WEST VALLEY CITY, UTAH | nt of the Interior<br>SERVICE<br>UITE 50<br>84119 |  |  |
|---|--|---|--|--|
| In Penky Pefer To   | September 29, 200  | 8   |  |  |
| FWS/R6<br>ES/UT   |  | RECEIVED<br>BUREAU OF LAND MANAGEMENT             |  |  |
| 06-F-0342<br>6-UT-08-F-0  | 20   | SEP 3 0 2008                                      |  |  |
| Memorandur  | n  | KANAB FIELD OFFICE                                |  |  |
| То:   | Field Office Manager, Bureau of Land Managen<br>North 100 East, Kanab, Utah 84741  | nent, Kanab Field Office, 318                     |  |  |
| From:   | Utah Field Supervisor, U.S. Fish and Wildlife So<br>Valley City, Utah  | ervice, Ecological Services, West                 |  |  |
| Subject:  | Biological Opinion for BLM Resource Managen<br>Office (KFO)  | nent Plan (RMP), Kanab Field                      |  |  |
| This document transmits the Fish and Wildlife Service's (Service) Biological Opinion based on |  |   |  |  |

This document transmits the Fish and whithe service's (Service's Biological Opinion based on our review of potential activities described under the Resource Management Plan of the Utah Bureau of Land Management (BLM) Kanab Field Office's (KFO) and their potential effects on the federally threatened Mexican spotted owl (*Strix occidentalis lucida*), Utah prairie dog (*Cynomys* parvidens), Siler pincushion cactus (*Pediocactus sileri*), and Welsh's milkweed (*Asclepias welshii*); and federally endangered southwestern willow flycatcher (*Empidonax traillii* extimus) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). In addition, this document includes the Conference Opinion for the candidate species Yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and Coral Pink Sand Dunes tiger beetle (*Cincindella limbata albissima*), and the experimental, non-essential population of the endangered California Condor (*Gymnogyps californianus*). Critical habitat was designated for the Mexican spotted owl on February 01, 2001 and was re-designated August 31, 2004 (66 FR 8530, 69 FR 53181). Critical habitat was designated for the southwestern willow flycatcher on October 12, 2004 (69 FR 60705). Your July 21, 2008 request for formal consultation for all aforementioned species was received on July 22, 2008.

Kanab FO BLM Resource Management Plan proposed activities are categorized into the following 23 programs:

Air Quality Soil Resources Water Resources Vegetation Management Special Status Species Management Fish and Wildlife Management Fire Management Cultural Resources Paleontological Resources Visual Resources Forestry and Woodland Resources Livestock Grazing Management Recreation Management Transportation Management Lands and Realty Management Minerals and Energy Management Special Management Areas Programs (5) Special Designations Management Hazardous Materials and Safety Management

This Biological Opinion and Conference Opinion is based on information provided in the July 21<sup>st</sup> 2008 Biological Assessment, personal communications between the Service's biologists and the BLM's biologists, telephone conversations, email correspondence, conference calls, planning meetings, and other sources of information. A complete administrative record of this consultation is on file at this office.

#### **Consultation History**

This section summarizes significant steps in the consultation process. Additional correspondence, and email transmissions, that occurred between May 8, 2008, and September 25, 2008 are documented in the administrative record for this consultation.

- May 9, 2008: BLM electronically sent a draft Biological Assessment for the Kanab BLM Field Office Resource Management Plan to the Service for review;
- May 2008 through June 26, 2008: The Service reviewed and provided comments on the draft Biological Assessment;
- July 22, 2008: We received the final version of the KFO Biological Assessment and began formal consultation;
- September 12, 2008: A draft Biological Opinion was provided to the Kanab Field Office;
- September 23-25, 2008: The BLM provided comments which were integrated into the Biological Opinion.

Biological Opinion for the Kanab BLM Resource Management Plan

### **RE-INITIATION STATEMENT**

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

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

L. Crist

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### APPENDIX 14—GRAZING ALLOTMENT FORAGE ALLOCATION

| Allotments         | Number | Federal<br>Acres | Livestock<br>Kind <sup>1</sup> | Active<br>Livestock<br>Permitted Use<br>(AUMs) | Suspended<br>Livestock<br>Permitted Use<br>(AUMs) | Wildlife<br>Allocation<br>(AUMs) | Total<br>AUMs<br>Allocated |
|--------------------|--------|------------------|--------------------------------|--|---|----------------------------------|----------------------------|
| Alton              | 24002  | 392              | С                              | 5  | 15  | 5                                | 10                         |
| Art Canyon         | 24003  | 8,927            | С                              | 352  | 198   | 344                              | 696                        |
| Bald Knoll         | 24004  | 6,741            | С                              | 215  | 197   | 148                              | 363                        |
| Barracks Point     | 24005  | 8,140            | С                              | 170  | 249   | 262                              | 432                        |
| Big Flat           | 15031  | 6,464            | С                              | 529  | 0   | *                                | 529                        |
| Black Mountain     | 24007  | 1,255            | С                              | 42   | 92  | 78                               | 120                        |
| Brown Canyon       | 24011  | 1,591            | С                              | 20   | 0   | 46                               | 168                        |
| Buck Knoll         | 24012  | 4,134            | С                              | 153  | 116   | 300                              | 453                        |
| Buck Pasture       | 24013  | 2,708            | С                              | 100  | 70  | 64                               | 164                        |
| Bunting Canyon     | 14014  | 339              | С                              | 4  | 19  | 6                                | 10                         |
| Burnt Cedar Point  | 24015  | 3,054            | С                              | 105  | 223   | 180                              | 285                        |
| Burnt Flat         | 24016  | 897              | С                              | 20   | 46  | 48                               | 68                         |
| Carmel Junction    | 24021  | 3,356            | С                              | 14   | 198   | 21                               | 35                         |
| Cave Creek         | 24092  | 645              | С                              | 16   | 0   | 61                               | 77                         |
| Chris Spring       | 34022  | 7,265            | С                              | 216  | 473   | 160                              | 376                        |
| Circleville Canyon | 00809  | 4,280            | С                              | 88   | 0   | *                                | 88                         |
| Clay Flat          | 24023  | 5,286            | С                              | 210  | 120   | 119                              | 329                        |
| Coal Hollow        | 04165  | 536              | С                              | 22   | 17  | **                               | 22                         |
| Coal Mine          | 24024  | 250              | С                              | 4  | 36  | 6                                | 10                         |
| Cogswell Point     | 04156  | 10               | С                              | 0  | 0   | **                               | 0                          |
| Coop Creek         | 24025  | 477              | С                              | 20   | 59  | 15                               | 35                         |
| Cottonwood Spring  | 24027  | 7,888            | С                              | 555  | 119   | 183                              | 738                        |
| Cougar Canyon      | 24028  | 1,468            | С                              | 55   | 0   | 36                               | 91                         |
| Cove (Alton)       | 24029  | 158              | С                              | 10   | 0   | 21                               | 31                         |
| Cove (Circleville) | 00810  | 12,662           | С                              | 231  | 0   | 9                                | 240                        |
| Dog Valley         | 00812  | 9,704            | С                              | 336  | 280   | *                                | 336                        |
| Driveway           | 00011  | 860              | С                              | 20   | 0   | 18                               | 38                         |
| Dry Lake           | 24033  | 1,796            | С                              | 74   | 46  | 94                               | 168                        |
| Dry Wash           | 24034  | 1,977            | C, H                           | 206  | 0   | 80                               | 286                        |
| Dump               | 24032  | 215              | С                              | 8  | 72  | 12                               | 20                         |
| Eight Mile Gap     | 24035  | 571              | С                              | 15   | 10  | 27                               | 42                         |
| Eight Mile Pass    | 05304  | 440              | С                              | 17   | 19  | **                               | 17                         |

