

Appendix I

Presidential Proclamation



APPENDIX 1 - PRESIDENTIAL PROCLAMATION

Establishment of the Grand Staircase-Escalante National Monument by the President of the United States of America September 18, 1996

A PROCLAMATION

The Grand Staircase-Escalante National Monument's vast and austere landscape embraces a spectacular array of scientific and historic resources. This high, rugged, and remote region, where bold plateaus and multi-hued cliffs run for distances that defy human perspective, was the last place in the continental United States to be mapped. Even today, this unspoiled natural area remains a frontier, a quality that greatly enhances the monument's value for scientific study. The monument has a long and dignified human history: it is a place where one can see how nature shapes human endeavors in the American West, where distance and aridity have been pitted against our dreams and courage. The monument presents exemplary opportunities for geologists, paleontologists, archeologists, historians, and biologists.

The monument is a geologic treasure of clearly exposed stratigraphy and structures. The sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the processes of the earth's formation. A wide variety of formations, some in brilliant colors,

have been exposed by millennia of erosion. The monument contains significant portions of a vast geologic stairway, named the Grand Staircase by pioneering geologist Clarence Dutton, which rises 5,500 feet to the rim of Bryce Canyon in an unbroken sequence of great cliffs and plateaus. The monument includes the rugged canyon country of the upper Paria Canyon system, major components of the White and Vermilion Cliffs and associated benches, and the Kaiparowits Plateau. That Plateau encompasses about 1,600 square miles of sedimentary rock and consists of successive south-to-north ascending plateaus or benches, deeply cut by steep-walled canyons. Naturally burning coal seams have scorched the tops of the Burning Hills brick-red. Another prominent geological feature of the plateau is the East Kaibab Monocline, known as the Cockscomb. The monument also includes the spectacular Circle Cliffs and part of the Waterpocket Fold, the inclusion of which completes the protection of this geologic feature begun with the establishment of Capitol Reef National Monument in 1938 (Proclamation No. 2246, 50 Stat. 1856). The monument holds many arches and natural bridges, including the 130-foot-high Escalante Natural Bridge, with a 100 foot span, and Grosvenor Arch, a rare "double arch." The upper Escalante Canyons, in the northeastern reaches of the monument, are distinctive: in addition to several major arches

and natural bridges, vivid geological features are laid bare in narrow, serpentine canyons, where erosion has exposed sandstone and shale deposits in shades of red, maroon, chocolate, tan, gray, and white. Such diverse objects make the monument outstanding for purposes of geologic study.

The monument includes world class paleontological sites. The Circle Cliffs reveal remarkable specimens of petrified wood, such as large unbroken logs exceeding 30 feet in length. The thickness, continuity and broad temporal distribution of the Kaiparowits Plateau's stratigraphy provide significant opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodylians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the monument, these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlying Wahweap and Kaiparowits formations, contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world.

APPENDIX 1 - PRESIDENTIAL PROCLAMATION

Archeological inventories carried out to date show extensive use of places within the monument by ancient Native American cultures. The area was a contact point for the Anasazi and Fremont cultures, and the evidence of this mingling provides a significant opportunity for archeological study. The cultural resources discovered so far in the monument are outstanding in their variety of cultural affiliation, type and distribution. Hundreds of recorded sites include rock art panels, occupation sites, campsites and granaries. Many more undocumented sites that exist within the monument are of significant scientific and historic value worthy of preservation for future study.

The monument is rich in human history. In addition to occupations by the Anasazi and Fremont cultures, the area has been used by modern tribal groups, including the Southern Paiute and Navajo. John Wesley Powell's expedition did initial mapping and scientific field work in the area in 1872. Early Mormon pioneers left many historic objects, including trails, inscriptions, ghost towns such as the Old Paria townsite, rock houses, and cowboy line camps, and built and traversed the renowned Hole-in-the-Rock Trail as part of their epic colonization efforts. Sixty miles of the Trail lie within the monument, as does Dance Hall Rock, used by intrepid Mormon pioneers and now a National Historic Site.

Spanning five life zones from low-lying desert to coniferous forest, with scarce and scattered water sources, the monument is an outstanding biological resource. Remoteness, limited travel corridors and low visitation have all helped to preserve intact the monument's important ecological values. The blending of warm and cold desert floras, along with the high number of endemic species, place this area in the heart of perhaps the richest floristic region in the Intermountain West. It contains an abundance of unique, isolated communities such as hanging gardens, tinajas, and rock crevice, canyon bottom, and dunal pocket communities, which have provided refugia for many ancient plant species for millennia. Geologic uplift with minimal deformation and subsequent downcutting by streams have exposed large expanses of a variety of geologic strata, each with unique physical and chemical characteristics. These strata are the parent material for a spectacular array of unusual and diverse soils that support many different vegetative communities and numerous types of endemic plants and their pollinators. This presents an extraordinary opportunity to study plant speciation and community dynamics independent of climatic variables. The monument contains an extraordinary number of areas of relict vegetation, many of which have existed since the Pleistocene, where natural processes continue unaltered by man. These include

relict grasslands, of which No Mans Mesa is an outstanding example, and pinon-juniper communities containing trees up to 1,400 years old. As witnesses to the past, these relict areas establish a baseline against which to measure changes in community dynamics and biogeochemical cycles in areas impacted by human activity. Most of the ecological communities contained in the monument have low resistance to, and slow recovery from, disturbance. Fragile cryptobiotic crusts, themselves of significant biological interest, play a critical role throughout the monument, stabilizing the highly erodible desert soils and providing nutrients to plants. An abundance of packrat middens provides insight into the vegetation and climate of the past 25,000 years and furnishes context for studies of evolution and climate change. The wildlife of the monument is characterized by a diversity of species. The monument varies greatly in elevation and topography and is in a climatic zone where northern and southern habitat species intermingle. Mountain lion, bear, and desert bighorn sheep roam the monument. Over 200 species of birds, including bald eagles and peregrine falcons, are found within the area. Wildlife, including neotropical birds, concentrate around the Paria and Escalante Rivers and other riparian corridors within the monument.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President,

APPENDIX 1 - PRESIDENTIAL PROCLAMATION

in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Grand Staircase-Escalante National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the document entitled "Grand Staircase-Escalante National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 1.7 million acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby

appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws, other than by exchange that furthers the protective purposes of the monument. Lands and interests in lands not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to diminish the responsibility and authority of the State of Utah for management of fish and wildlife, including regulation of hunting and fishing, on Federal lands within the monument.

Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation. The Secretary of the Interior shall prepare, within 3 years of this date, a management plan for this monument, and shall promulgate such regulations for its management as he deems appropriate. This proclamation does not reserve water as a matter of Federal law. I direct the Secretary to address in the management plan the extent to which water is necessary for the proper care and management of the objects of this monument and the extent to which further action may be necessary pursuant to Federal or State law to assure the availability of water.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this eighteenth day of September, in the year of our Lord nineteen hundred and ninety-six, and of the Independence of the United States of America the two hundred and twenty-first.

William J. Clinton

Appendix 2

Antiquities Act of 1906



APPENDIX 2 - ANTIQUITIES ACT OF 1906

Act of June 18, 1906, 16 U.S.C. 431-433 (Popularly known as the Antiquities Act of 1906)

The following is the text of the Antiquities Act of 1906, under the authority of which President Clinton established Grand Staircase-Escalante National Monument.

16 U.S.C. § 431 National monuments; reservation of lands; relinquishment of private claims:

The President of the United States is authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected. When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is authorized to

accept the relinquishment of such tracts in behalf of the Government of the United States.

16 U.S.C. § 431a Limitation on further extension or establishment of national monuments in Wyoming:

No further extension or establishment of national monuments in Wyoming may be undertaken except by express authorization of Congress.

Appendix 3

Special Recreation Management Areas



APPENDIX 3 - SPECIAL RECREATION MANAGEMENT AREAS

ESCALANTE CANYONS SPECIAL RECREATION MANAGEMENT AREA (SRMA)

Area Description: The boundary line would follow the geographical topography including all the tributaries to the main Escalante Canyon. It would include trailheads for all the popular routes into the canyons.

Activities: Backpacking, canyoneering, non-motorized boating, and equestrian use.

Desired Future Condition: The overall recreation experience would continue to be primitive, uncrowded and remote. Overall social encounters would remain low compared to other southwest canyon hiking opportunities. However, a range of social encounters would be available, from experiences where parties would be encountered to where there would be little or no contact with others. People would be able to make informed decisions about which recreation opportunities meet their desires, and have their expectations met. Monument resources would not be impaired. Potential permit systems could address general public, commercial, and research users.

PARIA/HACKBERRY SRMA

Area Description: This area would be bordered on the west by Kitchen Canyon road, on the east by Cottonwood Canyon Road corridor, the confluence of Hackberry/Cottonwood creeks and the Paria river on the south, and the Dixie National Forest on the north excluding the Skutumpah corridor.

Activities: Backpacking, canyoneering, and equestrian use.

Desired Future Condition: The overall recreation experience would continue to be primitive, uncrowded and remote. Equestrian opportunities would be emphasized in Paria Canyon while backpacking opportunities would be emphasized in Hackberry Canyon. Potential permit systems could address general public, commercial, and research users.

FIFTYMILE MOUNTAIN SRMA

Area Description: Geographical area called Fiftymile Mountain including trail access points.

Activities: Equestrian use, backpacking, and hunting.

Desired Future Condition: The recreation experience would be primitive, uncrowded and remote. Visitors would not be encouraged to go to this area and commercial outfitting would be extremely limited. Research projects would also be kept at low levels for this area.

HOLE-IN-THE-ROCK ROAD CORRIDOR SRMA

Area Description: Hole-in-the-Rock Road corridor would be defined as the zone between the Escalante Canyons SRMA, the Fiftymile Mountain SRMA, and Glen Canyon NRA. This corridor would include Hole-in-the-Rock Road, historic Hole-in-the-Rock Trail route, Devils Garden Outstanding Natural Area/Instant Study Area, Batty Pass Caves Historic Site, Dance Hall Rock Historic Site, Chimney Rock, access to backcountry trailheads (Harris Wash, Dry Fork Coyote, Coyote Gulch, Hurricane Wash, etc.) and access to Glen Canyon NRA and Hole-in-the-Rock.

Activities: Scenic driving, all-terrain vehicle riding, day use hiking, picnicking, family gatherings, camping, equestrian use, mountain bicycling, photography, scenic and interpretive viewing.

Desired Future Condition: The recreation experience would focus on learning about

APPENDIX 3 - SPECIAL RECREATION MANAGEMENT AREAS

pioneer history, geology, and biology as well as scenic viewing. In addition, this corridor would be an outstanding area to interpret and demonstrate range management and future management of range resources.

This corridor has been very popular for dispersed camping and large family outings. Primitive group camping areas would be developed to accommodate this traditional use while protecting areas from overuse.

Designated primitive camping areas could also be identified for individual campers.

HIGHWAY 12 CORRIDOR SRMA

Area Description: The Highway 12 corridor located in the Monument. Includes Calf Creek Campground and Interpretive Trail, and Deer Creek Campground

Activities: Scenic driving, day use hiking, camping, equestrian use, road bicycling, scenic and interpretive viewing.

Desired Future Condition: The recreation experience would focus on learning about geology, history, archeology, biology, paleontology in addition to scenic viewing. Short interpretive trails and scenic overlooks would be developed to encourage visitors to learn more about these Monument resources. Opportunities would accommodate all

visitors. Information stations located in Boulder, Escalante, and Cannonville would disseminate educational materials to further information about these resources.

HIGHWAY 89 CORRIDOR SRMA

Area Description: Highway 89 corridor located in the Monument. This special recreation management area would encompass the Paria Movie Set and the old Paria townsite and the Paria Contact Station.

Activities: Scenic driving, day use hiking, camping, road and mountain bicycling, scenic and interpretive viewing.

Desired Future Condition: The recreation experience would focus on learning about geology, history, archeology, biology, and paleontology in addition to scenic viewing. Short interpretive trails and scenic overlooks would be developed to encourage visitors to learn more about these Monument values. Opportunities would accommodate all visitors. This corridor would be coordinated with the Vermilion Cliffs Highway Project.

Appendix 4

Wild and Scenic River Eligibility



APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WILD AND SCENIC RIVER ELIGIBILITY FINDINGS

The Wild and Scenic Rivers Act (October 2, 1968, Public Law 90-542) requires the Bureau of Land Management to consider wild and scenic river values in its land use planning process. The objective of the Wild and Scenic Rivers Act is to preserve in free-flowing condition selected rivers in the Nation which possess outstandingly remarkable values and to protect those rivers and their immediate environments for the benefit of present and future generations.

On November 6, 1997, the Bureau of Land Management's Utah State Director signed a Memorandum of Understanding (MOU) concerning wild and scenic river studies in Utah with the Governor of Utah, the Regional Forester of the Forest Service, the Intermountain Regional Director of the National Park Service, and affected local agencies. The Memorandum of Understanding establishes a cooperative relationship among the agencies for conducting wild and scenic river studies for Utah rivers. Under the Memorandum of Understanding, an interagency team was established to jointly evaluate river segments in the Monument and adjoining Federal lands [Dixie National Forest (NF), Bryce Canyon National Park (NP) and Glen Canyon National Recreation Area (NRA)]. Together, the team made eligibility findings for stream segments, including those which crossed agency boundaries. This coordinated interagency approach applied consistent criteria across agency jurisdictions, and looked at entire streams and logical watershed units in the study area. Actual designation of river segments would only occur through congressional action or as a result of Secretarial decision at the request of the Governor in accordance with provisions of the Wild and Scenic Rivers Act (WSRA). While this section outlines eligibility findings for the entire study area, suitability assessments will be done by individual agencies only for segments on their lands, due to differing planning procedures and time lines. The suitability study for segments on Grand Staircase-Escalante National Monument (GSENM) are found in Appendix 5.

Determining preliminary eligibility of individual river segments for possible inclusion into the National Wild and Scenic River System was accomplished by a team of Bureau of Land Management, United States Forest Service, and National Park Service specialists in February of 1998. The team used personal knowledge, 1994 Bureau of Land Management river evaluations and 32 layers of Geographic Information System (GIS) resource and land information to conduct the evaluations.

Following criteria established in the Wild and Scenic Rivers Act and outlined in Bureau of Land Management Manual 8351 and Forest Service Handbook 1909.12, the team determined whether or not each of the inventory segments was free-flowing and possessed one or more outstandingly remarkable values (ORVs). The values considered were: scenic, recreational, geological, fish and wildlife, historic, cultural, and other similar values such as ecological (riparian), botanical, paleontological, hydrological, and scientific study. Land uses were not considered in this phase. Inventory segments determined non-eligible were either not free-flowing or lacked any of the outstandingly remarkable value. Some non-eligible segments possessed one or more value, but when viewed in the regions of comparison, they were not outstandingly remarkable.

Regions of comparison were established for each of the outstandingly remarkable values. They are listed as follows:

Colorado Plateau:

- C botanical
- C archeological
- C geological
- C paleontological
- C ecological
- C wildlife
- C fisheries
- C scientific study

Wild and Scenic River Study Area (Grand Staircase-Escalante National Monument, Glen Canyon National Recreation Area, Dixie National Forest):

- C recreational
- C scenic
- C hydrological

Southern Utah and Northern Arizona:

- C historic
- C cultural

The following guidelines were followed when conducting this preliminary evaluation:

1. Threatened and endangered species known to occur in the river corridor automatically became an outstandingly remarkable value.
2. Potential wildlife habitat without confirmed species sightings did not become an outstandingly remarkable value.
3. Habitat for common wildlife species was not an outstandingly remarkable value.
4. Cultural and paleontological sites were used as supporting outstandingly remarkable values only, one of these sites by itself did not warrant preliminary listing.
5. Scenic outstandingly remarkable value were determined by using existing scenic quality inventories. In some cases, personal on-the-ground knowledge took precedence over the automated inventory data.

ELIGIBILITY FINDINGS

Subject matter experts and the public were invited to comment on the preliminary findings. Six public comments and 26 subject matter expert comments were received. Subject matter expert comments provided information and varied from suggesting many additional river segments be added to stating that none of the segments possessed outstandingly remarkable values.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

Summary of Public Comments

- A. Deer Creek has an irrigation pipeline and right-of-way for maintenance. A water right also exists.
- B. All waterways within the Monument should be designated.
- C. Bull Valley Gorge should be classified as Wild instead of Scenic. Willis Creek is free flowing.
- D. All riparian areas within the monument should be designated. Designation should not bring any improvements or restrictions on hiking with pack dogs.
- E. Agrees with the interagency team's recommendations.
- F. Utah Rivers Council asked questions regarding land uses in the river corridors [NOTE: land uses were not considered during eligibility determinations unless they affect the free-flowing nature of the segment]. They also asked specific questions on the beginning and ending of segments, preferring a land survey description (township, range and section) rather than using the map and landmark description provided.

In May of 1998, the interdisciplinary team reconvened to make final eligibility determinations. Final eligibility determinations were accomplished by looking at each segment and determining if the comments warranted changes in the preliminary findings. Again, the team only considered free-flowing nature and outstandingly remarkable values viewed in the regional context. Based on additional information and the comments received, several segments were added to the eligible list, bringing the total to 47. The tentative classification was changed for others. The results are shown in the eligible segments table. All eligible segments will be carried forward to the suitability assessment phase of Wild and Scenic River studies.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

**TABLE A4.1
ELIGIBLE RIVER SEGMENTS**

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
Escalante River Basin					
Alvey Wash/ Harris Wash	Harris Wash	Tenmile Crossing (Hole-in-the-Rock Road) to Escalante River	Scenic Recreational Wildlife Cultural Historic	C Tenmile Crossing to Bighorn Wash - Scenic C Bighorn Wash to unnamed road - Wild C Road to west side of state section - Scenic C State section to Escalante River - Wild	GSENM, Glen Canyon NRA
Boulder Creek	Lower Boulder Creek	Downstream side of State section to Escalante River	Scenic, Recreational, Cultural	Wild	GSENM
	East Fork Boulder Creek	Immediately below Boulder Top to upstream side of King's Pasture	Scenic, Recreational, Fish	Wild	Dixie NF
	*Dry Hollow Creek	3/4 mile above Monument boundary to Lower Boulder Creek	Scenic	Wild	GSENM
	*Slickrock Canyon	Headwaters (6720') to Deer Creek	Scenic, Recreational, Cultural, Ecological	Wild	GSENM, Dixie NF
	*Cottonwood Canyon	Headwaters to Lower Deer Creek	Scenic, Recreational, Cultural	Wild	GSENM, Dixie NF
	Lower Deer Creek	Slickrock Canyon to Lower Boulder Creek	Scenic, Recreational, Wildlife, Cultural, Botanical, Ecological	C Slickrock Canyon to Burr Trail - Recreational C Burr Trail to Escalante River - Wild	GSENM

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
Coyote Gulch	Coyote Gulch	C Confluence of Big Hollow Wash with Coyote Gulch (T39S, R7E, Sec 10), downstream to confluence with Escalante River. C Includes approximately 3/4 mile BLM segment in T39S, R7E, Sec 13	Scenic, Recreational, Geological, Wildlife	Wild	Glen Canyon NRA
Fortymile Wash	Fortymile Gulch (Wash)	Confluence of Carcass Wash with Fortymile Gulch (T40S, R8E, Sec 8), downstream to confluence with Willow Gulch (T40S, R8E, Sec 13)	Scenic, Cultural, Wildlife, Paleontological	Wild	Glen Canyon NRA
	Davis Gulch	Hole-in-the-Rock Road (T41S, R8 1/2E, Sec 11) downstream to Lake Powell normal full pool elevation	Scenic, Cultural, Historic	Wild	Glen Canyon NRA
	Fiftymile Creek	Hole-in-the-Rock Road (T41S, R8E, Sec 11) downstream to Lake Powell full pool elevation	Scenic, Cultural	Wild	Glen Canyon NRA
	Willow Gulch	Hole-in-the-Rock Road (T40S, R8E, Sec 27) downstream to Lake Powell normal full pool elevation (3,700' MSL)	Scenic, Recreational Geological, Fish, Cultural, Paleontological	Wild	Glen Canyon NRA
	* Cow Canyon	Entire canyon downstream to Lake Powell normal full pool elevation	Scenic, Cultural	Wild	Glen Canyon NRA
	* Fence Canyon	Entire canyon downstream to Lake Powell normal full pool elevation	Scenic	Wild	Glen Canyon NRA

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
The Gulch	The Gulch, *Blackwater Canyon, *Lamanite Arch Canyon, and *Water Canyon	C Headwaters and tributaries to Escalante River C Includes Blackwater, Lamanite Arch Canyon and Water Canyon	Scenic, Recreational, Cultural	C Headwaters to Forest Road #1473 - Wild, Along road - Recreational C Road #1472 to Burr Trail Road - Wild C Along Burr Trail - Recreational C Below Burr Trail - Wild C Black Water, Lamanite, and Water Canyons - Wild	GSENM, Dixie NF
	*Steep Creek	Headwaters approx. 1 mile below HWY 12 to The Gulch	Scenic, Recreational, Ecological	Wild	GSENM Dixie NF
Horse Canyon	Lower Horse Canyon	Outstanding Natural Area boundary to Escalante River	Scenic, Recreational, Paleontological	Wild	GSENM
	*Wolverine Creek	Entire	Scenic	Wild	GSENM
	*Little Death Hollow	Entire	Scenic, Recreational	Wild	GSENM
Moody Creek	Choprock Canyon	Main stem from confluence of north and south forks (T36S, R7E, Sec 21) downstream to confluence with Escalante River	Scenic, Cultural	Wild	Glen Canyon NRA
	Neon Canyon	From Golden Cathedral pouroff (T37S, R7E, Sec 5) downstream to confluence with Escalante River	Scenic, Recreational	Wild	Glen Canyon NRA
	Silver Falls Creek	From confluence with North Fork (Sec 5, T36S, R7E) downstream to confluence with Escalante River	Scenic, Historic	Wild	Glen Canyon NRA

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
Moody Creek	Moody Creek	From where road leaves river corridor (T36S, R8E, Sec 31) downstream to confluence with Escalante River	Scenic, Botanical	Wild	Glen Canyon NRA
	East Moody Creek	Entire Canyon	Scenic	Wild	Glen Canyon NRA
Pine Creek	Pine Creek	Pine Creek Box Section from north to south wilderness boundaries	Scenic, Recreational, Geological, Ecological	Wild	Dixie NF
Sand Creek	Escalante River	Pine Creek confluence to Coyote Gulch/Lake Powell (section extends into Moody Creek and Stevens Canyon Watersheds)	Scenic, Recreational, Geological, Fish, Wildlife, Cultural, Historic, Ecological, Paleontological	C Pine Creek to Highway 12 - Wild C Highway 12 to east side of private land - Recreational C Private land to Coyote Gulch - Wild	GSENM, Glen Canyon NRA
	Lower Sand Creek and *Willow Patch Creek	Sweetwater Creek to Escalante River	Scenic, Recreational, Fish, Historic, Ecological, Wildlife	Wild	GSENM
	Mamie Creek and west tributary	Headwaters on Dixie National Forest to Escalante River	Scenic, Recreational, Geological, Fish, Wildlife, Cultural, Ecological, Historical	Wild	GSENM, Dixie NF
	Death Hollow Creek	Headwaters on Dixie National Forest within Box-Death Hollow Wilderness to Mamie Creek	Scenic, Recreational, Cultural, Wildlife, Paleontological, Ecological	Wild	GSENM, Dixie NF
	Calf Creek	Headwaters to Escalante River	Scenic, Recreational, Wildlife, Cultural	C Headwaters to Lower falls - Wild C Lower falls to campground - Scenic C Campground to Escalante River - Recreational	GSENM
	*Phipps Wash and tributaries	Top to Escalante River	Scenic, Recreational	Wild	GSENM

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
Sand Creek	*Unnamed Tributary (West of Calf Creek)	Top to Escalante River	Scenic, Recreational, Geological, Cultural	Wild	GSENM
Twentyfive Mile Wash	Twentyfive Mile Wash	Rat Seep Hollow to Escalante River and unnamed wash on north side.	Recreational, Cultural	Wild	GSENM, Glen Canyon NRA
Stevens Canyon	Georgie's Canyon	Entire canyon including both forks	Scenic	Wild	Glen Canyon NRA
	Scorpion Gulch	Entire canyon, including approximately .15 mile administered by BLM.	Scenic	Wild	Glen Canyon NRA
	Fools Canyon	Entire canyon	Scenic	Wild	Glen Canyon NRA
	Fold Canyon	Entire canyon including the three main branches at the upper end	Scenic	Wild	Glen Canyon NRA
	Eastside Tributaries #1, 2, 3 (Sheep Canyon), 4	Four unnamed tributaries that drain to the west between upper Stevens Canyon and Escalante River; entire canyons of each	Scenic	Wild	Glen Canyon NRA
	Stevens Canyon	Entire canyon	Scenic	Wild	Glen Canyon NRA

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

WATERSHED NAME	RIVER SEGMENT NAME	SEGMENT DESCRIPTION	OUTSTANDINGLY REMARKABLE VALUES	TENTATIVE CLASSIFICATION	RESPONSIBLE LAND MANAGER
Paria River Basin					
Henrieville Creek Watershed	Yellow Creek	Segment on Bryce Canyon N.P.	Scenic, Wildlife, Historic, Recreational	Wild	Bryce NP
Sheep Creek	Paria River, including Deer Creek Canyon, Snake Creek, Hogeye Creek, *part of Kitchen Canyon, *Starlight Canyon, and Cottonwood Creek	Little Dry Valley to downstream side of private property below Highway 89 (Paria segment extends into Henrieville Creek and Paria River Watersheds)	Scenic, Recreational, Historic, Geological	C Paria - Recreational C Deer Creek - Wild C Snake - Wild C Hogeye - Wild C Kitchen - Wild C Starlight - Wild C Cottonwood Creek - Recreational	GSENM
	Bull Valley Gorge	Little Bull Valley to Sheep Creek	Scenic, Recreational, Geological, Wildlife	Wild	GSENM
	Lower Sheep Creek	Bull Valley Gorge to Paria River	Scenic, Recreational	Scenic	GSENM
	Sheep Creek	Segment on Bryce Canyon N.P.	Scenic, Geological, Wildlife, Historical	Wild	GSENM
Cottonwood Creek	Hackberry Canyon	Top to Cottonwood Creek	Recreational, Wildlife, Ecological	Scenic	GSENM
Park Wash	Buckskin Gulch	Wilderness boundary to Paria River, includes Wire Pass	Scenic, Recreational, Wildlife, Geological	Wild	Wilderness
Paria River	Lower Paria River	From where river leaves private land to Arizona State line	Scenic, Recreational, Wildlife, Geological	C Private land to wilderness boundary - Recreational C Segment in wilderness - Wild	GSENM, Kanab Field Office

* = Segments added on May 28, 1998 after receiving public comments and additional information.

Eligible River Segments

Criteria for eligibility: the segment must be free-flowing and possess at least one Outstandingly Remarkable Value when viewed in the regional context.

Ecologic value includes riparian and other significant natural communities or processes

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

**TABLE A4.2
WILD AND SCENIC RIVER STUDY SEGMENTS FOUND NOT ELIGIBLE**

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Alvey Wash/Harris Wash Watershed		
Alvey Wash #1	Yes	Not significant in region of comparison. Chukars are common and non-native, not outstandingly remarkable.
Dave Canyon	Yes	Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Bull Run Canyon	Yes	Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Unnamed Wash	Yes	Potential spotted owl habitat, but no actual sightings.
Trap Canyon	Yes	Potential spotted owl habitat, but no actual sightings. Not outstanding recreation, no supporting information provided to qualify as recreation outstandingly remarkable value.
Little Valley Wash	Yes	Potential spotted owl habitat, but no actual sightings. Potential cultural sites. Not significant in region of comparison.
Horse Spring Canyon	Yes	Potential spotted owl habitat, but no actual sightings. Deer are common and habitat not outstandingly remarkable value, not outstandingly scenic.
Canaan Creek	Yes	Potential spotted owl habitat, but no actual sightings. Deer habitat not outstandingly remarkable value.
Willow Creek	Yes	Potential spotted owl habitat, but no actual sightings. Elk and deer habitat not outstandingly remarkable value, not outstanding recreational and scenic values, and no supporting information for recreational or scenic outstandingly remarkable values provided.
Mitchell Canyon	Yes	Not significant in region of comparison.
Halfway Hollow	Yes	Not significant in region of comparison. Not outstandingly scenic or recreational, no information provided to support scenic or recreational outstandingly remarkable values.
Cottonwood Wash	Yes	Potential spotted owl habitat, but no actual sightings. Not significant in region of comparison. Not outstandingly scenic or recreational, no information provided to support scenic or recreational outstandingly remarkable values.
Big Horn Wash	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Potential spotted owl habitat, but no actual sightings.
“North” Washes	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Not outstanding for scenic, geological, or cultural values. No information provided to support the segments as having at least one outstandingly remarkable value.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Coal Bed Canyon	Yes	Potential spotted owl habitat, but no actual sightings. Scenic and recreational values not outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Alvey Wash #2	No	Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Twitchell Canyon	Yes	Potential spotted owl habitat, but no actual sightings. Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Calf Canyon	Yes	Potential spotted owl habitat, but no actual sightings. Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
4 Cedar Washes	Yes	Not significant in region of comparison.
Birch Creek Watershed		
Upper Escalante River	No	Possible cultural sites but not significant in region of comparison. Wild turkey not outstanding.
Birch Creek (Main Canyon)	No	Wild turkey not outstanding, geology, scenery, recreation not deemed outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Pet Hollow	Yes	Not significant in region of comparison.
Upper Valley Creek/ Allen Creek	No	Possible cultural sites but not significant in region of comparison. Scenery, geology not deemed outstanding. No information provided to support these outstandingly remarkable values.
North Creek, East Fork North Creek and tributaries: Meadow Canyon, Jake Hollow, West Fork North Creek, White Creek, Twitchell Creek, Griffin Creek, Beck Hollow	Yes	Although river segment has potential spotted owl, neotropical habitat, Ocher sites, traditional cultural American Indian properties, and is a riparian system, it was not found significant in the region of comparison. Wild turkey, elk, deer and waterfowl are common, fisheries are not outstanding, fishing in reservoir not river, recreation and scenery not deemed outstanding, no information provided to support these outstandingly remarkable values, same with riparian, no documented spotted owl.
Varney Griffin & tributaries	Yes	Although river segment has potential spotted owls, contains prehistoric and historic sites, and is a riparian system, it was not found significant in the region of comparison.
Dead Mare Wash, Water Canyon, South Hollow, Left Hand Allen Creek		Elk and deer habitat not outstanding value, geology and recreation not found outstanding, no information provided to support them as outstandingly remarkable values.
Wide Hollow Wash	Yes	Not significant in region of comparison. Trout and waterfowl are common and are in reservoir not river.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Right Fork Wide Hollow	Yes	Not significant in region of comparison. Scenery and recreation not found to be outstanding, no info provided to support these as outstandingly remarkable values.
Boulder Creek Watershed		
West Fork Boulder Creek	No	Wild turkey, elk not outstanding values, Bonneville cutthroat trout not outstanding unless in early populations that are being transplanted. Flows altered by Spectacle Reservoir and West Fork Reservoir diversion.
Middle Boulder Creek	No	Diverted at King's Pasture, enough water is taken that affects the hydro regime for the rest of this segment, turkey and elk are not outstandingly remarkable values, recreation was not found outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Upper Deer Creek	No	Diverted for irrigation in upper reach, not outstandingly scenic or recreational, no information provided to support the segments as having at least one outstandingly remarkable value, turkey and elk are common and not outstandingly remarkable values.
Hot Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Cultural not outstandingly remarkable value, no information provided to support the segments as having at least one outstandingly remarkable value.
Coyote Gulch Watershed		
Coyote Gulch #1	Yes	Not significant in region of comparison.
Hurricane Wash	Yes	Not significant in region of comparison.
Big Hollow Wash	Yes	Not significant in region of comparison.
Dry Fork Coyote	Yes	Although Peek-a-Boo and Spooky canyons receive international visitation, slot canyons in and of themselves do not fit the criteria for being a wild and scenic river. No information provided to support the segments as having at least one outstandingly remarkable value.
Brimstone Gulch	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison.
Fortymile Wash Watershed		
Sooner Wash	Yes	Not found to be outstandingly scenic or recreational. No information provided to support the segments as having at least one outstandingly remarkable value.
Carcass Wash	Yes	Not significant in region of comparison. Cultural, geology, recreation not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Left Fork Fortymile Gulch	Yes	Not significant in region of comparison.
Right Fork Fortymile Gulch	Yes	Not significant in region of comparison.
The Gulch Watershed		
Long Canyon	No	Road through it, not free flowing, is scenic, but not because of riverine values, geologic, cultural not found outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Halfway Hollow	Yes	Not significant in region of comparison.
Henrieville Creek Watershed		
Paria River #1 (Headwaters to Water Canyon bridge)	Yes	Not significant in region of comparison. Turkey habitat not an outstandingly remarkable value, scenic, cultural and hydrology not found outstanding, minor diversions exist.
Paria River #2 (Little Dry Valley to Monument Valley)	No	Not significant in region of comparison.
Merrill Hollow and Tributaries	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Wild turkey habitat not an outstandingly remarkable value.
Henrieville Creek #1 (Highway 12 to Paria)	No	Not significant in region of comparison.
Henrieville Creek #2 (Headwaters to Highway 12, including FS)	Yes	Not significant in region of comparison.
Dry Creek and tributaries	Yes	Not significant in region of comparison.
Shurtz Bush Creek	Yes	Not significant in region of comparison.
Little Creek	Yes	Not significant in region of comparison.
Rock Springs Creek	Yes	Not significant in region of comparison.
Dry Valley Creek	Yes	Not significant in region of comparison.
Wiggler Wash	Yes	Not significant in region of comparison. Tropic shale fairly common, geology not outstanding.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Mud Spring Canyon	Yes	Not significant in region of comparison. Geology and recreation not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Horse Creek Canyon	Yes	Not significant in region of comparison. Geology, recreation and cultural values not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Cedar Wash	Yes	Not significant in region of comparison.
Horse Canyon Watershed		
Upper Horse Canyon	Yes	Not significant in region of comparison.
Middle Horse Canyon	Yes	Not significant in region of comparison. Bighorn habitat not an outstandingly remarkable value.
Upper Washes	No	Not significant in region of comparison.
West Wash	Yes	Not significant in region of comparison.
White Canyon	No	Not significant in region of comparison.
Moody Creek Watershed		
Unnamed washes (1)	Yes	Not significant in region of comparison. Bighorn habitat not an outstandingly remarkable value.
North Fork Silver Falls Creek	Yes	Not significant in region of comparison. Bighorn habitat not an outstandingly remarkable value.
Dry Fork Silver Falls Creek	Yes	Not significant in region of comparison.
Middle Moody	Yes	Not significant in region of comparison.
Pine Creek Watershed		
Upper Pine Creek	Yes	Not significant in region of comparison. Potential Bonneville cutthroat not an outstandingly remarkable value, turkey, elk and recreation fishery common.
Lower Pine Creek	Yes	Not significant in region of comparison. Recreation fishery common. No information provided to support the segments as having at least one outstandingly remarkable value.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Sand Creek Watershed		
Upper Sand Creek (on USFS)		Not significant in region of comparison. Turkey and elk habitat not outstandingly remarkable values. No information provided to support the segments as having at least one outstandingly remarkable value.
Salt Water Creek	Yes	Found to have scenic quality A in visual resource management criteria but not found significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Big Hollow	Yes	Not significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Sand Hollow	Yes	Found to have scenic quality A in visual resource management criteria but not found significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Sweetwater Creek	Yes	Although this is a riparian area and has cultural sites, it was not found significant in region of comparison. No information provided to support the segments as having at least one outstandingly remarkable value.
Twentyfive Mile Wash Watershed		
Twentyfive Mile Wash #1	Yes	Although potential spotted owl habitat, neotropicals, and southwestern willow flycatcher, no actual sightings have been documented. Not significant in region of comparison.
Rat Seep Hollow	No	Not significant in region of comparison. Chukar common and non-native, not an outstandingly remarkable value.
Left Hand Collet Canyon	No	Not significant in region of comparison.
Lower Trail Canyon	No	Not significant in region of comparison.
Willard Canyon	Yes	Although potential spotted owl habitat, no actual sightings have been documented. Recreation and bird habitat not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Right Hand Collet Canyon	Partially	Not significant in region of comparison.
Long Canyon/ Relishen Canyon	Yes	Not significant in region of comparison.
Star Seep Canyon	Yes	Not significant in region of comparison.
Sarah Ann Canyon	Yes	Not significant in region of comparison.
Unnamed wash (2)	Yes	Not significant in region of comparison.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Carcass Canyon	Yes	Not significant in region of comparison. Geology and recreation not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
North tributaries Carcass Canyon	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value, recreation not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Devils Garden	No	Not significant in region of comparison.
Little Valley Wash	No	Not significant in region of comparison.
Steer Canyon	Yes	Not significant in region of comparison. Geology and recreation not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Horse Canyon	Yes	Not significant in region of comparison. Recreation, geology and cultural not found to be outstanding, no supporting evidence given for those outstandingly remarkable values.
Henderson Creek Watershed		
Bulldog Hollow	Yes	Not significant in region of comparison. Wild turkey common, not an outstandingly remarkable value.
Bryce Creek	Yes on NPS, No on BLM	Not significant in region of comparison. Wild turkey not an outstandingly remarkable value, Bryce geology not uncommon.
Campbell Creek	Yes	Not significant in region of comparison. Paleontological values not deemed to be outstanding.
Cope Canyon	Yes	Not significant in region of comparison.
Box canyon	Yes	Not significant in region of comparison.
Dry Canyon	Yes	Not significant in region of comparison.
North Creek	Yes	Not significant in region of comparison.
Cedar Fork	Yes	Not significant in region of comparison.
Paradise Creek	Yes	Not significant in region of comparison.
Pasture Canyon	Yes	Not significant in region of comparison.
Unnamed tributary of Cedar Fork	Yes	Not significant in region of comparison.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Pasture Canyon Tributary 1	Yes	Not significant in region of comparison.
Henderson Creek	Yes	Not significant in region of comparison.
Wildcat Wash	Yes	Not significant in region of comparison.
Sheep Creek Watershed		
Indian Hollow #1	No	Not significant in region of comparison.
Indian Hollow #2	No	Not significant in region of comparison.
Bull Run	Yes	Not significant in region of comparison.
Squaw and Papoose Creeks	Yes	Not significant in region of comparison. Not outstandingly scenic, narrows very short, some diversions.
Little Bull Valley	Yes	Not significant in region of comparison.
Willis Creek	Partially	Although potential spotted owl habitat, no actual sightings have been documented. Several diversions, is not free flowing as suggested in public comment.
Averett Creek	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Turkey habitat not an outstandingly remarkable value, scenery not found outstanding, no information given to support that outstandingly remarkable value.
Sheep Creek	Partially	Not significant in region of comparison. Deer are common and not an outstandingly remarkable value.
Heward Creek	Yes	Not significant in region of comparison.
Jim Hollow	Yes	Not significant in region of comparison.
Pasture Wash	Yes	Not significant in region of comparison.
Cottonwood Creek Watershed		
Cottonwood Creek #1	No	Not significant in region of comparison.
Death Valley	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. No riparian here, no unique geological features, not significant cultural values, no information given to support potential outstandingly remarkable values.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Round Valley Draw	Yes	Not significant in region of comparison. Not significant riparian or cultural values.
Johnson Canyon Watershed		
Johnson Wash	No	Not significant in region of comparison. Deer, turkey not outstandingly remarkable values.
Swapp Canyon	Yes	Not significant in region of comparison. Deer are not an outstandingly remarkable value.
Fisher Canyon	Yes	Not significant in region of comparison. Turkey not an outstandingly remarkable value, cultural not found to be outstanding.
Thompson Creek Complex	Yes	Not significant in region of comparison. Cultural and grouse on flats not in river corridor. No information provided to support the segments as having at least one outstandingly remarkable value.
Skutumpah Creek Complex	No	Not significant in region of comparison. No significant cultural or recreation values, wildlife listed are common, sage grouse common and on flats not in river corridor.
Cottonwood Canyon Complex	Partially	Not significant in region of comparison.
Johnson Lakes Complex	No	Not significant in region of comparison. outstandingly remarkable value values found on lake not in river corridor.
Upper Flood Canyon Complex	Yes	Not significant in region of comparison. Deer not an outstandingly remarkable value.
Lower Flood Canyon	No	Not significant in region of comparison.
Park Wash Watershed		
Buckskin Gulch #2	Yes	Not significant in region of comparison. No slot canyons, geological values are not outstanding.
Kitchen Corral Wash	Yes	Although this segment has cultural sites, not significant in region of comparison. Other historic values are not outstanding.
Coyote Wash	No	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison.
Telegraph Wash	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
Clay Hole Wash	No	Not significant in region of comparison. Deer habitat and petrified wood not outstandingly remarkable values.
Fin Little Wash	No	Not significant in region of comparison. Deer not an outstandingly remarkable value, scenery not found to be outstanding, impoundments.
Deer Spring Wash	Partially	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value, scenery and historic values not found to be outstanding.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Nephi Wash	No	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value, scenic and historic values not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Adams Wash	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
Meadow Canyon	No	Not significant in region of comparison. Turkey not an outstandingly remarkable value.
Dunham Wash	Yes	Not significant in region of comparison.
Park Wash	Partially	Not significant in region of comparison. Scenery and historic values not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value. Upper part not free flowing.
Lick Wash	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
Lower Podunk Creek	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
Box Elder Wash	Yes	Not significant in region of comparison.
Deer Range Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Potential for spotted owl but no known sightings. Deer habitat not an outstandingly remarkable value.
Tank Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison.
Paria River Watershed		
Sand Gulch	No	Not significant in region of comparison.
Seaman Wash Watershed		
Seaman Wash	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
White Sage Wash	Yes	Not significant in region of comparison. Deer habitat not an outstandingly remarkable value.
Petrified Hollow	Yes	Not significant in region of comparison. Deer habitat and petrified wood not outstandingly remarkable values.
Wahweap Creek Watershed		
Wahweap Creek	Yes	Not significant in region of comparison. No outstandingly remarkable values, we did not look at grazing, etc as Utah River Coalition suggests, cultural, geology, riparian are not significant, no information provided to support those as outstandingly remarkable values.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Blue Wash	Yes	Not significant in region of comparison.
Long Flat Canyon	Yes	Not significant in region of comparison.
Tommy Canyon	Yes	Not significant in region of comparison. Cultural sites alone not outstanding, water not an outstandingly remarkable value.
Fourmile Canyon	Yes	Not significant in region of comparison. Geology not found to be outstanding, no information to support that outstandingly remarkable value.
Smith Run	Yes	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.
Ty Hatch Creek Wet Fork	Yes	Riparian, geology, Paleontology and scenery not found to be significant, no information given to support them as outstandingly remarkable values, bighorn not an outstandingly remarkable value.
Ty Hatch Creek Dry Fork	Yes	Riparian, geology, Paleontology and scenery not found to be significant, no information given to support them as outstandingly remarkable values, bighorn not an outstandingly remarkable value.
Nipple Creek	Yes	Not significant in region of comparison. Scenery and wildlife habitat not found outstanding, no information given to support those outstandingly remarkable values.
Warm Creek Watershed		
Warm Creek	No	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.
Tibbets Canyon	No	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.
John Henry Canyon	Yes	Not significant in region of comparison. Recreation and Paleontology not found outstanding, no information given to support those outstandingly remarkable values, bighorn not an outstandingly remarkable value.
Wesses Canyon	Yes	Not significant in region of comparison. Bighorn habitat not an outstandingly remarkable value, cultural not significant.
Smoky Hollow	No	Not significant in region of comparison. Bighorn and chukar not outstanding.
Last Chance Watershed		
Last Chance Creek	Yes	Potential spotted owl habitat but no actual sightings. Geologic formation not outstanding and not river value, bighorn not an outstandingly remarkable value.
Drip Tank Canyon	Yes	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Paradise Canyon	Yes	Not significant in region of comparison. Road through, not outstandingly scenic, no information to support scenery or recreation, cultural not found outstanding.
Dry Wash	Yes	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.
Reese Canyon	Yes	Not significant in region of comparison. Chukar, bighorn not outstandingly remarkable values.
Button Canyon	Yes	Not significant in region of comparison. Chukar not an outstandingly remarkable value.
Little Escalante Canyon	Yes	Not significant in region of comparison. Cultural and geology not found outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Cigar Creek	Yes	Not significant in region of comparison. Chukar not an outstandingly remarkable value.
Coyote Wash Watershed		
Coyote Creek	Yes	Not significant in region of comparison. Bighorn and pronghorn habitat not an outstandingly remarkable value, scenery and historic values not found outstanding, route not documented as historic. Not significant enough river value to make it eligible.
Blue Pools	No	Not significant in region of comparison. Historic water hole, but not outstanding.
Shittum Wash	Yes	Not significant in region of comparison. Habitat not an outstandingly remarkable value.
Croton Canyon Watershed		
Croton and Rogers Canyons	Yes	Not significant in region of comparison. Bighorn and chukar not outstandingly remarkable values, recreation and scenery not found to be outstanding. No information provided to support the segments as having at least one outstandingly remarkable value.
Navajo Canyon	Yes	Not significant in region of comparison. Bighorn and chukar not outstandingly remarkable values.
Willow Gulch	Yes	Not significant in region of comparison. Chukar not an outstandingly remarkable value.
Big Tank Draw	Yes	Not significant in region of comparison.
Basin Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Outstandingly remarkable values not significant in region of comparison. Chukar not an outstandingly remarkable value, recreation and geologic values not found to be outstanding.
Monday Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Bighorn not an outstandingly remarkable value.