| Allotments               | Number | Federal<br>Acres | Livestock<br>Kind <sup>1</sup> | Active<br>Livestock<br>Permitted Use<br>(AUMs) | Suspended<br>Livestock<br>Permitted Use<br>(AUMs) | Wildlife<br>Allocation<br>(AUMs) | Total<br>AUMs<br>Allocated<br>2 |
|--------------------------|--------|------------------|--------------------------------|--|---|----------------------------------|---------------------------------|
| Elbow Springs            | 24037  | 2,352            | С                              | 50   | 134   | 77                               | 127                             |
| Elephant Cove            | 24038  | 7,604            | С                              | 432  | 194   | 304                              | 736                             |
| F.A.R.                   | 24046  | 4,492            | С                              | 100  | 422   | 115                              | 215                             |
| Farm Canyon              | 24040  | 3,262            | С                              | 243  | 0   | 122                              | 365                             |
| Fish Tail                | 24042  | 3,039            | С                              | 230  | 58  | 87                               | 317                             |
| Flume Hollow             | 24045  | 806              | С                              | 7  | 42  | 37                               | 44                              |
| Gardner Hollow           | 24049  | 2,192            | С                              | 30   | 18  | 87                               | 117                             |
| Glendale Bench           | 24051  | 1,735            | С                              | 130  | 0   | 170                              | 300                             |
| Gordon Point             | 14098  | 329              | С                              | 40   | 30  | 47                               | 87                              |
| Graveyard Hollow         | 25048  | 1,206            | S                              | 75   | 0   | *                                | 75                              |
| Harris Flat              | 24058  | 4,292            | С                              | 268  | 45  | 181                              | 449                             |
| Hawkins Wash             | 15005  | 7,878            | С                              | 515  | 165   | *                                | 552                             |
| Hay Canyon               | 04155  | 709              | С                              | 50   | 50  | 60                               | 110                             |
| Hillsdale                | 25035  | 1,483            | С                              | 140  | 0   | *                                | 140                             |
| Hogs Heaven              | 04154  | 1,404            | С                              | 50   | 490   | 136                              | 186                             |
| Isolated Tracts          | 14062  | 1,028            | С                              | 65   | 16  | 89                               | 154                             |
| John. R. Flat            | 24063  | 9,862            | С                              | 258  | 75  | 291                              | 549                             |
| Johnson Spring           | 00012  | 618              | С                              | 96   | 0   | **                               | 15                              |
| Johnson Ranch            | 24066  | 5,118            | С                              | 265  | 335   | 110                              | 375                             |
| Kanab Creek              | 24067  | 4,023            | С                              | 85   | 266   | 138                              | 223                             |
| Kanab Creek<br>Custodial | 00005  | 65               | С                              | 9  | 39  | ***                              | 9                               |
| Kane Springs             | 24068  | 15,271           | С                              | 253  | 651   | 457                              | 710                             |
| Kinnikkinnic Spring      | 14069  | 5,031            | С                              | 90   | 410   | 167                              | 257                             |
| Levanger Lakes           | 14070  | 872              | С                              | 33   | 0   | 43                               | 76                              |
| Limekiln Creek           | 15029  | 3,773            | С                              | 70   | 0   | *                                | 70                              |
| Limestone Canyon         | 25047  | 1,535            | С                              | 67   | 0   | *                                | 67                              |
| Lost Spring              | 24074  | 1,028            | С                              | 4  | 0   | 15                               | 19                              |
| Lower Herd               | 04101  | 820              | С                              | 25   | 140   | 61                               | 86                              |
| Lower Hog Canyon         | 14075  | 2,486            | С                              | 52   | 116   | 33                               | 85                              |
| Lower North Fork         | 04157  | 813              | С                              | 10   | 19  | 36                               | 46                              |
| Lower Sink Valley        | 04112  | 2,441            | С                              | 35   | 238   | ***                              | 35                              |
| Lydia                    | 24077  | 2,083            | С                              | 58   | 158   | 171                              | 229                             |
| Lydia's Canyon           | 24010  | 466              | С                              | 0  | 0   | 41                               | 41                              |
| Marshall Canyon          | 25027  | 909              | С                              | 30   | 0   | *                                | 150                             |
| Meadow Canyon            | 24080  | 6,061            | С                              | 25   | 74  | 132                              | 157                             |

| Allotments       | Number | Federal<br>Acres | Livestock<br>Kind <sup>1</sup> | Active<br>Livestock<br>Permitted Use<br>(AUMs) | Suspended<br>Livestock<br>Permitted Use<br>(AUMs) | Wildlife<br>Allocation<br>(AUMs) | Total<br>AUMs<br>Allocated<br><sup>2</sup> |
|------------------|--------|------------------|--------------------------------|--|---|----------------------------------|--|
| Mill Creek       | 00010  | 12,209           | С                              | 301  | 0   | 429                              | 730  |
| Muggins Flat     | 04162  | 638              | С                              | 12   | 56  | 13                               | 25   |
| Neuts Canyon     | 24087  | 2,419            | С                              | 112  | 62  | 237                              | 349  |
| North Fork       | 04160  | 366              | С                              | 15   | 1   | 14                               | 29   |
| Oak Springs      | 14088  | 2,797            | С                              | 87   | 231   | 121                              | 208  |
| Old Fort         | 14089  | 2,202            | С                              | 7  | 27  | 20                               | 27   |
| Orderville Gulch | 24090  | 4,824            | С                              | 200  | 50  | 366                              | 566  |
| Pine Spring      | 24093  | 8,498            | С                              | 473  | 202   | 30                               | 478  |
| Poverty Flat     | 24094  | 9,603            | С                              | 416  | 0   | 400                              | 816  |
| Red Butte        | 24095  | 5,046            | С                              | 196  | 232   | 226                              | 422  |
| Red Canyon       | 14096  | 11,910           | С                              | 448  | 52  | 417                              | 865  |
| Red Hollow       | 14097  | 1,156            | С                              | 40   | 62  | 76                               | 116  |
| Red Knoll        | 04140  | 5,879            | С                              | 175  | 550   | 243                              | 418  |
| Robinson Creek   | 14099  | 524              | С                              | 24   | 61  | 37                               | 61   |
| Rock Canyon      | 25046  | 8,281            | С                              | 233  | 0   | *                                | 484  |
| Rocking Chair    | 14100  | 1,572            | С                              | 91   | 138   | 175                              | 236  |
| Roller Mill      | 15030  | 1,883            | С                              | 184  | 0   | *                                | 184  |
| Sagehen Hollow   | 25045  | 5,812            | С                              | 444  | 147   | *                                | 444  |
| Sandy Creek      | 25052  | 8,461            | С                              | 688  | 0   | *                                | 688  |
| Sanford Bench    | 25028  | 9,570            | С                              | 1,081  | 0   | *                                | 1,081                                      |
| Sawmill          | 25049  | 539              | С                              | 30   | 0   | *                                | 30   |
| Seeps            | 14107  | 2,199            | С                              | 30   | 422   | 281                              | 311  |
| Sethy's Canyon   | 04108  | 7,295            | С                              | 262  | 373   | 224                              | 486  |
| Sevier           | 15006  | 652              | С                              | 34   | 40  | *                                | 34   |
| Sevier River     | 25036  | 2,308            | С                              | 340  | 0   | *                                | 340  |
| Shearing Corral  | 00007  | 4,023            | С                              | 100  | 0   | *                                | 100  |
| Sheep Spring     | 04142  | 3,474            | С                              | 223  | 279   | 111                              | 334  |
| South Canyon     | 25044  | 18,355           | С                              | 900  | 0   | *                                | 900  |
| Spencer Bench    | 04113  | 7,023            | С                              | 97   | 129   | 160                              | 257  |
| Spring Hollow    | 04151  | 573              | S                              | 9  | 0   | 0                                | 9  |
| Spry             | 05007  | 8,528            | С                              | 449  | 302   | *                                | 449  |
| Sugar Knoll      | 04117  | 2,686            | С                              | 112  | 0   | 48                               | 160  |
| Sunnyside        | 04118  | 410              | С                              | 14   | 0   | 14                               | 28   |
| Sunset Cliffs    | 04103  | 2,014            | С                              | 188  | 0   | *                                | 188  |
| Syler Knoll      | 04122  | 442              | С                              | 6  | 104   | 16                               | 22   |

| Allotments        | Number | Federal<br>Acres | Livestock<br>Kind <sup>1</sup> | Active<br>Livestock<br>Permitted Use<br>(AUMs) | Suspended<br>Livestock<br>Permitted Use<br>(AUMs) | Wildlife<br>Allocation<br>(AUMs) | Total<br>AUMs<br>Allocated<br>2 |
|-------------------|--------|------------------|--------------------------------|--|---|----------------------------------|---------------------------------|
| Table Mountain    | 04104  | 2,296            | S                              | 89   | 247   | 181                              | 270                             |
| Tebbs Hollow      | 25053  | 3,961            | С                              | 319  | 0   | *                                | 319                             |
| Thompson Point    | 04123  | 1,549            | С                              | 64   | 0   | 39                               | 103                             |
| Three Mile Creek  | 25051  | 2,666            | С                              | 200  | 0   | *                                | 200                             |
| Toms Canyon       | 04164  | 240              | С                              | 5  | 0   | ***                              | 5                               |
| Trail Canyon      | 04125  | 6,924            | С                              | 110  | 100   | 158                              | 268                             |
| Trail Well        | 14126  | 1,329            | C, H                           | 88   | 0   | 16                               | 104                             |
| Upper Hog         | 04128  | 4,183            | С                              | 100  | 183   | 98                               | 198                             |
| Upper North Fork  | 04158  | 714              | С                              | 10   | 80  | 73                               | 83                              |
| Upper Place       | 04129  | 1,581            | С                              | 23   | 29  | 69                               | 92                              |
| Upper Sink Valley | 04163  | 4,806            | С                              | 311  | 134   | 141                              | 452                             |
| Virgin River      | 04131  | 3,922            | C, H                           | 230  | 0   | 122                              | 352                             |
| Water Canyon      | 04132  | 3,398            | С                              | 48   | 0   | 51                               | 99                              |
| Willis Canyon     | 04143  | 1,675            | С                              | 16   | 0   | 13                               | 29                              |
| Yellowjacket      | 04137  | 7,378            | С                              | 241  | 998   | 315                              | 556                             |
| Zion              | 04138  | 11,085           | С                              | 270  | 1167  | 519                              | 789                             |
| Zion Park         | 04159  | 1,263            | С                              | 0  | 162   | 42                               | 42                              |
| TOTAL             |        | 434,713          | -                              | 17,987   | 13,479  | 11,045                           | 29,424                          |

Notes:

<sup>1</sup> Livestock Kind Key: C = cattle; H = horse; S = sheep <sup>2</sup> Total = Sum of "Active Livestock Permitted Use" and "Wildlife Allocation"

\* For allotments within the CBGA RMP, big game will be provided 1,220 AUMs of forage in the short term and up to 2,042 AUMs of forage in the long term. However, these AUMs are not allotment specific; they are allotted decision area wide.

\*\*\* Wildlife AUMs not allotted in these allotments. \*\*\* Wildlife AUMs included only in the portion of the decision area administered by KFO.