APPENDIX 4 - WILD AND SCENIC RIVER ELIGIBILITY

SEGMENT NAME	FREE FLOWING	WHY NOT ELIGIBLE
Sunday Canyon and Gates Draw	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Bighorn not an outstandingly remarkable value.
Little Valley Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Remote, little valley arch, but not outstanding, bighorn not an outstandingly remarkable value.
Mud Holes Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Rugged spot, not outstanding, bighorn not an outstandingly remarkable value, riparian and cultural values not found outstanding.
Blackburn Canyon	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Bighorn and chukar not outstandingly remarkable values, landslides and mass wasting fairly common in area.
Glen Canyon Watershed		
Dry Rock Creek	Partially	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Perennial water not an outstandingly remarkable value, bighorn, chukar, and wild horse not outstandingly remarkable values.
Lake Draw, Elbow Hollow and Tank Hollow	Yes	Not significant in region of comparison. Not much recreation, some cultural, but not outstanding, no information given to support scenic and recreation outstandingly remarkable values, perennial water not an outstandingly remarkable value.
Spencer Canyon	Yes	Not significant in region of comparison. Recreational, scenic and geological values not found to be outstanding. Bighorn and chukar not outstandingly remarkable values.
Rock Creek	Yes	Found to have scenic quality A in visual resource management criteria, but not found significant in region of comparison. Bighorn, chukar and perennial not outstandingly remarkable values.
Steer Canyon	Yes	Not significant in region of comparison. Bighorn not an outstandingly remarkable value.

Appendix 5

Wild and Scenic River Suitability



APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

INTRODUCTION

As described in Appendix 4, representatives from Grand Staircase-Escalante National Monument, Bryce Canyon National Park, Glen Canyon National Recreation Area, and Dixie National Forest worked together to discuss suitability recommendations made in this document. Land managers responsible for managing the various segments came to consensus on segments which overlapped jurisdictions. They also made decisions for segments that were under their own jurisdictions. Due to differing agency mandates and stages in the study process, those segments lying within Grand Staircase-Escalante National Monument, as well as river segments found eligible between the Monument boundary and the Arizona state line, are assessed in this report. Glen Canyon National Recreation Area, Dixie National Forest, and Bryce National Park are currently working on suitability assessments for the segments within their jurisdiction.

Input was given by Kane County Water Conservancy District, the office of the Governor of Utah, Utah Division of Natural Resources, and Utah Division of Water Resources pursuant to the statewide Memorandum of Understanding (MOU) described in Appendix 3. All meetings held in regards to the MOU were open and announced to the public.

The suitability assessment is divided into two parts for Grand Staircase-Escalante National Monument. The first part assesses the Escalante River system, which includes the main stem of the Escalante River and many of its tributaries. The second part assesses the Paria River system and several of its tributaries. Alternative A (No Action) does not address suitability and leaves all segments eligible. Alternative C finds all eligible segments as non-suitable for designation as wild and scenic rivers. Alternative D finds all eligible segments suitable and Alternatives B and E find a portion of eligible segments as suitable, and a portion non-suitable for both river systems. Tentative classifications are the same for Alternatives B, D, and E, and were derived principally from the prescriptive zones described in the Monument

plan. BLM's proposed action for suitability is addressed in Alternatives B and E.

Escalante River System

The Escalante River System begins on the Aquarius Plateau. The river system extends from the top of Boulder Mountain south into the Colorado River (Lake Powell). The river system lies within the Colorado Plateau Physiographic Province, Canyonlands, and Southern High Plateaus subprovinces. Dominant vegetation zones change with elevation and precipitation levels. Headwaters begin in the Montane Zone, which contains forests of ponderosa pine, douglas fir, englemann spruce, and blue spruce. The Piñon-Juniper Zone follows, blending eventually with the Sagebrush Zone, and ending in the lower Shadscale Zone. It flows through the Plateau Uplands water province and is in the Escalante River Drainage Basin.

Although the main stem of the Escalante begins northwest of the town of Escalante, most of the flow comes from its side tributaries such as Boulder Creek, Pine Creek, Death Hollow, Sand Creek, The Gulch, and Calf Creek. These tributaries are located downstream from the town of Escalante. Boulder Creek and Deer Creek flow through or near the town of Boulder.

The headwaters of the Escalante River are composed of several tributaries in the Escalante Ranger District of Dixie National Forest. From there, the river flows through the BLM-managed Grand Staircase-Escalante National Monument, and then enters Glen Canyon National Recreation Area. It ends at Coyote Gulch, near Lake Powell. The Escalante River System contains 213 river miles, 184.5 miles (or 87 percent) of which are on public lands managed by the Bureau of Land Management. This suitability assessment covers that portion of the river and its major tributaries within the boundaries of Grand Staircase-Escalante National Monument.

The Escalante River was first identified by the Departments of Interior and Agriculture as a candidate "inventory" river to be studied as a possible addition to the

National Wild and Scenic River System on September 11, 1970. It was later identified as part of the nationwide rivers inventory by the National Park Service.

As prescribed in the Wild and Scenic Rivers Act and by BLM policy, the area included in this evaluation is the river area and its adjoining tributaries within the river corridor. Generally, the corridor width cannot exceed an average of 320 acres per mile, which is usually measured approximately 1/4 mile from the mean high-water mark on both sides of the channel. Few designated wild and scenic rivers have a boundary that is exactly 1/4 of a mile from the ordinary high water mark along their entire length. Corridor boundaries for Federally designated and administered wild and scenic rivers may vary based on a number of conditions, but are usually delineated by legally identifiable lines (survey or property lines). They may also be identified by some form of on-the-ground physical features (i.e., topography, natural or man-made features such as canyon rims, roads, etc.), which provide the basis for protecting the river's identified values and practicality in managing those values.

Alternatives Considered

About 213 miles of the Escalante River System would be considered suitable under Alternative D, and 140 miles would be considered suitable for Alternatives B and E for inclusion into the National Wild and Scenic Rivers System (NWSRS). All segments would remain eligible under Alternative A (No Action). All segments would be found non-suitable for Alternative C. Alternatives B and E represent BLM's proposed action for suitability.

The rationale for Alternative D is that the Escalante River would be a worthy addition to the NWSRS because it contains outstandingly remarkable river values that require special protective measures. This alternative focuses on remoteness; therefore, all the segments would be suitable. These outstandingly remarkable values are scenic, recreational, geological, fish and wildlife, cultural, historic, paleontological and riparian. Unique natural and human resources would benefit from the

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

protection and enhancement afforded by National Wild and Scenic River designation.

The following segments have been recommended as non-suitable and would be released from further wild and scenic river consideration, subject to a change in existing conditions for Alternatives B and E: the upper part of Harris Wash, Dry Hollow Creek, Cottonwood Canyon, Blackwater Canyon, Lamanite Arch Canyon, Water Canyon, west fork of Steep Creek, Lower Horse Canyon, Wolverine Creek, Little Death Hollow, unnamed tributary west of Calf Creek, Phipps Wash and tributaries, and the upper part of Twentyfive Mile Wash and north tributary. The rationale for dropping these 13 eligible segments (78.7 miles) in Alternatives B and E is that while these segments have outstandingly remarkable values, BLM did not think them worthy to be included in a national river program in comparison with the river segments considered suitable in Alternatives B and E. Although most of the eligible segments have outstandingly remarkable scenic and recreational values, when considered in context with other resource values, alternative special management, and plan objectives, BLM could best manage the Escalante River system by concentrating greater management on those segments that contribute most to the riverine values, and less on those that do not.

In Alternative A, suitability would not be considered and all segments would remain eligible. This would mean protective management would remain in effect for all eligible segments. Protective management consists of a case-by-case review of proposed actions. It does not provide any pre-determined outcome, only that river values will be considered in evaluating proposed actions.

Table A5.1 describes each segment by tentative classification. It illustrates the differences between Alternatives D and Alternatives B and E.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

**TABLE A5.1
DESCRIPTION OF SUITABLE RIVER SEGMENTS**

RIVER SEGMENT	SEGMENT DESCRIPTION		LENGTH (MILES)		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	Alternatives B, E	D	B, E		
Escalante River-1	Confluence with Pine Creek (T35S, R3E, Sec. 9) to Highway 12 (T35S, R4E, Sec. 12)	Same	13.8	13.8	Wild	High scenic quality, high recreational use, numerous geologic features, important fish and wildlife habitat, prehistoric sites, historic homestead and roads, riparian area, fossil tracks, petrified wood
Escalante River-2	Highway 12 to east side of private land (T35S, R4E, Sec. 13)	Same	1.1	1.1	Recreational	
Escalante River-3	Private land to boundary (T36S, R6E, Sec. 4)	Same	19.2	19.2	Wild	
Harris Wash-1	Tenmile Crossing (T365S, R4E, Sec. 17) to confluence with Bighorn Wash (T36S, R4E, Sec. 15)	Not included	2.9	0.0	Scenic	High quality scenery, recreational attraction, access to National Recreation Area, southwestern willow flycatchers, historic road, prehistoric sites, scientific study opportunities
Harris Wash-2	Bighorn Wash to unnamed road (T36S, R5E, Sec. 33)	Not included	8.7	0.0	Wild	
Harris Wash-3	Road to west side state section (T36S, R5E, Sec. 36)	Not included	2.8	0.0	Recreational	
Harris Wash-4	T36S, R5E, Sec. 35 to Monument boundary (T36S, R5E, Sec. 36)	Same	1.2	1.2	Wild	
Lower Boulder Creek	Downstream side of state section (T34S, R4E, Sec. 11) to Escalante River (T35S, R5E, Sec. 22)	Same	13.6	13.6	Wild	High quality scenery, high recreational use, Escalante Canyons ONA, prehistoric sites
Dry Hollow Creek	Monument boundary (T34S, R4E, Sec. 3) to Lower Boulder Creek (T34S, R5E, Sec. 30)	Not included	4.3	0.0	Wild	High quality scenery

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT	SEGMENT DESCRIPTION		LENGTH (MILES)		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	Alternatives B, E	D	B, E		
Slickrock Canyon	Monument boundary (T33S, R5E, Sec. 22) to private land (T33S, R5E, Sec. 33)	Same	2.8	2.8	Wild	High quality scenery, recreational attraction, prehistoric sites, riparian areas
Cottonwood Canyon	Monument boundary (T33S, R5E, Sec. 22) to Lower Deer Creek (T34S, R5E, Sec. 4)	Not included	4.4	0.0	Wild	High quality scenery, high recreational attraction, cultural sites
Lower Deer Creek-1	Private land (T33S, R5E, Sec. 33) to Burr Trail Road (T34S, R5E, Sec. 16)	Same	3.8	3.8	Recreational	High quality scenery, Deer Creek Recreation Area, Escalante Canyons ONA, Southwestern willow flycatchers, prehistoric sites, threatened plant, riparian area
Lower Deer Creek-2	Burr Trail Road to Lower Boulder Creek (T35S, R5E, Sec. 9)	Same	7.0	7.0	Wild	
The Gulch-1	Monument boundary (T32S, R6E, Sec. 32) to Burr Trail Road (T34S, R5E, Sec. 13)	Same	11.0	11.0	Wild	High quality scenery, outstanding recreation, natural arch, peregrine habitat, Traditional Cultural Property, riparian area, petrified wood.
The Gulch-2	Along Burr Trail Road to T34S, R5E, Sec. 13	Same	0.6	0.6	Recreational	
The Gulch-3	Below Burr Trail Road to Escalante River (T35S, R5E, Sec. 36)	Same	13.0	13.0	Wild	
Blackwater Canyon	Entire (T34N, R5E, Sec. 23)	Not included	0.6	0.0	Wild	
Lamanite Arch Canyon	Monument boundary (T32S, R6E, Sec. 31) to The Gulch (T33S, R6E, Sec. 8)	Not included	2.4	0.0	Wild	
Water Canyon	Headwaters (T33S, R6E, Sec. 7) to FS boundary (T32S, R5E, Sec. 13); FS boundary to The Gulch (T33S, R6E, Sec. 30)	Not included	3.5	0.0	Wild	

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT	SEGMENT DESCRIPTION		LENGTH (MILES)		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	Alternatives B, E	D	B, E		
Steep Creek	Monument boundary (T33S, R5E, Sec. 24) to The Gulch (T34S, R5E, Sec. 12)	Same	8.9	8.9	Wild	High quality scenery, recreational attraction, riparian areas
Lower Horse Canyon	T35S, R6E, Sec. 29) to Escalante River (T35S, R6E, Sec. 32)	Not included	3	0.0	Wild	High quality scenery, ONA, high recreational use, international use, paleontology
Wolverine Creek	Entire (T34S, R7E, Sec. 20) to (T35S, R6E, Sec. 16)	Not included	9.7	0.0	Wild	High quality scenery
Little Death Hollow	Entire (T34S, R7E, Sec. 28) to (T35S, R6E, Sec. 28)	Not included	14.8	0.0	Wild	High quality scenery, recreational attraction
Lower Sand Creek and tributary Willow Patch Creek	Sweetwater Creek (T34S, R4E, Sec. 8) to Escalante River (T35S, R4E, Sec. 10)	Same	13.2	13.2	Wild	High scenic quality, ONA, fish habitat, Southwestern willow flycatcher, Historic trail, riparian area
Mamie Creek and west tributary	Monument Boundary (T34S, R3E, Sec. 16) to Escalante River (T35S, R4E, Sec. 7)	Same	9.2	9.2	Wild	High scenic quality, ONA, high recreational use, natural bridge, fish and wildlife habitat, prehistoric and historic sites, historic mail trail, riparian area
Death Hollow Creek	Monument boundary (T34S, R3E, Sec. 3) to Mamie Creek (T34S, R3E, Sec. 36)	Same	9.9	9.9	Wild	High scenic quality, ONA, Southwestern willow flycatcher, prehistoric sites, dinosaur tracks, riparian area
Calf Creek-1	Headwaters (T34S, R4E, Sec. 10) to Lower Calf Creek Falls (T34S, R4E, Sec. 24)	Same	3.5	3.5	Wild	High scenic quality, Calf Creek Recreation Area, bird habitat, prehistoric site, riparian
Calf Creek-2	Lower Falls to Calf Creek Recreation Site (T35S, R4E, Sec. 1)	Same	3	3	Scenic	High scenic quality, Calf Creek Recreation Area, bird habitat, prehistoric site, riparian
Calf Creek-3	Recreation Site to Escalante River (T35S, R4E, Sec. 12)	Same	1.5	1.5	Recreational	

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT	SEGMENT DESCRIPTION		LENGTH (MILES)		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	Alternatives B, E	D	B, E		
Phipps Wash and tributaries	Headwaters (T35S, R4E, Sec. 22) to Escalante River (T35S, R5E, Sec. 18)	Not included	6	0.0	Wild	High quality scenery, recreational attraction
Unnamed tributary west of Calf Creek	Headwaters (T34S, R4E, Sec. 35) to Escalante River (T35S, R4E, Sec. 11)	Not included	2.6	0.0	Wild	High quality scenery, recreational attraction, geologic features, cultural sites
Twentyfive Mile Wash	Rat Seep Hollow (T37S, R5E, Sec. 25) to Monument boundary (T37S, R6E, Sec. 25), including unnamed tributary on north side	(37S, 6E, 29) to Monument boundary (37S, 6E, 25), does not include unnamed tributary on north side	9.1	6.8	Wild	High scenic quality, high recreational use, slot canyons, bird habitat, rock art, prehistoric structures and other sites from three cultures, riparian area

Note: Short segments of Scorpion Gulch, Fools Canyon, Coyote Gulch and Willow Gulch may be on Monument lands. These segments will be managed with the remainder of the named segments by Glen Canyon National Recreation Area.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

In addition to the outstandingly remarkable values listed in Table A5.1, the following factors (which are outlined in the Wild and Scenic Rivers Act) were analyzed for the Escalante River System as a whole. Specific facts and concerns pertaining to individual segments are presented in Table A5.2.

Characteristics which do or do not make the area a worthy addition to the National Wild and Scenic Rivers System: The segments identified in this report are on the Colorado Plateau Physiographic Province, Canyonlands and High Plateaus subprovinces. Currently, there are no designated components of the National Wild and Scenic Rivers System within this province. The Escalante River and Calf Creek Falls were specifically listed as objects of historic or scientific interest when the Monument was designated.

The Escalante River System is considered a worthy addition to the National Wild and Scenic River System based on the following outstandingly remarkable values:

- C **Scenic** - Throughout the spectacular Escalante River system, rugged canyons, colorful outcroppings, and imposing cliff faces provide unique opportunities for sightseeing and photography. The river has carved a sheer-walled canyon that reaches depths of 1,100 feet.
- C **Recreational** - The Escalante River and major tributaries provide outstanding opportunities for hiking, backpacking, boating, visiting cultural sites, photography and nature viewing. The canyons and colorful sandstone outcroppings, known as slickrock, attract visitors from throughout the U.S. and other countries. Water sources are plentiful in the Escalante Canyons, allowing easier travel. Canyons with similar geology are difficult to experience in other parts of the Colorado Plateau due to lack of water.
- C **Geological** - Colorful canyon walls composed of layers of sandstone, siltstone, and limestone record the geologic past, including extensive sand dunes, invasions by seaways, and deposits made by broad river systems. Tens of thousands of years of weathering and erosion have resulted in the formation

of numerous natural bridges and arches throughout the river corridor area. The canyons vary in width from a mile to only inches wide. These narrow canyons are commonly called slot canyons and number in the hundreds in this river system. Although these features are common to the Colorado Plateau, the number and variety of natural bridges, arches, and slot canyons make this area distinctive and exceptional.

- C **Riparian** - The river segments provide unique riparian corridors through an otherwise arid region. A variety of wildlife species, both aquatic and terrestrial, rely upon the river for habitat. The riparian area contains occupied or suitable habitat for numerous sensitive or special status wildlife and plant species. The Escalante River System is home to the following documented wildlife groups: 8 amphibians, 190 birds, 54 mammals, 20 fishes, and 20 reptile species. Among these are the threatened and endangered southwestern willow flycatcher, peregrine falcon, Mexican spotted owl, and wintering bald eagles.
- C **Historic** - The Escalante River system has provided water for humans in a relatively arid environment for at least 10,000 years. Prehistoric Native American Indian sites are prolific throughout the system. It continues to provide water for humans today.

Other values that support the addition of the Escalante River to the National Wild and Scenic Rivers System are significant paleontological values, including fossil trackways and petrified wood, and cultural sites that would be enhanced and protected by designation.

The Escalante River, Boulder Creek, Deer Creek, Sand Creek, Twentyfive Mile Wash, Calf Creek, The Gulch, Steep Creek, Coyote Gulch, Harris Wash, Mamie Creek and Death Hollow were included in *A Citizen's Proposal to Protect the Wild Rivers of Utah*.

Current Uses and Land Ownership Concerns:

- C **Energy and Minerals:** There are 2 oil and gas leases within the river area near the confluence of Phipps Wash and the Escalante River (at T35S, R5E, Sec. 18), and an active lease on a small portion of Mamie Creek. There are no mining claims, mineral sites, or coal leases in the river area. Existing valid claims or leases within the river boundary remain in effect, and activities may be allowed subject to regulations that minimize surface disturbance, water sedimentation, pollution, and visual impairment. Reasonable access to mineral leases will be permitted.
- C **Water Resource Developments, Water Rights and Instream Flow:** Existing water developments and rights held on the river area are associated with livestock, agricultural and domestic use. Ninety nine surface, 6 underground, and 8 spring water rights within 1 mile of each stream course in the Monument are on record with the State of Utah. Of these, BLM holds the rights to 40 surface, 0 underground, and 4 springs. Utah Division of Water Rights reports a total of 1.55 cfs surface diversions in the Escalante River, Calf Creek, Lower Deer Creek, and The Gulch. Most of the surface diversions are located on private land or on segments classified as Recreational. Wild and Scenic River designation would not affect these existing water rights as they are senior to any rights acquired through designation.

There is some concern from local water conservancy districts and potential users over the possible effects designation could have on proposed or potential projects. This concern should be addressed by Congress upon Wild and Scenic River designation. No action taken in this plan or WSR recommendation can establish an appropriation or Federal reserved water right. A Congressional Act designating a WSR may or may not establish a Federal reserved water right. If Congress creates a reserved right, BLM or the State of Utah may establish instream flows necessary to meet the purposes of the designation. The nature of such a condition would depend on the wording in the Act.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

Protective management for suitability could affect specific proposals if BLM would have to issue a right-of-way across BLM managed lands. At this time, there are no project proposals on suitable river segments.

C **Forestry, Agriculture and Livestock Grazing:**

There are no forested lands within the study area. Agriculture in the form of irrigated farmlands occurs near the communities of Escalante and Boulder. These areas of agricultural use are not within the study area. However, farming has an impact on the river study area. Water is diverted out of the channels to irrigate the farmland and the runoff returns to the river bed. When this water returns, it can carry residues of agricultural chemicals, nutrients, and salts. Livestock grazing is permitted on public lands throughout the river area. There are 13 allotments in the study area. Grazing along the river and on the uplands is primarily a fall/winter/spring operation. The rivers provide a significant source of water in this area for livestock. Grazing would continue to be governed by applicable laws and regulations.

Several fences cross the rivers within their corridors. These include allotment boundary fences, pasture fences, and state section line fences. If not removed after use, these wire fences typically wash out or are taken up during high flows but are rebuilt each year as flows recede or grazing operations start up for the season. Landowners and ranchers are concerned that they will not be able to maintain these fences with designation. W&SR designation would not affect the ability of landowners or ranchers to maintain fences.

C **Recreation Use and Facilities:** The Escalante River and major tributaries provide outstanding opportunities for recreational activities. These include hiking (canyoneering), backpacking, bird-watching, photography, viewing cultural sites, camping, and nature study. Recreational use is estimated to be 29,300 visits per year (based on 1997 RMIS data). Developed or semi-developed trail heads and trails are located at Calf Creek Lower and Upper Falls, Deer Creek, Escalante River outside of

the town of Escalante, Highway 12, Harris Wash, and The Gulch.

BLM operates Calf Creek Campground along Calf Creek, and Deer Creek Campground along Deer Creek. These sites received a total of 30,210 visits in FY 1997. Access to Calf Creek Falls, Deer Creek and other river-based activities is available at these sites.

C **Transportation/Utility Facilities:** Utah State Route 12 travels over the Escalante at the dividing point between segments 1 and 2. Along tributaries, dirt roads approach the water's edge and in some places, ford the river bed. An overhead utility line crosses over the river near State Route 12. Another line crosses Lower Sand Creek near its northern end. Wild and Scenic designation would not affect the ability to maintain these lines.

C **Private and Commercial Development:** Protective management for suitable segments only applies to BLM managed lands. Private and commercial development is not a concern for river management on public lands. There are 843 acres (2.6 miles) of private land within the river area.

Resources and uses that would be enhanced or curtailed by designation:

C **Scenic** - Approximately 198 river miles provide outstanding scenery in Alternative D and 173 miles in Alternatives B and E. Deep, narrow canyons, colorful rock walls, numerous interesting geologic features, and waterfalls provide exceptional opportunities for sightseeing and photography. During a BLM visual resources inventory, the river corridors were determined to have scenic quality A. This indicates that scenic qualities of the landforms, vegetation, and waterform are extremely high, with great variety and distinction. Designation would ensure that the scenic values of this river system would not be impaired by additional water diversions or dams.

C **Recreational** - The Escalante River and major tributaries provide outstanding opportunities for

hiking, backpacking, photography, and nature viewing. The canyons and colorful sandstone outcroppings, known as slickrock, attract visitors from throughout the U.S. and other countries. Canyons of the Escalante and its tributaries are well known for canyoneering (seeking out and hiking narrow slot canyons). Designation would enhance the recreation values for this river system by keeping the canyon system intact and desirable for hiking.

C **Geological** - The Colorado Plateau is a region of generally horizontal geologic strata where plateaus and mesas are separated by deep canyons. The meandering Escalante River has become deeply incised or entrenched into the Jurassic Navajo Sandstone in some places. Small side canyons within the 1/4 mile boundary to segments such as Little Death Hollow or the Escalante River are called slot canyons. Colorful canyon walls composed of layers of sandstone, siltstone, and limestone record times in the geologic past of extensive sand dunes, invasions by seaways, and deposits made by broad river systems. Tens of thousands of years of weathering and erosion have resulted in the forming of natural bridges and arches, water carved alcoves, rincons, and oxbows throughout the river area. Designation would ensure that our knowledge would be enhanced by providing an additional reason for scientific study.

C **Wildlife and Riparian Habitat** - The river and tributaries provide riparian corridors through an otherwise semi-arid region that support a wide variety of wildlife. As typical of wetland areas, the diversity of plants and wildlife around the washes and streams is greater than in the surrounding uplands. Various wildlife species rely upon the outstandingly remarkable riparian and wildlife habitat values of the river area for food, water and other requirements. The Escalante river supports a variety of fish species. Special status wildlife species include bald eagles, southwestern willow flycatcher, Mexican spotted owl and peregrine falcons. The riparian area is potential habitat for spotted bat, Townsend's big-eared bat, and golden eagle. Canyons of the Escalante could provide habitat for the recently reintroduced California condor.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

Other wildlife include bighorn sheep, mule deer, raccoons, bats, reptiles, amphibians, waterfowl, raptors, neotropical species, and other birds. Wild and Scenic River designation would ensure that habitat for these species would continue to be protected and would provide an additional reason to conduct scientific studies.

C **Vegetative Composition Varies Greatly Depending on the Zone:**

Riparian and upland. Riparian communities associated with the river are composed largely of tamarisk stands with narrow corridors of native willows, ash, bulrushes, cattails, and cottonwoods. Mature cottonwood and willow galleries occur along the Escalante, and at scattered springs in tributaries. Stretches that receive disruptive, scouring floods on a regular basis may remain in a disclimax successional stage. Other vegetation includes rushes, sedges, and a variety of grasses and forbs. Algal mats are found in some quiet pools. Upland vegetation is described as a mixture of desert shrub, sagebrush, piñon-juniper, grasslands, mountain shrub, and coniferous woodlands. The distribution of these associations is determined largely by elevation and precipitation. Designation would enhance the viability of the riparian communities.

C **Cultural Resources** - There is evidence to suggest that cultural properties and features representing the entire time span of human occupation of the region are present along or immediately adjacent to the study area. This should not be surprising since water is a limiting factor to all human activity. The probable span of use of the riverine habitat covers from about 11,000 years before present to the most recent activities of our own time. Numerous prehistoric sites can be attributed to several Native American Indian cultures: Anasazi and Fremont, Hopi, Zuni, Paiute, and possibly Navajo. The riverine system continues to be important to modern societies. Cultural properties likely to be encountered along the river could include rock art sites, agricultural features, storage cists, rock shelters, habitations, artifact scatters, and pioneer-era homesteads, ranches, and travel routes. These cultural properties exhibit a

challenge in balancing conservation and utilization, but also offer great opportunities for scientific study, education, and interpretation. Wild and Scenic River designation would enhance BLM's ability to further study these cultural resources.

C **Wilderness Study Areas** - 82 percent of the Escalante River and major tributaries run through Wilderness Study Areas (WSA) or Instant Study Areas (ISA). The river and/or tributaries flow through Phipps-Death Hollow ISA Complex, North Escalante Canyons/The Gulch ISA Complex, Escalante Canyons Tract 5 ISA Complex, Steep Creek WSA, and Scorpion WSA. There are no designated wilderness areas in the study area. Wild and Scenic River designation would complement BLM's management of the WSAs if classified as wild.

C **Streamflow and Water Quality** - The Escalante River and tributaries meet the definition of free-flowing. A mean flow of 11.4 cfs is recorded at the USGS gauging station located at the Escalante River/Pine Creek confluence and 22.5 cfs are recorded in Boulder Creek above the Escalante River. Data was collected from 1950-1955 which showed a mean flow of 82.2 cfs at the mouth. High flows typically occur during the spring runoff period and as a result of summer thundershowers. Scouring of the river beds as a result of high flows can affect channel morphology and riparian ecosystems.