Source: Kanab Field Office Grazing Files

### APPENDIX 15—RMP MONITORING PLAN

| Resource        | Suggested Monitoring Methodology  |
|-----------------|---|
| Air Quality     | Monitoring of air resource conditions for the purposes of evaluating<br>BLM activities is done in accordance with the BLM Air Resource<br>Management Monitoring Strategy (BLM, January 3, 2006). Air<br>Quality Monitoring for regulatory compliance purposes is primarily<br>conducted by Utah Department of Environmental Quality, Division of<br>Air Quality (UDAQ) with oversight by the Environmental Protection<br>Agency. The BLM Air Monitoring Strategy relies heavily on existing<br>monitoring networks such as the Interagency Monitoring of<br>Protected Visual Environments (IMPROVE) network, National<br>Atmospheric Deposition Program (NADP), and Clean Air Status and<br>Trends Network (CASTNET) and the UDAQ Air Monitoring Network.<br>Smoke emissions related to wildland fire and prescribed fire are<br>tracked and monitored according to the Utah Smoke Management<br>Plan as revised:<br>http://gacc.nifc.gov/egbc/predictive/weather/smoke.htm   |
| Soil Resources  | A sample of ground-disturbing projects with the potential to affect soil resources will be evaluated on a periodic basis to determine if best management practices or identified mitigation measures were followed and if they were effective. The number of allotments/acres that met the Upland and Riparian standards in the Utah Standards for Rangeland Health and the total number of allotments/acres assessed will also be reported in Rangeland, Inventory, Monitoring, and Evaluation report (RIME).  |
| Water Resources | As noted in WAT-1 and WAT-2, the BLM will work with the State<br>Division of Water Quality to monitor water quality. Review the water<br>quality data from instream monitoring stations annually.<br>In addition, use the rangeland health assessment process,<br>particularly Standard 4 according to Interpreting Indicators of<br>Rangeland Health, Rangeland Health Standards and Guidelines, and<br>BLM Manual 4180 and Handbook H-4180-1. Water quality monitoring<br>would be conducted at the established water quality sampling<br>stations on a priority basis using indicators that are chosen in<br>coordination with the State Division of Water Quality, Upper Sevier<br>Watershed Committee, and Virgin River Management Plan<br>Watershed Advisory Committee. Implement and monitor<br>effectiveness of BMPs to protect the quality and beneficial uses of<br>water at the project level. BMPs will be monitored and evaluated on<br>implementation and effectiveness as part of the project or activity<br>plan.<br>Completion of the Water Source Inventory and maintenance of water<br>rights data base would provide needed information to assert federal<br>water rights, especially Public Water Reserves to protect federal<br>investments and to ensure a reliable water supply for beneficial uses<br>of public lands. |
| Vegetation      | Measure trends in vegetative production, structure, and composition,<br>soil/site stability, watershed function, and integrity of biotic<br>community. Use the rangeland health assessment process<br>prescribed in the most current versions of Interpreting Indicators of<br>Rangeland Health, Rangeland Health Standards and Guidelines, and<br>BLM Manual 4180 and Handbook H-4180-1 guiding implementation<br>of the rangeland health standards. Determine level of PNC using the<br>Rangeland Health Assessments (VEG-3).<br>Conduct periodic measurements of plant composition, vigor, and<br>productivity, as well as the amount and distribution of plant cover and  |

| Resource   | Suggested Monitoring Methodology   |
|--|--|
|  | litter. Monitoring of existing condition of vegetation would consist of identifying ecological sites, determining ecological status, determining soil types, vegetation mapping, baseline inventory, and assembling existing basic information.  |
|  | Monitor for seedling establishment, seedling and sapling survival,<br>and understory herbaceous plant diversity. Monitor for effectiveness<br>of treatments in rare plant communities that receive restoration<br>treatments.  |
|  | As noted under VEG-8 and VEG-10, monitor riparian condition and functional status. Conduct Proper Functioning Condition (PFC) Assessment per TR 1737-9 and TR 1737-15 (assessment for streams) and TR 1737-11 and TR 1737-16 (assessments for lakes/wetlands) to assess the functionality of riparian and wetland areas.   |
|  | Conduct annual monitoring for new noxious weeds, concentrating in<br>areas where ground disturbing activities have occurred, and where<br>the public or agency personnel have reported sightings. Visit known<br>noxious weed sites that are identified for treatment, and evaluate for<br>effectiveness of control (annually). Monitor for both invasiveness and<br>impacts. Monitor for new satellite populations of noxious weeds<br>beyond existing noxious weed infestations/populations. For all<br>known sites and any newly discovered sites, locate with a global<br>positioning system (GPS) unit, photograph, measure, and determine<br>the need for future treatment. Survey all burned areas (natural and<br>prescribed) over 20 acres for noxious weeds. |
| Special Status Species<br>(Threatened, Endangered, and<br>Sensitive) | As noted in SSS-3, monitoring for listed and non-listed special status species and their habitats would be developed where land use and human disturbances have been identified as having potential for adverse impacts.   |
|  | According with conservation measures, agreements, and consultation efforts with the USFWS, monitoring listed species regularly.  |
|  | Long-term monitoring would be conducted using methods chosen in coordination with the USFWS and Utah Division of Wildlife Resources.   |
|  | Visual reconnaissance would be used to obtain general information<br>on the habitats of special status plants. Individual federally listed<br>species populations and habitats.  |
|  | Conduct monitoring jointly with Coral Pink Sand Dunes State Park for<br>the Coral Pink Sand Dunes tiger beetle and the Welsh's milkweed.   |
|  | As noted in SSS-36, monitor stream habitat to detect changes every 5 to 10 years in streams with historic or currently occupied Bonneville cutthroat trout, roundtail chub, bluehead sucker, and flannelmouth sucker habitat, in cooperation with UDWR.  |
| Fish and Wildlife  | In conjunction with other federal and state agencies, continue to<br>monitor wildlife populations in the planning area. Do this for<br>individual species such as mule deer, elk, and pronghorn; and<br>groups of species associated with source habitats such as<br>sagebrush-steppe, pinyon-juniper, and mixed conifer forest.<br>Periodically determine the adequacy of existing data (i.e. species,<br>habitats, etc.) for supporting management decisions.  |
| Wildland Fire Ecology  | Monitoring will determine whether fire management strategies,<br>practices, and activities are meeting resource management<br>objectives and concerns. Fire management plans and policies will be<br>updated as needed to keep current with national and state fire  |

| Resource           | Suggested Monitoring Methodology   |
|--------------------|--|
|                    | management direction. Scheduled program reviews (post-season fire review) will be conducted to evaluate fire management effectiveness in meeting goals and to re-assess program direction.   |
|                    | Pre-fire condition and post-fire effects will be determined by<br>monitoring vegetative response to treatments and progress towards<br>meeting objectives. Monitoring methods may include fuels and<br>vegetation transects, photo points, density, cover and frequency<br>plots, and ocular estimates. As avail-able, applicable remote sensing<br>data will also be incorporated into ecological condition monitoring.<br>The number of acres in Condition Class 1, 2, and 3 will be re-<br>evaluated during the watershed assessment process, and tracked<br>and reported in the Annual Program Summary and Planning Update.                  |
|                    | Wildfire rehabilitation effectiveness monitoring studies will be<br>encouraged to determine whether emergency rehabilitation<br>objectives are met. Monitoring requirements and methods will be<br>project specific.   |
| Cultural Resources | As noted in CUL-11, Establish a comprehensive monitoring program emphasizing:  |
|                    | <ul> <li>Cultural sites that have been previously identified as being impacted (e.g., from vandalism, erosion, grazing, or other)</li> <li>Cultural sites identified on maps, brochures, or other media that bring the site into public awareness</li> <li>Sites that are known to be popular for public visitation (e.g., public use site)</li> <li>A representative sample of sites known to be prone to impacts from predictable sources (e.g., vandalism, recreation, grazing, or development)</li> </ul>  |
|                    | As noted in CUL-6, update the Class I cultural resources inventory every 10 years.   |
|                    | As noted in CUL-15, prioritize new field inventories (Class II or III) directed by NHPA Section 110 as follows:  |
|                    | <ul> <li>Recreation areas identified for public use (i.e., OHV open areas)</li> <li>100 feet (30 meters) (depending on topography) on either side from the centerline of designated OHV routes</li> </ul>  |
|                    | <ul> <li>Areas of special cultural designation (ACECs, National Register<br/>sites, etc.) that have not been fully inventoried</li> </ul>  |
|                    | <ul> <li>Resources eligible for the NRHP at a national level of significance that have not been fully inventoried</li> <li>Road systems—100 feet (30 meters) (depending on topography)</li> </ul>  |
|                    | <ul> <li>on either side from the centerline of road</li> <li>Areas lacking existing inventories (large areas with no inventory)</li> </ul>   |
|                    | <ul><li>data)</li><li>5-mile vulnerability zones surrounding cities and towns</li></ul>  |
|                    | Hiking/equestrian trails.  |
|                    | A representative sample of significant cultural sites will be monitored<br>at least annually, and a mitigation plan based on the results of the<br>monitoring will be developed if necessary. Periodic ground patrols<br>will be used year-round to reduce or prevent looting of cultural<br>resource sites. Major sites will be periodically inspected to document<br>any damage and identify future stabilization needs. Management<br>plans will be developed for significant properties requiring protection<br>or stabilization when identified. Assistance to institutions doing<br>research or collection of specimens will be encouraged |
|                    | Cultural resources will continue to be inventoried and evaluated as part of project level planning to achieve the objective of protecting  |

| Resource   | Suggested Monitoring Methodology  |
|--|---|
|  | significant properties from impact by proposed federally funded or<br>authorized actions. This inventory and evaluation includes application<br>of the National Register criteria to cultural properties and consultation<br>with the State Historic Preservation Officer (SHPO), Tribal<br>Governments, and Advisory Council on Historic Preservation, as<br>appropriate per current regulations, policy, and the UT-BLM-SHPO<br>Protocol Agreement.   |
| Paleontological Resources                        | As noted in PAL-1, monitor the highest priority scientifically significant paleontological sites for trend and condition.   |
|  | As noted in PAL-5 and PAL-6, conduct non-Section 106 proactive inventories intermittently as resources allow. Prioritize paleontological resource inventories in the following areas (Map 31):  |
|  | <ul> <li>High resource potential</li> <li>Medium resource potential</li> <li>Low resource potential.</li> </ul>   |
|  | As noted in PAL-9, monitor high-significance (scientific or interpretive) sites with fossil resources that are not feasible or desirable to excavate or collect when possible to document their condition. Frequency of monitoring action for identified sites would be determined by the physical nature of the resource and potential threats.  |
|  | The number of localities visited on an annual basis and their condition will be reported in the Annual Program Summary and Planning Update.   |
| Visual Resources                                 | Any project design features or mitigation measures identified to<br>address visual resource management concerns will be monitored to<br>ensure compliance with established VRM classes. Where<br>appropriate, monitoring will include the use of the visual contrast<br>rating system, described in BLM Manual 8400 during project review<br>and upon project completion to assess the effectiveness of project<br>design features and any mitigating measures.   |
|  | The number of areas/projects monitored for compliance with VRM objectives will be reported in the Annual Program Summary.   |
| Non-WSA Lands with Wilderness<br>Characteristics | Monitor impacts to the wilderness characteristics, focusing on areas<br>with a higher potential for impacts, based on known visitor use<br>patterns and area accessibility. Monitor impacts from OHV use<br>annually. On a project-by-project basis, monitor potential and<br>observed impacts to wilderness characteristics. Assess impacts to<br>naturalness (e.g., rapid site inventory, review of naturalness based<br>on inventory methods) and solitude (e.g., actual counts of visitors).<br>Where funding and staffing allow, install and maintain traffic counters<br>and/or motion-sensitive cameras at key sites to enhance data<br>accuracy and assist in determining visitor use patterns. |
| Drought and Natural Disasters                    | During periods of prolonged drought or in areas that have<br>experienced natural disasters, increase monitoring noted under the<br>other resources, uses, and special designations to ensure that RMP<br>goals and objectives are met during these periods of increased<br>vulnerability.   |
| Forestry and Woodland Products                   | Record accomplishments for providing wood products in the Timber Sale Information System (TSIS) database and MIS reporting.   |

| Resource          | Suggested Monitoring Methodology   |
|-------------------|--|
| Livestock Grazing | Use the rangeland health assessment process prescribed in the most current versions of Interpreting Indicators of Rangeland Health, Rangeland Health Standards and Guidelines, and BLM Manual 4180 and Handbook H-4180-1 guiding implementation of the rangeland health standards.   |
|                   | The number of allotments/acres that meet the Standards for<br>Rangeland Health and the total number of allotments/acres assessed<br>will be reported in the Rangeland, Inventory, Monitoring, and<br>Evaluation report (RIME).   |
|                   | Assess Rangeland Health (qualitative) with an interdisciplinary team every 10 years or at the time of permit renewal. Report acres moving toward or away from meeting standards as part of meeting RMP objectives.   |
|                   | Actual Use: Animal Unit Month (AUM) numbers reported 15 days<br>after completing authorized grazing use on those allotments that<br>qualify for actual use reporting. Forage consumed by livestock would<br>be reported based on number of livestock and length of grazing use.<br>Numbers could potentially be reduced when allotments are not<br>meeting or progressing towards meeting standards due to livestock<br>grazing.   |
| Recreation        | Monitoring of recreation resources will continue to occur throughout<br>the planning area with emphasis placed on developed recreation<br>sites and Special Recreation Management Areas. Monitoring will<br>include regular patrols of these areas to check on signing, visitor use,<br>recreation use-related impacts, and user conflicts. Additionally,<br>monitoring will include identification and inspection of undeveloped<br>areas where there may be problems with compliance with rules and<br>regulations resulting in user conflicts and/or resource damage.   |
|                   | Actual visitor and/or vehicle counts will be documented at all<br>developed recreation sites and SRMAs as those sites and areas are<br>visited. Monitoring will also use visitor surveys, traffic counters, and<br>surveillance at developed recreation sites, documentation of user<br>conflicts, and photo documentation of the changes in resource<br>conditions over time. Monitoring may also include collection of data<br>from visitor comments and complaints, or information request calls or<br>emails. Monitoring data will be used to manage visitor use, develop<br>plans and projects to reduce visitor impacts, and to provide<br>appropriate facility or transportation system design. |
|                   | Special Recreation Permits (SRPs) issued to commercial operators<br>or for competitive events will be monitored for compliance with permit<br>terms, conditions and special stipulations, as well as administrative<br>and post-use requirements. Field monitoring will focus on visitation<br>levels and compliance with rules, regulations, and permit stipulations<br>for specific sites, dispersed uses, and prescribed standards and<br>guidelines.   |
|                   | Average visitor use numbers for developed recreation sites and<br>SRMAs will be reported in the BLM's Recreation Management<br>Information System (RMIS) to track visitor use and recreation use<br>trends over time. The number of recreation area management plans<br>prepared and special recreation permits (SRPs) issued will also be<br>reported annually in RMIS.   |
| Transportation    | Travel management and OHV use monitoring within the planning<br>area will focus on compliance with specific route and area<br>designations and restrictions, with primary emphasis on those routes<br>or areas causing the highest levels of user conflicts or adverse<br>impacts to resources. Various methods of monitoring may be<br>employed including; aerial monitoring, ground patrol, "citizen watch,"   |
| Resource            | Suggested Monitoring Methodology  |  |  |
|---------------------|---|--|--|
|                     | and appropriate methods of remote surveillance such as traffic counters, etc.   |  |  |
|                     | Evaluate trail impacts on natural resources through visual<br>inspections, photo at problem areas (erosion, users short cutting,<br>etc). Use trail traffic counters where appropriate to determine visitor<br>use levels. Involve volunteers to assist in trail monitoring where<br>appropriate and feasible.  |  |  |
|                     | Periodically check that routes meet the objectives set forth in the<br>RMP to ensure resource conditions such as water quality, wildlife/fish<br>habitat, or recreational values are maintained and available to<br>communities and users, and ensure resource values are not<br>compromised.   |  |  |
|                     | Route or area closures will be regularly monitored for compliance.<br>Cooperation with other agencies in travel management and OHV use<br>monitoring will continue to be emphasized, and improved wherever<br>possible.   |  |  |
| Lands and Realty    | Land use authorizations will be monitored through periodic field<br>examinations to ensure compliance with the terms and conditions of<br>the authorizing document. On-the-ground monitoring will occur<br>immediately upon issuance of the authorization and periodically<br>throughout the life of the authorization. Records as to the status of<br>the authorization are tracked through the BLM accomplishment<br>tracking process (Legacy Rehost 2000 (LR-2000)). Management,<br>realty personnel, and other key staff will periodically review status of<br>authorizations and compliance. |  |  |
|                     | The number of use authorizations monitored annually and the number of those in compliance with terms and conditions of the authorization in any given fiscal year will be recorded in the Annual Program Summary and reported in LR-2000.   |  |  |
|                     | Land ownership adjustment actions will be monitored through the<br>BLM accomplishment tracking process. Management, realty<br>personnel, and other key staff members in the Kanab Field Office will<br>meet periodically to review program status and compliance with<br>goals and objectives. Changes in land ownership affecting BLM<br>lands or interests in lands will be recorded on the Utah State Office<br>Geographic Information System Data Base, on Master Title Plats and<br>on Surface and Minerals Status Maps in a timely manner.  |  |  |
|                     | The number of acres acquired and/or disposed of through land exchanges, acquisitions, sales, and Recreation and Public Purpose Act patents will be reported in LR-2000.   |  |  |
|                     | The effectiveness of existing right-of-way corridors and right-of-way<br>use areas will be discussed during the periodic meetings of<br>management, realty personnel and key KFO staff. The need for<br>additional corridors and use areas will also be discussed during<br>these meetings. Periodic on-the-ground inspections of the corridors<br>and use areas will be conducted to ensure they are being managed<br>correctly and that conflicting uses are not occurring which could<br>preclude the use of these locations for their intended purpose.                                       |  |  |
| Minerals and Energy | Any new mineral withdrawals from operation of the public land laws<br>and/or mineral laws will be reported in the LR-2000 as will any<br>withdrawal revocations. Withdrawals and revocation of withdrawals<br>will be reported in LR-2000.  |  |  |
|                     | Monitoring of mineral operations will be done to ensure compliance<br>with applicable laws, regulations, conditions of leases/permits, and<br>the requirements of approved exploration/development<br>plans/applications. Monitoring activities will include:   |  |  |