Utah Division of Water Quality has classified the Escalante River and tributaries from Lake Powell to the confluence with Boulder Creek as 2B, protected for secondary contact recreation (boating, wading), and 3C, protected for non-game fish and other aquatic life. The Escalante River and tributaries from the confluence of Boulder Creek to the headwaters and Deer Creek and tributaries, from confluence with Boulder Creek to headwaters are classified as 2B, protected for secondary contact recreation (boating, wading), 3A, protected for cold water fish and other cold-water aquatic life, and 4, protected for agricultural use.

The Division of Water Quality defines anti-degradation segments as high quality waters with exceptional recreational or ecological significance or waters that require protection and are to be maintained at their existing quality. New point sources are prohibited and non-point sources shall be controlled to the extent feasible through best management practices. Calf Creek, Sand Creek, Mamie Creek, and Deer Creek are anti-degradation stream segments in the Monument. Wild and Scenic River designation would further protect streamflow and water quality.

Designation would not significantly restrict, foreclose, or curtail any activities currently occurring or proposed within the Escalante River System.

Federal, Public, State, Tribal, Local, or Other Interests

Garfield County was primarily concerned about the effect that W&SR designation would have on their proposal for Wide Hollow dam which is located above the suitable W&SR segments in all alternatives. The existing dam currently holds about 1,100 acre feet although it originally held 2,400 acre feet when it was built in 1956. The county is proposing a new location for the dam because the existing location has filled with sediments. The proposal calls for the new reservoir to hold 6,000 acre feet with water diverted from North Creek and Birch Creek to fill and maintain it. The existing dam also receives water diverted from these same streams. Wild and Scenic River designation may affect this project although additional environmental review would be needed to assess and mitigate the impacts.

Garfield County is also concerned that the segments immediately downstream from Hole-in-the-Rock Road would curtail the ability to improve that road. The upper part of Harris Wash, which is adjacent to the road, is not considered suitable for Alternatives B and E.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

Another concern expressed by Garfield County was for private landowners. It was suggested that BLM exclude those river segments from being suitable. Private landowners have .9 acres along the Escalante River upstream and downstream of the Highway 12 bridge, and own 1.7 miles along Deer Creek upstream of the Burr Trail. Wild and Scenic River designation does not affect private landowners and their senior water rights. Therefore, this is not a concern.

Escalante and Boulder are the only communities within the river area. It is anticipated that these communities would be most affected by possible designation of the river. Much of the economy of Escalante is dependant on agriculture and the scarce water supplies available. The viability of Escalante is dependant of the continuation of existing water diversions (Franson and Noble). These diversions are upstream from the river study area.

Native American Indian tribes are concerned about rock art in the canyons. Wild and Scenic River designation would ensure that the rock art and surrounding area would remain intact.

Ability to Manage

The Escalante River system is considered to be manageable based on the current level and type of activities taking place, and adequate staff and funding is available to carry out management of a designated Wild and Scenic River. Designation of the Canyons of the Escalante may raise the level of management needed above that being proposed in the Monument Plan. Free-flowing character and outstandingly remarkable scenic, recreational, geological, and riparian values identified in the determination of eligibility can be protected through management actions. If the river segments are designated, a management plan would be developed within 3 years pursuant to the WSR Act to determine management objectives and strategy for long-term protection of the river's outstandingly remarkable values to the full extent of the WSRA.

About 87 percent of the river segments are on public land. River protection measures are being applied in environmental assessments of proposed projects and considered in all land use and activity plans.

All river segments are within Grand Staircase-Escalante National Monument. Almost half of the river mileage is in Outstanding Natural Areas which became Instant Study Areas in the wilderness study process. These other administrative designations including wilderness study areas would complement WSR designation and provide specific authority and guidance for BLM to protect and manage the rivers.

Historical or Existing Rights That Could be Adversely Affected by Designation

No impact on existing or historical rights would occur as a result of designation, although there is a perception that existing water rights could be adversely affected. Section 13 (b) of the Act states that jurisdiction over waters is determined by established principles of law. Existing, valid water rights are not affected by designation.

Alterations to existing irrigation or water withdrawal facilities may be approved under Section 7 of the Act as long as there is no direct adverse effect to the values for which the river was designated. The valid and existing rights of present land owners to use water and shorelines are not affected.

The Federal government may acquire water rights under state law. In some instances, the Federal government can purchase water from private citizens who have vested rights.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

**TABLE A5.2
SUITABILITY SUMMARY FOR BLM'S PROPOSED ACTION**

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Harris Wash	<p>C High quality scenery, recreational attraction, southwestern willow flycatcher habitat, historic road, prehistoric sites, scientific study opportunities are the characteristics that make the lower section a worthy addition to the WSR system.</p> <p>C The upper section was not chosen for the proposed action (Alternatives B and E) because the values identified, with the exception of the historic road, apply primarily to the lower section and the portion that flows through the NRA.</p>	<p>C 1.6 miles run through State lands which are being considered for exchange with BLM</p>		<p>C 1 mile Federal public water reserve</p> <p>C Garfield County concerned that W&SR designation would curtail improving Hole-in-the-Rock Road.</p>	<p>The cost to manage this 15.5 mile segment may exceed its contribution to the NWSR in Alternatives B and E.</p>
Lower Boulder Creek	<p>C High quality scenery, high recreational use, part of the Escalante Canyons ONA, prehistoric sites are the characteristics that make this a worthy addition to the WSR system.</p>	<p>C 3.4 miles run through State or other public lands</p> <p>C ½ mile runs through private ownership</p> <p>C A pipeline ROW exists along the north end T34S, R4E, Sec 11,12</p>	<p>C Fisheries could be enhanced with designation</p>		
Dry Hollow Creek	<p>C Scenery was the only outstandingly remarkable value identified for this segment. It also has a healthy riparian system. However, compared to other streams, this one does not contribute significantly to the Escalante River system for the proposed action (Alternatives B and E.)</p>				<p>The cost to manage this 4.2 mile segment may exceed its contribution to the NWSR in Alternatives B and E.</p>

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Lower Deer Creek	C High quality scenery, Deer Creek Recreation Area, Escalante Canyons ONA, southwestern willow flycatchers, prehistoric sites, threatened plant, and riparian area make this segment a worthy addition to the WSR system.	C 1.7 miles of the section of Deer Creek between Slickrock and the Burr Trail is on private land C Irrigation pipeline and right-of-way for maintenance of water system on part of public land C water right to approx 1.5 cfs for irrigation and non-consumptive use through this section C This is not a significant diversion for this stream.	C Fisheries could be enhanced with designation. C A Federally threatened species, the Ute ladies' tresses orchid, is found in the Deer Creek drainage and could be further protected by W&SR designation.	C Part of this segment is in the Escalante Canyons Outstanding Natural Area.	
Slickrock Canyon	C High quality scenery, recreational values, prehistoric sites, and riparian areas make this a worthy addition to the WSR system.				
Cottonwood Canyon	C Although this canyon exhibits high quality scenery and has recreational use, it is not deemed to be the best of the best.				The cost to manage this 4.4 mile segment may exceed its contribution to the NWSR in Alternatives B and E.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
The Gulch including Blackwater Canyon, Lamanite Arch Canyon, and Water Canyon	<p>C Only The Gulch is deemed a worthy addition for the proposed action (Alternatives B and E).</p> <p>C High quality scenery, outstanding recreation, natural arch, peregrine habitat, Traditional Cultural Property, riparian area, petrified wood are the characteristics that make it worthy.</p> <p>C The other canyons are short, side tributaries whose outstandingly remarkable values are scenery, and a natural arch. They are not in and of themselves worthy additions to a national river system.</p>	C 2 miles run through State lands		C Outstanding Natural Area	The cost to manage the 6.5 mile segment dropped in Alternatives B and E may exceed its contribution to the NWSR.
Steep Creek	C High quality scenery, recreational values, and riparian areas make this a worthy addition to the WSR system.				
Lower Horse Canyon	C Although this canyon exhibits high quality scenery, and has recreational use, the primary values do not contribute to its riverine values.		C While there is a diversion pipe at the top of this section, it has not been used in 15 years and there are not plans to utilize it in the future, therefore W&SR would not have no effect.	C Outstanding Natural Area	The cost to manage this 3.0 mile segment may exceed its contribution to the NWSR in Alternatives B and E.
Wolverine Creek	<p>C Scenery was the only outstandingly remarkable value identified for this segment.</p> <p>C Compared to other streams, this one does not contribute significantly to the Escalante River system for the proposed action (Alternatives B and E).</p>				The cost to manage this 9.7 mile segment may exceed its contribution to the NWSR in Alternatives B and E.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Little Death Hollow	<p>C Scenery was the only outstandingly remarkable value identified for this segment.</p> <p>C Compared to other streams, this one does not contribute significantly to the Escalante River system for the proposed action.</p>			C Outstanding Natural Area	The cost to manage this 14.8 mile segment may exceed its contribution to the NWSR in Alternatives B and E.
Escalante River	C High scenic quality, high recreational use, numerous geologic features, important fish and wildlife habitat, prehistoric sites, historic homestead and roads, riparian area, fossil tracks, petrified wood make this a worthy addition to the national system.	<p>C 2 power lines, 1 pipeline, and 1 telephone line cross the Escalante River and Calf Creek near their confluence, T35S, R4E, Sec 12.</p> <p>C There is also a ROW for State Route 12 near Escalante River and Calf Creek confluence.</p>		C Garfield County is concerned about their ability to replace Wide Hollow Reservoir upstream of this segment.	
Lower Sand Creek and Willow Patch Creek	C High scenic quality, part of an ONA, fish habitat, southwestern willow flycatcher habitat, historic trail, and riparian area make this river segment a worthy addition.	C A utility line crosses the north end of Lower Sand Creek, T34S, R4W, Sec 8.			
Mamie Creek and West Tributary	C High scenic quality, part of an ONA, high recreational use, natural bridge, fish and wildlife habitat, prehistoric and historic sites including an historic mail trail, and riparian area make this a worthy addition.			C Part of Phipps Death Hollow Outstanding Natural Area	

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Unnamed tributary (west of Calf Creek, top to Escalante River)	<p>C Scenery and recreation were the outstandingly remarkable values identified for this segment.</p> <p>C Compared to other streams, this one does not contribute significantly to the Escalante River system.</p>			C North Escalante Canyons Outstanding Natural Area	The cost to manage this 2.6 mile segment may exceed its contribution to the NWSR in Alternatives B and E.
Death Hollow Creek	C High scenic quality, part of an ONA, southwestern willow flycatcher habitat, prehistoric sites, dinosaur tracks, and riparian area make this a worthy addition to the system.			C This segment is in the North Escalante Canyons Outstanding Natural Area	
Calf Creek	C High scenic quality, Calf Creek Recreation Area, bird habitat, prehistoric site, and riparian area make this a worthy addition to the WSR system.	<p>C Public campground</p> <p>C diversion on lower end</p> <p>C 2 power lines, 1 pipeline, and 1 telephone line cross the Escalante River and Calf Creek near their confluence, T35S, R4E, Sec 12. There is also a ROW for State Route 12 near Escalante River and Calf Creek confluence.</p>	C Recreation could be enhanced	C This segment is in an Outstanding Natural Area C and a Recreation Area	
Phipps Wash and tributaries	<p>C Scenery and recreation were the outstandingly remarkable values identified for this segment.</p> <p>C Compared to other streams, this one does not contribute significantly to the Escalante River system.</p>				The cost to manage this 6 mile segment may exceed its contribution to the NWSR in Alternatives B and E.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Twentyfive Mile Wash #2 and North tributary	<p>C The lower section was chosen for the proposed action (Alternatives B and E) because the values identified apply primarily to the lower section and the portion that flows through the NRA.</p> <p>C The values are high scenic quality, high recreation use, bird habitat, rock art, prehistoric structures, and riparian.</p>			C Outstanding Natural Area	The cost to manage the 4.4 mile segment dropped in Alternatives B and E may exceed its contribution to the NWSR.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

Paria River System

The Paria River System begins on the Paunsaugunt Plateau near Bryce Canyon. The river system flows through the White Cliffs and the Vermilion Cliffs, and carves its way through the Paria Canyon/Vermilion Cliffs Wilderness Area to the Colorado River. The Paria River and tributaries are in the Colorado Plateau Physiographic Province and in the Canyonlands and High Plateaus subprovinces. Dominant vegetation zones change with elevation and precipitation levels. These zones start in lower elevations with Shadscale, then blend with Sagebrush, and eventually Piñon-Juniper zones. Headwaters of some tributaries are in the Montane Zone. The Paria is a significant tributary in the Colorado River Basin and joins the Colorado at Lees Ferry in Arizona. It flows through the Plateau Uplands water province.

The headwaters of the Paria River are composed of several tributaries in Dixie National Forest and Bryce Canyon National Park. From there, the Paria flows through the BLM-managed Grand Staircase-Escalante National Monument and then leaves the study area at the Arizona State line. The Paria River System studied in this document covers 117.5 river miles, of which 101.6 miles (86 percent) are on public lands managed by the Bureau of Land Management. This suitability assessment covers the river and major tributaries within the boundaries of the Monument, as well as designated BLM wilderness outside the Monument boundaries.

As prescribed in the WSR Act and by BLM policy, the area included in this evaluation is the river area and its adjoining tributaries within the river corridor. Generally, the corridor width cannot exceed an average of 320 acres per mile, which is usually measured approximately 1/4 mile from the mean high-water mark on both sides of the channel. Few designated WSRs have a boundary that is exactly one-quarter of a mile from the ordinary high water mark along their entire length. Corridor boundaries for Federally designated and administered WSRs may vary based on a number of

conditions, but are usually delineated by legally identifiable lines (survey or property lines). They can also be delineated by some form of on-the-ground physical features (i.e., topography, natural or man-made features such as canyon rims, roads, etc.), which provide the basis for protecting the river's identified values and practicality in managing those values.

Alternatives Considered

About 213 miles of the Escalante River System would be considered suitable under Alternative D, and 140 miles would be considered suitable for Alternatives B and E for inclusion into the National Wild and Scenic Rivers System (NWSRS). All segments would remain eligible under Alternative A (No Action). All segments would be found non-suitable for Alternative C. Alternatives B and E represent BLM's proposed action for suitability

About 116 miles of the Paria River System would be considered suitable under Alternative D, and 110 miles would be considered suitable for Alternatives B and E for inclusion into the National Wild and Scenic Rivers System. All segments would remain eligible under Alternative A (No Action). All segments would be found non-suitable for Alternative C. Alternatives B and E represent BLM's proposed action for suitability. The classifications recommended for the segments are indicated in Table A5.3.

The rationale for this recommendation is that the Paria River and selected tributaries would be worthy additions to the WSR system because they contain outstandingly remarkable river values that require special protective measures. These values are scenic, recreational, wildlife, geological and historic. Unique natural and human resources would benefit from the protection and enhancement afforded by National Wild and Scenic River designation.

While the segments identified for Alternatives B and E contain some of the same values, Bull Valley Gorge would not be included for Alternatives B and E. The

rationale for dropping this 5.9 mile segment is that while this segment has high quality scenery, is a recreational attraction, and has a confirmed Mexican spotted owl, the watershed for this tributary is small and the outstandingly remarkable values are derived from its geology rather than being a riverine system. The recreation interest lies in the tributary as a slot canyon.

Threats to the Paria River or tributaries within the study area could come from diverting or impounding water for use or modifying stream channels. However, there are no major developments or actions being proposed that would significantly alter the river system's values.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

**TABLE A5.3
DESCRIPTION OF SUITABLE RIVER SEGMENTS**

RIVER SEGMENT NAME	SEGMENT DESCRIPTION		LENGTH		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	B,E	D	B,E		
Upper Paria River - 1	Little Dry Valley (T38S, R2W, Sec 21) to T41S, R1W, Sec 7	Same	22.0	22.0	Wild	High quality scenery, recreational values, exposed geologic strata and arch, historic sites
Upper Paria River - 2	T41S, R1W, Sec 7 to downstream side of private property south of Highway 89 (T42S, R1W, Sec 28)	Same	16.9	16.9	Recreational	
Lower Paria River-1	Downstream side of private property (T43S, R1W, Sec. 10) to wilderness boundary (T43S, R1W, Sec. 23)	Same	3.3	3.3	Recreational	High quality scenery, wilderness area, high recreation use, narrow canyon
Lower Paria River-2	Segment in wilderness (T43S, R1W, Sec. 23 to T44S, R1W, Sec. 12)	Same	4.8	4.8	Wild	
Deer Creek Canyon	Headwaters (T40S, R3W, Sec. 1) to Paria River (T40S, R2W, Sec. 4)	Same	5.1	5.1	Wild	High quality scenery, recreational values
Snake Creek	Entire (T39S, R2W, Sec. 26 to T40S, R2W, Sec. 10)	Same	4.7	4.7	Wild	High quality scenery, recreational values
Hogeye Creek	Entire (T40S, R2W, Sec. 1 to T40S, R2W, Sec. 26)	Same	6.3	6.3	Wild	High quality scenery, recreational values
Kitchen Canyon	T40S, R2W, Sec. 28 to Starlight Canyon (T40S, R2W, Sec. 34)	Same	1.2	1.2	Wild	High quality scenery
Starlight Canyon	Entire (T41S, R2W, Sec. 7 to T40S, R2W, Sec. 35)	Same	4.9	4.9	Wild	High quality scenery
Bull Valley Gorge	Little Bull Valley (T38S, R3W, Sec. 28) to Sheep Creek (T39S, R2W, Sec. 7)	Not included	5.9	0.0	Wild	High quality scenery, recreational values related to slot canyon, spotted owls
Lower Sheep Creek	Bull Valley Gorge (T39S, R2W, Sec. 7) to Paria River (T39S, R2W, Sec. 17)	Same	1.5	1.5	Wild	High quality scenery, recreational values, spotted owls

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT NAME	SEGMENT DESCRIPTION		LENGTH		TENTATIVE CLASSIFICATION	OUTSTANDINGLY REMARKABLE VALUES
	Alternative D	B,E	D	B,E		
Hackberry Creek	Top (T38S, R1W, Sec. 29) to Cottonwood Creek	Same	20.0	20.0	Wild	Recreational values, spotted owls, riparian area
Lower Cottonwood Creek	Confluence with Hackberry Creek to Paria River	Same	2.9	2.9	Recreational	Recreational values
Buckskin Gulch	Wilderness boundary (T43S, R2W, Sec. 15) to Paria River (T44S, R1W, Sec. 12)	Same	18.0	18.0	Wild	High quality scenery, high recreational use, slot canyons

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

In addition to the outstandingly remarkable values listed in Table A5.3, the following factors were analyzed generally for the Paria River System as a whole. Additional specific facts and concerns are addressed in Table A5.4.

Characteristics Which do or do not Make the Area a Worthy Addition to NWSRS

The segments identified in this report are in the Colorado Plateau Physiographic Province, Canyonlands and High Plateaus subprovinces. Currently, there are no designated components of the NWSRS within this province. The Nationwide Rivers Inventory identified the Paria River from Colorado River to its source as possessing values of national significance as identified by the NPS (National Park Service, 1982, 1986, 1988). The Paria was listed as an object of historic or scientific interest when the Monument was designated.

The adjacent Arizona Strip District identified the segment of the Paria River within designated wilderness (in Utah) and it was determined suitable. This determination (although in the administrative record) was not included in the Arizona statewide W&SR review in 1994 -1996.

The Paria River, Hackberry Creek and Bull Valley Gorge were nominated as eligible rivers in *A Citizen's Proposal to Protect the Wild Rivers of Utah*.

The Paria River system would be a worthy addition to the National Wild and Scenic River System based on the following outstandingly remarkable values:

- C **Scenic** - Throughout the spectacular Paria River Gorge, rugged canyons, colorful outcroppings and imposing cliff faces provide unique opportunities for sightseeing and photography.
- C **Recreational** - The Paria River and major tributaries provide outstanding opportunities for hiking, backpacking, photography, and nature viewing. The canyons and colorful sandstone outcroppings, know as

slickrock, attract visitors from throughout the U.S. and other countries.

- C **Geologic** - The Paria River cuts through strata of successively older rocks ranging in age from Cretaceous through Permian, a time span of more than 150 million years, as it descends toward the Colorado River. The Paria River tributary of Lower Sheep Creek and Bull Valley Gorge, which flows into Sheep Creek, are narrow canyons incised mostly into Jurassic Navajo Sandstone.
- C **Riparian** - The river provides a unique riparian corridor through an otherwise arid region. This corridor provides habitat for 329 species of wildlife: 7 amphibians, 242 birds, 59 mammals and 21 reptiles. Among these are the threatened and endangered southwestern willow flycatcher, peregrine falcon, Mexican spotted owl, and wintering bald eagles. There are documented nests in the riparian vegetation along the banks of the Paria. This is also an important historic habitat for the population of reintroduced bighorn sheep.
- C **Historic** - The Paria River system has provided water for humans in a relatively arid environment for at least 10,000 years. Prehistoric Native American Indian sites are prolific throughout the system. The river system continues to provide water for humans today.

Other values that support addition of the Paria to the NWSRS are significant paleontological values, including fossil trackways and petrified wood, and cultural sites that would be enhanced and protected by designation.

Current Uses and Land Ownership Concerns

- C **Energy and Minerals:** An existing oil and gas lease is within the river area on the north end of Hackberry Creek. There are no oil or gas wells within the river area. There are no mining claims. All Federal lands in the Monument are withdrawn from new mineral entry. Existing valid claims or leases within the river boundary remain in effect, and activities may be allowed, subject to regulations that minimize surface disturbance, water sedimentation, pollution, and visual impairment. Reasonable access to mining claims and mineral leases

will be permitted. Mining claims, subject to valid existing rights, can be patented only as to the mineral estate and not the surface estate, subject to proof of discovery prior to the effective date of designation.

- C **Water Resource Developments, Water Rights and Instream Flow:** Existing water developments and rights within the river area are associated with livestock, agricultural, and domestic use. Sixty four surface, 6 underground, and 7 spring water rights within the river corridor are on record with the State of Utah. Of these, BLM holds the rights to 31 surface, 2 underground, and 7 springs. Utah Division of Water Resources reports a total of 3.14 cfs surface diversions in Buckskin Gulch, Hackberry Creek, Hogeeye Creek, Lower Paria River, and the Upper Paria River. Three of these cfs are held by private landowners primarily on the upper Paria, with some on the lower Paria. Existing, valid water rights would not be affected by designation. Future water developments on or above public land segments would be subject to environmental analysis where Federal permits, approval, or funding would be involved.

There is some concern from Kane County Water Conservancy Districts and potential users over the possible effects designation could have on proposed or potential projects. This concern should be addressed by Congress upon Wild and Scenic River designation. No action taken in this plan or WSR recommendation can establish an appropriation or Federal reserved water right. A Congressional Act designating a WSR may or may not establish a federal reserved water right. If Congress creates a reserved right, BLM or the State of Utah may establish instream flows necessary to meet the purposes of the designation. The nature of such a condition would depend on the wording in the Act. Protective management for suitability could affect specific proposals if BLM would have to issue a right-of-way across BLM managed lands. At this time, there are no project proposals on suitable river segments.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

C Forestry, Agriculture and Livestock Grazing:

There are no forested lands within the study area. Agriculture, in the form of irrigated farmlands, occurs near the communities of Tropic, Cannonville, and Adairville. These areas of agricultural use are not within the study area. However, the farming has a major impact on the river study area. Water is diverted out of the channels to irrigate the farmland and the runoff returns to the river bed. When this water returns, it can be carrying remnants of chemicals used to spray the fields.

Livestock grazing is permitted on public lands throughout the river area. The Paria and tributaries flow through 7 allotments and serve as boundaries for others. The Paria flows through Bunting Well, Cottonwood, and Headwaters Allotments. Grazing along the river and on the uplands is primarily a fall/winter/spring operation. The river is the major source of water in this area for livestock. Grazing would continue to be governed by applicable laws and regulations.

Six fences cross the Paria within the corridor. These include allotment boundary fences, pasture fences, and state section line fences. If not removed after use, these wire fences typically wash out or are taken up during high flows, but are rebuilt each year as flows recede or grazing operations start up. Landowners are concerned that they will not be able to maintain these fences with designation. W&SR designation would not affect the ability of landowners or ranchers to maintain fences.

C Recreational Use and Facilities: Corridors of the Paria River and tributaries provide outstanding opportunities for recreational activities. These include hiking (canyoneering), backpacking, bird-watching, photography, camping, and nature study. Recreational use is estimated to be about 7,200 visits per year (based on 1997 RMIS data).

BLM has developed trailheads at Whitehouse, Buckskin Gulch, and Wire Pass. These sites receive most of the Paria visitors (6,986 in FY 1997). Access for hiking and river-based activities is

available at these trailheads. A visitor contact station and developed campground are located near the Whitehouse trailhead. The old Pahreah townsite and Paria Movie Set are located near the river corridor north of Highway 89.

C Transportation/Utility Facilities: U.S. Highway 89 travels over the river at the lower end of the Upper Paria. Outside of wilderness, dirt roads approach the water's edge, and in some places, ford the river. An historic travel route that is still in use today goes along the Upper Paria river channel, in and out of the river. Power transmission lines cross over the river at three places between the Pahreah townsite and Highway 89, and two others cross the Paria at the wilderness boundary. Wild and Scenic designation would not affect the ability to maintain these lines.

C Private and Commercial Development: Interim management strategy for the Monument is to locate all major developments outside the Monument boundaries. There are 1,152 acres (5 miles) of private land within the river area. Development on these parcels is not a concern for river management.

C Rights-of-Way, Leases or Traditional Uses: Three rights-of-way fall within the Paria River study area. They are for utility lines at T41S, R1W, Sec. 29 and 32; T42S, R1W, Sec. 16; and T43S, R1W, Sec. 23.

Resources and Uses that Would be Enhanced or Curtailed by Designation

C Scenic - The inventory indicates that 83 river miles possess outstanding scenic values in Alternative A and 78 miles in Alternatives B and E. Deep, narrow canyons and colorful rock walls provide exceptional opportunities for sightseeing and photography. During a BLM visual resources inventory, the river corridors were determined to have scenic quality A. This indicates that scenic qualities of the landforms, vegetation, and waterform are extremely high, with great variety and distinction. Designation would ensure that the scenic values of this river system would not be impaired by additional water diversions or dams.

C Recreation - The Paria River and major tributaries provide outstanding opportunities for hiking, backpacking, photography, and nature viewing. The canyons and colorful sandstone outcroppings, known as slickrock, attract visitors from throughout the U.S. and other countries. Thousands of hikers and backpackers a year visit the river as it flows through the Paria Canyon/Vermilion Cliffs Wilderness Area. Outside the wilderness area, visitor use is quite low and dispersed. Designation would enhance the recreation values for this river system by keeping the canyon system intact and desirable for hiking.

The Paria River Corridor is also accessed by motorized users. This use would be curtailed for the entire river corridor in Alternatives B and D by the zone prescriptions. W&SR classifications support the zone prescriptions. Alternative E would allow motorized use in the Paria Box, the section of river below the old Paria townsite.

C Geological - The Colorado Plateau is a region of generally horizontal geologic strata where plateaus and mesas are separated by deep canyons. The Paria River cuts through strata of successively older rocks ranging in age from Cretaceous through Permian, a time span of more than 150 million years, as it descends toward the Colorado River near Lee's Ferry. The upper reaches of the Paria include the tributaries of Bull Valley Gorge and Lower Sheep Creek. These slot canyons, so defined because they are very deep with extremely narrow walls, are incised mostly into the Jurassic Navajo Sandstone. Southern portions of the Paria River and tributaries such as Buckskin Gulch, also form slot canyons. Kaibab Gulch, the upper reaches of Buckskin Gulch, is the stratigraphic type section for the Permian Kaibab Formation. Designation would ensure that knowledge would be enhanced by providing a basis for additional scientific study.

C Riparian and Wildlife Habitat - The river and tributaries provide riparian corridors through an otherwise semi-arid region that support a wide variety of wildlife. As typical of wetland areas, the

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

diversity of plants and wildlife around the washes and streams is greater than in the surrounding uplands. Various wildlife species rely upon the river area for consumptive use and other requirements. Special status wildlife species include bald eagles, southwestern willow flycatcher, Mexican spotted owl, and peregrine falcons. The riparian area is potential habitat for the recently reintroduced California condor. Other wildlife include bighorn sheep, mule deer, raccoons, bats, reptiles, amphibians, waterfowl, raptors and other birds (see Appendix 7 for a species list). Wild and Scenic River designation would ensure that habitat for these species would continue to be protected, and would provide an additional reason to conduct scientific studies.

C Vegetative Composition Varies Depending on the Zone: Riparian and Upland. Riparian communities associated with the river consist of native willows, cottonwoods, bulrushes, cattails, and non-native tamarisk. Stretches that receive disruptive, scouring floods on a regular basis remain in a disclimax successional stage. Other vegetation includes rushes, sedges, and a variety of grasses and forbs. Algal mats are found in some quiet pools. Upland vegetation is described as a mixture of desert shrub, sagebrush, piñon-juniper, grasslands, mountain shrub and coniferous woodlands. The distribution of these associations is determined largely by elevation and precipitation. Designation would enhance the viability of the riparian communities.

C Cultural (Prehistoric and Historic) Resources - There is evidence to suggest that cultural properties and features representing the entire time span of human occupation of the region are present along or immediately adjacent to the Paria River. This should not be surprising since water is a limiting factor to all human activity. The probable span of use of the riverine habitat covers from about 11,000 years before present to the most recent activities of our own time. Numerous prehistoric sites can be attributed to several Native American cultures: Anasazi and Fremont, Hopi, Zuni, Paiute, and

possibly Navajo. The river system continues to be important to modern societies. Cultural properties likely to be encountered along the river include rock art sites, agricultural features, storage cists, rock shelters, habitations, artifact scatters and pioneer-era homesteads, ranches, and travel routes. These cultural properties exhibit a challenge in balancing conservation and utilization, but also offer great opportunities for scientific study, public education and interpretation.

C Wilderness and Wilderness Study Areas - 77 percent of the Paria River and tributaries run through wilderness study areas (WSA) and a designated wilderness in Alternative A, and 75 percent in Alternatives B and E. The river and tributaries flow through the Paria-Hackberry WSA and The Cockscomb WSA. Lower Paria River-2 segment and the entire eligible segments of Buckskin Gulch and Wire Pass are within the Paria Canyon/Vermillion Cliffs Wilderness Area (23 miles or 19 percent). Wild and Scenic River designation would complement BLM's management of Wilderness and WSAs.

C Streamflow and Water Quality - The Paria River and tributaries are free-flowing streams although intermittent. A mean flow of 9.08 cfs is recorded by USGS south of the town of Tropic. High flows typically occur during the spring runoff period and as a result of summer thundershowers. Frequent scouring of the river as a result of high flows constantly affects channel morphology and the stage of riparian ecosystems.

Utah Division of Water Quality has classified the Paria River and tributaries from the State line to headwaters as 2B, protected for secondary contact recreation (boating, wading), 3A, protected for cold water fish and other cold-water aquatic life, and 4, protected for agricultural use.

The Paria generally is turbid and saline. The water appears turbid for most of the year to the degree that the substrate is not visible. Dissolved salt and sediment loads are high, reducing the feasibility and success of impoundments on the river. There is heavy algal growth in pools during periods of low water. River designation would further protect streamflow.

Federal, Public, State, Tribal, Local, or Other Interests

Kane County Water Conservancy District does not support Wild and Scenic River designation for the Paria River System. They are specifically concerned about being able to maintain the power lines on the lower portion of the Paria River and upgrading the crossing on Skutumpah road over Bull Valley Gorge. Bull Valley Gorge is determined suitable in Alternative D. However, Wild and Scenic River designation may or may not affect the county's ability to improve the crossing over the canyon, dependent on an individual site specific assessment of impacts. This is not a concern for Alternatives B and E, as Bull Valley Gorge is not considered suitable. Power lines would be able to be maintained under both of these alternatives.

Kane County Water Conservancy District also expressed concern for the private property owners near Highway 89. They feel that those private property owners will not be able to use their water rights if designation occurs. They are also concerned that ranchers will not be able to repair and build fences in the river corridor. Wild and Scenic River designation does not affect private landowners and their senior water rights. Therefore, this is not a concern.

There was also concern that motorized users will not be able to access the Paria River Corridor as they have in the past. Motorized and mechanized use would be curtailed by Alternatives B, C, and D in the Monument Management Plan. Alternative E would allow for motorized access in the Paria Box and below to the Wilderness boundary. In Alternative A, BLM would continue to manage the segments as eligible, and the classification for the Paria segment would be recreational allowing motorized use. Wild and Scenic designation would support motorized restrictions in Alternatives B, D, and E, which would curtail motorized use.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

Native American Indian tribes are concerned about rock art in the canyons. Wild and Scenic River designation would ensure that the rock art and surrounding area would remain intact.

Ability to Manage

The Paria River study area is considered to be manageable based on the current level and type of activities taking place, and assuming that adequate staff and funding is available to carry out management of a designated Wild and Scenic River. Designation of the Paria River System would slightly raise the level of management needed above that being proposed in the Monument plan. Free-flowing character and outstandingly remarkable scenic, recreational, geological, and riparian values identified in the eligibility study can be protected through management actions. If the rivers are designated, a management plan would develop management objectives and strategy for long-term protection of the river's outstandingly remarkable values to the full extent of the WSRA.

Eighty-six percent of the segments are on public lands. Protective management has been in effect since eligibility was determined, as outlined in BLM Manual Section 8351. River protection is considered in environmental assessments of proposed projects and in all land use and activity plans.

Twenty percent of the river system is in a designated wilderness area. The majority of the remainder on public land is in wilderness study areas. Dams could be constructed in wilderness but not on NWSRs. Overlapping designations complement WSR designation and provide additional authority, protection, and guidance for BLM to manage the river if designated.

Historical or Existing Rights that Could be Adversely Affected by Designation

No impact on existing or historical rights would occur as a result of designation.

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

**TABLE A5.4
SUITABILITY SUMMARY FOR BLM'S PROPOSED ACTION**

RIVER SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY DESIGNATION	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Upper Paria River	C High quality scenery, recreational attraction, exposed geologic strata and arches, and historic sites make this area a worthy addition.	C The Paria River runs through 3.1 miles of private lands in the Recreation segment. C The landowner in the lower segment periodically constructs a diversion utilizing their water rights. While this blocks the flow temporarily, the diversion is frequently washed out by high flows retaining the free-flowing character of the Paria River. C 3.9 miles run through State lands. C There is motorized use and commercial horseback rides in the river corridor. It is used as a livestock driveway and historic throughway.	C Motorized use would be curtailed if designated Wild C Enhance southwestern willow flycatcher habitat C Enhance deer population and all other wildlife if no OHV use allowed.	C Kane County Water Conservancy District is concerned that private property owners will be constrained from using their water rights or building fences. C They also are concerned that ranchers will not be able to drive their cattle down the Paria like they do now. C They are also concerned that the existing power lines could not be maintained if designated.	
Lower Paria River	C High quality scenery, wilderness area, high recreation use, narrow canyon, peregrine, and historic travelway make this a worthy addition.		C Habitat for peregrine and southwestern willow flycatcher would be enhanced	C 4.9 miles is in the designated Paria-Vermilion Cliffs Wilderness area outside Grand Staircase-Escalante National Monument boundaries	
Deer Creek Canyon	C High quality scenery and recreation values make this a worthy addition.	C 3.1 miles run through state lands.			
Snake Creek	C High quality scenery and recreation values make this a worthy addition.				
Hogeye Creek	C High quality scenery and recreation values make this a worthy addition.				

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY DESIGNATION	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Kitchen Canyon	C High quality scenery makes this a worthy addition to the system.				
Starlight Canyon	C High quality scenery makes this a worthy addition to the system.	C .2 miles run through State lands.			
Bull Valley Gorge	<p>C High quality scenery, recreational values, slot canyon, spotted owls are characteristics that make this a worthy addition for Alternative D. The values are more the result of the geologic process than the hydrologic process, however.</p> <p>C The spotted owl would be protected under the GSENM plan. Therefore, it is not considered worthy in Alternatives B and E because the canyon would be protected under Monument values.</p>	C A makeshift bridge on the Skutumpah Road spans Bull Valley Gorge.		C Kane County is concerned that they will not be able to improve the road or bridge that spans the gorge due to WSR designation.	
Lower Sheep Creek	C High quality scenery, recreational values, a known spotted owl sighting make this a worthy addition to the WSR system.	<p>C Motorized use</p> <p>C Livestock driveway</p> <p>C Historic throughway</p>	C Motorized use would be curtailed if classified Wild		
Hackberry Creek	C Recreational and scenic values, spotted owls, and riparian area make this a worthy addition to the system.	<p>C 3.1 miles run through state lands.</p> <p>C Limited OHV use at upper and lower ends</p>	C Motorized access would be curtailed if classified as Wild		
Lower Cottonwood Creek	C Recreational values and ecologic continuity make this a worthy addition to the system.	C 1.3 miles run through private lands.			

APPENDIX 5 - WILD AND SCENIC RIVER SUITABILITY

RIVER SEGMENT NAME	CHARACTERISTICS WHICH DO OR DO NOT MAKE THE AREA A WORTHY ADDITION TO WSR SYSTEM.	CURRENT USES AND LAND OWNERSHIP CONCERNS	RESOURCES AND USES THAT WOULD BE ENHANCED OR CURTAILED BY DESIGNATION	FEDERAL, PUBLIC, STATE, TRIBAL, LOCAL, OR OTHER INTERESTS	ABILITY TO MANAGE
Buckskin Gulch and Wire Pass	C High quality scenery, wilderness area, high recreational use, slot canyons, and known peregrine make this a worthy addition to the WSR system.	C .2 miles run through state lands. C There is a lone watering hole in this segment used for livestock. C Motorized vehicles are used to maintain range improvements.	C Spring and vegetation could be enhanced	C These segments are in the designated Paria-Vermilion Cliffs Wilderness area outside GSENM boundaries	

Estimated Cost

No additional easements or land acquisitions are anticipated as a result of NWSR designation. Section 6(b) of the National Wild and Scenic Rivers Act specifically prohibits the use of condemnation for fee title purchase of lands if 50 percent or more of the acreage within the river area boundary is in public ownership (Federal, state or local government). This is the case with both the Escalante and Paria River Systems. It is estimated that an additional \$70,000 or 1 FTE would be needed to develop, implement, and maintain actions identified in the river plans.

Interim Management

Until a record of decision by the BLM determines segments non-suitable, and/or Congressional action on any recommendations for those segments be included as a part of the National Wild and Scenic River System, all eligible river areas on Federal lands are under management to protect their free-flowing characteristics, tentative classifications, and outstandingly remarkable values. This means that values which make rivers eligible for inclusion in the National Wild and Scenic River system will be addressed on a case by case basis. Whenever any proposed action would affect these values, impacts will be addressed in the NEPA document, and mitigation and alternatives will be considered to avoid such impacts. National Monument designation provides protective management direction regardless of WSR designation.

Appendix 6

Areas of Critical Environmental Concern



APPENDIX 6 - AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Introduction

Areas of Critical Environmental Concern (ACEC) were considered by an evaluation team to see if they met the designation criteria. Nominations were also considered in light of the special management attention they would receive through the establishment of the Monument. The Monument is unique in the realm of Bureau of Land Management (BLM) public lands administration in regards to the need for ACECs. After careful evaluation of the resources recognized in each of the nominations, it was determined that the protection of would be equivalent under either Monument authority or ACEC designation. Therefore, it was concluded that no ACECs will be designated under the Monument Management Plan.

Existing special management areas such as Outstanding Natural Areas (ONAs) and Research Natural Areas (RNAs) were also considered for ACEC protection. The original designations are recommended to be preserved because of the historical context of these units to Monument lands and to Glen Canyon National Recreation Area, and also due to public recognition through time.

Evaluation Criteria:

To be considered for designation as an ACEC, an area must meet the requirements of

relevance and importance as described in the Code of Federal Regulations (43 CFR 1610.7.2). The definitions for the criteria of relevance and importance are as follows:

Relevance

An area is considered relevant if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (for example: rare or sensitive archeological resources and religious or cultural resources important to Native Americans).
2. A fish and wildlife resource (for example: habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity).
3. A natural process or system (for example: endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities; rare geologic features).
4. A natural hazard (for example: areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

Importance

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

1. Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of Federal Land Policy and Management Act.
4. Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare.
5. Poses a significant threat to human life and safety or to property.

HR 1500 Areas

Nominations were received from Southern Utah Wilderness Alliance (SUWA) during the earlier 1994 planning process for the Escalante/Kanab Resource Management Plan

APPENDIX 6 - AREAS OF CRITICAL ENVIRONMENTAL CONCERN

(RMP) and from more recent 1998 correspondence from both SUWA and from the Wilderness Society. In their correspondence, they requested the protection of areas being proposed in legislation for wilderness designation. Specifically noted were the protection of wilderness values. It is explicit in the current BLM Planning Manual (1613.06) that ACECs are not to be designated to protect areas for wilderness values:

“The FLPMA requires that priority shall be given to the designation and protection of ACECs. The ACECs are identified, evaluated, and designated through BLM’s resource management planning process. An ACEC designation is the principal BLM designation for public lands where special management is required to protect important natural, cultural and scenic resources, or to identify natural hazards. Therefore, BLM managers will give precedence to the identification, evaluation, and designation of areas which require “special management attention” during resource management planning. *“An ACEC designation will not be used as a substitute for wilderness suitability recommendations.”* (Italics added)

In compliance with this policy, nominations of HR1500 areas were not considered since the values to be protected were wilderness

values. BLM wilderness suitability is being considered outside the plan.

ACEC Nominations

The following nominations were received as of June 23, 1998:

1. Owen Severance - Fourmile Bench Old Tree Area (Received March 2, 1998)
2. Utah Farm Bureau (John B. Keeler) - 48 Grazing Allotments (Received March 3, 1998)
3. Utah Trail Machine Association - Propose No ACECs be designated (Received March 9, 1998)
4. The Nature Conservancy of Utah (Joel S. Tuhy) - Nomination “that the existing No Mans Mesa Research Natural Area (RNA) be formally designated as an ACEC through the Monument planning process that is now underway.” (Received March 16, 1998)
5. SUWA - A nomination requesting that the HR1500 areas within the Monument (see Wilderness at the Edge) become ACECs to protect wilderness values. (Received March 19, 1998)
6. Grand Canyon Wildlands Council (Kelly Burke) - They “maintain that ACEC criteria applies to, and is met by, the Grand Staircase-Escalante National Monument as an ecological whole.” “...The Grand Canyon Wildlands considers the entire Monument an Area

of Critical Environmental Concern.

When applied to smaller units, it seems problematic whether ACEC status would provide an additional meaningful layer of protection, and such designations may prove counterproductive in protecting the Monument.” (Received March 20, 1998)

7. John R. Swanson - Urges that the entire Grand Staircase-Escalante National Monument become an Area of Critical Environmental Concern. (Received about March 23, 1998)
8. Southern Utah Wilderness Alliance - They have determined that the entire Monument qualifies for protection under the ACEC category. They ask that previous SUWA correspondence on this issue be disregarded. (Received March 23, 1998)
9. The Wilderness Society - They do incorporate by reference the ACEC nominations made in 1994 by SUWA, plus Fortymile Gulch and Hurricane Wash (Received March 23, 1998)
10. Southern Utah Wilderness Alliance - Another letter, received April 9, 1998, discussed the use of ACECs in protecting Wilderness Values in the Monument
11. Utah Farm Bureau - A second letter received April 15 from John B. Keeler stated that the Farm Bureau felt that Monument designation provides adequate protection without ACECs

APPENDIX 6 - AREAS OF CRITICAL ENVIRONMENTAL CONCERN

**TABLE A6.1
AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECS)**

RESOURCE VALUE	LOCATION	EVALUATION/COMMENTS
Entire Monument	Area within Monument	The entire Monument was found to qualify under both relevance and importance. Monument designation already gives authority to provide special management emphasis. Designating the entire Monument as an ACEC would be duplicative.
Grazing Allotments	All allotments within the Monument	Grazing allotments may have historical relevance, but do not qualify under the criteria for importance. Consensus by evaluators that they do not need special management. Nominations subsequently withdrawn by nominee.
Scenic Access Routes	US-89; Utah 12, 9, and 143; Cottonwood Wash Road from Utah 12 to US 89; the road to Pahreah Townsite from US 89; the Burr Trail from Boulder to Capitol Reef; and the Hole-in-the-Rock Road from Utah 12 to Glen Canyon NRA.	Scenic Access Routes are historically relevant. U-12, Cottonwood, Old Pahreah, Burr Trail, and Hole-in-the-Rock Trail have more than local significance. ACEC probably is not the right tool.
Fourmile Bench Old Tree Area	Fourmile Bench	The Old Tree area is relevant as a natural system and is of more than local significance. It is also irreplaceable, and vulnerable to adverse change.
No Mans Mesa	About 30 miles northwest of Kanab.	No Mans Mesa is a historically relevant natural system, and relict plant community. It is also irreplaceable and vulnerable to adverse change. Continue designation as a Research Natural Area.

Appendix 7

Standards & Guidelines for Healthy Rangelands



APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

INTRODUCTION

The following policies, practices, and procedures will be implemented in order to ensure that Bureau of Land Management (BLM) lands are healthy. The concept of healthy rangelands expresses the BLM's desire to maintain or improve productivity of plant, animal (including livestock), soil, and water resources at a level consistent with the ecosystem's capability.

In order to meet society's needs and expectations for *sustained* production and conservation of natural resources from BLM rangelands, use of these lands must be kept in balance with the land's ability to sustain those uses. Identifying that balance requires an understanding and application of ecological principles that determine how living and non-living components of rangelands interact. Recognition of the inter-dependence of soil, water, plants, and animals (including livestock) is basic to maintaining healthy rangelands and the key element in BLM's proposed Standards and Guidelines.

The policies, practices, and procedures contained in this document are referred to as Standards and Guidelines. Standards and Guidelines will apply to all uses of BLM land for forage, including livestock, wildlife, wild horses, and burros.

Standards describe desired ecological conditions that BLM intends to attain in managing BLM lands, whereas Guidelines define practices and procedures that will be applied to achieve Standards. While Standards will initially be applied to grazing, it is BLM's intent to eventually apply these Standards to all rangeland uses that have the ability to affect or be affected by the ecological characteristics of rangelands.

FUNDAMENTALS OF RANGELAND HEALTH

The Bureau of Land Management has defined four Fundamentals of Rangeland Health, which are the basic ecological principles underlying sustainable production of rangeland resources. These Fundamentals are embodied in BLM's new Grazing Regulation (43 Code of Federal Regulations, Part 4100), which became effective in August of 1995. These four Fundamentals of Rangeland Health, which also serve as the basis for Standards and Guidelines for Grazing Management, are as follows:

1. Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian/wetland, and aquatic components; soil and plant conditions support water infiltration, soil moisture storage, and release of water that are in balance with climate and landform, and

maintain or improve water quality, water quantity, and timing and duration of flow.

2. Ecological processes, including the hydrologic cycle, nutrient cycles, 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 progress toward achieving, established BLM management objectives such as meeting wildlife needs.
4. Habitats are, or are making significant progress towards being, restored or maintained for Federal threatened and endangered species, Federal proposed, Federal candidate, other special status species, native species, and for economically valuable game species and livestock.

By developing Standards and Guidelines based on the Fundamentals listed above, and by applying those Standards and Guidelines to BLM land management, it is BLM's intent to achieve the following:

1. Promote healthy, sustainable rangeland ecosystems that produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, wild horse and burro habitat, clean water, clean air, etc.

APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

2. Accelerate restoration and improvement of public rangelands to properly functioning condition, where appropriate.
3. Provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy rangelands.
4. Ensure that BLM land users and stakeholders have a meaningful voice in establishing policy and managing BLM rangelands.

STANDARDS AND GUIDELINES

Standards are descriptions of the desired condition of the biological and physical components and characteristics of rangelands. Standards:

- C are measurable and attainable;
- C comply with various Federal and state statutes, policies, and directives applicable to BLM rangelands;
- C establish goals for resource condition and parameters for management decisions.

Indicators are features of an ecosystem that can be measured or observed in order to gain an understanding of the relative condition of a particular landscape or portion of a landscape. Indicators will be used by the rangeland manager to determine if Standards are being met. The indicators proposed for use are

commonly accepted and used by members of the rangeland management profession in monitoring rangelands. Methods and techniques for evaluating these indicators are also commonly available. In using these terms, it should be recognized that not every indicator applies equally to every acre of land or to every ecological site. Additional indicators not listed below may need to be developed for some rangelands depending upon local conditions.

Similarly, because of natural variability, extreme degradation, or unusual management objectives, discretion will be used in applying Standards. Judgements about whether a site is meeting or failing to meet a Standard must be tempered by a knowledge of the site's potential. Examples of this are thousands of acres of the Great Basin in western Utah where native perennial grass species' have been replaced by cheatgrass, an annual exotic species. It will be difficult and expensive to return all those areas to their natural potential because they have been greatly altered. It may not even be feasible to restore such areas from such an altered state to a state similar to "natural" conditions.

Site potential is determined by soil, geology, geomorphology, climate, and landform. Standards must be applied with an understanding of the potential of the particular site in question, as different sites have differing potentials.

Guidelines are management approaches, methods, and practices that are intended to achieve a standard. Guidelines:

- C typically identify and prescribe methods of influencing or controlling specific public land uses
- C are developed and applied consistent with the desired condition and within site capability
- C may be adjusted over time.

It should be understood that these Standards and Guidelines are to be applied in making specific grazing management decisions. However, it should also be understood that they are considered the minimum conditions to be achieved. Flexibility must be used in applying these policy statements because ecosystem components vary from place to place and ecological interactions may be different.

Standards and Guidelines for use on BLM Land in Utah are described in the following pages. Standards and Guidelines, once approved by the Secretary of the Interior, will be implemented through subsequent Resource Management Plans (RMPs) and other decisions by BLM officials involving matters related to management of grazing. Where applicable, the statewide Guidelines may be adopted as terms and conditions for grazing permits and leases. Additional Guidelines

APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

may be identified and implemented through subsequent Resource Management Plans and activity plans to address local situations not dealt with by the statewide Guidelines.

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. This is indicated by:

- a. Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation
- b. The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies
- c. The 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 not identified, a community that equally sustains the desired level of productivity and properly functioning ecological processes

Standard 2. Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform. This is indicated by:

- a. Streambank vegetation consisting of, or showing a trend toward, species with root masses capable of withstanding high streamflow events, vegetative cover adequate to protect stream banks and dissipate streamflow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge
- b. 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
- c. Re-vegetating point bars, lateral stream movement associated with natural sinuosity, channel width, depth, pool frequency, and roughness appropriate to landscape position
- d. Active floodplain

Standard 3. Desired species, including native, threatened, endangered, and special-status species, are maintained at a level

appropriate for the site and species involved. This is indicated by:

- a. Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival
- b. Habitats connected at a level to enhance species survival
- c. Native species re-occupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of non-native species
- d. Habitats for threatened, endangered, and special-status species managed to provide for recovery and move species toward de-listing
- e. 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 not identified, a community that equally sustains the desired level of productivity and properly functioning ecological 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

APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

Utah Water Quality Standards (R.317-2) for Surface and Groundwater. This is indicated by:

- a. Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters
- b. Macro invertebrate communities that indicate water quality meets aquatic objectives

GUIDELINES FOR GRAZING MANAGEMENT

1. Grazing management practices will be implemented which:
 - 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 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 and seep developments will be 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, 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, non-intrusive, non-native plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as non-native species, and/or (d) cannot compete with already established non-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.

APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

8. Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein, and other supplements), for the purpose of substituting 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 inadvertent 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 with the Environmental Protection Agency.
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 CFR 4180.2(c).

12. Where it can be 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: (a) burned rangelands, whether by wildfire or prescribed burning, will be ungrazed for a minimum of one complete growing season following the burn; (b) rangelands that have been reseeded or otherwise chemically or mechanically treated will be ungrazed for a minimum of two complete growing seasons following treatment.
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 land BLM use plans, the conversion will be allowed.

MONITORING AND ASSESSMENT

The determination of whether or not a particular grazing unit, pasture or allotment is meeting a Standard will be made by the Authorized Officer based on rangeland assessments and monitoring.

Monitoring the indicators will be in the form of recorded data from study sites or transects. It may be supplemented by visual observations and other data by BLM or other agency personnel, ranchers, interested public, wildlife agency personnel, or other resource data.

Assessments are the interpretation of data, observations, and related research findings. Assessments are the usual basis for prescribing grazing adjustments or practices. In some cases, such as with threatened or endangered species, Section 7 consultation with the U. S. Fish and Wildlife Service under the Endangered Species Act will occur. In all cases, conformance with Standards and Guidelines is a local decision based on local circumstances involving a collaborative process with affected interests

Should an assessment determine that an allotment is not meeting a Standard and/or

APPENDIX 7 - STANDARDS AND GUIDELINES FOR HEALTHY RANGELANDS

significant progress toward meeting a Standard is not occurring, the next step is to determine the cause of failing to meet the Standard. If that determination reveals that grazing is involved or partially responsible, the Authorized Officer, with involvement of the interested parties, will prescribe actions that ensure progress toward meeting the Standard. Those actions may be a part of an activity plan, a coordinated management plan, or an administrative decision. Corrective management actions will be based on actual on-the-ground data and conditions.

(Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah, USDI, BLM, May 1997)

Appendix 8

Visual Resource Management Classes



APPENDIX 8 - VISUAL RESOURCE MANAGEMENT CLASSES

INTRODUCTION

Visual resource management (VRM) classes are assigned through the planning process. All actions proposed that would result in surface disturbances must consider the importance of the visual values and the impacts the project may have on these values.

VRM CLASS OBJECTIVES:

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

Class II - The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III - The objective if this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention

but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the landscape.

Class IV - The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

VISUAL RESOURCE MANAGEMENT CLASS OBJECTIVES APPLICATION (STIPULATIONS OR MITIGATION OR PRESCRIPTIONS)

1. While performing an environmental analysis for projects, the visual resource contrast rating system would be utilized, as a guide, to analyze potential visual impacts of the proposal. The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. Projects would be designed to resolve and minimize potential impacts and meet or exceed the visual resource management class objectives.

Some types of projects such as rights-of-way requests, valid existing rights., or ingress to private land may be allowed on a case by case basis in Class II or III areas. Visual resource impacts in these instances would be minimized by such measures, but not limited to screening, painting, project design, relocation, or reclamation.

2. The Monument Manager may allow temporary projects, such as research projects, to exceed VRM standards in Class II-IV areas, if the project terminates within two years of initiation. Rehabilitation begins at the end of the two year period. During the temporary project, the Manager may require phased mitigation to better conform with prescribed VRM standards.
3. VRM classes acknowledge existing visual contrasts. Existing facilities or visual contrasts will be brought into VRM class conformance as the need or opportunity arises (i.e. rights-of-way renewals, mineral material site closures, abandoned mine rehabilitation, other structures).
4. VRM Class I is assigned to designated wilderness areas and the designated wild segments of national wild and scenic rivers, and may be assigned to other administratively designated areas where a management decision is made to maintain a natural landscape.

Appendix 9

Wilderness Study Areas



APPENDIX 9 - WILDERNESS STUDY AREAS

**TABLE A9.1
WILDERNESS STUDY AREAS**

NAME	ACRES ¹
Phipps-Death Hollow Instant Study Area (ISA)	42,731
Steep Creek Wilderness Study Area (WSA)	21,896
North Escalante Canyons/The Gulch ISA	119,752
Carcass Canyon WSA	46,711
Scorpion WSA	35,884
Escalante Canyons Tract 1 ISA	360
Escalante Canyons Tract 5 ISA	760
Devils Garden ISA	638
The Blues WSA	19,030
Fiftymile Mountain WSA	146,143
Death Ridge WSA	62,870
Burning Hills WSA	61,550
Mud Spring Canyon WSA	38,075
The Cockscomb WSA	10,080
Paria/Hackberry and Paria/Hackberry 202 WSA	135,822
Wahweap WSA	134,400
¹ WSA/ISA acres are total BLM acres from Utah Statewide Wilderness Study Report, October 1991	

Appendix 10

Paleontology



APPENDIX 10 - PALEONTOLOGY

**TABLE A10.1
EXPOSED ROCK UNITS AND ASSOCIATED FOSSILS**

FORMATION	AGE	FOSSILS
unnamed	Quaternary	possible Pleistocene fossils (mammoth, bison, plants, etc.)
Claron *	Tertiary	leaves, pollen, snails, clams, turtles
Canaan Peak *	Tertiary/ Cretaceous	not known in the Monument
Kaiparowits	Cretaceous	plants, pollen, clams, snails, sharks, rays, fish, amphibians, turtles, lizards, crocodiles, birds, dinosaurs, mammals
Wahweap	Cretaceous	plants, petrified wood, clams, snails, ostracodes, fish, amphibians, turtles, lizards, crocodiles, dinosaurs, mammals
Straight Cliffs	Cretaceous	plants, petrified wood, leaves, carbonized wood, pollen, corals, bryozoans, snails, clams, ammonoids, sharks, fish, salamanders, frogs, turtles, lizards, crocodiles, pterosaurs, dinosaurs, mammals, dinosaur tracks
Tropic Shale	Cretaceous	plants, clams, snails, ammonoids, crabs, worms, sharks, fish, marine reptiles
Dakota	Cretaceous	plants, petrified wood, pollen, snails, clams, ammonoids, worm tracks, ostracodes, sharks, rays, fish, salamanders, turtles, lizards, crocodiles, dinosaurs, mammals
Morrison	Jurassic	petrified wood, dinosaurs
Summerville, Henrieville, Romana	Jurassic	not known in the Monument
Entrada Sandstone	Jurassic	dinosaur tracks
Carmel	Jurassic	plants, algae, corals, brachiopods, bivalves, snails, ammonoids, crinoids, echinoids, ostracodes, and worm traces
Temple Cap Sandstone	Jurassic	not known in the Monument
Navajo Sandstone	Jurassic	dinosaur tracks, other reptile tracks
Kayenta	Jurassic	petrified wood, clams, reptile tracks, worm traces

APPENDIX 10 - PALEONTOLOGY

FORMATION	AGE	FOSSILS
Moenave	Jurassic	pollen, fish, crocodiles, dinosaur tracks, tracks of insects and worms
Wingate Sandstone	Jurassic	dinosaur tracks
Chinle	Triassic	petrified wood, plants, snails, clams, insects, insect traces, fish, lungfish burrows, phytosaurs, reptile tracks
Moenkopi	Triassic	plants, snails, clams, ammonoids, crinoids, echinoids, ostracodes, fish, tracks of reptiles and arthropods
Kaibab	Permian	brachiopods, bryozoans, clams, snails, corals, sponges, algal stromatolites, cephalopods, trilobites, conodonts
Toroweap-White Rim, Coconino	Permian	clams, brachiopods, crinoids
Hermit Shale	Permian	land plants, insects, amphibian tracks, worm traces

* Does not crop out in the Monument.

Exposed rock units (from Allison, 1997, after Doelling and Davis, 1989) and summary of their fossil content. (Modified from Gillette and Hayden (1997) with some new information added.)

Appendix I I

Vegetation Associations



APPENDIX 11 - VEGETATION ASSOCIATIONS

**TABLE A11.1
VEGETATION ASSOCIATIONS**

VEGETATION ASSOCIATION	ACRES*	DOMINANT SPECIES
Salt desert shrub	476,149	shadscale (<i>Atriplex confertifolia</i>), greasewood (<i>Sarcobatus vermiculatus</i>), squirreltail (<i>Sitanion hystrix</i>), alkali sacaton (<i>Sporobolus airoides</i>) and galleta grass (<i>Hilaria jamesii</i>)
Sand shrub	53,539	sand sage (<i>Artemisia filifolia</i>), big sagebrush (<i>Artemisia tridentata</i>), four-wing saltbush (<i>Atriplex canescens</i>), and a variety of perennial grasses
Warm desert shrub	73,403	blackbrush (<i>Coleogyne ramosissima</i>), shadscale (<i>Atriplex confertifolia</i>), galleta grass (<i>Hilaria jamesii</i>), indian ricegrass (<i>Stipa hymenoides</i>), and sand dropseed (<i>Sporobolus cryptandrus</i>)
Grassland	262,888	needle-and-thread (<i>Stipa comata</i>), sand dropseed (<i>Sporobolus cryptandrus</i>), blue gramma (<i>Bouteloua gracilis</i>), indian ricegrass (<i>Stipa hymenoides</i>), and galleta grass (<i>Hilaria jamesii</i>) perennial shrubs such as sagebrush (<i>Artemisia</i> spp.) are scattered among this association
Cool desert shrub	193,302	big sagebrush (<i>Artemisia tridentata</i>), black sagebrush (<i>Artemisia nova</i>), bitterbrush (<i>Purshia tridentata</i>), four-wing saltbush (<i>Atriplex canescens</i>), snakeweed (<i>Gutierrezia sarothrae</i>) and a variety of perennial grasses
Piñon/Juniper	723,378	piñon pine (<i>Pinus edulis</i>), Utah juniper (<i>Juniperus osteosperma</i>) are the dominant large shrubs, understory includes big sagebrush (<i>Artemisia tridentata</i>), bitterbrush (<i>Purshia tridentata</i>), and a variety of perennial grasses
Mountain shrub	25,156	gambel oak (<i>Quercus gambelii</i>), manzanita (<i>Arctostaphylos patula</i>), mahogany (<i>Cercocarpus</i> spp.), and serviceberry (<i>Amelanchier utahensis</i>)
Ponderosa pine	2,797	ponderosa pine (<i>Pinus ponderosa</i>), with lesser amounts of white fir (<i>Abies concolor</i>), and quaking aspen (<i>Populus tremuloides</i>), this association also supports a variety of shrubs and grasses in the understory
Riparian	826	willows (<i>Salix</i> spp.) and cottonwood (<i>Populus fremontii</i>). Tamarisk (<i>Tamarix chinensis</i>) and Russian olive (<i>Eleagnus angustifolia</i>) also occupy large areas of riparian habitat.

*From Utah GAP Analysis data, using 1 hectare resolution satellite imagery

Appendix 12

Special Status Plant Species



APPENDIX 12 - SPECIAL STATUS PLANT SPECIES

**TABLE A12.1
SPECIAL STATUS PLANT SPECIES**

COMMON NAME	SCIENTIFIC NAME	STATUS		
		BLM ¹	FEDERAL ¹	UTNHP ²
Slender camissonia	<i>Camissonia exilis</i>	S		G1/S1
Jones' cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	T	T	G3G4T2/S2
Higgins biscuitroot	<i>Cymopterus acualis</i> var. <i>higginsii</i>	S		G5T1/S1
Hole-in-the-rock prairie clover	<i>Dalea flavescens</i> var. <i>epica</i>	S		G5T1Q/S1
Alcove daisy	<i>Erigeron zothecinus</i>	S		G1Q/S1
Spiny gilia	<i>Gilia latifolia</i> var. <i>imperialis</i>	S		G4T2/S2
Alcove bog-orchid	<i>Habenaria zothecina</i>	S		
Kodachrome bladderpod	<i>Lesquerella tumulosa</i>	E	E	G1Q/S1
Kane breadroot	<i>Pediomelum epipsilum</i>	S		G1/S1
Sandloving penstemon	<i>Penstemon ammophilus</i>	S		G2G3/S2S3
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	T	T	G2/S1
Cronquist's woody aster	<i>Xylorhiza cronquistii</i>	S		G1QS1

1. **S** = Utah BLM sensitive species (1996) **E** = Federally listed endangered species **T** = Federally listed threatened species
2. **Utah Natural Heritage Program Status Rank** (Utah Reclamation Mitigation and Conservation Commission, U.S. Department of the Interior, Utah Division of Wildlife Resources. 1997. Inventory of Sensitive Species and Ecosystems in Utah - Endemic and Rare Plants of Utah: An Overview of Their Distribution and Status)

A numeric rank (1 through 5) is assigned to indicate the status of a species at both the Global or rangewide level (**G**) and at the State level (**S**). Where appropriate, a Trinomial rank (**T**) is also assigned to indicate the rangewide distribution and abundance at the infraspecific (variety or subspecies) level. These

ranks are based primarily on the number of occurrences of the species, along with other factors such as overall abundance, extent of geographic range, population trends, and threats. The range in number of occurrences suggested for each numeric rank is not an absolute guideline, but only the starting point in the ranking process:

- | | |
|-----------------------|---|
| G1 or T1 or S1 | Indicates extreme rarity or other factor(s) making the species especially vulnerable to extinction or extirpation (typically 5 or fewer occurrences or very few remaining individuals or acres). |
| G2 or T2 or S2 | Indicates rarity or other factor(s) making the species very vulnerable to extinction or extirpation (6 to 20 occurrences or few remaining individuals or acres). |
| G3 or T3 or S3 | Indicates a species that is either very rare and local throughout its range or found locally (even abundantly at some of its locations) within a restricted range, or vulnerable to extinction or extirpation because of other factors (21 to 100 occurrences). |
| G4 or T4 or S4 | Indicates a species that is widespread, abundant, and apparently secure, though it may be quite rare in parts of its range, especially at the periphery (usually more than 100 occurrences). |
| G5 or T5 or S5 | Indicates a species that is demonstrably widespread, abundant, and secure, though it may be quite rare in parts of its range. |

A range spanning two (or even three) of the numeric ranks denotes a range of uncertainty about the exact status of the species (e.g., **SIS2**); ranges cannot skip more than one rank (e.g., **SIS4** is not allowed). A qualifier of "Q" is added to a rank to denote a taxonomic question.

Appendix 13

Fish and Wildlife Consultation



APPENDIX 13 - FISH AND WILDLIFE CONSULTATION



**United States Department of the Interior
FISH AND WILDLIFE SERVICE**

UTAH FIELD OFFICE
LINCOLN PLAZA
145 EAST 1900 SOUTH, SUITE 404
SALT LAKE CITY, UTAH 84115



In Reply Refer To

(CO/KS/NE/UT)

April 30, 1998

A. Jerry Meredith, Monument Manager
Bureau of Land Management
Grand Staircase-Escalante National Monument
337 South Main Street, Suite 010
Cedar City, Utah 84720

Subject: Endangered and Threatened Species Consultation for the Grand Staircase-Escalante National Monument, Garfield and Kane Counties, Utah

Dear Mr. Meredith:

The U.S. Fish and Wildlife Service (Service) received your letter on April 6, 1998 requesting a list of threatened and endangered species which may occur in the area of influence of the subject proposed action. The following species occur in Garfield and/or Kane Counties, and may occur in the subject project's area of influence:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
California Condor	<i>Gymnogyps californicus</i>	Endangered ¹
Colorado Squawfish	<i>Ptychocheilus lucius</i>	Endangered
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	Threatened
Kodachrome Bladder Pod	<i>Lesquerella tumulosa</i>	Endangered
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered
Razorback Sucker	<i>Xyrauchen texanus</i>	Endangered
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened

In addition, the Service requests that you survey for Kanab ambersnail (*Oxyloma haydeni kanabensis*) where suitable habitat conditions exist within the Monument. Although this species has not been documented within the boundaries of what is now the Grand Staircase-Escalante National Monument, it may occur there.

¹Experimental, Nonessential Population

Only a Federal agency can enter into formal Endangered Species Act (ESA) section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

The draft Environmental Impact Statement should be reviewed and a determination made if the proposed alternative may affect any listed species or its critical habitat. A determination also should be made if the proposed alternative is likely to jeopardize a proposed species or result in the destruction or adverse modification of any proposed critical habitat. If the determination is "may affect" for listed species, formal ESA section 7 consultation should be requested by the Federal agency to the Field Supervisor at the address given above. In addition, if a determination is made that the proposed alternative may jeopardize proposed species or result in the destruction or adverse modification of proposed critical habitat, the Federal agency must confer with this office. At that time, the Federal agency should provide this office with a copy of a biological assessment or any other relevant information that was used in reaching its conclusion.

Your attention is also directed to section 7(d) of the ESA, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

The Service looks forward to working with you to further recovery of threatened and endangered species of plants and wildlife found within the Monument. If further assistance is needed, please contact Ted Owens, Wildlife Biologist, of this office at telephone (801) 524-5001.

Sincerely,

Harold A. Zaklan
for Reed E. Harris
Field Supervisor

Appendix 14

Noxious Weed List



APPENDIX 14 - NOXIOUS WEED LIST

**TABLE A14.1
NOXIOUS WEEDS**

COMMON NAME	SCIENTIFIC NAME	FAMILY	Location ¹	List ²
Bermuda grass	<i>Cynodon dactylon</i>	Poaceae (Gramineae)	X	S, F
Bindweed (wild morning-glory)*	<i>Convolvulus arvensis</i>	Convolvulaceae	P	S, F
Broad-leaved peppergrass (tall whitetop)	<i>Lepidium latifolium</i>	Brassicaceae (Cruciferae)	P	S, F
Bull thistle	<i>Cirsium vulgare</i>	Asteraceae (Compositae)	P	F
Candada thistle	<i>Cirsium arvense</i>	Asteraceae (Compositae)	C	S, F
Dalmation toadflax	<i>Linaria dalmatica</i>	Scrophulariaceae	P	NS, F
Diffuse knapweed	<i>Centaurea diffusa</i>	Asteraceae (Compositae)	X	S, F
Dyers woad	<i>Isatis tinctoria</i>	Brassicaceae (Cruciferae)	C	S, F
Jointed goatgrass*	<i>Aegilops cylindrica</i>	Poaceae (Gramineae)	P	NS, F
Leafy spurge	<i>Euphorbia esula</i>	Euphorbiaceae	C	S, F
Mediterranean grass	<i>Schismus barbatus</i>	Poaceae (Gramineae)	P	F
Medusahead	<i>Taeniatherum caput-medusae</i>	Poaceae (Gramineae)	X	S, F
Musk thistle	<i>Carduus nutans</i>	Asteraceae (Compositae)	C	S, F
Perennial sorghum (including but not limited to	<i>Sorghum halepense</i>	Poaceae (Gramineae)	C	S, F
Purple loostrife	<i>Lythrum salicaria</i>	Lythraceae	C	NS, F
Quackgrass*	<i>Agropyron repens</i>	Poaceae (Gramineae)	P	S, F
Russian knapweed*	<i>Centaurea repens</i>	Asteraceae (Compositae)	P	S
Russian olive*	<i>Eleagnus angustifolia</i>	Eleagnaceae	P	F
Saltcedar (tamarisk)*	<i>Tamarix ramosissima</i>	Tamaricaceae	P	F
Scotch thistle (cotton thistle)*	<i>Onopordum acanthium</i>	Asteraceae (Compositae)	P	S, F

APPENDIX 14 - NOXIOUS WEED LIST

COMMON NAME	SCIENTIFIC NAME	FAMILY	Location ¹	List ²
Silverleaf nightshade	<i>Solanum eleagnifolium</i>	Solanaceae	P	NS
Spotted knapweed	<i>Centaurea maculosa</i>	Asteraceae (Compositae)	P	S, F
Squarrose knapweed	<i>Centaurea virgata ssp. squarrosa</i>	Asteraceae (Compositae)	C	S, F
Waterhemlock	<i>Cicuta maculata</i>	Apiaceae (Umbelliferae)	P	NS
Western Whorled Milkweed*	<i>Asclepias subverticillata</i>	Asclepiadaceae	P	K
Whiteweed (hoary cress)*	<i>Cardaria draba</i>	Brassicaceae (Cruciferae)	P	S, F
Yellow starthistle	<i>Centaurea solstitialis</i>	Asteraceae (Compositae)	C	S, F
* Plants found in the Monument during the 1997 survey project.				

1. **C** = Close to Monuemnt, but currently not found in Monument **P** = Present in Monument **X** = Not found in Monument, but of concern

2. **S** = State list **NS** = New invaders on State list **F** = Federal list **K** = Kane county list (no additional plants have been added by Garfield Co.)