| Resource                                   | Suggested Monitoring Methodology  |  |  |
|--|---|--|--|
|  | 1. Periodic field inspections of leasable mineral activities. Inspections will be conducted to determine compliance with applicable laws, regulations, lease stipulations, and the requirements of approved exploration /development plans, applications for permit to drill, and sundry notices.   |  |  |
|  | <ol> <li>Monitoring of oil and gas drilling/production activities in the<br/>decision area. Total gross surface disturbance and net surface<br/>disturbance from all drilling will be tracked.</li> </ol>   |  |  |
|  | An accurate accounting of production will also be tracked on<br>producing leases. Acres of new disturbance, acres re-claimed, and<br>production numbers from producing leases will be reported in the<br>Annual Program Summary.  |  |  |
|  | Monitoring of mining operations will be done to ensure compliance<br>with 43 CFR 3809, 3802 and 3715 and other regulations and<br>conditions of approval, specifically preventing "unnecessary or undue<br>degradation". When applicable and practical, Plan and Notice review,<br>inspections and associated compliance work will be coordinated with<br>the Utah Division of Oil, Gas and Mining (DOGM).  |  |  |
|  | Field inspections will look for compliance with the Plans of Operation<br>and Notices of Intent and include monitoring of weed control,<br>reclamation of disturbed areas, revegetation and protection of the<br>environment and public health and safety. Findings for each<br>inspection will be documented. Any non-compliance items will be<br>noted and the appropriate regulatory procedures followed.  |  |  |
|  | The number of explorations/operations monitored and the number in compliance will be reported in LR-2000 and CBS (Collection and Billing System).   |  |  |
|  | Monitoring of salable minerals will be done on a periodic basis to<br>ensure compliance with applicable laws, regulations, BLM policy<br>contained in BLM Manual Section 3600, Handbook H-3600- 1, and<br>the requirements of the approved mining plan.   |  |  |
|  | Inspections will specifically note production verification compliance<br>with reclamation, weed control and the protection of the environment<br>and public health and safety. Operations in sensitive environmental<br>areas or operations with a high potential for greater than usual<br>impacts will be inspected more often. Identification and resolution of<br>salable mineral trespasses will also be performed.  |  |  |
|  | The number of mineral material sites monitored will be reported in LR-2000 and CBS.   |  |  |
| Areas of Critical Environmental<br>Concern | The Cottonwood Canyon ACEC will have a management plan<br>prepared that will include a monitoring component. Specific<br>monitoring methods will be identified in the ACEC plan, but<br>techniques could include photo points, line intercept transects, ocular<br>surveillance, study plots, or value points. A mitigation plan will be<br>developed based on the results of the monitoring, if necessary.   |  |  |
|  | The long term monitoring program will include the visitation of a representative sample of various relevant and important values within the designated ACEC, as well to establish baseline information on the current condition of these values. Once the baseline condition assessment information has been compiled, the ACEC will be monitored at least once every four years to identify any potential adverse impacts that might occur and identify trends in resource condition and/or deterioration, and to determine whether any actions taking place in the area are causing detrimental changes to the values deemed relevant and important. Any changes will be noted and recorded in the cultural resource data base and reported to the Field Manager. |  |  |

| Resource               | Suggested Monitoring Methodology  |
|------------------------|---|
| Wild and Scenic Rivers | Conduct monitoring, including periodic patrols to check boundaries, signing, and visitor use to ensure that outstandingly remarkable values are not compromised on the suitable WSR segments. Inspect planned projects as well as on-the-ground projects for compliance to maintain WSR integrity. Monitor the upper and lower boundaries of each WSR at a minimum of once per year, document with photos at permanent locations at the on-stream boundaries. Every other year inspect random segments of the interior of each WSR for compliance to maintain WSR integrity.            |
| Wilderness             | The Paria Canyon-Vermilion Cliffs Wilderness Area will be monitored<br>in accordance with the direction provided in the Wilderness<br>Management Plan, 1986, unless direction is updated. Any new areas<br>that may be designated wilderness by Congress over the life of the<br>plan would be monitored in accordance with guidance developed in<br>their respective wilderness management plans.  |
| Wilderness Study Areas | Wilderness Study Areas will be monitored in accordance with<br>direction provided in the Interim Management Policy for Lands Under<br>Wilderness Review (BLM Handbook H-8550-1), Chapter 2 section D.<br>The policy requires monitoring of all WSAs at least once per month<br>during the months the area is accessible by the public. Suitable<br>monitoring methods will include both aerial and ground surveillance.<br>As allowed by the IMP, alternative monitoring schedules may be<br>prepared and implemented if approved by the State Director.                                |
| Other Designations     | Following development of the comprehensive management plan for<br>the National Historic Trail (OD-2), the prepared Activity Trail Plan<br>(OD-3) will include monitoring for the segments within the Kanab<br>Field Office. Monitoring should include inspection of planned<br>projects as well as on-the-ground projects for compliance to maintain<br>remaining trail integrity. Assure that the VRM objectives for public<br>lands seen along the trail are met.<br>Monitor any interpretive signs installed along the Old Spanish<br>National Historic Trail for wear or vandalism. |

# APPENDIX 16. STANDARDS AND GUIDES FOR GRAZING MANAGEMENT

The BLM has developed the following Fundamentals of Rangeland Health and their companion rules-Standards for Rangeland Health and Guidelines for Grazing Management for BLM in Utah ([BLM-UT-GI-97-001-4000] U.S. Department of Interior, Bureau of Land Management, Utah State Office 1997).

# D.1. FUNDAMENTALS OF RANGELAND HEALTH

As provided by regulations, developed by the Secretary of the Interior on February 22, 1995, the following conditions must exist on BLM lands:

- 1. Watersheds are in, or making significant progress toward, properly functioning physical condition, including their upland, riparian –wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, and timing and duration of flow.
- 2. Ecological processes, including the hydrologic cycle nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
- 3. Water quality complies with State water quality standards and achieves, or is making significant progress towards achieving established BLM management objectives such as meeting wildlife needs.
- 4. Habitats; are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered Species, Federal proposed, Category 1 and 2 Federal candidate and other special status Species.

In 1997, the BLM in Utah developed rules to carry out the Fundamentals of Rangeland health. These are called Standards for Rangeland health and Guidelines for grazing management.

**Standards** spell out conditions to be achieved on BLM Lands in Utah, and **Guidelines** describe practices that will be applied in order to achieve the Standards.d.2. Standards for Rangeland Health

#### **STANDARD 1.** UPLAND SOILS EXHIBIT PERMEABILITY AND INFILTRATION RATES THAT SUSTAIN OR IMPROVE SITE PRODUCTIVITY, CONSIDERING THE SOIL TYPE, CLIMATE, AND LANDFORM.

As indicated by:

- 1. Sufficient cover and litter to protect the soil surface from excessive water and
- 2. wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.
- 3. The absence of indicators of excessive erosion such as rills, soil pedestals. and actively eroding gullies.

4. The appropriate amount, type, and distribution Of vegetation reflecting the presence of (1) the Desired Plant Community IDPCI, where identified in a land use plan, or (2) where the PVC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

#### STANDARD 2. RIPARIAN AND WETLAND AREAS ARE IN PROPERLY FUNCTIONING CONDITION. STREAM CHANNEL MORPHOLOGY AND FUNCTIONS ARE APPROPRIATE TO SOIL TYPE, CLIMATE AND LANDFORM.

As indicated by:

- 1. Stream bank vegetation consisting of or showing a trend toward species with root masses capable of withstanding high stream flow events. Vegetative cover adequate to protect stream banks and dissipate stream flow energy associated with high-water flows. protect against accelerated erosion. capture sediment. and provide for groundwater recharge.
- 2. Vegetation reflecting: Desired Plant Community. maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition. high vigor. large woody debris when site potential allows. and providing food. cover and other habitat needs for dependent animal species.
- 3. Revegetating point bars: lateral stream movement associated with natural sinuosity: channel width. depth, pool frequency and roughness appropriate to landscape position.
- 4. Active floodplain.

#### STANDARD 3. DESIRED SPECIES, INCLUDING NATIVE, THREATENED.

As indicated by:

- 1. Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.
- 2. Habitats connected at a level to enhance species survival.
- 3. Native species reoccupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of nonnative species.
- 4. Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community DPC, where identified in a land use plan conforming to these Standards, or (2) where the DPC is identified a community that equally sustains the desired level of productivity and properly functioning ecologic processes.

#### STANDARD 4. BLM WILL APPLY AND COMPLY WITH WATER QUALITY STANDARDS ESTABLISHED BY THE STATE OF UTAH (R.317-2) AND THE FEDERAL CLEAN WATER AND SAFE DRINKING WATER ACTS. ACTIVITIES ON BLM LANDS WILL FULLY SUPPORT THE DESIGNATED BENEFICIAL USES DESCRIBED IN THE UTAH WATER QUALITY STANDARDS {R.317-2} FOR SURFACE AND GROUNDWATER. 1

As indicated by:

- 1. Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters.
- 2. Macro-invertebrate communities that indicate water quality meets aquatic objectives.

Because BLM Lands provide forage for grazing of wildlife, wild horses and burros, and domestic livestock, the following rules have been developed to assure that such grazing is consistent with the Standards listed here.

1. BLM will continue to coordinate monitoring water quality activities with other Federal, State and technical agencies.

# D.3. GUIDELINES FOR GRAZING MANAGEMENT

- 1. Grazing management practices will be implemented that:
  - a. Maintain sufficient residual vegetation and litter on both upland and riparian sites to protect the soil from wind and water erosion and support ecological functions;
  - b. Promote attainment or maintenance of proper functioning condition riparian/wetland areas, appropriate stream channel morphology, desired soil permeability and permeability and infiltration, and appropriate soil conditions and kinds and amounts of plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow.
  - c. Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow;
  - d. Maintain viable and diverse populations of plants and animals appropriate for the site,
  - e. Provide or improve within the limits of site potentials, habitat for Threatened or Endangered Species;
  - f. Avoid grazing management conflicts with other species that have the potential of becoming protected or special status species;
  - g. Encourage innovation, experimentation and the ultimate development of alternatives to improve rangeland management practices;
  - h. Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the Standards.
- 2. Any spring or seep developments will he designed and constructed to protect ecological process and functions and improve livestock, wild horse and wildlife distribution.
- 3. New rangeland projects for grazing will be constructed in a manner consistent with the Standards. Considering economic circumstances and site limitations, existing rangeland projects and facilities that conflict with the achievement or maintenance of the Standards will be relocated and/or modified.
- 4. Livestock salt blocks and other nutritional supplements will be located away from riparian/wetland areas or other permanently located, or other natural water sources. It is recommended that the locations of these supplements be moved every year.
- 5. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands nonintrusive, nonnative plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) can not achieve ecological objectives as well as nonnative species, and/or (d) cannot compete with already established native species
- 6. When rangeland manipulations are necessary, the best management practices, including biological processes, fire and intensive grazing, will be utilized prior to the use of chemical or mechanical manipulations.

- 7. When establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience is to be considered. Aesthetic and scenic values, water, campsites and opportunities for solitude are among those considerations.
- 8. Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein, and other supplements) for the purpose of substituting for inadequate natural forage will not be conducted on BLM lands other than in (a) emergency situations where no other resource exists and animal survival is in jeopardy, or (b) situations where the Authorized Officer determines such a practice will assist in meeting a Standard or attaining a management objective.
- 9. In order to eliminate, minimize, or limit the spread of noxious weeds, (a) only hay cubes, hay pellets, or certified weed-free hay will be fed on BLM lands, and (b) reasonable adjustments in grazing methods, methods of transport, and animal husbandry practices will be applied.
- 10. To avoid contamination of water sources and in advertent damage to non-target species, aerial application of pesticides will not be allowed within 100 feet of a riparian wetland area unless the product is registered for such use by the EPA.
- 11. On rangelands where a standard is not being met, and conditions are moving toward meeting the standard, grazing may be allowed to continue. On lands where a standard is not being met, conditions are not improving toward meeting the standard or other management objectives, and livestock grazing is deemed responsible, administrative action with regard to livestock will be taken by the Authorized Officer pursuant to CUR 4180.2(c).
- 12. Where it can he determined that more than one kind of grazing animal is responsible for failure to achieve a Standard, and adjustments in management are required. those adjustments will be made to each kind of animal, based on interagency cooperation as needed. in proportion to their degree of responsibility.
- 13. Rangelands that have been burned, reseeded or otherwise treated to alter vegetative composition will be closed to livestock grazing as follows: (I) burned rangelands, whether by wildfire or prescribed burning, will be ungrazed for a minimum of one complete growing season following the burn; and (2) rangelands that have been reseeded or otherwise chemically or mechanically treated will be ungrazed for a minimum of two complete growing seasons.
- 14. Conversions in kind of livestock (such as from sheep to cattle) will be analyzed in light of Rangeland Health Standards. Where such conversions are not adverse to achieving a Standard, or they are not in conflict with BLM land use plans, the conversion will be allowed.

# APPENDIX 17. HYDRAULIC CONSIDERATIONS FOR PIPELINES CROSSING STREAM CHANNELS; TECHNICAL NOTE 423

#### Suggested citations:

- Fogg, J. and H. Hadley. 2007. Hydraulic considerations for pipelines crossing stream channels. Technical Note 423. BLM/ST/ST-07/007+2880. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. 18 pp. http://www.blm.gov/nstc/library/techno2.htm.
- U.S. Department of the Interior. 2007. Hydraulic considerations for pipelines crossing stream channels. Technical Note 423. BLM/ST/ST-07/007+2880. Bureau of Land Management, National Science and Technology Center, Denver, CO. 18 pp. *http://www.blm.gov/nstc/library/techno2.htm.*

# ABSTRACT

High flow events have the potential to damage pipelines that cross stream channels, possibly contaminating runoff. A hydrologic analysis conducted during the design of the pipeline can help determine proper placement. Flood frequency and magnitude evaluations are required for pipelines that cross at the surface. There are several methods that can be used, including reconnaissance, physiographic, analytical, and detailed methods. The method used must be appropriate for the site's characteristics and the objectives of the analysis. Channel degradation and scour evaluations are required for pipelines crossing below the surface. Proper analysis and design can prevent future pipeline damage and reduce repair and replacement costs.

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#### INTRODUCTION

In 2002, the U.S. Fish and Wildlife Service raised concerns about the potential for flash floods in ephemeral stream channels to rupture natural-gas pipelines and carry toxic condensates to the Green River, which would have deleterious effects on numerous special-status fish species (Figure 1). In November of the same year, BLM hydrologists visited the Uinta Basin in Utah to survey stream channels and compute flood magnitudes and depths to better understand possible flooding scenarios. From this they developed construction guidance for pipelines crossing streams in Utah. This guidance was later modified so that it was generally applicable to the arid and semiarid lands of the intermountain west. It may also have general applicability in other areas of the western United States. The purpose of this document is to present the modified guidance for placement of pipelines crossing above or below the surface of stream channels to prevent inundation or exposure of the pipe to the hydraulic forces of flood events.



Figure 1. Pipeline breaks during flooding can release condensate toxic to sensitive fish species.

# SURFACE CROSSINGS

Pipelines that cross stream channels on the surface should be located above all possible floodflows that may occur at the site. At a minimum, pipelines must be located above the 100-year flood elevation and preferably above the 500-year flood elevation. Two sets of relationships are available for estimating flood frequencies at ungaged sites in Utah. Thomas and Lindskov (1983) use drainage basin area and mean basin elevation for flood estimates for six Utah regions stratified by location and basin elevation (Table 1). Thomas et al. (1997) also use drainage area and mean basin elevation to estimate magnitude and frequency of floods throughout the southwestern U.S., including seven regions that cover the entire State of Utah. Results from both sets of equations should be examined to estimate the 100- and 500-year floods, since either of the relations may provide questionable results if the pipeline crosses a stream near the boundary of a flood region or if the drainage area or mean basin elevation for the crossing exceed the limits of the data set used to develop the equations.

| Regression equations for peak discharges for Uinta Basin (from Thomas and Lindskov 1983) |  |                                     |   |  |  |  |
|--|--|-------------------------------------|---|--|--|--|
| Discharge Q i  | Discharge Q in cubic feet per second, Area in square miles, Elevation in thousands of feet |                                     |   |  |  |  |
| Recurrence<br>interval (yrs)   | Equation   | Number of stations used in analysis | Average standard<br>error of estimate (%) |  |  |  |
| 2  | $Q = 1,500 A^{0.403} E^{-1.90}$  | 25                                  | 82  |  |  |  |
| 5  | Q = 143,000 A <sup>0.374</sup> E <sup>-3.66</sup>  | 25                                  | 66  |  |  |  |
| 10   | Q = $1.28 \times 10^6 A^{0.362} E^{-4.50}$   | 25                                  | 64  |  |  |  |
| 25   | Q = $1.16 \times 10^7 A^{0.352} E^{-5.32}$   | 25                                  | 66  |  |  |  |
| 50   | $Q = 4.47 \times 10^7 A^{0.347} E^{-5.85}$   | 25                                  | 70  |  |  |  |
| 100  | Q = $1.45 \times 10^8 \text{ A}^{0.343} \text{ E}^{-6.29}$                                 | 25                                  | 74  |  |  |  |

Table 1. Examples of Flood Frequency Equations for Ungaged Sites in Utah

Procedures for estimating 100-year and 500-year flood magnitudes for other States are described in the U.S. Geological Survey's National Flood Frequency Program (Ries and Crouse 2002) (Figure 2). Full documentation of the equations and information necessary to solve them is provided in individual reports for each State. The National Flood Frequency (NFF) Website (<u>http://water.usgs.gov/software/nff.html</u>) provides State summaries of the equations in NFF, links to online reports for many States, and factsheets summarizing reports for States with new or corrected equations. Background information in each State's flood frequency reports should be checked to ensure that application of the equations is not attempted for sites with independent variables outside the range used to develop the predictive equations.

| 🔣 National Flood Frequency Program (NFF)  |                          |
|---|--------------------------|
| <u>File G</u> raph <u>H</u> elp   |                          |
| Site Name: West Fork  |                          |
| Rural New Edit Delete   | Urban                    |
| Rural 1<br>Basin Drainage Area: 31 mi2<br>1 Region<br>Region: Northwest_Region<br>Drainage_Area = 31 mi2<br>Mean_Annual_Precipitation = 12 in<br>Crippen & Bue Region 13  | No Scenarios Available 🔗 |
| Recurrence         Peak, Standard Equivalent           Interval, yrs         cfs         Error, % Years           2         104         86           5         228         74           10         337         71           25         504         70           50         646         70           100         892         77           200         1010         80           500         1170         85           maximum:         55100         (for C&B region 13) |                          |
| Frequency Plot Hydrograph <u>W</u> eight  |                          |

Figure 2. View of the output from NFF.

Once the flood frequency for a site has been estimated, determining the depth of flow associated with an extreme flood (i.e., the elevation of the pipeline at the crossing) may be approached in a number of ways. Procedures for estimating depth of flow for extreme floods in Utah are presented in Thomas and Lindskov (1983). Similar procedures presented in Burkham (1977, 1988) are generally applicable for locations throughout the Great Basin and elsewhere. The reconnaissance, physiographic, analytical, and detailed methods described in those reports will be summarized briefly in this paper. Burkham (1988) describes an additional method (historical method) not presented here, since the data for its use (high-water marks for an extreme historical flood with known discharge and recurrence interval) are rarely available in public land situations for which this guidance is intended.

#### **RECONNAISSANCE METHOD**

The reconnaissance method (as the name implies) is a fairly rough and imprecise method for delineating flood-prone areas (Burkham 1988; Thomas and Lindskov 1983). It is most applicable to stable or degrading alluvial channels with multiple terrace surfaces, although such terraces may be difficult to detect on severely degrading streams. In this procedure, the channel of interest is examined to approximate the area that would be inundated by a large flood. A geomorphic reconnaissance of the site is conducted, and it may be supplemented with aerial photos, maps, and historical information available for the reach of interest. In addition to the morphology of the channel, floodplain, and terraces, information on vegetation (e.g., species,

flood tolerance, drought tolerance) and soils (e.g., development, stratification, and drainage) can be helpful for identifying flood-prone areas (Burkham 1988). For best results, the geomorphic analysis should include reaches upstream and downstream of the site and should attempt to determine the general state of the stream channel as aggrading, degrading, or stable. (Additional guidance on detection of stream degradation is presented in the section on subsurface crossings).

In the reconnaissance method, identification of bankfull elevation and the active floodplain (i.e., floodplain formed by the present flow regime) provides **inadequate** conveyance for extreme flood events (Figure 3). Past floodplains or present terraces also must be identified, since these surfaces may be inundated by extreme floods in the present flow regime, especially in arid and semiarid environments. Pipelines should be constructed so that they cross at or above the elevation of the highest and outermost terrace (Figure 4). The highest terrace is unlikely to be accessed in the modern flow regime by any but the most extreme floods.