Appendix 15

Wildlife Species



APPENDIX 15 - WILDLIFE SPECIES

**TABLE A15.1
WILDLIFE SPECIES LIST FOR GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT**

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Amphibian species					
Boreal Chorus Frog	<i>Pseudacris triseriata maculata</i>	ND			
Bullfrog (non-native)	<i>Rana catesbeiana</i>	ND			
Canyon treefrog	<i>Hyla arenicolor</i>	X		X	
Northern Leopard Frog	<i>Rana pipiens brachycephala</i>	X		X	
Tiger Salamander	<i>Ambystoma tigrinum nebulosum</i>	X	X	X	
Boreal Toad	<i>Bufo boreas boreas</i>	ND			FC
Great Basin Spadefoot Toad	<i>Spea intermontana</i>	X	X	X	
Great Plains Toad	<i>Bufo cognatus</i>			X	
New Mexico Spadefoot Toad	<i>Spea multiplicata</i>			X	
Red Spotted Toad	<i>Bufo punctatus</i>	X	X	X	
Arizona Toad	<i>Bufo microscaphus microscaphus</i>	X			SP
Woodhouse's Toad	<i>Bufo woodhousei woodhousei</i>	X	X	X	
Avian species					
American Avocet	<i>Recurvirostra americana</i>	X		X	
American Bittern	<i>Botaurus lentiginosus</i>	X		X	
Brewer's Blackbird	<i>Euphagus carolinus</i>	X	X	X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	X	X	X	
Rusty Blackbird	<i>Euphagus carolinus</i>	X			
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	X		X	
Mountain Bluebird	<i>Sialia currucoides</i>	X	X	X	
Western Bluebird	<i>Sialia mexicana</i>	X	X	X	
Bobolink	<i>Dolichonyx oryzivorus</i>	ND			SP/SD
Bufflehead	<i>Bucephala albeola</i>	X		X	TAKE

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Indigo Bunting	<i>Passerina cyanea</i>	X			
Lark Bunting	<i>Calamospiza melanocorys</i>	ND			
Lazuli Bunting	<i>Passerina amoena</i>	X	X	X	
Snow Bunting	<i>Plectrophenax nivalis</i>	ND			
Bushtit	<i>Psaltriparus minimus</i>	X	X	X	
Canvasback	<i>Aythya valisineria</i>	X		X	TAKE
Grey Catbird	<i>Dumetella carolinensis</i>	ND			
Yellow-breasted Chat	<i>Icteria virens</i>	X	X	X	
Black-capped Chickadee	<i>Parus atricapillus</i>	X			
Mountain Chickadee	<i>Parus gambeli</i>	X	X	X	
Chukar	<i>Alectoris chukar</i>	X	X	X	TAKE
California Condor	<i>Gymnogyps californicus</i>	X	X	X	FE
American Coot	<i>Fulica americana</i>	X	X	X	TAKE
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	X		X	
Brown-headed Cowbird	<i>Molothrus ater</i>	X	X	X	
Sandhill Crane	<i>Grus canadensis</i>	ND			TAKE
Brown Creeper	<i>Certhia familiaris</i>	X	X	X	
Red Crossbill	<i>Loxia curvirostra</i>	X	X	X	
White-winged Crossbill	<i>Loxia leucoptera</i>	ND			
American Crow	<i>Corvus brachyrhynchos</i>	X		X	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	ND			ST
Long-billed Curlew	<i>Numenius americanus</i>	X	X	X	SP/SD
American Dipper	<i>Cinclus mexicanus</i>	X		X	
Inca Dove	<i>Columbina inca</i>	X			
Mourning Dove	<i>Zenaida macroura</i>	X	X	X	TAKE
Rock Dove	<i>Columba livia</i>	X		X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	X		X	
Ring-necked Duck	<i>Aythya collaris</i>	X		X	TAKE
Ruddy Duck	<i>Oxyura jamaicensis</i>	X		X	TAKE
Wood Duck	<i>Aix sponsa</i>	X			TAKE
Dunlin	<i>Calidris alpina</i>	X			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	X	X	X	FT
Golden Eagle	<i>Aquila chrysaetos</i>	X	X	X	
Cattle Egret	<i>Bubulcus ibis</i>	X			
Snowy Egret	<i>Egretta thula</i>	X	X	X	
Peregrine Falcon	<i>Falco peregrinus</i>	X	X	X	FE
Prairie Falcon	<i>Falco mexicanus</i>	X	X	X	
Cassin's Finch	<i>Carpodacus cassinii</i>	X	X	X	
House Finch	<i>Carpodacus mexicanus</i>	X	X	X	
Northern Flicker	<i>Colaptes auratus</i>	X	X	X	
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	X	X	X	
Cordilleran (Western) Flycatcher	<i>Empidonax occidentalis</i>	X	X	X	
Dusky Flycatcher	<i>Empidonax oberholseri</i>	X	X	X	
Gray Flycatcher	<i>Empidonax wrightii</i>	X	X	X	
Hammond's Flycatcher	<i>Empidonax hammondii</i>	X			
Olive-sided Flycatcher	<i>Contopus borealis</i>	X	X		
Scissor-tailed Flycatcher	<i>Tyrannus forficatum</i>	X			
Vermillion Flycatcher	<i>Pyrocephalus rubinus</i>	X			
Southwestern Willow Flycatcher	<i>Empidonax trailii extimus</i>	X	X	X	FE
Gadwall	<i>Anas strepera</i>	X	X	X	TAKE
Blue-gray Gnatcatcher	<i>Poliopitila caerulea</i>	X	X	X	
Marbled Godwit	<i>Limosa fedoa</i>	X		X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Barrow's Goldeneye	<i>Bucephala islandica</i>	ND			TAKE
Common Goldeneye	<i>Bucephala elangula</i>	X		X	TAKE
American Goldfinch	<i>Carduelis tristis</i>	X	X	X	
Lesser Goldfinch	<i>Carduelis lawrencei</i>	X	X	X	
Canada Goose	<i>Branta canadensis</i>	X	X	X	TAKE
Greater White-fronted Goose	<i>Anser albifrons</i>	ND			TAKE
Ross's Goose	<i>Chen rossii</i>	ND			TAKE
Snow Goose	<i>Chen caerulescens</i>	X			
Northern Goshawk	<i>Accipter gentilis</i>	X	X	X	SP
Common Grackle (possible)	<i>Quiscalus quiscula</i>	ND			
Clark's Grebe	<i>Aechmophorus clarkii</i>	X			
Eared Grebe	<i>Podiceps nigricollis</i>	X		X	
Horned Grebe	<i>Podiceps auritus</i>	ND			
Pied-billed Grebe	<i>Podilymbus podiceps</i>	X		X	
Western Grebe	<i>Aechmophorus occidentalis</i>	X		X	
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	X	X	X	
Blue Grosbeak	<i>Guiraca caerulea</i>	X	X	X	SP/SD
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	X	X	X	
Pine Grosbeak	<i>Pinicola enucleator</i>	X			
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	ND			
Blue Grouse	<i>Dendragapus obscurus</i>	X			TAKE
Ruffed Grouse	<i>Bonasa umbellus</i>	ND			TAKE
Sage Grouse	<i>Centrocercus urophasianus</i>	X			TAKE
Bonaparte's Gull	<i>Larus philadelphia</i>	X			
California Gull	<i>Larus californicus</i>	X	X	X	
Franklin's Gull	<i>Larus pipixcan</i>	X		X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Herring Gull	<i>Larus argentatus</i>	ND			
Ring-billed Gull	<i>Larus delawarensis</i>	X		X	
Northern Harrier	<i>Circus cyaneus</i>	X	X	X	
Cooper's Hawk	<i>Accipiter cooperii</i>	X	X	X	
Ferruginous Hawk	<i>Buteo regalis</i>	X	X	X	ST
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X	X	X	
Rough-legged Hawk	<i>Buteo lagopus</i>	X	X	X	
Sharp-shinned Hawk	<i>Accipiter striatus</i>	X	X	X	
Swainson's Hawk	<i>Buteo swainsoni</i>	X	X	X	SP
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	X	X	X	
Great Blue Heron	<i>Ardea herodias</i>	X	X	X	
Green Heron	<i>Butorides virescens</i>	X			
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	X	X	X	
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	X	X	X	
Calliope Hummingbird	<i>Stellula calliope</i>	X			
Rufous Hummingbird	<i>Selasphorus rufus</i>	X	X	X	
White-faced Ibis	<i>Plegadis chihi</i>	X	X	X	
Gray Jay	<i>Perisoreus canadensis</i>	ND			
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	X	X	X	
Steller's Jay	<i>Cyanocitta stelleri</i>	X	X	X	
Western Scrub-Jay	<i>Aphelocoma californica</i>	X	X	X	
Dark-eyed Junco	<i>Junco hyemalis</i>	X	X	X	
American Kestrel	<i>Falco sparverius</i>	X	X	X	
Killdeer	<i>Charadrius vociferus</i>	X	X	X	
Cassin's Kingbird	<i>Tyrannus vociferans</i>	X	X	X	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	X		X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Western Kingbird	<i>Tyrannus verticalis</i>	X	X	X	
Belted Kingfisher	<i>Ceryle alcyon</i>	X	X	X	
Golden-crowned Kinglet	<i>Regulus satrapa</i>	X		X	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	X	X	X	
Red Knot	<i>Calidris canutus</i>	ND			
Horned Lark	<i>Eremophila alpestris</i>	X	X	X	
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	ND			
Lapland Longspur	<i>Calcarius lapponicus</i>	ND			
Common Loon	<i>Gavia immer</i>	X		X	
Black-billed Magpie	<i>Pica pica</i>	X	X	X	
Mallard	<i>Anas platyrhinos</i>	X	X	X	TAKE
Purple Martin	<i>Progne subis</i>	ND			
Western Meadowlark	<i>Sturnella neglecta</i>	X	X	X	
Common Merganser	<i>Mergus merganser</i>	X		X	TAKE
Hooded Merganser	<i>Lophodytes cucullatus</i>	X			TAKE
Red-breasted Merganser	<i>Mergus serrator</i>	X		X	TAKE
Merlin	<i>Falco columbarius</i>	X	X	X	
Northern Mockingbird	<i>Mimus polyglottos</i>	X	X	X	
Common Nighthawk	<i>Chordeiles minor</i>	X	X	X	
Clark's Nutcracker	<i>Nucifraga columbiana</i>	X	X	X	
Pygmy Nuthatch	<i>Sitta pygmaea</i>	X	X		
Red-breasted Nuthatch	<i>Sitta canadensis</i>	X	X	X	
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X	X	X	
Oldsquaw	<i>Clangula hyemalis</i>	ND			TAKE
Bullock's Oriole	<i>Icterus bullockii</i>	X	X	X	
Scotts Oriole	<i>Icterus parisorum</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Osprey	<i>Pandion haliaetus</i>	X	X	X	SD
Barn Owl	<i>Tyto alba</i>	X		X	
Burrowing Owl	<i>Speotyto cunicularia</i>	X		X	SP
Flammulated Owl	<i>Otus flammeolus</i>	X		X	
Great Horned Owl	<i>Bubo virginianus</i>	X	X	X	
Long-eared Owl	<i>Asio otus</i>	X	X	X	
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	X	X	X	
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	X	X	X	
Short-eared Owl	<i>Asio flammeus</i>	X			SP
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	X	X	X	FT
Western Screech-owl	<i>Otus kennicottii</i>	X			
American White Pelican	<i>Pelecanus erythrorhynchos</i>	X		X	SD
Phainopepla	<i>Phainopepla nitens</i>	X			
Red Phalarope	<i>Phalaropus fulicaria</i>	ND			
Red-necked Phalarope	<i>Phalaropus lobatus</i>	X		X	
Wilson's Phalarope	<i>Phalaropus tricolor</i>	X		X	
Ring-necked Pheasant	<i>Phasianus colchicus</i>	ND			TAKE
Black Phoebe	<i>Sayornis nigricans</i>	X			
Eastern Phoebe	<i>Sayornis phoebe</i>	X			
Say's Phoebe	<i>Sayornis saya</i>	X	X	X	
Band-tailed Pigeon	<i>Columba fasciata</i>	X			TAKE
Northern Pintail	<i>Anas acuta</i>	X		X	TAKE
American Pipit	<i>Anthus spinoletta</i>	X		X	
American Golden-Plover	<i>Pluvialis dominicus</i>	ND			
Black-bellied Plover	<i>Pluvialis squatarola</i>	X			
Semipalmated Plover	<i>Charadrius semipalmatus</i>	X			

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Snowy Plover	<i>Charadrius alexandrinus</i>	ND			
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	X	X	X	
California Quail	<i>Callipepla californica</i>	ND			TAKE
Gamble Quail	<i>Callipepla gambelii</i>	X		X	TAKE
Virginia Rail	<i>Rallus limicola</i>	X			
Common Raven	<i>Corvus corax</i>	X	X	X	
Redhead	<i>Aythya americana</i>	X		X	TAKE
Common Redpoll	<i>Carduelis flammea</i>	ND			
American Redstart	<i>Setophaga ruticilla</i>	ND			
Greater Roadrunner	<i>Geococcyx californicus</i>	X			
American Robin	<i>Turdus migratorius</i>	X	X	X	
Sanderling	<i>Calidris alba</i>	X			
Baird's Sandpiper	<i>Calidris bairdii</i>	X			
Least Sandpiper	<i>Calidris minutilla</i>	X		X	
Pectoral Sandpiper	<i>Calidris melanotos</i>	X			
Semipalmated Sandpiper	<i>Calidris pusilla</i>	ND			
Solitary Sandpiper	<i>Tringa solitaria</i>	X			
Spotted Sandpiper	<i>Actitis macularia</i>	X	X	X	
Stilt Sandpiper	<i>Colidris himantopus</i>	ND			
Upland Sandpiper	<i>Bartramia longicauda</i>	ND			
Western Sandpiper	<i>Calidris mauri</i>	X		X	
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	X	X	X	
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	X			SD
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	ND			
Greater Scaup	<i>Aythya marila</i>	X			TAKE
Lesser Scaup	<i>Aythya affinis</i>	X		X	TAKE

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
White-winged Scoter	<i>Melanitta fusca</i>	ND			TAKE
Northern Shoveler	<i>Anas clypeata</i>	X		X	TAKE
Loggerhead Shrike	<i>Lanius ludovicianus</i>	X	X	X	
Northern Shrike	<i>Lanius excubitor</i>	X	X	X	
Pine Siskin	<i>Carduelis pinus</i>	X	X	X	
Common Snipe	<i>Gallinago gallinago</i>	X		X	TAKE
Townsend's Solitaire	<i>Myadestes townsendi</i>	X	X	X	
Sora	<i>Porzana carolina</i>	X			
American Tree Sparrow	<i>Spizella arborea</i>	X			
Black-chinned Sparrow	<i>Spizella atrogularis</i>	X			
Black-throated Sparrow	<i>Amphispiza bilineata</i>	X	X	X	
Brewer's Sparrow	<i>Spizella breweri</i>	X	X	X	
Chipping Sparrow	<i>Spizella passerina</i>	X	X	X	
Fox Sparrow	<i>Passerella iliaca</i>	X	X	X	
Golden-crowned Sparrow	<i>Zonotrichia querula</i>	X			
Harris's Sparrow	<i>Zonotrichia querula</i>	X			
House Sparrow	<i>Passer domesticus</i>	X	X	X	
Lark Sparrow	<i>Chondestes grammacus</i>	X	X	X	
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	X		X	
Sage Sparrow	<i>Amphispiza belli</i>	X	X	X	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	X		X	
Song Sparrow	<i>Melospiza melodia</i>	X	X	X	
Swamp Sparrow	<i>Melospiza georgiana</i>	X			
Vesper Sparrow	<i>Pooecetes gramineus</i>	X	X	X	
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	X	X	X	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	X			

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
European Starling	<i>Sturnus vulgaris</i>	X	X	X	
Black-necked Stilt	<i>Himantopus mexicanus</i>	X		X	
Bank Swallow	<i>Riparia riparia</i>	X			
Barn Swallow	<i>Hirundo rustica</i>	X	X	X	
Cliff Swallow	<i>Hirundo pyrrhonota</i>	X	X	X	
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	X	X	X	
Tree Swallow	<i>Tachycineta bicolor</i>	X	X	X	
Violet-green Swallow	<i>Tachycineta thalassina</i>	X	X	X	
Tundra Swan	<i>Cygnus columbianus</i>	X		X	TAKE
Black Swift	<i>Cypseloides niger</i>	ND			SP/SD
Vaux's Swift	<i>Chaetura vauxi</i>	ND			
White-throated Swift	<i>Aeronautes saxatalis</i>	X	X	X	
Western Tanager	<i>Piranga ludoviciana</i>	X	X	X	
Blue-winged Teal	<i>Anas discors</i>	X		X	TAKE
Cinnamon Teal	<i>Anas cyanoptera</i>	X	X	X	TAKE
Green-winged Teal	<i>Anas crecca</i>	X	X	X	TAKE
Black Tern	<i>Chlidonias niger</i>	X		X	SP
Caspian Tern	<i>Sterna caspia</i>	ND			SP
Common Tern	<i>Sterna hirundo</i>	ND			
Forster's Tern	<i>Sterna forsteri</i>	X		X	
Bendire's Thrasher	<i>Toxostoma bendirei</i>	X		X	
Sage Thrasher	<i>Oreoscoptes montanus</i>	X	X	X	
Hermit Thrush	<i>Catharus guttatus</i>	X	X	X	
Swainson's Thrush	<i>Catharus ustulatus</i>	X			
Varied Thrush	<i>Ixoreus naevius</i>	X			
Juniper Titmouse	<i>Parus inornatus</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Green-tailed Towhee	<i>Pipilo chlorurus</i>	X	X	X	
Spotted Towhee	<i>Pipilo maculatus</i>	X	X	X	
Merriam's Turkey	<i>Meleagris gallopavo</i>	X		X	TAKE
Rio Grande Turkey	<i>Meleagris gallopavo</i>	X	X	X	TAKE
Ruddy Turnstone	<i>Arenaria interpres</i>	ND			
Cassin's Vireo	<i>Vireo cassinii</i>	ND			
Gray Vireo	<i>Vireo vicinior</i>	X			
Plumbeous Vireo	<i>Vireo plumbeus</i>	X	X	X	
Red-eyed Vireo	<i>Vireo olivaceus</i>	ND			
Warbling Vireo	<i>Vireo gilvus</i>	X	X	X	
White-eyed Vireo	<i>Vireo griseus</i>			X	
Turkey Vulture	<i>Cathartes aura</i>	X	X	X	
Black-throated Gray Warbler	<i>Dendroica nigrascens</i>	X	X	X	
Grace's Warbler	<i>Dendroica graciae</i>	X	X		
Hermit Warbler	<i>Dendroica occidentalis</i>	ND			
Lucy's Warbler	<i>Vermivora luciae</i>	ND			
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	X	X	X	
Nashville Warbler	<i>Vermivora ruficapilla</i>	X			
Orange-crowned Warbler	<i>Vermivora celata</i>	X		X	
Townsend's Warbler	<i>Dendroica townsendi</i>	X			
Virginia's Warbler	<i>Vermivora virginiae</i>	X	X	X	
Wilson's Warbler	<i>Wilsonia canadensis</i>	X	X	X	
Yellow Warbler	<i>Dendroica petechia</i>	X	X	X	
Yellow-rumped Warbler	<i>Dendroica coronata</i>	X	X	X	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	ND			
Bohemian Waxwing	<i>Bombycilla garrulus</i>	X			

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	X		X	
Whimbrel	<i>Numenius phaeopus</i>	ND			
American Wigeon	<i>Anus americana</i>	X	X	X	TAKE
Willet	<i>Catoptrophorus semipalmatus</i>	X			
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	ND			
Downy Woodpecker	<i>Picoides pubescens</i>	X	X	X	
Hairy Woodpecker	<i>Picoides villosus</i>	X	X	X	
Lewis' Woodpecker	<i>Melanerpes lewis</i>	X	X	X	SP/SD
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	ND			
Western Wood-pewee	<i>Contopus sordidulus</i>	X	X	X	
Bewick's Wren	<i>Thryomanes bewickii</i>	X	X	X	
Canyon Wren	<i>Catherpes mexicanus</i>	X	X	X	
House Wren	<i>Troglodytes aedon</i>	X	X	X	
Marsh Wren	<i>Cistothorus palustris</i>	X		X	
Rock Wren	<i>Salpinctes obsoletus</i>	X	X	X	
Winter Wren	<i>Troglodytes troglodytes</i>	X		X	
Greater Yellowlegs	<i>Tringa melanoleuca</i>	X		X	
Lesser Yellowlegs	<i>Tringa flavipes</i>	X		X	
Common Yellowthroat	<i>Geothlypis trichas</i>	X		X	SP
Fish Species					
Largemouth Bass	<i>Micropterus salmoides</i>			X	TAKE
Smallmouth Bass	<i>Micropterus dolomieu</i>			X	TAKE
Bluegill	<i>Lepomis macrochirus</i>			X	TAKE
Carp	<i>Cyprinus carpio</i>			X	
Channel Catfish	<i>Ictalurus punctatus</i>			X	TAKE
Roundtail Chub	<i>Gila robusta</i>			X	ST

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Speckled Dace	<i>Rhinichthys osculus</i>			X	
Fathead Minnow	<i>Pimephales promelas</i>			X	
Mottled Sculpin	<i>Cottus bairdi</i>			X	
Red Shiner	<i>Notropis lutrensis</i>			X	
Bluehead Sucker	<i>Catostomus discobolus</i>			X	SP
Flannelmouth Sucker	<i>Catostomus latipinnis</i>			X	SP
Mountain Sucker	<i>Pantosteus platyrhynchus</i>			X	
Green Sunfish	<i>Lepomis cyanellus</i>			X	
Brook Trout	<i>Salvelinus fontinalis (Mitchill)</i>			X	TAKE
Brown Trout	<i>Salmo trutta</i>			X	TAKE
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>			X	TAKE
Rainbow Trout	<i>Oncorhynchus mykiss</i>			X	TAKE
Tiger Trout	<i>Salmo trutta X Salvelinus fontinalis</i>			X	TAKE
Yellowstone Cutthroat Trout	<i>Salmo clarki bouvieri</i>			X	TAKE
Mammal species					
American Badger	<i>Taxidea taxus</i>	X	X	X	TAKE
Allen's Big-eared Bat	<i>Idionycteris phyllotis</i>	X	X		SD
Big Brown Bat	<i>Eptesicus fuscus</i>	X	X	X	
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	X	X	X	SP/SD
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	X	X	X	SP/SD
Hoary Bat	<i>Lasiurus cinereus</i>	X	X	X	
Pallid Bat	<i>Antrozous pallidus</i>	X	X	X	
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	X	X	X	
Spotted Bat	<i>Euderma maculatum</i>	X	X	X	SP
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	X	X	X	SP/SD
Western Red Bat	<i>Lasiurus blossevilli</i>	X	X	X	SP/SD

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Black Bear	<i>Ursus americanus</i>	X	X	X	TAKE
American Beaver	<i>Castor canadensis</i>	X		X	TAKE
Bobcat	<i>Lynx rufus</i>	X	X	X	TAKE
Ringtail Cat	<i>Bassariscus astutus</i>	X	X	X	TAKE
Cliff Chipmunk	<i>Tamias dorsalis</i>	X	X	X	
Colorado Chipmunk	<i>Tamias quadrivittatus</i>	X	X	X	
Least Chipmunk	<i>Tamias minimus</i>	X	X	X	
Uinta Chipmunk (includes Mt. Ellen race)	<i>Tamias umbrinus (includes sedulus)</i>	ND			
Coyote	<i>Canis latrans</i>	X	X	X	
Mule Deer	<i>Odocoileus hemionus</i>	X	X	X	TAKE
Rocky Mountain Elk	<i>Cervus elaphus nelsoni</i>	X	X	X	TAKE
Ermine	<i>Mustela erminea</i>	ND			
Gray Fox	<i>Urocyon cinereoargenteus</i>	X	X	X	TAKE
Kit Fox	<i>Vulpes velox</i>	ND			TAKE
Red Fox	<i>Vulpes vulpes</i>	ND			TAKE
Botta's Pocket Gopher	<i>Thomomys bottae (includes dissimilis)</i>	X	X	X	
Northern Pocket Gopher	<i>Thomomys talpoides</i>	X	X		
Snowshoe Hare	<i>Lepus americanus</i>	ND			TAKE
Black-tailed Jackrabbit	<i>Lepus californicus</i>	X	X	X	
Desert Cottontail Rabbit	<i>Sylvilagus audubonii</i>	X	X	X	TAKE
Mountain Cottontail Rabbit	<i>Sylvilagus nuttallii</i>	X			TAKE
White-tailed Jackrabbit	<i>Lepus townsendii</i>	ND			
Mountain Lion	<i>Felis concolor</i>	X	X	X	TAKE
Yellow-bellied Marmot	<i>Marmota flaviventris</i>	X			
Mink	<i>Mustela vison</i>			X	TAKE
Brush Mouse	<i>Peromyscus boylii</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Canyon Mouse	<i>Peromyscus crinitus</i>	X	X	X	
Deer Mouse	<i>Peromyscus maniculatus</i>	X	X	X	
Great Basin Pocket Mouse	<i>Perognathus parvus</i>	ND			
House Mouse	<i>Mus musculus</i>	X	X	X	
Little Pocket Mouse	<i>Perognathus longimembris</i>	ND			
Long-tailed Pocket Mouse	<i>Perognathus formosus</i>	X	X	X	
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>	X	X	X	
Northern Rock Mouse	<i>Peromyscus nasutus</i>	ND			SP/SD
Pinyon Mouse	<i>Peromyscus truei</i>	X	X	X	
Rock Pocket Mouse	<i>Chaetodipus intermedius</i>	ND			SD
Western Harvest Mouse	<i>Rheithrodontomys megalotis</i>	X	X	X	
Western Jumping Mouse	<i>Zapus princeps</i>	ND			
Muskrat	<i>Ondatra zibethicus</i>	X	X	X	
California Myotis	<i>Myotis californicus</i>	X	X	X	
Fringed Myotis	<i>Myotis thysanodes</i>	X	X	X	SD
Little Brown Myotis	<i>Myotis lucifugus</i>	ND			
Long-eared Myotis	<i>Myotis evotis</i>	X		X	
Long-legged Myotis	<i>Myotis volans</i>		X	X	
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	X	X	X	SD
Yuma Myotis	<i>Myotis yumanensis</i>	X	X	X	
Northern River Otter	<i>Lutra canadensis</i>	ND			SP/SD
American Pika	<i>Ochatona princeps</i>	ND			SD
Western Pipistrelle	<i>Pipistrellus hesperus</i>	X	X	X	
Common Porcupine	<i>Erethizon dorsatum</i>	X	X	X	
Pronghorn	<i>Antilocapra americana</i>		X		TAKE
Raccoon	<i>Procyon lotor</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Black Rat	<i>Rattus rattus</i>	ND			
Norway Rat	<i>Rattus norvegicus</i>	ND			
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>	X	X	X	
Desert Bighorn Sheep	<i>Ovis canadensis nelsoni</i>	X	X	X	TAKE
Desert Shrew	<i>Notiosorex crawfordi</i>	ND			SD
Masked Shrew	<i>Sorex cinereus</i>	ND			
Merriams Shrew	<i>Sorex merriami</i>	ND			
Montane Shrew	<i>Sorex monticolus</i>	ND			
Preble's Shrew	<i>Sorex preblei</i>	ND			
Vagrant Shrew	<i>Sorex vagrans</i>	ND			
Water Shrew	<i>Sorex palustris</i>		X		
Striped Skunk	<i>Mephitis mephitis</i>	X	X	X	TAKE
Western Spotted Skunk	<i>Spilogale gracilis</i>	X	X	X	TAKE
Golden-mantled Ground Squirrel	<i>Spermophilus lateralis</i>	X	X		
Nothern Flying Squirrel	<i>Glaucomys sabrinus</i>	ND			SD
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	X	X		
Rock Squirrel	<i>Spermophilus variegatus</i>	X	X	X	
White-tailed Antelope Squirrel	<i>Ammospermophilus leucurus</i>	X	X	X	
Heather Vole	<i>Phenacomys intermedius</i>	ND			
Long-tailed Vole	<i>Microtus longicaudus</i>	X	X	X	
Mexican Vole	<i>Microtus mexicanus</i>	ND			SP/SD
Montane Vole (includes Virgin R.)	<i>Microtus montanus (includes rivularis)</i>	X			SP/SD
Sagebrush Vole	<i>Lemmiscus curtatus</i>	ND			
Water Vole	<i>Microtus richardsoni</i>	ND			
Long-tailed Weasel	<i>Mustela frenata</i>	X	X	X	TAKE
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Desert Woodrat	<i>Neotoma lepida</i>	X	X	X	
Stephens' Woodrat	<i>Neotoma stephensi</i>	ND			SP/SD
Reptile species					
Rubber Boa	<i>Charina bottae</i>	ND			
Glen Canyon Chuckwalla	<i>Sauromalus obesus muliforaminatus</i>		X	X	SP/SD
Red Coachwhip	<i>Masticophis flagellum piceus</i>	ND			
California Kingsnake	<i>Lampropeltis getula californiae</i>	X	X	X	SD
Utah Mountain Kingsnake	<i>Lampropeltis pyromelana infralabalis</i>	X			SP
Pale Leopard Lizard	<i>Gambelia wislizenii punctatus</i>	X	X	X	
Northern Plateau Lizard	<i>Sceloporus undulatus elongatus</i>	X	X	X	
Northern Sagebrush Lizard	<i>Sceloporus graciosus graciosus</i>	X	X	X	
Northern Tree Lizard	<i>Urosaurus ornatus</i>	X	X		
Orangehead Spiny Lizard	<i>Sceloporus magister cephaloflavus</i>	X	X	X	
Short-horned Lizard	<i>Phrynosoma douglassii</i>	X	X	X	
Side-blotched Lizard	<i>Uta stansburiana</i>	X	X	X	
Southern Desert Horned Lizard	<i>Phrynosoma platyrhinos calidiarum</i>	ND			
Yellow-headed collared lizard	<i>Crotaphytus collaria auriceps</i>	X	X	X	
Utah Night Lizard	<i>Xantusia vigilis utahensis</i>			X	SD
Western Yellow-bellied Racer	<i>Coluber constrictor mormon</i>	ND			
Great Basin Rattlesnake	<i>Crotalus viridis lutosus</i>	X	X	X	
Hopi Rattlesnake	<i>Crotalus viridis nuntius</i>			X	
Midget-faded Rattlesnake	<i>Crotalus viridis concolor</i>		X	X	
Great Basin Skink (no records)	<i>Eumeces skiltonianus utahensis</i>	X	X	X	
Southwestern Black-headed Snake	<i>Tantilla hobartsmithi</i>		X		SD
Black-necked Garter Snake	<i>Thamnophis cyrtopsis cyrtopsis</i>			X	
Wandering Garter Snake	<i>Thamnophis elegans vagrans</i>	X	X	X	

APPENDIX 15 - WILDLIFE SPECIES

SPECIES COMMON NAME	SCIENTIFIC NAME	GEOGRAPHIC AREA			SOSC
		GS	KP	EC	
Painted Desert Glossy Snake	<i>Arizona elegans philipi</i>	X	X		SD
Great Basin Gopher Snake	<i>Pituophis melanoleucus deserticola</i>	X	X	X	
Western Longnose Snake	<i>Rhinocheilus lecontei lecontei</i>	X	X	X	
Utah Milk Snake	<i>Lampropeltis triangulum taylori</i>	ND			SP
Desert Night Snake	<i>Hypsiglena torquata deserticola</i>	X			
Mojave Patch-nosed Snake	<i>Salvadora hexalepis</i>	X	X		SD
Regal Ringneck Snake	<i>Diadophis punctatus regalis</i>	X			
Western Painted Turtle (non native)	<i>Chrysemys picta belli</i>	ND			
Desert Striped Whipsnake	<i>Masticophis taeniatus taeniatus</i>	X	X	X	
Great Basin Whiptail	<i>Cnemidophorus tigris tigris</i>	ND			
Painted Desert Whiptail	<i>Cnemidophorus tigris septentrionalis</i>	ND			
Plateau Striped Whiptail	<i>Cnemidophorus velox</i>	X	X	X	SP/SD

Geographic Areas:

- C **GS** Grand Staircase
- C **KP** Kaiparowits Plateau
- C **EC** Escalante Canyons

Species of Special Concern (SOSC):

- C **ND** No Data (but could occur)
- C **FE** (Federally listed as Endangered)
- C **FC** (Federally listed as Candidate)
- C **SE** (State Endangered Species)
- C **ST** (State Threatened Species)
- C **SP** (Species of Special Concern Population Decline)
- C **SD** (Species of Special Concern Specialized Habitat)
- C **SP/SD** (Species of Special Concern Population and Habitat Decline)
- C **TAKE** (Species that have seasons for hunting or fishing set by the Utah Wildlife Board)

APPENDIX 15 - WILDLIFE SPECIES

**TABLE A15.2
INVERTEBRATES FOUND IN GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT**

INVERTEBRATE GROUP	GEOGRAPHIC AREA ¹		
	GS	KP	EC
Mollusks	7	0	13
Scorpions	2	5	3
Spiders	1	51	38
Mites and Ticks	3	1	1
Pseudo Scorpions	1	0	0
Centipedes and Millipedes	0	0	3
Mayflies	0	6	6
Dragonflies and Damselflies	22	17	10
Grasshoppers and Relatives	6	13	15
Stone Flies	0	1	0
True Bugs	6	8	17
Cicadas, Aphids, and Relatives	12	1	15
Nerve-Winged Insects	10	1	1
Beetles	28	74	54
Caddisflies	0	3	5
Butterflies and Moths	4	0	0
Flies	56	12	24
Fleas	13	0	0
Wasps, Ants, and Bees	136	39	121

¹ Number of species found in each geographic area

Geographic Areas:

- C **GS** Grand Staircase
- C **KP** Kaiparowits Plateau
- C **EC** Escalante Canyons

Appendix 16

Utah Sensitive Wildlife Species



APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

INTRODUCTION

The Purpose the Utah Sensitive Species list is to identify those species in the state that are the most vulnerable to population or habitat loss. This list provides land managers, wildlife managers and concerned citizens with a brief overview of the conservation status of listed species. By developing and implementing timely and sufficient conservation measures for Sensitive Species, federal listing of these species under the Endangered Species Act may be precluded.

DEFINITIONS

- A. **Wildlife**, for the purposes of this list, includes all vertebrate animals; crustaceans, including brine shrimp and crayfish; and mollusks in Utah that are living in nature, except feral animals.
- B. **Extinct Species**: any wildlife species that has disappeared in the world.
- C. **Extirpated Species**: any wildlife species that has disappeared from Utah since 1800.
- D. **State Endangered Species**: any wildlife species or subspecies which is threatened with extirpation from Utah or extinction resulting from very low or declining numbers, alteration and/or reduction of habitat, detrimental environmental changes, or any combination of the above. Continued long-term survival is unlikely without implementation of special measures. A management program is needed for these species if a Recovery Plan has not been developed.
- E. **State Threatened Species**: any wildlife species or subspecies which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range in Utah or the world. A management program is needed for these species if a Recovery Plan has not been developed.
- F. **Species of Special Concern**: any wildlife species or subspecies that: has experienced a substantial decrease in population, distribution and/or habitat availability (**SP**), or occurs in limited areas and/or numbers due to a restricted or specialized habitat (**SD**), or has both a declining population and a limited range (**SP/SD**). A management program, including protection or enhancement, is needed for these species.
- G. **Conservation Species**: any wildlife species or subspecies, except those species currently listed under the Endangered Species Act as Threatened or Endangered, that meets the state criteria of Endangered, Threatened or of Special Concern, but is currently receiving sufficient special management under a Conservation Agreement developed and/or implemented by the State to preclude its listing above. In the event that the conservation agreement is not implemented, the species will be elevated to the appropriate category.