Practitioners of the reconnaissance method need considerable experience in geomorphology, sedimentation, hydraulics, soil science, and botany. Also, since this method is based on a geomorphic reconnaissance of the site, no flood frequency analysis is required and no recurrence interval can be assigned to the design elevation. An additional drawback to the method is that the accuracy of the results is unknown. However, the reconnaissance method may be the most rational one for delineating flood-prone areas on some alluvial fans and valley floors where channels become discontinuous (Burkham 1988). While this is the quickest approach to designing a pipeline that crosses a channel, it likely will result in the most conservative estimate (i.e., highest elevation and greatest construction cost) for suspension of the pipeline.



Figure 3. Although this pipeline crossed above the bankfull channel indicators, it was not high enough to escape more extreme floods.



Figure 4. This New Mexico pipeline crosses the channel near the elevation of the highest terrace, which places it above even the most extreme flood events.

### Physiographic Method

A slightly more intensive approach to designing pipelines that cross streams is based on the physiographic method for estimating flood depths at ungaged sites described by Thomas and Lindskov (1983) and Burkham (1988). The procedure uses regional regression equations (similar to the flood frequency equations described above) to estimate maximum depth of flow associated with a specified recurrence-interval flood (Table 2). Flood depth is then added to a longitudinal survey of the channel thalweg in the vicinity of the crossing (10 to 20 channel widths in length), resulting in a longitudinal profile of the specified flood. Elevation of the flood profile at the point of pipeline crossing is the elevation above which the pipeline must be suspended. The method is generally applicable where 1) the project site is physiographically similar to the drainage basins used to develop the regression equations and 2) soil characteristics are the same at the project site as in the basins where the regression equations were developed. While this procedure requires a field survey and calculation of flood depths at points along the channel, it may result in a lower crossing elevation (and possibly lower costs) for the pipeline. Also, since the regional regression equations estimate flood depths for specific recurrenceinterval floods, it is possible to place a recurrence interval on the crossing design for risk calculations. However, regional regression equations linking depth of flood to recurrence interval have not been developed for many areas. In States where they have been developed (e.g., Alabama, Colorado, Illinois, Kansas, and Oklahoma), standard errors of the estimates have ranged from 17 to 28 percent, with an average standard error of 23 percent (Burkham 1988).

| Regression equations for flood depths for Uinta Basin (from Thomas and Lindskov 1983)              |  |  |   |  |  |
|--|--|--|---|--|--|
| Flood depth <u>D</u> in feet, <u>A</u> rea in square miles, <u>E</u> levation in thousands of feet |  |  |   |  |  |
| Recurrence<br>interval (yrs)   | Equation                                       | Number of stations<br>used in analysis | Average standard<br>error of estimate (%) |  |  |
| 2  | D = 1.03 A <sup>0.159</sup>                    | 16                                     | 30  |  |  |
| 5  | $D = 13.3 A^{0.148} E^{-1.03}$                 | 16                                     | 28  |  |  |
| 10   | $D = 68.6 A^{0.131} E^{-1.69}$                 | 16                                     | 26  |  |  |
| 25   | $D = 556 A^{0.128} E^{-2.59}$                  | 16                                     | 24  |  |  |
| 50   | D = 1330 A <sup>0.123</sup> E <sup>-2.95</sup> | 15                                     | 24  |  |  |
| 100  | D = 1210 A <sup>0.130</sup> E <sup>-2.86</sup> | 14                                     | 22  |  |  |

 Table 2. Examples of Depth Frequency Equations for Ungaged Sites in Utah

#### ANALYTICAL METHOD

The analytical method described by Burkham (1988) uses uniform flow equations to estimate depth of flow associated with a particular magnitude and frequency of discharge. Typically, a trial-and-error procedure is used to solve the Manning uniform flow equation for depth of flow, given a design discharge (i.e., a flood of specified recurrence interval), a field-surveyed cross section and channel slope, and an estimate of the Manning roughness coefficient (n). Numerous software packages are available to facilitate the trial-and-error solution procedure (e.g., WinXSPRO). Since the Manning formula is linear with respect to the roughness coefficient, estimating this coefficient can be a significant source of error and is likely the most significant weakness in this approach. Estimating roughness coefficients (n values) for ungaged sites is a matter of engineering judgment, but *n* values typically are a function of slope, depth of flow, bed-material particle size, and bedforms present during the passage of the flood wave. Guidance is available in many hydraulic references (e.g., Chow 1959). Selecting n values for flows above the bankfull stage is particularly difficult, since vegetation plays a major role in determining resistance to flow. Barnes (1967) presents photographic examples of field-verified n values, and Arcement and Schneider (1989) present comprehensive guidance for calculating n values for both channels and vegetated overbank areas (i.e., floodplains). Depth of flow determined with uniform flow equations, such as the Manning equation, represents mean depth of flow to be added to the **cross section** at the site of the pipeline crossing.

Burkham (1977, 1988) also presented a simplified technique for estimating depth of flow, making use of the general equation for the depth-discharge relation:

#### $d = C Q^{f}$

Values of f (the slope of the relationship when plotted on logarithmic graph paper) can be determined from "at-station" hydraulic geometry relationships at gaging stations in the region. Only the upper portion of the gaging-station ratings should be used to derive the slope (f value) for application to extreme floods, since a substantial portion of the flow may be conveyed in the overbank area. Alternatively, Burkham (1977, 1988) presents a simplified procedure for estimating f that requires only a factor for channel shape. Leopold and Langbein (1962)

computed a theoretical value of 0.42 for natural channels, while Burkham (1988) computed a theoretical value of 0.46 for parabolic cross sections. Burkham (1977) earlier reported an average f value of 0.42 from 539 gaging stations scattered along the eastern seaboard and upper Midwest, while Leopold and Maddock (1953) reported an average f value of 0.40 for 20 river cross sections in the Great Plains and the Southwest. Park (1977) summarized f values from 139 sites around the world and found most values occurred in the range of 0.3 to 0.4. Additional assumptions in Burkham (1977, 1988) enable an estimate of the coefficient C in the depth-discharge relationship with only a single field measurement of width and maximum depth at some reference level in the channel (e.g., bankfull stage) (Burkham 1977, 1988). Depth of flow determined from Burkham's simplified technique represents **maximum** depth of flow to be added to the **thalweg** at the cross section.

The analytical methods described by Burkham (1977, 1988) generally will be more accurate than the physiographic and reconnaissance methods described previously; thus, they may result in lower pipeline elevations and construction costs than the previous methods. However, analysis of flood elevations for the most sensitive situations should probably be conducted with the detailed method described below.

# DETAILED METHOD

Additional savings in construction costs for pipelines crossing channels may be realized by applying a detailed water-surface-profile model of flow through the crossing site. The watersurface-profile model requires a detailed survey of both the longitudinal channel profile (at least 20 channel widths in length) and several cross sections along the stream (Figure 5). Design flows (e.g., 100-year and 500-year floods) are calculated for the channel at the crossing with the regional regression equations described above and routed through the surveyed channel reach using a step-backwater analysis. The step-backwater analysis uses the principles of conservation of mass and conservation of energy to calculate water-surface elevations at each surveyed cross section. Computed water-surface elevations at successive cross sections are linked to provide a water-surface profile for the flood of interest through the reach of interest. The computations are routinely accomplished in standard software, such as the U.S. Army Corps of Engineers' HEC-RAS model. Whereas the analytical methods described previously assume steady, uniform flow conditions through the reach, a detailed water-surface-profile model is capable of handling both gradually and (to some extent) rapidly varied flow conditions. Since the computation uses a detailed channel survey, it is the most accurate method to use; however, it is likely the most expensive method for the same reason. Burkham (1988) indicates that the error in flood depths predicted from step-backwater analysis can be expected to be less than 20 percent. The stepbackwater computations require an estimate of the Manning roughness coefficient (n) as an indicator of resistance to flow and assume fairly stable channel boundaries. Estimation of the roughness coefficient (n) includes the same considerations discussed previously for the analytical methods. The assumption of fairly stable channel boundaries is not always met with sand-bed channels and is an issue of considerable importance for designing subsurface pipeline crossings as well.



# Figure 5. Application of a water-surface-profile model requires both a longitudinal channel profile and several surveyed cross sections (Federal Interagency Stream Restoration Working Group 1998).

Of the methods presented for determining elevation of floods for pipelines crossing channels, the detailed method is the most accurate and should be used for situations with high resource values, infrastructure investment, construction costs, or liabilities in downstream areas. In undeveloped areas, the physiographic and analytical methods may be used to provide quick estimates of flood elevations for sites with fewer downstream concerns. The reconnaissance method provides the roughest estimates but may be all that is warranted in very unstable areas, such as alluvial fans or low relief valley floors (e.g., near playas). The detailed, analytical, and physiographic methods all assume relatively stable channel boundaries but may be used on sand channels with an accompanying loss of accuracy. In very sandy channels, the accuracy of results from the detailed method may not be significantly better than the results from one of the intermediate methods unless a mobile-boundary model is used (Burkham 1988).

# SUBSURFACE (BURIED) CROSSINGS

Since many of the pipelines are small and most of the channels are ephemeral, it is commonplace to bury the pipelines rather than suspending them above the streams. The practice of burying pipelines at channel crossings likely is both cheaper and easier than suspending them above all floodflows; however, an analysis of channel degradation and scour should be completed to ensure the pipelines are not exposed and broken during extreme runoff events (Figure 6). Without such an analysis, channels should be excavated to bedrock and pipelines placed beneath all alluvial material.



Figure 6. Channel degradation or scour during flash-flood events may expose buried pipelines, resulting in costly breaks.