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

**TABLE A16.1
SENSITIVE BIRD SPECIES FOUND WITHIN THE MONUMENT**

BIRD SPECIES	AGENCY LISTING				
	Utah Division of Wildlife Resources	United States Fish and Wildlife	United States Forest Service	Utah Natural Heritage Program	Bureau of Land Management
Condor, California (<i>Gymnogyps californianus</i>)	SD	E/NE		SR	S
Curlew, Long-billed (<i>Numenius americanus</i>)	SP/SD			S3B	S
Eagle, Bald (<i>Haliaeetus leucocephalus</i>)	T	T	T	S1B, S3N	S
Falcon, Peregrine (<i>Falco peregrinus anatum</i>)	E	E	E	S2	S
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	E	E	S	S1B	S
Goshawk, Northern (<i>Accipiter gentilis atricapillus</i>)	SP		S	S3	S
Grosbeak, Blue (<i>Guiraca caerulea</i>)	SP/SD			S3S4B	S
Grouse, Sage (<i>Centrocercus urophasianus</i>)	SP/SD			S2S3	S
Hawk, Ferruginous (<i>Buteo regalis</i>)	T			S2N, S2S3B	S
Hawk, Swainson's (<i>Buteo swainsoni</i>)	SP			S3B, SRN	S
Osprey (<i>Pandion haliaetus</i>)	SD			S1S2B	S
Owl, Burrowing (<i>Athene cunicularia hypugaea</i>)	SP			S3B	S
Owl, Short-eared (<i>Asio flammeus flammeus</i>)	SP			S2S3	S
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	T	T	S	S1	S
Pelican, American White (<i>Pelecanus erythrorhynchos</i>)	SD			S2B	S
Sapsucker, Williamson's (<i>Sphyrapicus thyroideus</i>)	SD			S2S3B, SAN	S
Tern, Black (<i>Chlidonias niger</i>)	SP			S2S3B	S
Tern, Caspian (<i>Sterna caspia</i>)	SP			S1B	S
Woodpecker, Lewis' (<i>Melanerpes lewis</i>)	SP/SD			S2S3	S
Yellowthroat, Common (<i>Geothlypus trichas</i>)	SP			S3B	S

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

TABLE A16.2

SENSITIVE MAMMAL SPECIES FOUND WITHIN THE MONUMENT

MAMMAL SPECIES	AGENCY LISTING				
	Utah Division of Wildlife Resources	United States Fish and Wildlife Service	United States Forest Service	Utah Natural Heritage Program	Bureau of Land Management
Bat, Allen's Big-eared (<i>Idionycteris phyllotis</i>)	SD			S1	S
Bat, Big Free-tailed (<i>Nyctinomops macrotis</i>)	SP/SD			S2	S
Bat, Brazilian Free-tailed (<i>Tadarida brasiliensis mexicana</i>)	SP/SD			S3S4	S
Bat, Spotted (<i>Euderma maculatum</i>)	SP		S	S2	S
Bat, Townsend's Big-eared (<i>Plecotus townsendii</i>)	SP/SD		S		S
Bat, Western Red (<i>Lasiurus blossevillii</i>)	SP/SD			S1	S
Myotis, Fringed (<i>Myotis thysanodes</i>)	SD			S3	S
Myotis, Western Small-footed (<i>Myotis ciliolabrum</i>)	SD			S3S4	S
Ringtail (<i>Bassariscus astutus</i>)	SD			S4	S
Vole, Virgin River Montane (<i>Microtus montanus rivularis</i>)	SP/SD			S2	S

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

TABLE A16.3

SENSITIVE FISH SPECIES FOUND WITHIN THE MONUMENT

FISH SPECIES	AGENCY LISTING				
	Utah Division of Wildlife Resources	United States Fish and Wildlife Service	United States Forest Service	Utah Natural Heritage Program	Bureau of Land Management
Chub, Roundtail (<i>Gila robusta</i>)	T			S2	S
Squawfish, Colorado (<i>Ptychocheilus lucius</i>)	E	E		S1	S
Sucker, Bluehead (<i>Catostomus discobolus</i>)	SP			S4	S
Sucker, Flannelmouth (<i>Catostomus latipinnis</i>)	SP			S3S4	S
Sucker, Razorback (<i>Xyrauchen texanus</i>)	E	E		S1	S
Trout, Colorado River Cutthroat (<i>Oncorhynchus clarki</i>)	CS		S	S2	S

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

TABLE A16.4

SENSITIVE AMPHIBIAN SPECIES FOUND WITHIN THE MONUMENT

AMPHIBIAN SPECIES	AGENCY LISTING				
	Utah Division of Wildlife Resources	United States Fish and Wildlife Service	United States Forest Service	Utah Natural Heritage Program	Bureau of Land Management
Toad, Arizona (<i>Bufo microscaphus microscaphus</i>)	SP			S2	S

TABLE A16.5

SENSITIVE REPTILE SPECIES FOUND WITHIN THE MONUMENT

REPTILE SPECIES	AGENCY LISTING				
	Utah Division of Wildlife Resources	United States Fish and Wildlife Service	United States Forest Service	Utah Natural Heritage Program	Bureau of Land Management
Chuckwalla, Glen Canyon (<i>Sauromalus obesus multiforamatus</i>)	SP/SD			S2	S
Kingsnake, California (<i>Lampropeltis getula californiae</i>)	SD			S3	S
Kingsnake, Utah Mountain (<i>Lampropeltis pyromelana infralabialis</i>)	SP			S2S3	S
Lizard, Desert Night (<i>Xantusia vigilis vigilis</i>)	SD			S2S3	S
Lizard, Utah Night (<i>Xantusia vigilis utahensis</i>)	SD			S2S3	S
Snake, Mojave Patch-nosed (<i>Salvadora hexalepis mojavenensis</i>)	SD			S2S3	S
Snake, Painted Desert Glossy (<i>Arizona elegans philipi</i>)	SD			S2	S
Snake, Southwestern Black-headed (<i>Tantilla hobartsmithi</i>)	SD			S2	S
Whiptail, Plateau Striped (<i>Cnemidophorus velox</i>)	SP/SD			S3	S

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

Utah Division of Wildlife Resources and Utah Natural Heritage Program definition of ranks:

S1	critically imperiled	SH	historical	SR	reported	
S2	imperiled	SX	extirpated	SRF	reported falsely	S## rank range
S3	rare or uncommon	SE	exotic, introduced	SZ	zero occurrences	
S4	common	SA	accidental	-B	breeding rank	
S5	abundant and secure	SP	potential	-N	non-breeding rank	

As defined in the Natural Heritage Program Operations Manual, a numeric rank (1 through 5) is assigned to indicate the status of a species at both the Global (rangewide) level and at the State level. These ranks are based primarily on the number of occurrences of the species, along with other factors such as overall abundance, extent of geographic range, population trends, and threats. The range in number of occurrences suggested for each numeric rank below is not an absolute guideline, but only the starting point in the ranking process.

- G1 or S1** Indicates extreme rarity or other factor(s) making the species especially vulnerable to extinction or extirpation (typically 5 or fewer occurrences or very few remaining individuals or acres).
- G2 or S2** Indicates rarity or other factor(s) making the species very vulnerable to extinction or extirpation (6 to 20 occurrences or few remaining individuals or acres).
- G3 or S3** Indicates a species that is either very rare and local throughout its range or found locally (even abundantly at some of its locations) within a restricted range, or vulnerable to extinction or extirpation because of other factors (21 to 100 occurrences).
- G4 or S4** Indicates a species that is widespread, abundant, and apparently secure, though it may be quite rare in parts of its range, especially at the periphery (usually more than 100 occurrences).
- G5 or S5** Indicates a species that is demonstrably widespread, abundant, and secure, though it may be quite rare in parts of its range.

A range spanning two (or even three) of the numeric ranks denotes a range of uncertainty about the exact status of the species (e.g., **S1S2**); ranges cannot skip more than one rank (e.g., **S1S4** is not allowed). Global ranks for infraspecific taxa (races or subspecies in the case of animals) consist of the G-rank for the full species plus a **T** followed by a numerical rank, which is the global rank of the infraspecific taxon. A qualifier of **?** also may be added to a rank to denote the rank as inexact; a qualifier of **Q** indicates that the validity of the taxon is questionable.

APPENDIX 16 - UTAH SENSITIVE WILDLIFE SPECIES

As more information is gathered, some species are added to the tracking list and some are dropped from the list. Our increasing understanding allows the ranks to be reevaluated and adjusted periodically.

Additional possible Natural Heritage ranks include:

GH or **SH** Historical: Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., relict leopard frog).

GX or **SX** Extinct (Global) or extirpated (State): Believed to be extinct throughout its range or extirpated in the state with virtually no likelihood that it will be rediscovered.

SE Exotic in the state

SA Accidental in the state

SZ Zero occurrences (in most cases this implies that the species is migratory through the state)

SP Potential occurrence in the state but as yet undocumented

SR Reported in the state, but occurrence questionable

SRF Reported falsely in the state

An extension of the above basic ranks may be assigned to denote breeding and non-breeding status (**rank + B** for breeding status, **rank + N** for non-breeding status, especially useful for many birds, some bats, and other animals that move into or out of the state seasonally).

Appendix 17

Deer and Elk Herd Unit Management Plans



APPENDIX 17 - DEER AND ELK HERD UNIT MANAGEMENT PLANS

**TABLE A17.1
DEER AND ELK HERD UNIT MANAGEMENT PLANS¹**

UNIT MANAGEMENT PLAN	TARGET WINTER HERD SIZE	HERD COMPOSITION
Plateau - Elk Herd Unit #25 Sub-unit #25-c Boulder	modeled population of 1,500 post season and winter count of 1,250	A minimum post season bull to cow ratio of 8:100, with at least 4 of these bulls being 2 ½ years of age or older.
Kaiparowits - Elk Herd Unit #26	up to 25 elk	Allowed to use during the winter
Paunsaugunt - Elk Herd Unit #27	200 elk	A minimum post season bull to cow ratio of 16:100, with at least 8 of these bulls being 2 ½ years of age or older. Bull Harvest Objective - Provide opportunity for a 60% bull harvest success with 40% of the bulls harvested being 2 ½ years or older.
Plateau - Deer Herd Unit #25 Sub-unit #25-c	8,500 wintering deer	A post season buck to doe ratio of 15:100, with 30% of these bucks being three point or better.
Kaiparowits - Deer Herd Unit #26	1,200 wintering deer (modeled number)	A post season buck to doe ratio of 15:100, with 30% of these bucks being three point or better.
Paunsaugunt - Deer Herd Unit #27	target population size of 6,500 wintering deer (modeled number)	A post season buck to doe ratio of 30:100, with 50% of these bucks being three point or better.

¹ Deer and Elk Herd unit Management Plans passed by the Utah Wildlife Board April 23, 1998

Appendix 18

Special Management Areas



APPENDIX 18 - SPECIAL MANAGEMENT AREAS

SPECIAL MANAGEMENT AREAS UNDER THE CLASSIFICATION AND MULTIPLE USE ACT

Outstanding Natural Areas (ONA), Recreation Areas, and Historic Sites were created under the authority of the Classification and Multiple Use Act (CMU) of 1964. Originally these classifications were to expire, but FLPMA provided for the continuation of all classifications and withdrawals made under the CMU Act. Under FLPMA, the classifications and withdrawals made under the CMU Act and other existing designations are to be reviewed as a part of planning and a recommendation made regarding continuing these designations. The Secretary reserves the authority to modify or terminate the classification consistent with the land use plan. In this plan, we would recommend the continuation of all existing designations.

Provisions of 43 CFR 6225.0-5 of that era define Outstanding Natural Areas as follows:

“Outstanding natural areas. These are established to preserve scenic values and areas of natural wonder. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas, and public use facilities are normally located on the periphery of the area. The public is

encouraged to walk into the area for recreation purposes wherever feasible.”

A notice in the Federal Register in 1970 designated the following areas as ONAs, recreation areas or sites, or historic sites. The notice segregated the Escalante Canyons ONA, Devils Garden ONA, Calf Creek Recreation Area, Deer Creek Recreation Site, and Dance Hall Rock Historic Site from all forms of entry, location, or selection under the public land laws, including the general mining laws, but not the mineral leasing laws. They were also segregated from oil and gas exploration to the extent that notices of intent to explore require the approval of the Manager before operations commence. Phipps-Death Hollow, North Escalante Canyon, and the Gulch ONAs were segregated only from appropriation under the agricultural land laws and from sales under section 2455 of the Revised Statutes.

In 1972, Glen Canyon National Recreation Area was established and the public lands it encompassed were transferred to the National Park Service for management. This eliminated the majority of the Escalante Canyons ONA (originally 129,000 acres) but left five scattered tracts totaling 1,160 acres.

The ONAs became Instant Study Areas as part of the Wilderness Inventory process beginning in 1979. Interim Management

Policy has applied to these areas since that time and will continue until Congress acts to designate or release these areas from study.

Later in 1979, off-road-vehicle closures were made on the ONAs, and on Calf Creek and Deer Creek Recreation Areas, as well as some other areas of concern under the authority of Executive Order 11644.

Devils Garden ONA, and both Deer Creek and Calf Creek Recreation Areas have management plans dating from the 1970s. The management prescriptions for Dance Hall Rock and the other ONAs include segregation from the land and mineral laws and off-highway vehicle closures.

It is recommended that the following ONAs, Recreation Areas and Historic sites designated under the authority of the CMU Act be continued:

- C Calf Creek Recreation Area
- C Deer Creek Recreation Site
- C Devils Garden Outstanding Natural Area
- C Dance Hall Rock Historic Site
- C Escalante Canyons Outstanding Natural Area (tracts 2, 3, 4 are included in North Escalante Canyon/The Gulch ISA and Tract 1 and 5 are separate)
- C North Escalante Canyon Outstanding Natural Area
- C The Gulch Outstanding Natural Area

C Phipps-Death Hollow Outstanding Natural Area

No Mans Mesa

On September 18, 1986, a Federal Register Notice announced the designation of No Mans Mesa as a Research Natural Area (RNA) under the authority of 43 CFR 8200 and using a plan amendment.

The management prescription included designating 1,335 acres of public land as an RNA. Management was to give primary emphasis to educational, scientific, and research values. Management prescriptions included restricting off-highway vehicles to existing roads and trails, placement of a “no surface occupancy” stipulation on oil and gas leases, a requirement that the area be retained in public ownership, withdrawal of the RNA from mineral entry, completion of a management plan, and provision for determination of fire suppression on a case-by-case basis.

No subsequent management plan has been written. Since the Monument Proclamation, mineral recommendations and the retention objective have been superseded.

It is recommended that the RNA designation continue.

Wolverine Petrified Wood Area

Wolverine Petrified Wood Natural Environmental Area (2,560 acres) was withdrawn in 1960 from all forms of appropriation under the public land laws, including the mining, but not the mineral leasing laws. This withdrawal was continued and modified in 1982 and the area withdrawn was reduced to 1,520 acres as the minimum needed for protection. At that time the area was referred to as the Wolverine Petrified Wood Area. In 1981, 2,560 acres were closed to off-road-vehicle use.

It is recommended that this designation continue.

Appendix 19

Economic Conditions



APPENDIX 19 - ECONOMIC CONDITIONS

INTRODUCTION

The creation of Grand Staircase-Escalante National Monument in September 1996 brought with it a commitment from both the Federal and Utah State government administrations to make the resulting management planning process both unique and innovative. One result of that commitment is the involvement of state economists in the preparation of the required socio-economic analysis.

The *Grand Staircase - Escalante National Monument Socio-Economic Analysis* was prepared by the Utah Governor's Office of Planning and Budget in August 1998. It was commissioned by the BLM to facilitate the evaluation of the socio-economic impacts of the alternatives described in the Draft Management Plan/EIS.

The Utah Governor's Office of Planning and Budget analysis identified the direct, indirect and induced employment impacts of the alternatives using the base period 1995 Utah Multi-Regional Input-Output (UMRIO-95) model of southwest Utah and assumptions provided by the Monument Planning Team. These assumptions and estimates were then analyzed using the Utah Process Economic and Demographic Model, which provided population impacts. A Fiscal Impact Model was then used to generate fiscal impacts.

This appendix describes key background data used in the analysis.

ASSUMPTIONS

The BLM provided a series of basic assumptions for the socio-economic research and analysis conducted for this Draft Plan/EIS.

Some key assumptions include:

- C Direct BLM spending will remain constant across all alternatives, and will stay level except for facility design and construction costs in 1999-2001.
- C Direct BLM employment will also remain constant across all alternatives, totaling approximately 75 full time equivalents, with 30 being newly-created jobs.
- C Major monument facilities will not change across alternatives, and will include a Headquarters in Kanab, a Visitor's Center and offices in Escalante, Visitor Contact Stations in Cannonville, Glendale, and Big Water, and the existing Contact Stations at Paria and the Anasazi State Park in Boulder.
- C The BLM Monument Planning Team provided a series of assumptions regarding anticipated future levels of motorized use, scenic driving, mountain biking, backpacking, and car camping for each

alternative, which are the building blocks for much of the analysis.

Research and analysis conducted by the Governor's Office of Planning and Budget resulted in the following assumptions:

- C Visitation of 207,382 visitor days in 1997 serves as the base for projecting future recreation use.
- C A baseline visitation projection was developed using a constant growth rate of 4.25 percent, which corresponds to other southern Utah destinations.
- C The 1997 breakdown of visitor activities in the Monument is the basis of future use projections (backpacking, 40 percent; camping, 15 percent; hunting, 11 percent, hiking, 4 percent, driving, 8 percent, other, 22 percent)
- C Visitor spending is approximately \$20 per day.

FINDINGS

The socio-economic analysis considered impacts to four major areas: (1) Population; (2) Employment; (3) Earnings; and (4) Net Revenues to Local Governments.

APPENDIX 19 - ECONOMIC CONDITIONS

Key findings of the analysis include:

Population

Overall impacts to the southwestern Utah population base are relatively small. The various management alternatives could add between six and 544 persons to a total population base of 212,603 in the year 2012. Peak population impacts occur in the year 2000, during construction of the new Monument facilities, when the additional population base could range between 554 and 961. After construction activities cease, population increases attributable to the Monument would range between a loss of 10 to a gain of 28, depending upon the alternative considered.

Employment

Employment attributable to Monument activities is expected to peak during facility construction in the year 2000, when Monument activities could add between 351 and 615 jobs to an employment base of 74,457 in southwestern Utah. Total employment impacts attributable to the Monument in the year 2012 range from -1 to 248 added to a total employment base of 116,129. After construction activities cease, employment increases attributable to the Monument would range between a loss of 10

jobs to a gain of 18 jobs annually, depending upon the alternative considered.

Earnings

For the most part, unchanging direct employment by BLM results in a fairly steady earning stream throughout the study period analyzed. However, during facility construction the highest earnings are generated, ranging from \$10.8 million to \$18.4 million in the year 2000, depending upon the alternative considered. After construction, earnings stay quite steady, ranging between \$1.4 million and \$7.9 million in the year 2012.

Net Revenues to Local Governments

Net revenues to local governments remain relatively small, again with the construction activities in the year 2000 providing the peak revenue stream. In 2000, net revenues could range between \$351,000 and \$565,000. Because this item is so dependent upon projected visitation numbers, the assumptions made for the various alternatives produce a wide range of results by the year 2012, when net revenues range between a loss of \$36,000 to a positive \$330,000. This is again a very small proportion of expected local government revenues which total in the tens of millions of dollars.

Conclusions

All proposed management alternatives are driven by a basic intent to keep most of the landscape in its current condition, with very little new development expected. The steady operating budget, constant employee base, and fixed facility locations result in little variation between alternatives and over time. Overall, the impacts to the management alternatives are small. Impacts to local government revenues and expenditures are also relatively small.

The following tables and graphs provide specific information:

A19.3-4	Economic, Demographic and Fiscal Impacts to the Southwest Region
A19.5	Bureau of the Census Sub-county Population Estimates, 1990-1996
A19.6	Projection of Population by City in Garfield and Kane Counties
A19.7	Economic and Demographic Projections Summary
A19.8	Garfield County Employment Sectors in 1997
A19.9	Garfield County Employment Sector Growth
A19.10	Kane County Employment Sectors in 1997
A19.11	Kane County Employment Sector Growth
A19.12	Southwest Utah Employment Sector Growth
A19.13	Per Capita Income
A19.14	Average Annual Wages
A19.15	Unemployment Rates
A19.16	Net Migration
A19.17	Total Historic and Projected Population Growth

APPENDIX 19 - ECONOMIC CONDITIONS

**TABLE A19.1
ECONOMIC, DEMOGRAPHIC AND FISCAL IMPACTS TO THE SOUTHWEST REGION**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Alternative A - No Action															
Visitor Days	217,190	227,462	238,219	249,486	261,285	273,642	286,584	300,138	314,332	329,198	344,768	361,073	378,150	396,034	414,764
Population	244	288	554	277	283	291	299	307	316	320	331	339	349	360	370
Employment	156	182	351	168	172	175	180	184	189	193	197	202	208	214	219
Earnings (\$)	4,700	5,511	10,803	4,905	5,032	5,184	5,256	5,289	5,486	5,570	5,531	5,683	5,690	5,897	6,001
Revenue (\$)	366	426	807	389	401	415	424	430	449	459	461	477	483	503	516
Expenditures (\$)	200	237	455	225	232	238	247	256	269	274	283	291	300	309	317
Net Revenue (\$)	166	189	351	164	170	178	178	174	180	185	178	186	183	194	199
Alternative B															
Visitor Days	218,134	229,443	241,338	253,850	267,011	280,854	295,414	310,730	326,839	343,784	361,607	380,355	400,074	420,816	442,633
Population	244	338	961	284	299	309	319	328	344	347	360	372	388	405	422
Employment	157	215	615	172	179	183	190	195	203	209	215	222	231	240	248
Earnings (\$)	4,616	6,459	18,446	4,940	5,132	5,241	5,526	5,412	5,762	5,913	5,947	6,079	6,279	6,444	6,636
Revenue (\$)	361	496	1,356	397	416	429	455	453	485	502	512	530	553	574	598
Expenditures (\$)	201	278	791	232	244	253	262	274	295	299	310	320	334	349	362
Net Revenue (\$)	160	218	565	165	172	176	193	179	189	203	202	210	219	225	236
Alternative C															
Visitor Days	215,080	223,064	231,345	239,933	248,839	258,077	267,657	277,593	287,897	298,584	309,668	321,164	333,086	345,450	358,274
Population	238	317	845	261	270	272	274	277	280	274	277	277	278	281	282
Employment	154	201	540	158	161	161	163	163	165	164	164	163	163	164	163

APPENDIX 19 - ECONOMIC CONDITIONS

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Earnings (\$)	3,386	4,941	15,223	3,507	3,589	3,709	3,889	3,688	3,834	3,891	3,735	3,716	3,709	3,848	3,828
Revenue (\$)	269	380	1,113	277	282	290	302	287	297	300	287	285	283	291	288
Expenditures (\$)	196	261	695	213	220	222	226	231	242	238	240	240	242	246	245
Net Revenue (\$)	73	119	418	64	62	68	76	56	54	61	47	45	40	45	43
Alternative D															
Visitor Days	209,873	212,394	214,945	217,526	220,139	222,783	225,459	228,167	230,907	233,680	236,487	239,327	242,202	245,111	248,055
Population	157	213	644	145	146	134	124	115	104	86	73	56	43	25	6
Employment	102	135	411	87	84	77	71	64	58	49	40	30	21	11	-1
Earnings (\$)	3,269	4,392	12,921	3,066	3,031	2,937	3,033	2,626	2,642	2,553	2,269	2,034	1,819	1,771	1,480
Revenue (\$)	254	327	927	216	205	189	186	147	138	120	88	59	30	13	-22
Expenditures (\$)	130	175	530	117	118	110	102	97	94	80	70	54	44	30	13
Net Revenue (\$)	125	152	397	100	87	80	84	50	43	40	18	5	-14	-17	-36
Alternative E															
Visitor Days	220,466	234,376	249,164	264,884	281,597	299,364	318,252	338,331	359,678	382,371	406,496	432,143	459,408	488,394	519,208
Population	246	309	671	304	317	332	348	368	390	408	429	454	482	513	544
Employment	159	197	427	183	192	200	210	222	234	246	259	273	289	307	324
Earnings (\$)	4,691	5,821	12,994	5,127	5,386	5,616	5,762	5,887	6,302	6,640	6,581	6,942	7,237	7,732	7,963
Revenue (\$)	369	457	977	425	453	480	501	523	566	604	616	659	698	753	792
Expenditures (\$)	202	254	551	248	259	271	287	306	331	347	365	385	410	437	462
Net Revenue (\$)	167	204	425	177	193	208	215	216	235	257	251	273	288	317	330

APPENDIX 19 - ECONOMIC CONDITIONS

**TABLE A19.2
BUREAU OF THE CENSUS SUB-COUNTY POPULATION ESTIMATES, 1990-1996**

	1990	1991	1992	1993	1994	1995	1996
GARFIELD COUNTY	3,980	3,992	4,063	3,998	3,974	4,033	4,076
Antimony	83	83	86	84	83	85	88
Boulder	126	125	127	125	128	131	135
Cannonville	131	133	136	133	134	138	141
Escalante	818	826	843	831	834	853	876
Hatch	103	102	104	100	101	101	101
Henrieville	163	163	164	161	159	162	161
Panguitch	1,444	1,440	1,464	1,440	1,414	1,420	1,408
Tropic	374	377	384	380	380	389	397
Balance of Garfield County	738	743	755	744	741	754	769
KANE COUNTY	5,169	5,111	5,196	5,678	5,679	5,858	5,751
Alton	93	93	96	107	107	109	106
Big Water	326	315	317	344	346	360	370
Glendale	282	284	292	324	328	339	333
Kanab	3,289	3,251	3,302	3,598	3,582	3,698	3,616
Orderville	422	408	410	442	440	443	430
Balance of Kane County	757	760	779	863	876	909	896

APPENDIX 19 - ECONOMIC CONDITIONS

**TABLE A19.3
PROJECTIONS OF POPULATION BY CITY IN GARFIELD AND KANE COUNTIES**

	1996	1997	1998	1999	2000	2001	2002	2010	2020
Antimony	88	89	90	91	91	92	93	100	109
Boulder	135	138	142	145	149	152	155	181	217
Cannonville	141	144	147	149	151	154	157	177	202
Escalante	876	901	994	1,028	1,063	1,097	1,131	1,354	1,548
Hatch	101	102	103	105	107	108	109	121	138
Henrieville	161	163	165	167	169	171	173	193	220
Panguitch	1,408	1,421	1,534	1,582	1,631	1,679	1,727	2,013	2,319
Tropic	397	405	414	422	430	439	475	569	639
Balance of Garfield County	769	846	1,052	997	957	922	870	1,022	1,147
Garfield County	4,076	4,209	4,641	4,686	4,748	4,814	4,890	5,730	6,539
Alton	106	111	114	115	119	123	127	141	167
Big Water	370	400	420	432	450	478	503	662	845
Glendale	333	372	389	396	403	414	433	589	743
Kanab	3,616	4,096	4,339	4,414	4,514	4,652	4,806	6,369	8,450
Orderville	430	478	489	507	533	550	570	756	982
Balance of Kane County	896	1,084	1,354	1,416	1,465	1,479	1,489	1,793	2,008
Kane County	5,751	6,541	7,105	7,280	7,484	7,696	7,928	10,310	13,195

Notes:

(1) 1996 estimates are Census Bureau estimates.

(2) 1997 through 2020 subcounty numbers have been produced by Five County AOG analysts controlling to GOPB county totals. GOPB county totals include assumptions about federal employment related to the GSENM in Kane County.

Source: Governor's Office of Planning and Budget--Demographic and Economic Analysis Section

UPED Model System

1997 Baseline Projections(12/17/96)

The last year of historical data is 1995 for employment and 1996 for population.

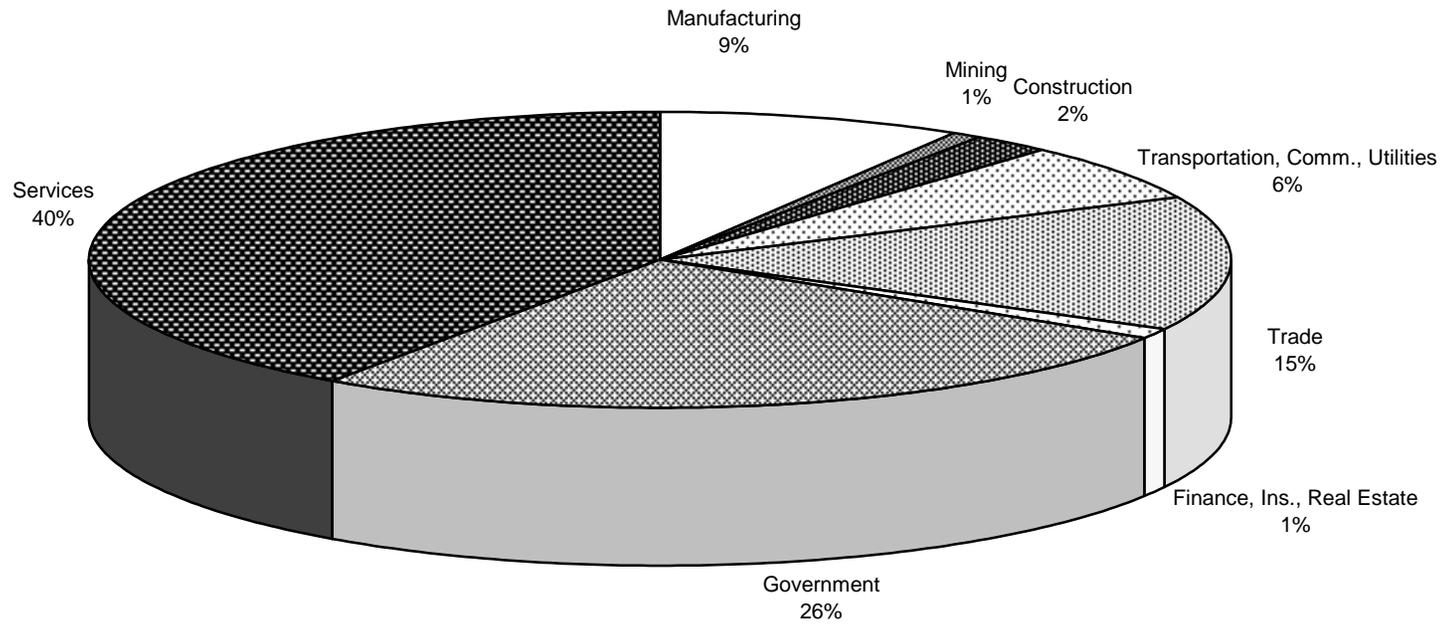
APPENDIX 19 - ECONOMIC CONDITIONS

**TABLE A19.4
ECONOMIC AND DEMOGRAPHIC PROJECTIONS SUMMARY**

Year	Southwest Region				Garfield County				Kane County			
	Population		Employment		Population		Employment		Population		Employment	
	Total	Change	Total	Change	Total	Change	Total	Change	Total	Change	Total	Change
1990	83,900	2.6%	36,364	2.6%	3,950	1.1%	1,474	1.3%	5,150	1.10%	1,572	1.7%
1991	87,553	4.4%	39,124	7.6%	4,097	3.7%	1,496	1.5%	5,248	1.9%	1,609	2.4%
1992	91,755	4.8%	41,883	7.1%	4,100	0.1%	1,527	2.1%	5,350	1.9%	1,709	6.2%
1993	97,152	5.9%	45,363	8.3%	4,200	2.4%	1,625	6.4%	5,450	1.9%	1,832	7.2%
1994	103,654	6.7%	50,657	11.7%	4,200	0.0%	1,768	8.8%	5,700	4.6%	2,048	11.8%
1995	110,955	7.0%	54,761	8.1%	4,300	2.4%	1,838	4.0%	5,900	3.5%	2,195	7.2%
1996	116,833	5.3%	59,181	8.1%	4,385	2.0%	1,952	6.2%	5,955	0.9%	2,372	8.1%
1997	122,851	5.2%	63,394	7.1%	4,209	0.0%	1,914	0.0%	6,492	9.0%	2,650	11.7%
1998	129,694	5.6%	67,950	7.2%	4,641	10.3%	2,151	12.4%	7,006	7.9%	2,916	10.0%
1999	134,752	3.9%	71,336	5.0%	4,686	1.0%	2,201	2.3%	7,178	2.5%	3,021	3.6%
2000	139,658	3.6%	74,457	4.4%	4,748	1.3%	2,252	2.3%	7,379	2.8%	3,131	3.6%
2001	144,258	3.3%	77,310	3.8%	4,814	1.4%	2,301	2.2%	7,590	2.9%	3,242	3.5%
2002	149,182	3.4%	80,190	3.7%	4,890	1.6%	2,350	2.1%	7,819	3.0%	3,355	3.5%
2003	154,370	3.5%	83,093	3.6%	4,970	1.6%	2,399	2.1%	8,065	3.1%	3,468	3.4%
2004	160,725	4.1%	86,705	4.3%	5,087	2.4%	2,467	2.8%	8,366	3.7%	3,613	4.2%
2005	167,079	4.0%	90,336	4.2%	5,200	2.2%	2,535	2.8%	8,665	3.6%	3,757	4.0%
2006	173,177	3.6%	93,847	3.9%	5,301	1.9%	2,597	2.4%	8,954	3.3%	3,897	3.7%
2007	179,402	3.6%	97,402	3.8%	5,404	1.9%	2,659	2.4%	9,248	3.3%	4,039	3.6%
2008	185,862	3.6%	101,047	3.7%	5,510	2.0%	2,722	2.4%	9,555	3.3%	4,184	3.6%
2009	192,618	3.6%	104,828	3.7%	5,622	2.0%	2,787	2.4%	9,874	3.3%	4,336	3.6%
2010	199,305	3.5%	108,628	3.6%	5,730	1.9%	2,852	2.3%	10,189	3.2%	4,487	3.5%
2011	205,915	3.3%	112,395	3.5%	5,832	1.8%	2,914	2.2%	10,500	3.1%	4,639	3.4%
2012	212,603	3.2%	116,129	3.3%	5,935	1.8%	2,973	2.0%	10,814	3.0%	4,789	3.2%
2013	219,234	3.1%	119,792	3.2%	6,032	1.6%	3,030	1.9%	11,126	2.9%	4,934	3.0%
2014	225,598	2.9%	123,313	2.9%	6,120	1.5%	3,082	1.7%	11,424	2.7%	5,075	2.9%
2015	231,764	2.7%	126,704	2.7%	6,201	1.3%	3,130	1.6%	11,714	2.5%	5,210	2.7%
2016	237,725	2.6%	129,963	2.6%	6,274	1.2%	3,173	1.4%	11,992	2.4%	5,341	2.5%
2017	243,515	2.4%	133,125	2.4%	6,342	1.1%	3,213	1.3%	12,262	2.3%	5,468	2.4%
2018	249,372	2.4%	136,263	2.4%	6,410	1.1%	3,251	1.2%	12,536	2.2%	5,593	2.3%
2019	255,113	2.3%	139,346	2.3%	6,473	1.0%	3,288	1.1%	12,801	2.1%	5,714	2.2%
2020	260,991	2.3%	142,447	2.2%	6,539	1.0%	3,324	1.1%	13,073	2.1%	5,837	2.2%

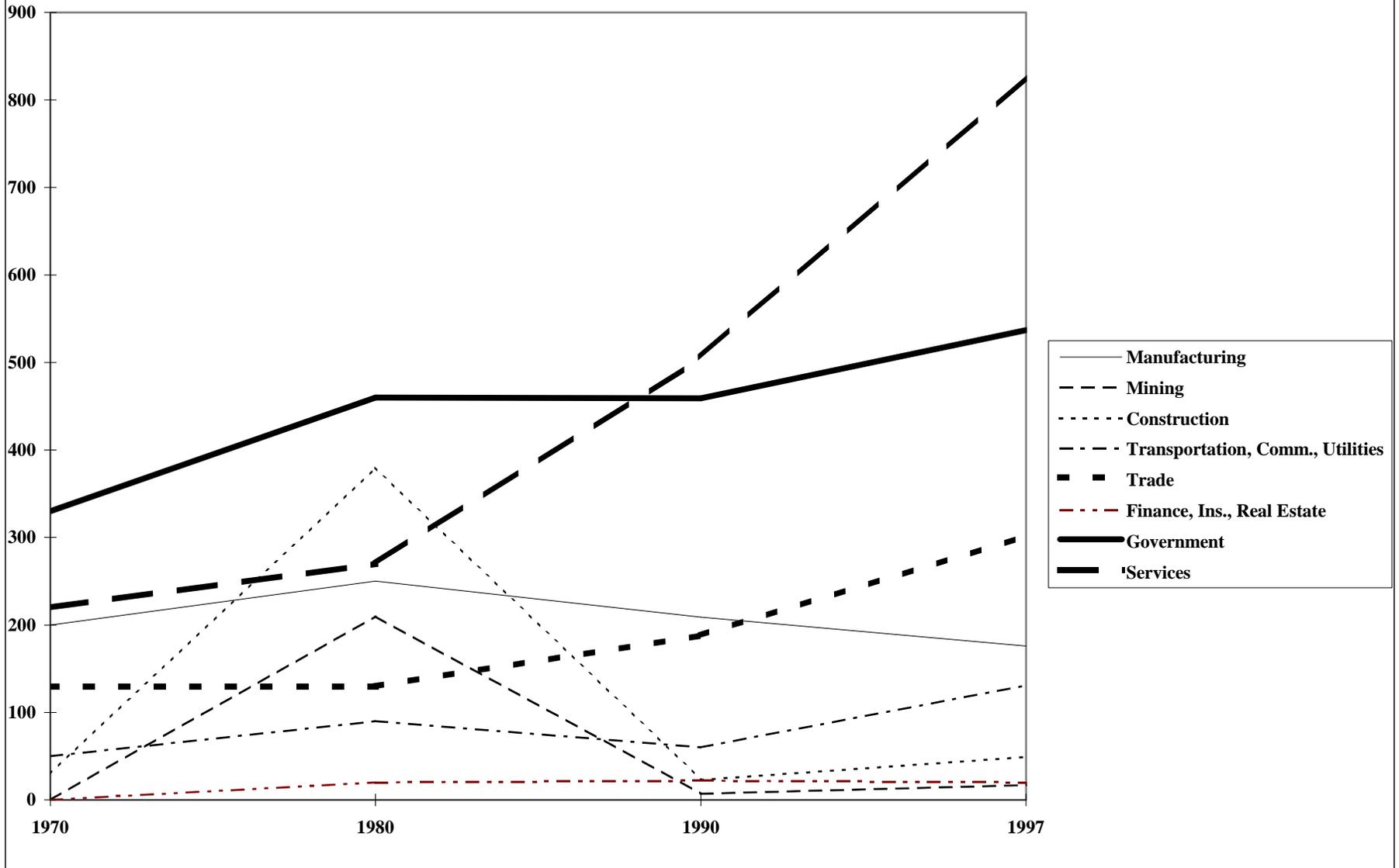
APPENDIX 19 - ECONOMIC CONDITIONS

FIGURE A19.1
GARFIELD COUNTY EMPLOYMENT SECTORS IN 1997



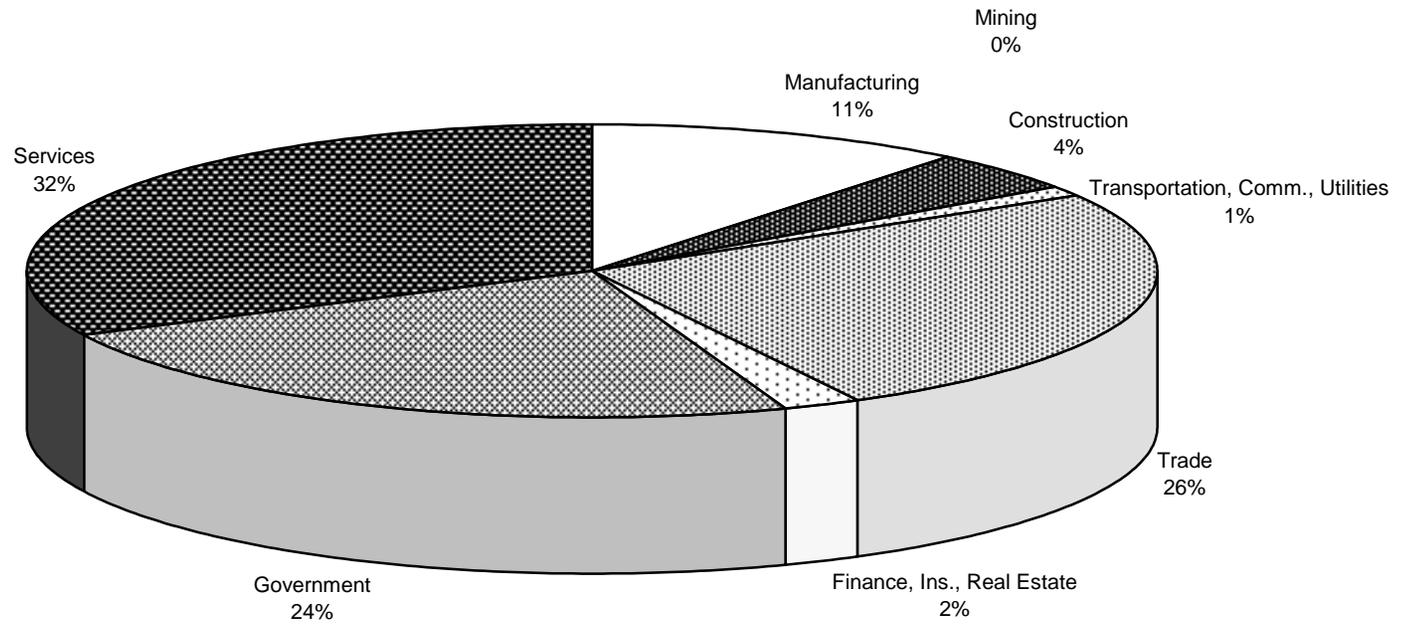
APPENDIX 19 - ECONOMIC CONDITIONS

FIGURE A19.2
GARFIELD COUNTY EMPLOYMENT SECTOR GROWTH



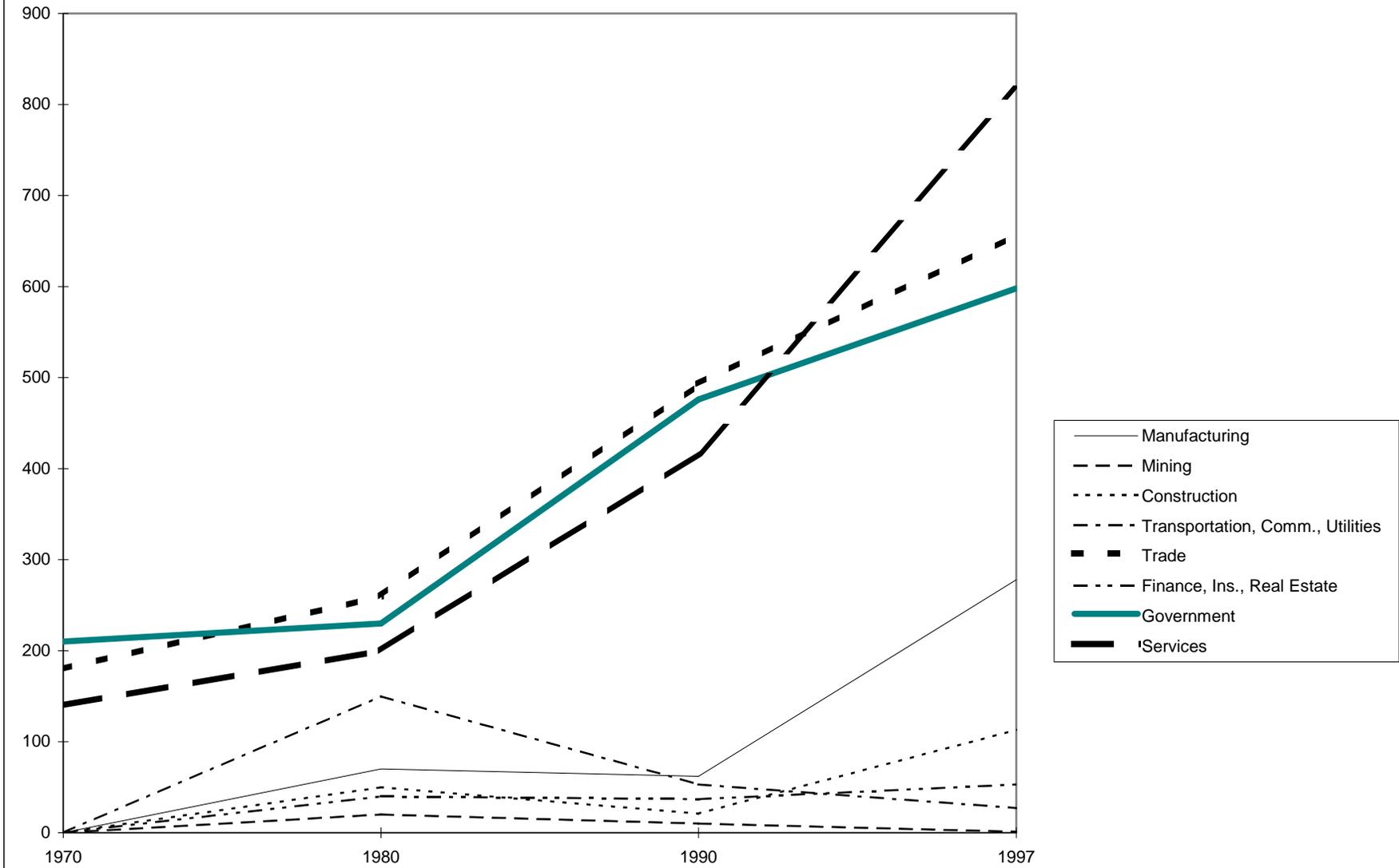
APPENDIX 19 - ECONOMIC CONDITIONS

**FIGURE A19.3
KANE COUNTY EMPLOYMENT SECTORS IN 1997**



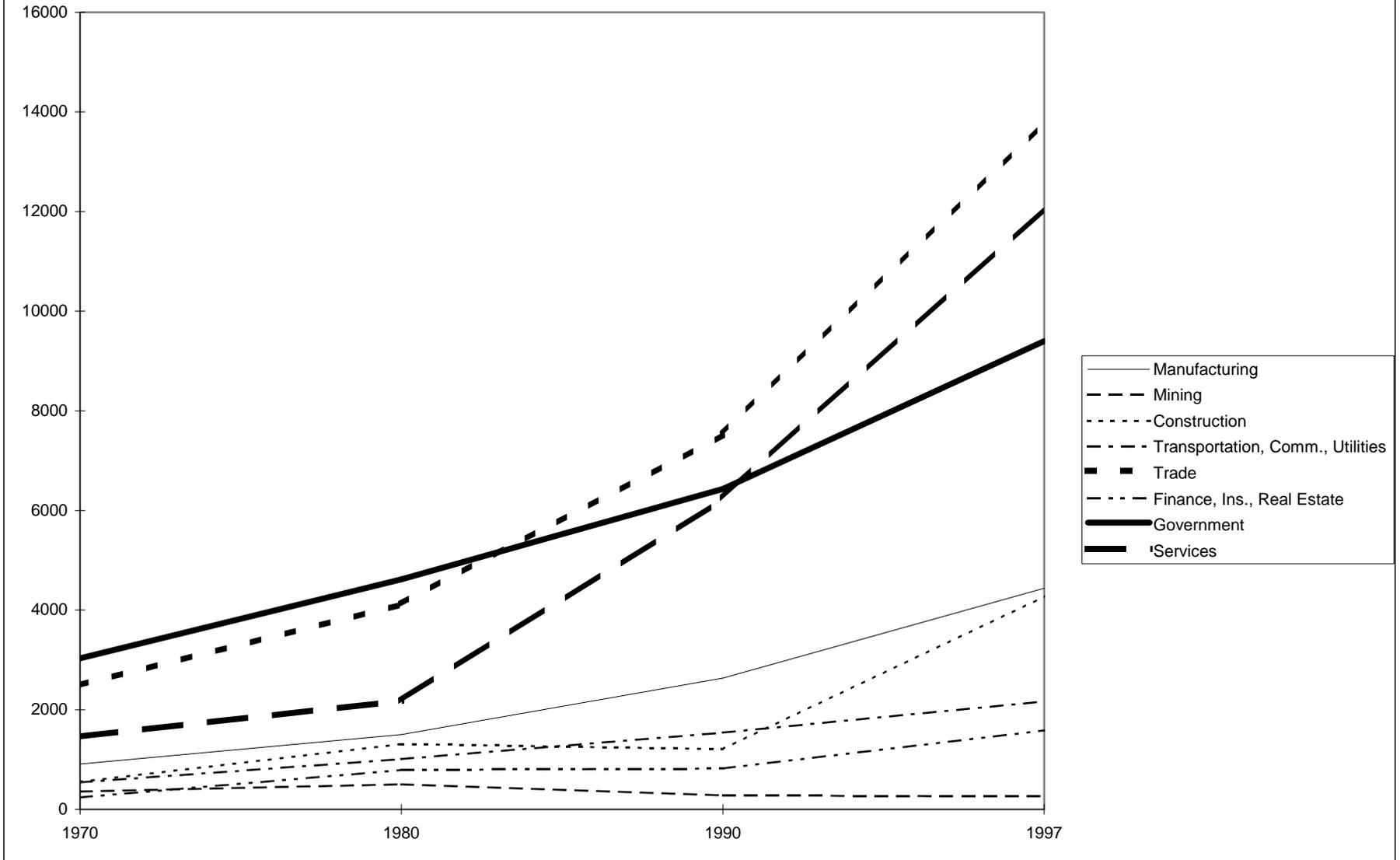
APPENDIX 19 - ECONOMIC CONDITIONS

**FIGURE A19.4
KANE COUNTY EMPLOYMENT SECTOR GROWTH**



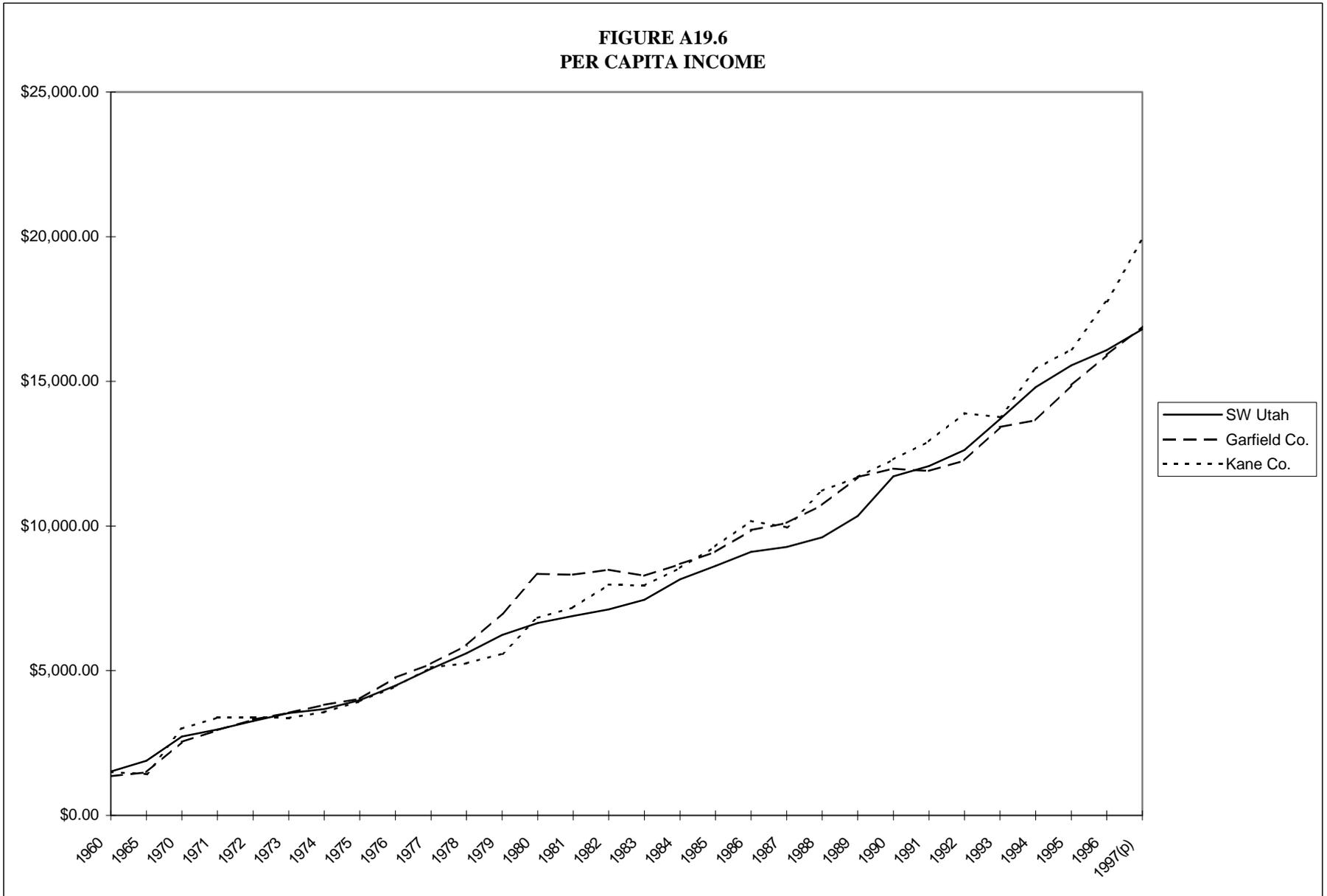
APPENDIX 19 - ECONOMIC CONDITIONS

FIGURE A19.5
SOUTHWEST UTAH EMPLOYMENT SECTOR GROWTH



APPENDIX 19 - ECONOMIC CONDITIONS

FIGURE A19.6 PER CAPITA INCOME



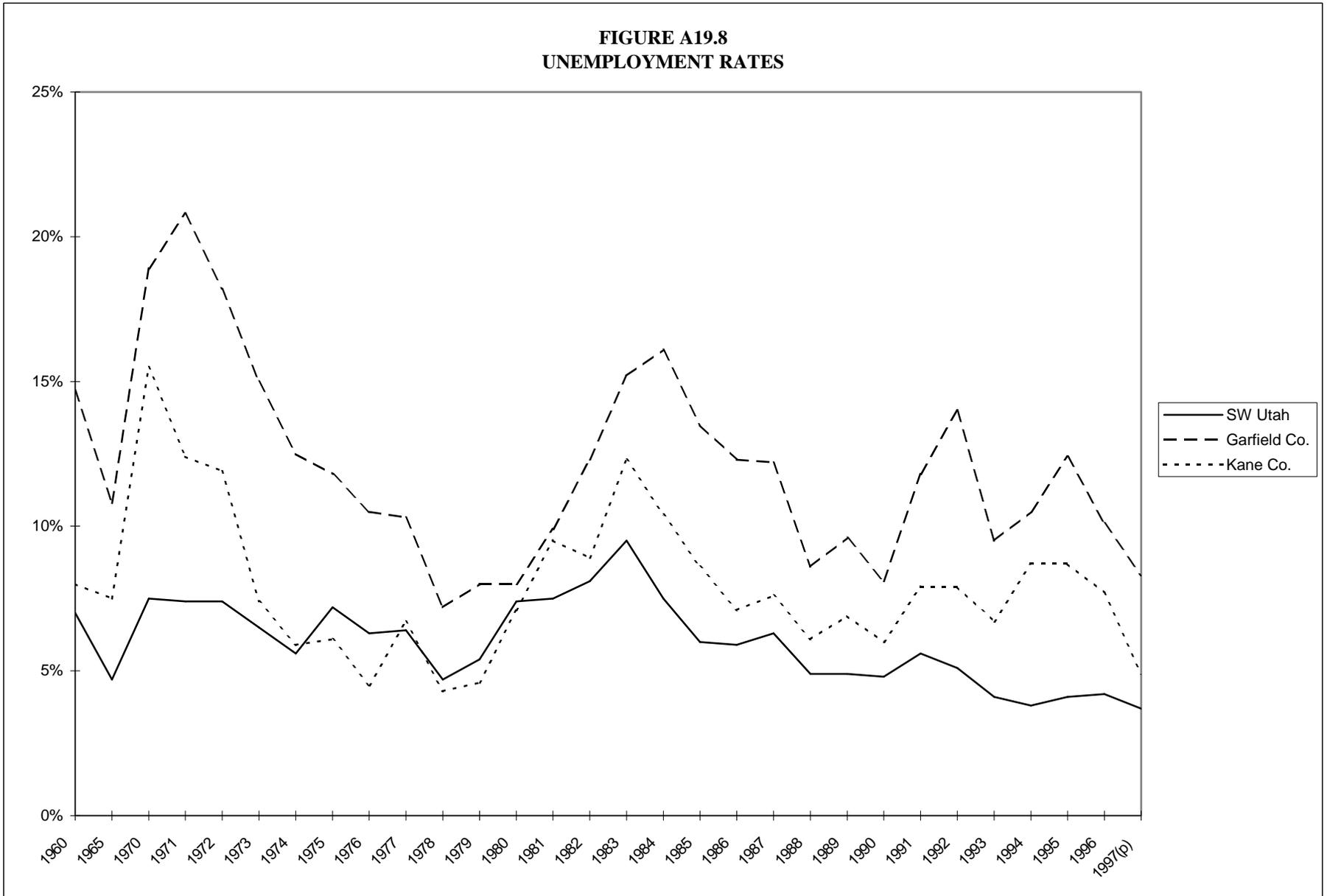
APPENDIX 19 - ECONOMIC CONDITIONS

FIGURE A19.7 AVERAGE ANNUAL WAGES



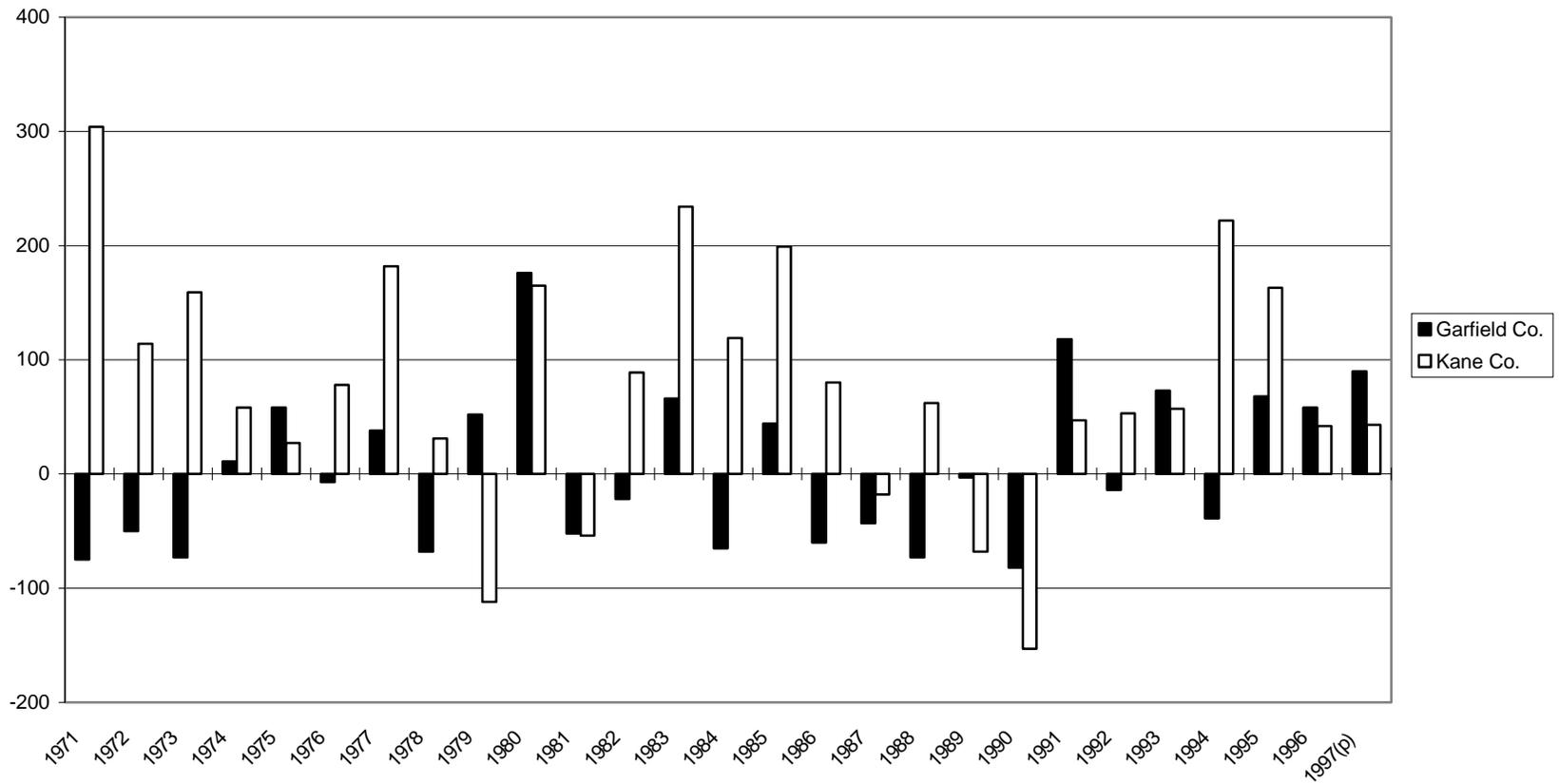
APPENDIX 19 - ECONOMIC CONDITIONS

**FIGURE A19.8
UNEMPLOYMENT RATES**



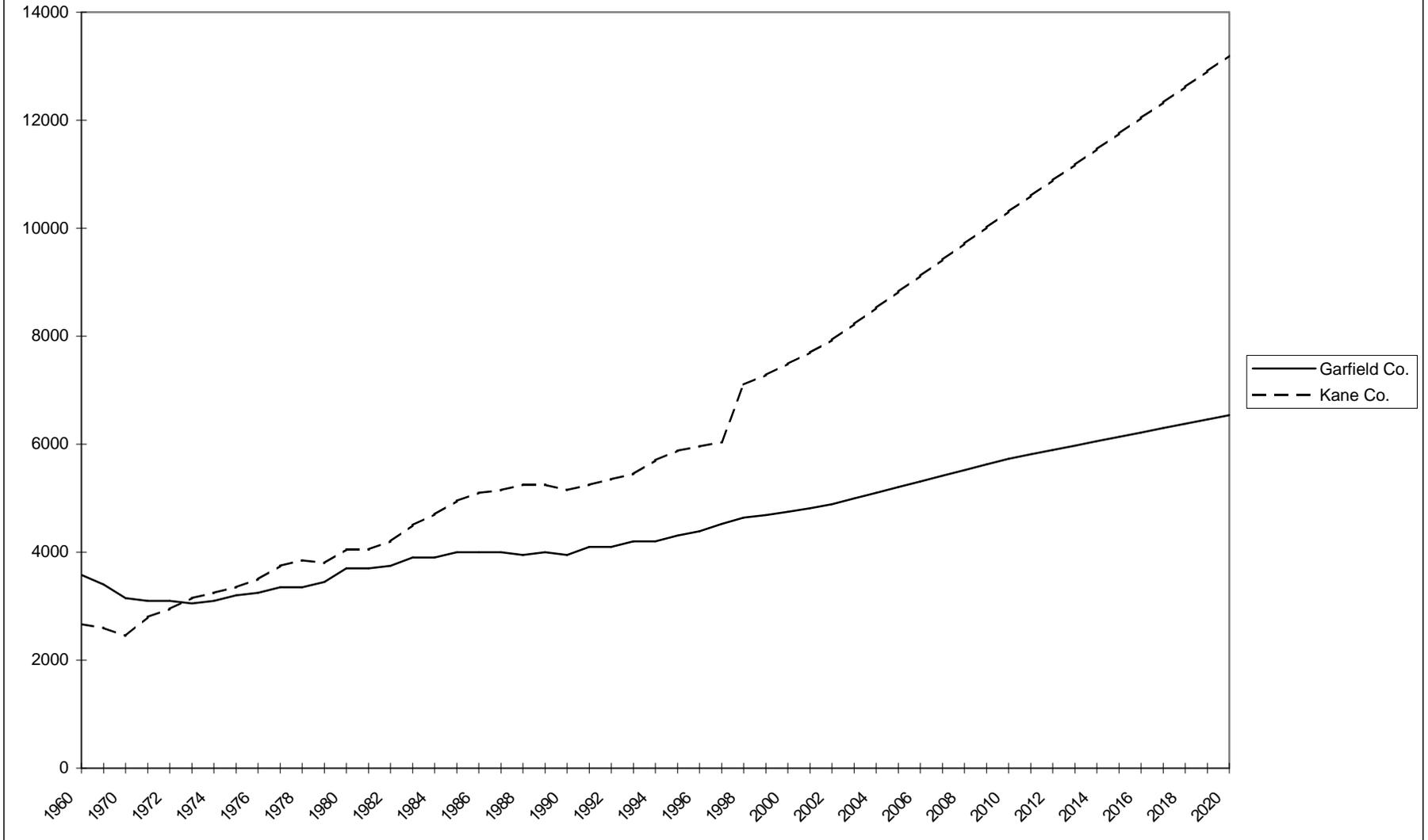
APPENDIX 19 - ECONOMIC CONDITIONS

**FIGURE A19.9
NET MIGRATION**



APPENDIX 19 - ECONOMIC CONDITIONS

**FIGURE A19.10
TOTAL HISTORIC AND PROJECTED POPULATION GROWTH**



Appendix 20

Recreation Opportunity Spectrum



APPENDIX 20 - RECREATION OPPORTUNITY SPECTRUM (ROS) SETTING DESCRIPTION

**TABLE A20.1
RECREATION OPPORTUNITY SPECTRUM**

ROS CLASSES	PHYSICAL SETTING	SOCIAL SETTING	MANAGERIAL SETTING
Primitive	Area is characterized by essentially unmodified natural environment of fairly large size.	Concentration of users is very low and evidence of other users is minimal.	Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.
Semi-Primitive Non-Motorized	Area is characterized by a predominantly unmodified natural environment of moderate to large size.	Concentration of users is low, but often other area users are evident.	Facilities are provided for the protection of resource values and the safety of users. On-site controls and restrictions may be present but are subtle. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not generally permitted.
Semi-Primitive Motorized	Same as Semi-Primitive Non-Motorized	Same as Semi-Primitive Non-Motorized.	Same as Semi-Primitive Non-Motorized; except that motorized use is permitted.
Roaded Natural	Area is generally characterized by a generally natural environment. Resource modification and utilization practices are evident, but harmonize with the natural environment.	Concentration of users is low to moderate. Moderate evidence of the sights and sounds of humans.	On-site controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience as well as for safety and resource protection. Facilities are sometimes provided for group activity. Conventional motorized use is provided for in construction standards and design of facilities.
Rural	Area is characterized by a substantially modified natural environment. Resource modification and utilization practices are evident.	Concentration of users is often moderate to high. The sights and sound of humans are readily evident.	A considerable number of facilities are designed for use by large numbers of people. Facilities are often provided for specific activities. Developed sites, roads, and trails, are designed for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.

Appendix 2 |

Visitor Facilities



APPENDIX 21 - VISITOR FACILITIES

**TABLE A21.1
VISITOR FACILITIES**

SITE	FACILITIES
Escalante Interagency Center	visitor contact center, interpretive displays, interpretive association sales
Kanab Field Office	visitor contact center, interpretive displays, interpretive association sales
Anasazi State Park	visitor contact center, interpretive displays
Paria Contact Station	visitor contact center, interpretive association sales
Calf Creek Campground	13 individual sites, 5 picnic sites, 1 group area, flush toilets and vault toilet, drinking water
Deer Creek Campground	7 individual sites, 1 vault toilet
Highway 12 Scenic Byway	interagency interpretive plan, interpretive pullouts and signs, route guide, video
White House Campground/Trailhead	5 individual sites, 2 vault toilets
Devils Garden Picnic Site	4 picnic sites, 1 vault toilet
Grosvenor Arch	picnic site, toilet
Paria Movie Set	3 picnic sites, toilet
Wolverine Petrified Wood Area	interpretive sign
Old Pareth Townsite and Cemetery	interpretive sign
Dance Hall Rock	interpretive sign
Lower Calf Creek Falls Trail	2¾ miles of developed interpretive trail with brochure
Kodachrome State Park	kiosk panel, interpretive
13 Trailheads BLM Developed	register boxes
6 Trailheads BLM Undeveloped	secondary trailheads, no facilities
6 Trailheads NPS Administered on BLM	register boxes
4 Hiking Trail Easements	maintained trails

Appendix 22

Grazing Allotments



APPENDIX 22 - GRAZING ALLOTMENTS

**TABLE A22.1
GRAZING ALLOTMENTS**

ALLOTMENT	ALLOTMENT MANAGEMENT PLAN (AMP)	GRAZING PERIOD ₁	ACTIVE PREFERENCE (Number of animal unit months)	ALLOTMENT CATEGORY ₂
Alvey Wash	1990	05/15 through 09/23	1,276	I
Big Bowns Bench	1984	10/16 through 04/15	1,275	M
Big Horn	1983	11/10 through 06/15	4,392	I
Blackridge	No AMP	10/15 through 04/15	848	I
Black Rock	No AMP	Year-long	408	I
Boot	No AMP	08/01 through 10/31	45	C
Boulder Creek	No AMP	10/16 through 11/29	80	C
Bunting Well	1981	Year-long	3,307	M
Calf Pasture	1991	08/10 - 10/15 odd years	176	M
	1991	06/10 - 08/15 even years		
Cedar Wash	1984	06/15 through 10/31	898	M
Circle Cliffs	1996	11/01 through 03/31	1,050	I
Clark Bench	1982	08/01 through 04/30	1,200	I
Cockscomb	No AMP	03/01 through 05/31	36	C
Collet	No AMP	09/15 through 10/15	92	C
Cottonwood	1981	11/10 through 05/31	2,233	I
Coyote	1978	11/01 through 05/31	2,044	M
Death Hollow	No AMP	11/01 through 05/15	1,002	C
Deer Creek	No AMP	11/01 through 04/30	587	M
Deer Range	No AMP	08/01 through 10/15	213	M
Deer Spring Point	1988	06/10 through 10/07	503	I
Dry Valley	No AMP	07/01 through 10/31	531	M
First Point	1979	Summer Use	396	M
Five Mile Canyon	No AMP	11/01 through 04/30	385	C
Flood Canyon	1989	07/01 through 10/31	148	I
Fordwell	No AMP	06/10 through 10/09	291	C
Fortymile Ridge	1987	11/01 through 06/15	4,155	I
Granary Ranch	No AMP	07/01 through 11/30	70	C
Haymaker Bench	No AMP	11/10 through 12/31	100	C

APPENDIX 22 - GRAZING ALLOTMENTS

ALLOTMENT	ALLOTMENT MANAGEMENT PLAN (AMP)	GRAZING PERIOD ₁	ACTIVE PREFERENCE (Number of animal unit months)	ALLOTMENT CATEGORY ₂
Headwaters	1982	11/01 through 03/15	3,607	M
Hells Bellows	No AMP	05/01 through 10/15	44	C
Johnson Canyon	No AMP	06/10 through 11/15	174	C
Johnson Lakes	1986	06/01 through 11/30	319	I
Johnson Point	No AMP	11/01 through 03/31	135	C
King Bench	1983	11/01 through 03/31	2,414	I
Lake	1989	09/01 through 05/01	1,308	I
Last Chance	1982	Year-long	3,708	I
Little Bowns Bench	No AMP	11/01 through 02/28	130	M
Little Desert	No AMP	09/24 through 10/08	107	C
Locke Ridge	1986	12/01 through 04/30	145	I
Lower Cattle	1967	10/01 through 04/15	6,875	I
Lower Hackberry	1981	11/01 through 03/31	435	I
McGath Point	No AMP	10/01 through 02/28	60	M
Meadow Canyon	1986	09/01 through 11/30	144	I
Mill Creek	No AMP	06/01 through 09/30	300	C
Mollie's Nipple	1976	Year-long	3,436	M
Moody	No AMP	11/01 through 03/31	1,600	C
Mudsprings	No AMP	07/15 through 10/15	195	M
Neaf	No AMP	03/01 through 11/30	9	C
Nipple Bench	1981	12/01 through 04/30	885	I
Phipps	No AMP	09/01 through 03/31	280	M
Pine Point	1988	06/16 through 10/15	365	I
Rock Creek-Mudholes	1982	Year-long	2,100	M
Round Valley	1983	11/01 through 03/31	495	I
Roy Willis	No AMP	11/01 through 04/30	10	C
Rush Beds	1982	11/01 through 05/31	247	M
Salt Water Creek	No AMP	10/16 through 03/15	120	C
School Section	No AMP	06/01 through 07/31	2	C
Second Point	No AMP	07/01 through 03/31	21	C
Sink Holes	1982	10/15 through 03/31	154	I

APPENDIX 22 - GRAZING ALLOTMENTS

ALLOTMENT	ALLOTMENT MANAGEMENT PLAN (AMP)	GRAZING PERIOD, ₁	ACTIVE PREFERENCE (Number of animal unit months)	ALLOTMENT CATEGORY, ₂
Soda	No AMP	10/01 through 06/01	2,755	I
Steep Creek	1969	05/15-06/16 ,11/10-03/31	318	C
Swallow Park	1992	05/10 through 11/10	734	I
Timber Mountain	No AMP	06/15 through 10/15	375	M
Upper Cattle	1984	11/01 through 06/15	6,297	I
Upper Hackberry	1981	11/01 through 06/15	605	I
Upper Paria	1976	05/01 through 09/30	2,525	M
Upper Warm Creek	1981	11/01 through 05/31	1,477	I
Vermillion	1974	Year-long	2,556	M
Wagon Box Mesa	No AMP	11/01 through 03/31	633	C
Wahweap	No AMP	12/01 through 04/30	400	M
White Rocks	1981	12/01 through 01/31	60	C
White Sage	No AMP	05/06 through 06/05	75	C
Willow Gulch	1983	11/01 through 03/31	404	M

₁Grazing season-of-use schedules may vary slightly due to yearly climatic conditions, vegetative growth, and availability of livestock water.

₂ There are three categories in which allotments are placed. These categories assist in prioritizing the levels and type of resource management applied on each allotment. The “I” (Intensive) category receives the highest management priority due to identified resource conflicts or multiple resource issues. The “M” (Maintain) category describes allotments in which the current level of management is satisfactory in order to maintain resource conditions. The “C” (Custodial) allotments are usually small parcels of public land within larger blocks of private land. The level of management needed is low, provided that resources are not being negatively impacted.

Livestock grazing allotments that are totally or partially within the Monument, and administered by Monument personnel, were placed in an M, I, or C category by analyzing each allotment using the following categories: range condition; resource potential; present productivity; resource use conflicts; controversy; and present management situation. A number of criteria were used to further define both resource conflicts and level of controversy. These include: recreation concerns; deer herd management; multiple wildlife species concerns; watershed values; riparian resources; multiple resource concerns within the allotment; adjacent federal management within the allotment (Glen Canyon National Recreation Area, Capital Reef National Park, and Dixie National Forest); vegetation; and archeological resources. An interdisciplinary team approach was used to categorize each allotment.