Buried pipelines may be exposed by streambed lowering resulting from channel degradation, channel scour, or a combination of the two. Channel degradation occurs over a long stream reach or even the entire drainage network and is generally associated with the overall lowering of the landscape. Degradation also may be associated with changes in upstream watershed or channel conditions that alter the water and sediment yield of the basin. Channel scour is a local phenomenon associated with passage of one or more flood events or site-specific hydraulic conditions that may be natural or human-caused in origin. Either process can expose buried pipelines to excessive forces associated with extreme flow events, and an analysis of each is required to ensure integrity of the crossing.

#### CHANNEL DEGRADATION

Detection of long-term channel degradation must be attempted, even if there is no indication of local scour. Conceptual models of channel evolution (e.g., Simon 1989) have been proposed to describe a more-or-less predictable sequence of channel changes that a stream undergoes in response to disturbance in the channel or the watershed. Many of these models are based on a "space for time" substitution, whereby downstream conditions are interpreted as preceding (in time) the immediate location of interest, and upstream conditions are interpreted as following (in time) the immediate location of interest. Thus, a reach in the middle of the watershed that previously looked like the channel upstream will evolve to look like the channel downstream

(Federal Interagency Stream Restoration Working Group 1998). Since channel evolution models can help predict current trends where a pipeline crosses a channel, they may indicate areas to be avoided when relocation of the crossing is an option. Most conceptual models of channel evolution have been developed for landscapes dominated by streams with cohesive banks; however, the same processes occur in streams with noncohesive banks, with somewhat less welldefined stages.

Geomorphic indicators of recent channel incision (e.g., obligate and facultative riparian species on present-day stream terraces elevated above the water table) also may be helpful for diagnosing channel conditions. However, long-term trends in channel evolution are often reversed during major flood events, especially for intermittent and ephemeral channels in arid and semiarid environments. Thus, a stream that is degrading during annual and intermediate flood events may be filled with sediment (i.e., it may aggrade) from tributary inputs during a major flood, and channels that are associated with sediment storage (i.e., aggrading) during the majority of runoff events may be "blown out" with major degradation during unusual and extreme large floods.

In some situations, a quantitative analysis of channel degradation may be warranted. Plots of streambed elevation against time permit evaluation of bed-level adjustment and indicate whether a major phase of channel incision has passed or is ongoing. However, comparative channel survey data are rarely available for the proposed location for a pipeline to cross a channel. In instances where a gaging station is operated at or near the crossing, it is usually possible to determine long-term aggradation or degradation by plotting the change in stage through time for one or more selected discharges. The procedure is called a specific-gage analysis (Figure 7) and is described in detail in *Stream Corridor Restoration: Principles, Processes, and Practices* (Federal Interagency Stream Restoration Working Group 1998). When there is no gaging station near the proposed channel crossing, nearby locations on the same stream or in the same river basin may provide a regional perspective on long-term channel adjustments. However, specific-gage records indicate only the conditions in the vicinity of the particular gaging station and do not necessarily reflect river response farther upstream or downstream of the gage. Therefore, it is advisable to investigate other data in order to make predictions about potential channel degradation at a site.



Figure 7. Specific-gage plots of the gage heights associated with index flows through time may indicate general channel lowering in the drainage basin (Federal Interagency Stream Restoration Working Group 1998; Biedenharn et al. 1997).

Other sources of information include the biannual bridge inspection reports required in all States for bridge maintenance. In most States, these reports include channel cross sections or bed elevations under the bridge, and a procedure similar to specific gage analysis may be attempted (Figure 8). Simon (1989, 1992) presents mathematical functions for describing bed-level adjustments through time, fitting elevation data at a site to either a power function or an exponential function of time. Successive cross sections from a series of bridges in a basin also may be used to construct a longitudinal profile of the channel network; sequential profiles so constructed may be used to document channel adjustments through time (Figure 9). Again, bridge inspection reports so used indicate only the conditions in the vicinity of those particular bridges (where local scour may be present) and must be interpreted judiciously for sites upstream, downstream, or between the bridges used in the analysis.



Figure 8. Plots of bed elevation versus time may be developed from biannual bridge inspection reports to document systemwide degradation or aggradation (Federal Interagency Stream Restoration Working Group 1998).



# Figure 9. Sequential longitudinal profiles also may be used to document channel lowering through time (Federal Interagency Stream Restoration Working Group 1988; Biedenharn et al. 1997).

In the absence of channel surveys, gaging stations, and bridge inspection reports (or other records of structural repairs along a channel), it may be necessary to investigate channel aggradation and degradation using quantitative techniques described in Richardson et al. (2001) and Lagasse et al. (2001). Techniques for assessing vertical stability of the channel include incipient motion analysis, analysis of armoring potential, equilibrium slope analysis, and sediment continuity analysis. Incipient motion analysis and analysis of armoring potential are equally applicable to both long-term degradation and short-term scour and fill processes, while equilibrium-slope and sediment-continuity analyses are more closely tied to long-term channel processes (i.e., degradation and aggradation).

#### CHANNEL SCOUR

In addition to long-term channel degradation at subsurface crossings, general channel scour must be addressed to ensure safety of the pipeline. General scour is different from long-term degradation in that general scour may be cyclic or related to the passing of a flood (Richardson and Davis 2001). Channel scour and fill processes occur naturally along a given channel, and both reflect the redistribution of sediment and short-term adjustments that enable the channel to maintain a quasi-equilibrium form. In other words, channels in dynamic equilibrium experience various depths of scour during the rising stages of a flood that frequently correspond to equal amounts of fill during the falling stages, resulting in minimal changes in channel-bed elevation. Where pipelines cross channels, it is important to determine the potential maximum depth of scour so that the pipeline is buried to a sufficient depth and does not become exposed when bed scour occurs during a flood.

General scour occurs when sediment transport through a stream reach is greater than the sediment load being supplied from upstream and is usually associated with changes in the channel cross section. General scour can occur in natural channels wherever a pipeline crosses a constriction in the channel cross section (contraction scour). Equations for calculating

contraction scour generally fall into two categories, depending on the inflow of bed-material sediment from upstream. In situations where there is little to no bed-material transport from upstream (generally coarse-bed streams with gravel and larger bed materials), contraction scour should be estimated using clear-water scour equations. In situations where there is considerable bed-material transport into the constricted section (i.e., for most sand-bed streams), contraction scour equations can be found in many hydraulic references (e.g., Richardson and Davis 2001). In either case, estimates of general scour in the vicinity of the pipeline crossing must be added to the assessment of channel degradation for estimating the depth of burial for the crossing.

Other components of general scour can result from placement of subsurface crossings relative to the alignment of the stream channel. Pipelines crossing at bends in the channel are particularly troublesome, since bends are naturally unstable and tend to collect both ice and debris (which can cause additional constrictions in the flow). Channel-bottom elevations are usually lower on the outside of meander bends and may be more than twice as deep as the average depth in straighter portions of the channel. Crossings in the vicinity of stream confluences also create difficulties, since flood stages and hydraulic forces may be strongly influenced by backwater conditions at the downstream confluence. For example, sediment deposits from tributary inputs may induce contraction scour opposite or downstream of the deposit. Additional complications are introduced where pipelines are located near other obstructions in the channel. Channel-spanning obstructions (e.g., beaver dams or large wood) may induce plunge-pool scour downstream of the structure, and individual obstructions in the channel induce local scour akin to pier scour characteristic of bridge piers at highway crossings.

Even in the absence of contraction scour, general scour will still occur in most sand-bed channels during the passage of major floods. Since sand is easily eroded and transported, interaction between the flow of water and the sand bed results in different configurations of the stream bed with varying conditions of flow. The average height of dune bedforms is roughly one-third to one-half the mean flow depth, and the maximum height of dunes may nearly equal the mean flow depth. Thus, if the mean depth of flow in a channel was 5 feet, maximum dune height could also approach 5 feet, half of which would be below the mean elevation of the stream bed (Lagasse et al. 2001). Similarly, Simons, Li, and Associates (1982) present equations for antidune height as a function of mean velocity, but limit maximum antidune height to mean flow depth. Consequently, formation of antidunes during high flows not only increases mean water-surface elevation by one-half the wave height, it also reduces the mean bed elevation by one-half the wave height. Richardson and Davis (2001) reported maximum general scour of one to two times the average flow depth where two channels come together in a braided stream.

Pipeline crossings that are buried rather than suspended above all major flow events should address all of the components of degradation, scour, and channel-lowering due to bedforms described above. In addition, once a determination is made on how deep to bury the pipeline at the stream crossing, the elevation of the pipe should be held constant across the floodplain. If the line is placed at shallower depths beneath the floodplain, channel migration may expose the line where it is not designed to pass beneath the channel (Figure 10).



# Figure 10. Lateral migration of this stream channel during high water excavated a section of pipeline under the floodplain that was several feet shallower than at the original stream crossing.

In complex situations or where consequences of pipeline failure are significant, consideration should be given to modeling the mobile-bed hydraulics with a numerical model such as HEC-6 (U.S. Army Corps of Engineers 1993) or BRI-STARS (Molinas 1990). The Federal Interagency Stream Restoration Working Group (1998) summarizes the capabilities of these and other models and provides references for model operation and user guides where available.

### CONCLUSION

Pipelines that cross perennial, intermittent, and ephemeral stream channels should be constructed to withstand floods of extreme magnitude to prevent rupture and accidental contamination of runoff during high flow events. Pipelines crossing at the surface must be constructed high enough to remain above the highest possible floodflows at each crossing, and pipelines crossing below the surface must be buried deep enough to remain undisturbed by scour and fill processes typically associated with passage of peak flows. A hydraulic analysis should be completed during the pipeline design phase to avoid repeated maintenance of such crossings and eliminate costly repairs and potential environmental degradation associated with pipeline breaks at stream crossings.

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