Appendix 23

Allotment Trend



APPENDIX 23 - ALLOTMENT TREND

The following table summarizes the vegetative trend data on the Monument. Trend describes the direction of change over time of a rangeland area (BLM Manual Handbook 4400-1, Rangeland Monitoring and Evaluation). Vegetation data are collected at different times on the same site and the results are then compared to detect a change. In this table, trend is described as upward, static, or downward. These categories indicate whether rangeland conditions are moving toward or away from management objectives. Trend data are also used to determine if changes in management are needed in order to improve resource conditions. The trend of a rangeland area is judged by noting changes in vegetation attributes such as species composition, density, cover, production, and frequency. The table lists allotments where trend data sites are located. A number of these allotments have several sites located in various grazing pastures.

**TABLE A23.1
ALLOTMENT TREND**

ALLOTMENT	PASTURE	TREND	DATE ESTABLISHED	DATE LAST READ
Alvey Wash	Camp Flat	upward	8/26/69	9/1/95
	Little Valley	static	8/26/69	8/8/89
Big Bowns	Horse	static	1968	1997
	Middle	static	1968	1997
	Seep	upward	1968	1997
Big Horn	10-Mile	downward, static	7/25/67, 7/26/67	9/3/97, 9/3/97
	Big Flat	static, downward, downward	9/8/67, 7/26/67, 7/26/67	7/10/97, 7/10/97, 7/25/97
	Spencer Flat	static	7/28/67	8/1/97
Blackrock	Blackrock	upward	1987	1992
	Chalk Ridge	upward, upward	1981, 1987	1992, 1992
	East Pine	upward, no data	1981, 1970	1992, 1980
	West Pine		1992	
Blackridge	Blackridge	downward, downward	8/25/67, 8/30/67	8/24/95, 8/24/95
Boulder Cr.	Boulder Cr.	no data	1988	1988
Bunting Well	Bunting Well	static, static	6/20/67, 7/25/68	6/19/97, 6/19/97
	Cedar Mountain	static, static, static	9/15/82, 9/15/82, 9/15/82	6/19/97, 6/19/97, 6/19/97
	East Clark Bench	static, static, static, static, static, static, static, static, static	7/6/67, 7/18/68, 6/16/67, 7/25/68, 6/15/67, 7/25/68, 6/16/67, 7/25/68, 6/16/67, 7/24/68	6/12/97, 6/12/97, 6/12/97, 6/12/97, 6/19/97, 6/19/97, 6/19/97, 6/19/97, 6/19/97, 6/19/97, 6/19/97
	Flat Top	static, static, static	9/20/82, 9/29/82, 9/29/82	6/19/97, 6/19/97, 6/19/97
	Judd Hollow	static, static, static, static, downward, downward	7/12/67, 7/18/68, 7/12/67, 7/18/68, 7/13/67, no date	6/18/97, 6/18/97, 6/18/97, 6/18/97, 9/28/93, 9/28/93
Calf Pasture	Calf Pasture		1991	

APPENDIX 23 - ALLOTMENT TREND

ALLOTMENT	PASTURE	TREND	DATE ESTABLISHED	DATE LAST READ
Cedar Wash	East	static, static	9/1/67, 10/2/68	8/25/92, 9/11/91
	West	upward, upward	9/16/81, 9/16/81	7/17/95, 7/17/95
Circle Cliffs	Lampstand	downward, downward	9/5/85, 9/6/85	7/24/95, 7/24/95
	Onion Beds	static, static	8/8/69, 9/5/85	7/25/95, 7/25/95
	Prospect	upward, upward	9/3/86, 9/3/86	9/20/96, 9/20/96
	White Flats	upward, static	9/9/87, 9/9/87	7/24/95, 7/24/95
Clark Bench	Bull Pasture	static, static	6/29/67, 7/25/68	6/14/96, 6/14/96
	Calf Spring Pasture	static, static	7/5/67, 7/26/68	6/14/96, 6/14/96
	West Clark Bench Pasture	static, static, static, static	6/29/67, 7/26/68, 7/5/67, 7/26/68	6/14/96, 6/14/96, 6/14/96, 6/14/96
Cottonwood	Brigham Plains	static, static, static, static, static, static	6/21/67, 7/24/68, 7/24/68, 7/24/68, 6/22/67, 7/24/68	8/15/96, 8/15/96, 8/15/96, 8/15/96, 8/15/96, 8/15/96
	Butler Valley	downward, static, upward, static, static, upward, static, static	8/3/70, 8/3/70, 8/30/70, 8/30/70, 7/31/70, 7/31/70, 8/3/70, 8/3/70	6/27/96, 6/27/96, 6/27/96, 6/27/96, 9/8/87, 6/27/96, 6/27/96, 6/27/96
	Gravelly Hills	static, downward, static, static	7/24/70, 7/24/70, 7/24/70, 7/24/70	6/27/96, 6/27/96, 7/17/96, 7/17/96
	North Coyote	downward, static	6/20/67, 7/10/68	7/17/96, 7/17/96
	Wiggle Rim	static, static, static, static	10/6/66, 7/2/67, 6/21/67, 7/10/68	6/14/96, 6/14/96, 6/14/96, 6/14/96
Coyote	Fivemile	downward, downward, downward, upward	6/28/67, 7/22/68, 6/27/67, 7/22/68	7/9/96, 7/9/96, 7/9/96, 7/9/96
	Sand Gulch	downward, downward, downward, downward, downward, downward	6/26/67, 7/22/68, 6/26/67, 7/22/68, 6/27/67, 7/22/68	7/9/96, 7/9/96, 7/9/96, 7/9/96, 7/9/96, 7/9/96
	South Coyote	static, static, static, static, upward, no data, no data, static	8/18/93, 7/2/68, 6/13/67, 7/17/68, 6/15/67, no date, 8/16/93, 7/17/68	8/5/96, 8/5/96, 8/5/96, 8/5/96, 8/14/96, 8/14/96, 8/5/96, 8/5/96
	White Sands	upward, upward, upward, upward, static, static	6/15/67, 7/17/68, 6/13/67, 6/13/67, 6/23/67, 7/11/68	8/15/96, 8/15/96, 8/15/96, 8/15/96, 8/14/96, 8/14/96
Death Hollow	Death Hollow	upward, downward	9/9/82, 9/9/82	9/14/88, 9/14/88
Deer Creek	Brigham Tea	unknown	6/24/83	6/24/83
	Cottonwood	unknown	4/8/83	4/8/83
	Wolverine	unknown	4/5/83	4/5/83
Deer Range	Deer Range	static	8/21/89	6/30/93
Deer Spring Point	Crawford Bench	static	1981	1997
	Deer Spring Point	static	1959	1997
	Deer Spring Point Seeding	static	1968	1997
Dry Valley	Dry Valley	static, static, static	9/8/83, 9/8/83, 9/8/83	6/6/96, 6/6/96, 6/6/96

APPENDIX 23 - ALLOTMENT TREND

ALLOTMENT	PASTURE	TREND	DATE ESTABLISHED	DATE LAST READ
First Point	Middle	downward	1967	1992
	North	downward	1967	1992
	South	downward	1967	1992
Ford Well	Ford Well	static, no data	1982, 1959	1989, 1982
Fortymile Ridge	West	static, downward, upward	8/26/68, 8/23/68, 8/3/81	8/11/97, 8/11/97, 8/21/97
	East	downward, downward	8/29/88, 7/31/81	8/19/97, 8/19/97
	Middle	static, static	8/23/68, 9/81	8/11/97, 8/11/97
	Big Hollow	downward, downward	8/28/67, 8/30/97	8/6/97, 8/6/97
	Red Well	static, downward	8/31/67, 8/3/67	8/19/97, 8/6/97
Haymaker	Haymaker	no data		
Headwaters	Headquarters	static, static, upward, static, static	10/13/83, 10/13/83, 10/13/83, 8/24/60, 8/24/60	8/27/96, 8/27/96, 8/27/96, 8/29/96, 8/27/96
	Fourmile	static	8/24/60	8/29/96
King Bench	Bench	downward, downward	1970, 1970	1996, 1996
	Horse	upward, static	1970, 1970	1995, 1995
Lake	Lake	static	1968	1993
	Navajo	static	1967	1995
	Spencer	static	1968	1993
	Steer	static	1968	1994
Last Chance	Summer	static, upward, upward, static	9/9/69, 9/9/69, 9/9/69, 9/9/69	9/21/93, 9/20/95, 8/29/95, 9/21/93
	Winter	static, downward, downward	9/22/83, 8/29/86, 9/22/83	9/19/95, 9/19/95, 10/2/90
Little Bowns	Little Bowns	static	1970	1997
Lower Cattle	Lower Cattle	static, static, downward, static	8/1/87, 8/2/67, 8/1/67, 8/2/67	7/9/97, 8/9/88, 7/9/97, 8/9/88
	Sunset Flat Exclosure	no data	6/01/77	2/27/78
Lower Hackberry	Lower Hackberry	upward, static, upward, no data, no data	7/13/82, 7/13/82, 7/13/82, 6/16/97, 6/16/97, 6/16/97	9/16/96, 9/16/96, 9/16/96, 6/16/97, 6/16/97, 6/16/97
McGath Point	McGath Point	unknown	9/23/88	9/23/88
Mill Creek	Mill Creek	static	1959	1989
Moody	Moody	unknown, static	9/8/82, 9/8/82	9/8/82, 9/19/88
Mud Springs	Mud Springs	no data	1981, 1981	1995, 1995
Nipple Bench	Tibbet	static, static, static	9/18/69, 9/18/69, 9/24/82	7/26/96, 7/24/96, 7/26/96
	Nipple	upward, upward, static, static, static, upward, downward, static	9/18/69, 9/18/69, 9/23/82, 9/19/69, 9/19/69, 9/23/82, 9/19/69, 9/19/69	7/26/96, 7/26/96, 7/26/96, 7/26/96, 7/26/96, 7/26/96, 7/26/96, 7/26/96

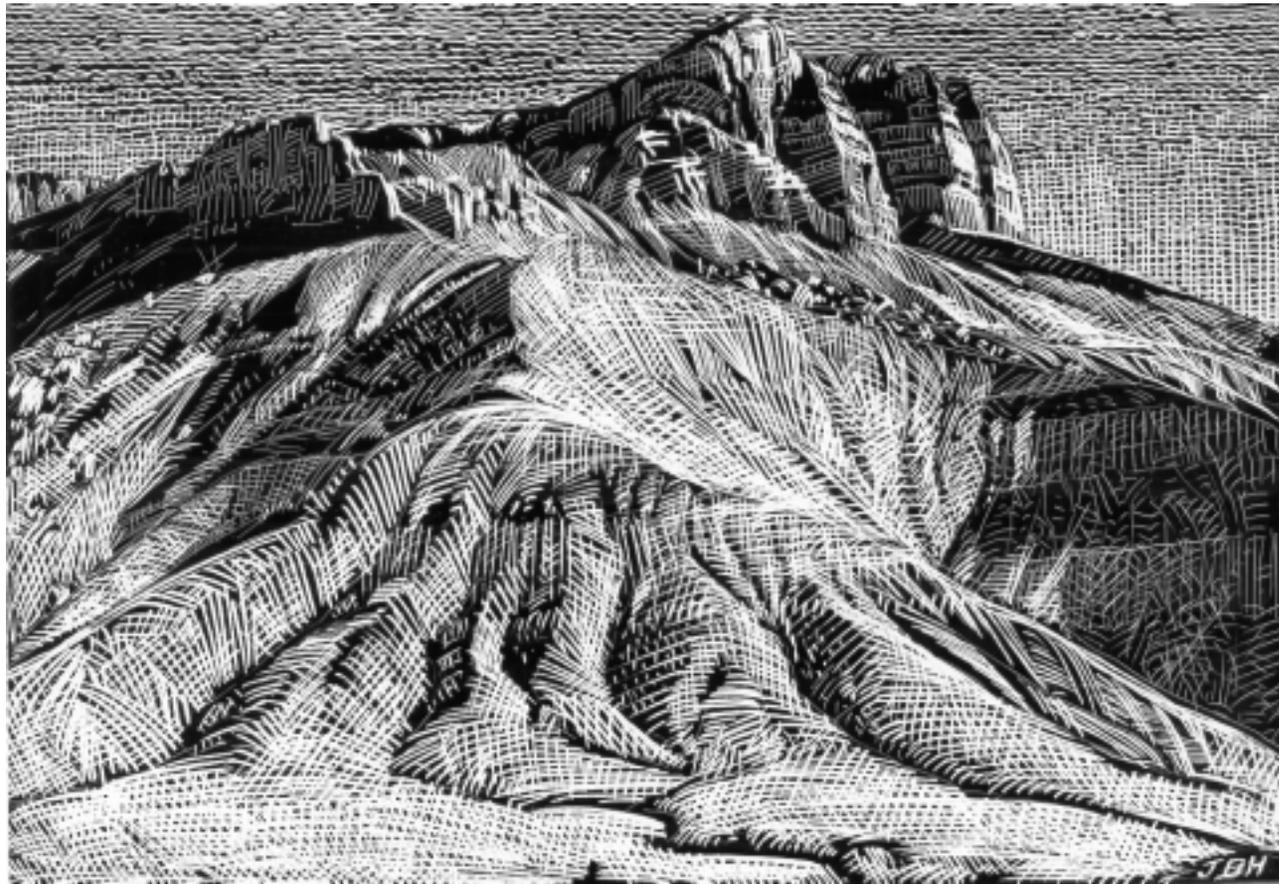
APPENDIX 23 - ALLOTMENT TREND

ALLOTMENT	PASTURE	TREND	DATE ESTABLISHED	DATE LAST READ
Phipps	Lower River	unknown	1/13/84	1/13/84
	Phipps	static	9/8/83	9/7/93
Pine Point	Cutler Point	upward, no data, no data	1981, 1969, 1968	1991, 1980, 1980
	Pine Point	static, no data, no data	1988, 1968, 1968	1991, 1969, 1980
Round Valley	Round Valley	upward, static, upward	9/8/83, 9/8/83, 9/8/83	7/12/95, 7/12/95, 7/12/95
Salt Water Creek	Salt Water Creek	unknown	9/23/88	9/23/88
Second Point	Canyon	static	1971	1989
	Top	static	1969	1989
Soda	Bench	static	1987	1994
	Carcass	downward, downward, downward	1967, 1967, 1982	1995, 1995, 1995
	Hole-in-the-Rock	static	1971	1992
	Soda	downward, downward	1971, 1971	1996, 1996
Steep Creek	Steep Creek	no data		
Swallow Park	Bulrush Hollow	downward	1968	1995
	Dry Valley	no data		
	Dunham Flat	downward	1969	1995
	Mud Point	downward	1968	1995
	Park Wash	no data		
	Podunk	downward	1982	1995
Timber Mountain	Timber Mountain	upward, upward	1982, 1959	no date, 1982
Upper Cattle	Seep Flat	static, static, static	8/1/68, 8/1/68, 7/27/67	9/12/90, 9/12/90, 9/12/90
	Allen Dump	downward, upward, static, upward	9/3/68, 7/31/67, 8/29/67, 9/5/67	8/23/95, 8/23/95, 8/23/95, 9/23/95
Upper Hackberry	North Jodi Point	upward, upward, upward	9/17/69, 9/17/69, 9/17/69	8/13/96, 8/13/96, 8/13/96
	Middle Jodi Point	upward, upward, static	9/17/69, 7/13/82, 7/13/82	8/13/96, 9/16/96, 9/16/96
	Johnson Hole	static	7/13/82	9/16/96
Upper Paria	Between the Creeks	downward, downward	8/4/70, 8/4/70	7/25/89, 7/25/89
	Bulldog	static, static	8/13/70, 8/13/70	9/17/87, 9/17/87
	Indian Hollow	downward, static	7/31/68, 8/7/68	9/14/68, 9/14/87
	Jim Hollow	downward	8/8/68	9/14/87
	Lower Coal Bench	upward	9/4/69	9/10/87
	Lower Jim Hollow	downward	8/8/68	9/14/87
	Sheep Creek	static, static, static	9/1/72, 8/7/68, 8/7/68	9/17/87, 9/15/87, 9/15/87

APPENDIX 23 - ALLOTMENT TREND

ALLOTMENT	PASTURE	TREND	DATE ESTABLISHED	DATE LAST READ
Upper Paria	Upper Coal Bench	static	7/30/68	9/10/87
	Willis Creek	static, static, downward, static	8/5/70, 8/5/70, 8/5/70, 8/5/70	8/29/88, 7/27/89, 7/27/89, 7/27/89
Upper Warm Creek	Ahlstrom Point	static, static, static, static, static, upward, no data, static, upward, upward, static, static, static, upward, upward	7/20/67, 7/20/67, 7/18/67, 7/18/67, 7/20/67, 7/16/68, 10/18/83, 8/6/70, 8/6/70, 9/21/81, 7/20/67, 7/17/68, 7/18/67, 7/15/68, 9/23/81	9/9/96, 9/9/96, 9/9/96, 9/9/96, 10/18/83, 10/18/83, 10/18/83, 7/9/96, 7/9/96, 7/9/96, 7/24/80, 7/24/80, 9/25/93, 9/25/93, 7/25/93,
	Heads of Creek	upward, upward, upward, upward, upward, static, static, static, upward, upward, upward, static, no data, no data	7/21/67, 7/16/68, 9/23/81, 7/21/67, 7/16/68, 9/23/81, 7/8/69, 7/8/69, 7/8/69, 7/8/69, 6/24/70, 6/24/70, no date, no date	9/23/96, 9/23/96, 9/23/96, 8/21/96, 8/21/96, 8/21/96, 9/23/96, 9/23/96, 9/23/96, 9/23/96, 9/23/96, 9/23/96, 7/26/96, 7/26/96
Wagon Box	Wagon Box	static, downward	9/3/81, 9/7/82	9/19/88, 9/19/88
Wahweap	Snow Bench	static, static	8/14/70, 8/14/70	9/27/94, 9/27/84
	Sit Down Bench	upward, static, static	8/13/70, 8/13/70, 9/22/81	9/27/94, 9/27/94, 9/27/94
	Wahweap Bottom	static, upward, upward	8/13/70, 8/13/70, 9/22/81	10/26/94, 10/26/94, 10/26/94
	Smith Run	downward, downward, static	8/14/70, 8/14/70, 9/22/81	9/27/94, 9/27/94, 9/27/94
White Rock	White Rock	static	1970	1979
Willow Gulch	Willow Gulch	static, static	1983, 1983	1993, 1992

Glossary



GLOSSARY

ACRE-FOOT: The volume (as of irrigation water) that would cover 1 acre to a depth of 1 foot (43,560 cubic feet).

ACTIVE PREFERENCE: The total number of animal unit months of forage that can be licensed.

ADIT: A nearly horizontal passage from the surface by which a mine is entered.

AGATE: A kind of silica consisting mainly of chalcedony in variegated bands or other patterns.

AIR QUALITY: A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

AIR QUALITY CLASS I AND II AREAS: Regions in attainment areas where maintenance of existing good air quality is of high priority. Class I areas are those that have the most stringent degree of protection from future degradation of air quality, such as National Parks. Class II areas permit moderate deterioration of existing air quality, such as lands administered by the Bureau of Land Management (BLM).

ALABASTER: Compact, fine-grained gypsum, white or shaded. Used for

ornamental vessels, figures, and other carving.

ALGAE: Class of thallophytes, includes single-celled plants and common seaweeds.

ALLOCATION: Process to specifically assign use between and ration among competing users for a particular area of public land or related waters.

ALLOTMENT: An area allocated for livestock use by one or more qualified grazing permittees including prescribed numbers and kinds of livestock under one plan of management.

ALLOTMENT MANAGEMENT PLAN

(AMP): A written program of livestock grazing management including supportive measures, if required. An AMP is designed to attain specific management goals in a grazing allotment and is prepared cooperatively with the permittee(s) or lessee(s).

ALL-TERRAIN VEHICLE (ATV): All-terrain vehicle - 42" width or smaller. A small, amphibious motor vehicle with wheels or tractor treads for traveling over rough ground, snow, or ice, as well as on water.

ALLUVIAL DEPOSIT: Sedimentary matter, such as sand and mud, deposits by

flowing water, generally of comparatively recent times.

ALLUVIAL FAN: A cone-shaped deposit of alluvium made by a stream where it runs out onto a level plain or meets a slower stream.

ALTERNATIVE: One of at least two proposed means of accomplishing planning objectives.

ANALYSIS: The examination of existing and/or recommended management needs and their relationships to discover and display the outputs, benefits, effects, and consequences of initiating a proposed action.

ANIMAL UNIT MONTH (AUM): The amount of forage required to sustain the equivalent of 1 cow for 1 month; 1 wild horse for 1 month; or 5 sheep for 1 month; 8.9 deer for 1 month (winter season), 5.8 deer for 1 month (summer season); 9.6 antelope for 1 month; 5.5 bighorn sheep for 1 month; 2.2 burros for 1 month; 1.2 elk for 1 month (winter season) or 2.1 elk for 1 month (yearlong) (usually 800 lbs. of useable air-dried forage).

ANTICLINE: A fold that is convex upward or had such an attitude at some stage of development. A geological upfold opening downward.

GLOSSARY

AQUATIC: Living or growing in or on the water.

AQUIFER: Stratum or zone below the surface of the earth capable of producing water, as from a well. A saturated bed, formation, or group of formations which yield water in sufficient quantity to be of consequence as source of supply. An aquifer acts as a transmission conduit and storage reservoir.

ARCH: A natural opening through a narrow wall or plate of rock.

ARCHAEOLOGY: The scientific study of the life and culture of past, especially ancient, peoples, as by excavation of ancient cities, relics, artifacts, etc.

AREA OF CRITICAL ENVIRONMENTAL CONCERN

(ACEC): An area of public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life/provide safety from natural hazards.

BADLAND: A region nearly devoid of vegetation where erosion has cut the land into an intricate maze of narrow ravines, and sharp

crests and pinnacles, instead of curving hills and valleys of the ordinary type.

BEDLOAD: Soil, rock particles, or other debris rolled along the bottom of a stream by the moving water, as contrast with the “silt load” carried in suspension .

BEDROCK: The solid rock exposed at the surface of the earth or overlain by unconsolidated material such as sand, gravel, clay, or soil.

BIODIVERSITY: The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

BITUMEN: Any of various mixtures of hydrocarbons such as asphalt, tar, or petroleum.

BRACHIOPOD: A marine, shelled animal with two unequal shells or valves each of which normally is bilaterally symmetrical.

BUTTE: An isolated hill rising abruptly above the surrounding land.

CALCAREOUS: Containing calcium carbonate.

CALICHE: Carbonate-rich horizons developed in soils of semiarid and arid regions. Pedologists call these soil accumulations Bk and K horizons, and these are preferable to the terms caliche or calcrete.

CENOMANIAN-SANTONIAN AGES: Span of geologic ages including Cenomanian, Turonian, Coniacian, and Santonian during Late Cretaceous time, 98 to 84 million years ago.

CEPHALOPOD: A member of the most highly developed class of mollusks that swim by ejecting a jet of water from the mantle cavity through a muscular funnel. Most of those preserved as fossils had straight to symmetrically coiled shells divided into chambers by transverse septa.

CLINKER: Slaggy or vitreous masses of coal ash. Clinkers form the area of naturally burning coal fires and are later exposed by erosion.

COMMUNITY PIT: A mineral materials pit established by the Bureau of Land

GLOSSARY

Management for use by local communities and individuals.

CONCESSIONAIRE: Someone who holds a long term authorization to possess and use public lands to provide recreation facilities and services for a fixed period of time authorized under BLM regulations.

CONCRETION: Spherical to elliptical nodules, harder than the surrounding rock, formed by accumulation of mineral matter (example - iron oxide) after deposition of sedimentary rock.

CONGLOMERATE: A cemented clastic rock containing rounded fragments corresponding in their grade sizes to gravel or pebbles.

CONSULTATION: A meeting to discuss, decide, or plan something.

CORAL: A bottom-dwelling, sessile, marine coelenterate; some are solitary individuals, but the majority grow in colonies; they secrete external skeletons of calcium carbonate.

CRINOID: A type of echinoderm consisting of a cup or “head” containing the vital organs, numerous radiating arms, an elongate, jointed stem, and roots by which it attached to the sea bottom while the body, stem, and arms float. Stems are the common part found as fossils.

CRYPTOBIOTIC CRUST: Composed of cyanobacteria, green and brown algae, mosses, and lichens that bind together with soil particles to create a crust.

CRYPTOGAM: A plant that bears no flowers or seeds but propagates by means of spores. Cryptogamic organisms make up a cryptogamic crust or surface on certain soils.

CUBIC FEET PER SECOND (cfs): As a rate of stream flow, a cubic foot of water passing a referenced section in 1 second of time. One cfs flowing for 24 hours will yield 1.983 acre-feet of water.

CULTURAL RESOURCES: Those resources of historical and archaeological significance.

CUMULATIVE IMPACTS: Additional and interactive combinations of activities that are not necessarily individually quantitatively different, but together require different management techniques and applications. Cumulative impacts occur when there are multiple infringements on the same values.

CYANOBACTERIA: Photosynthetic bacteria formerly called blue-green algae.

DIRT BIKE: Non-street legal motorcycle.

DORMANT: In a state of suspended animation; live but not actively growing.

DUNAL POCKET: Areas of limited extent that have collected eolian deposits of local weathering products, mainly of blowing sand. These are semi-stable and support locally adapted plant species.

EASEMENT: A right or privilege one may have on another’s land.

ECOSYSTEM: A system made up of a community of animals, plants, and bacteria and its interrelated physical and chemical environment.

ELIGIBLE RIVER SEGMENT: A section of a river that qualifies for inclusion into the National Wild and Scenic River System through determination that it is free-flowing and with its adjacent land area possessing at least one river-related value considered to be outstandingly remarkable.

ENDANGERED SPECIES: Any animal or plant species in danger of extinction throughout all of a significant portion of its range. These species are listed by the United States Fish and Wildlife Service.

ENDEMIC: A species restricted to a given geographical location and which are native to that locale.

GLOSSARY

EPHEMERAL STREAM: A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

EQUESTRIAN: Of horses, horsemen, or horseback riding.

EXCLUSION AREA: An environmentally sensitive area where rights-of-way would be granted only in cases where there is a legal requirement to provide such access.

FAULT: A geologic fracture or a zone of fractures along which there has been movement (off set) of one side relative to the other.

FAUNA: The animals of a specified region or time.

FLOODPLAIN: A plain along a river, formed from sediment deposited by floods.

FLORA: The plants of a specified region or time.

FORAGE: Vegetation of all forms available and of a type used for animal consumption.

FORMATION: The primary unit in stratigraphy consisting of a succession of strata useful for mapping or description. Most formations possess certain lithologic

features that may indicate genetic relationships.

FOSSIL: The remains or traces of animals or plants which have been preserved by natural causes in the earth's crust exclusive of organisms which have been buried since the beginning of historic times.

FOUR-WHEEL-DRIVE (4WD): Four-wheel-drive, differential transfer case disperses 50/50 front and rear displacement. Trucks, cars, buses, or sport utility vehicles with high clearance and the ability to operate off-pavement as well as on highways.

FUNCTIONING-AT-RISK: Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

GASTROPOD: Any if a large class of mollusks having one-piece, straight or spiral shells, as snails, limpets, etc.

GEOLOGY: The science which studies the Earth, the rocks of which it is composed, and the changes it has undergone or is undergoing.

GRAZING ALLOTMENT

CATEGORIES: Direction under which all grazing allotments are categorized for

management purposes into three groups. The overall objectives are: M-maintain the current resource conditions; I-improve the current resource conditions; and C-custodial manage the existing resource values.

GRAZING PERMIT: An authorization which allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types: preference (10 year) and temporary nonrenewable (1 year).

GRAZING PERMIT VALUE: BLM allocated animal unit months may be transferred from one operator to another. The dollar value given by one operator (buyer) to induce a present permit holder (seller) to transfer his permit is known as the "permit value" of an animal unit month. This "permit value" may have a significant bearing on the rancher's capital value.

GRAZING PREFERENCE: The total number (active and suspended non-use) of animal unit months of livestock grazing on public land apportioned and attached to base property owned or controlled by a permittee.

GRAZING SYSTEM: A prescribed method of grazing a range allotment having two or more pastures or management units to provide periodic rest for each unit.

GLOSSARY

GYPSUM: A common soft evaporite mineral (alabaster, selenite, satin spar) used to make plaster of Paris.

HABITAT: A specific set of physical conditions in a geographic area(s) that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

HANGING GARDEN: Small pockets of vegetative associations surrounding “canyon-wall” springs that often contain a wide variety of unique plant and insect species. Hanging gardens are characteristic of flat-lying strata with deeply incised canyons of the Colorado Plateau.

HOMOCLINE: A group of geological strata which have fairly regular dip in the same general direction.

HYDRAULIC: Operated, moved, or effected by means of water.

HYDROCARBON: An organic compound containing only hydrogen and carbon, such as petroleum or crude oil.

HYDROLOGY: The science dealing with the properties, distribution, and circulation of water.

ILMENITE: A mineral of the composition FeTiO_3 (iron-titanium-oxide), the principal mineral of titanium ore.

IMPACT: Synonymous with effects. Includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts may also include those resulting from actions which may have both beneficial and detrimental (adverse) effects. Impacts may be considered as direct, indirect, or cumulative:

C Direct: Impacts caused by an action an occurring at the same time and place.

C Indirect: Impacts caused by the proposed action and occurring later in time or farther removed in distance, but are still reasonably foreseeable.

C Cumulative: Those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

INHOLDING: A non-Federal parcel of land that is completely surrounded by Federal land.

INSTANT STUDY AREA (ISA): A designation of all primitive or natural areas formally identified prior to November 1, 1975, that were to be studied for wilderness

suitability and recommended to the President by July 1, 1980 as mandated under Section 603 of FLPMA.

INTERIM MANAGEMENT POLICY

(IMP): An interim measure governing lands under wilderness review. This policy protects Wilderness Study Areas from impairment of their suitability as wilderness.

INTERMITTENT STREAM: Seasonal stream. A 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.

INVERTEBRATE SPECIES: Any animal without a backbone or spinal column.

JASPER: Red, brown, green, impure, slightly translucent cryptocrystalline quartz with a dull fracture.

KIND OR CLASS OF LIVESTOCK:

C Kind: The species of domestic livestock-cattle and sheep.

C Class: The age class (i.e., yearling or cows) of a species of livestock.

KNOWN GEOLOGIC STRUCTURES:

Technically, the known geologic structure of a producing oil or gas field is construed by the Geological Survey to be the trap, whether

GLOSSARY

structural or stratigraphic, in which an accumulation of oil or gas has taken place, and the limits of said trap, irrespective of the degree to which it may be occupied by oil or gas. Known geologic structures are frequently much more extensive than the pools of oil or gas they may contain, and the extent and place of any oil or gas accumulation therein, though influenced by structure, is finally determined by such factors as stratigraphy, hydrocarbon supply, sand conditions, and hydrostatic pressure. The Geological Survey seeks to evaluate the net effect of these several factors in terms of reasonably presumptive productive acreage and, as far as practicable, to conform the results, modified to include a fair safety margin, to the subsurface contours of the dominant structural feature involved.

LAND USE PLAN: A plan that reflects an analysis of activity systems and a carefully studied estimate of future land requirements for expansion, growth control, and revitalization or renewal. The plan shows how development in the area should proceed in the future to insure the best possible physical environment for living, the most economic and environmentally sensitive use of land, and the proper balance in use from a cost revenue point of view. The land use plan embodies a proposal as to how land should be used in the future, recognizing local objectives and generally accepted principals

of health, safety, convenience, economy, and general living amenities.

LEASE: An authorization or contract by which one party (lessor) conveys the use of property, such as real estate, to another (lessee) in return for rental payments. In the case of oil, gas, and coal leases in the Monument, the U.S. Department of Interior or the Utah School and Institutional Trust Lands Administration are lessors and have conveyed the right to explore and develop these resources to corporations or individuals on various land tracts. In addition to rental payments, lessees also pay royalties (a percentage of value) to the lessor from resource production.

LEASABLE MINERAL: A mineral such as coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources, and all other minerals that may be developed under the Mineral Leasing Act of 1920, as amended.

LENTICULAR: Having the shape of a convex lens. In geological descriptions, lenticular is used to describe the shapes of certain bodies of rocks or minerals enclosed by contrasting rock.

LICHEN: Any of various small plants composed of a particular fungus and a particular algae growing in an intimate symbiotic association and forming a dual

plant, commonly adhering in colored patches of sponge-like branches to rock, wood, soil, etc.

LIMESTONE: A bedded sedimentary deposit consisting chiefly of calcium carbonate (CaCO_3).

LIVERWORT: Any of the plants of two classes of bryophytes, often forming dense, green, moss-like mats on logs, rocks, or soil in moist places.

LOCATABLE MINERAL: Any valuable mineral that is not saleable or leasable including gold, silver, copper, uranium, etc., that may be developed under the General Mining Law of 1872.

MAGNETITE: One of the most widespread oxide minerals with the general formula Fe_3O_4 (iron oxide) found in a number of geological environments including sand grains in beach or river deposits. Magnetite is magnetic with some forms (lodestone) showing polarity.

MESA: A flat-topped mountain or plateau bounded on at least one side by a steep cliff.

METALLIC-MINERAL: A mineral containing one or more metals such as copper [malachite - $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$], lead [galena - PbS], or zinc [sphalerite - $(\text{Zn,Fe})\text{S}$].

GLOSSARY

MIGRATORY: A group of people, or of birds, fishes, or plants that move from one region to another with the change of seasons or climate.

MINERAL ENTRY: The location of mining claims by an individual to protect his/her right to a valuable mineral.

MINERAL MATERIALS: Refer to saleable minerals.

MINERAL POTENTIAL:

C High: Those lands currently producing oil or gas or having high current industry interest.

C Moderate: Those lands which have had oil and gas shows in favorable geologic environments.

C Low: Those lands where either the geologic environment appears to be favorable for the accumulation of oil and gas, or where little or no information is available to evaluate the oil and gas potential.

MINERAL WITHDRAWAL: A withdrawal for public lands which are potentially valuable for leasable minerals. This precludes the disposal of the lands except with a mineral reservation, or unless the lands are found to not be valuable for minerals.

MINIMUM IMPACT FILMING: A filming activity which does not involve:

C impact to sensitive habitat or species

C impact to Native American Indian sacred rites

C use of explosives or major use of pyrotechnics

C more than minimum impacts to land, air, or water

C use of exotic species with danger of introduction into the area

C adverse impacts to sensitive surface resources including historic, cultural, or paleontological sites; sensitive soils; relict environments; wetlands or riparian areas; or ACECs

C use of heavy equipment

In addition, if filming activity is proposed to occur in a Wilderness Study Area, Wild and Scenic River corridor, HR 1500 area, or National Historic Register Site, to be “minimum impacting”, none of the following can occur:

C use of vehicles off designated routes

C set construction

C significant restriction of public access

C significant use of domestic livestock

C aircraft taking off, landing, or flying less than 1,000 feet above the site

C 15 or more production vehicles, or 75 or more people

C continue in excess of 10 days

MITIGATING MEASURES: Constraints, requirements, or conditions imposed to reduce the significance of or eliminate an anticipated impact to environmental, socioeconomic, or other resource value from a proposed land use. Committed mitigating measures are those measures BLM is committed to enforce (i.e., all applicable laws and their implementing regulations).

MOLLUSK: A member of the phylum of invertebrate animals which includes the gastropods, pelecypods (bivalves), cephalopods, etc.

MONAZITE: A widespread rare-earth mineral containing thorium [(Ce,La,Y,Th)PO₄], which is commonly found in igneous and metamorphic rocks and sedimentary deposits derived from them.

MONOCLINE: A step-like bend in otherwise horizontal beds.

MOSS: Any of various classes of very small, green bryophytes having stems with leaflike structures and growing in velvety clusters on rocks, trees, moist ground, etc.

MOUNTAIN BICYCLE: Bicycle designed for off-pavement use. Generally are multi-gear with fat knobby tires. Frames and tire

GLOSSARY

rims are stronger than road bicycles. Sometimes referred to in this document as a mechanized vehicle.

NATIONAL WILD AND SCENIC RIVERS SYSTEM: Established by the Wild and Scenic Rivers Act of 1958 to protect rivers and their immediate environments that have outstanding scenic, recreation, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in free-flowing conditions. The system provides for the designation of three types of rivers:

C Recreation: Rivers or sections of rivers readily accessible by road or railroad that may have some development along their shorelines and may have undergone some impoundment or diversion in the past.

C Scenic: Rivers or sections of rivers free of impoundments, with shorelines or watersheds still largely undeveloped, but accessible in places by road.

C Wild: Rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with essentially primitive watersheds or shorelines and unpolluted waters.

NATURALNESS: An area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." (Section 2c, WILDERNESS ACT).

NON-FUNCTIONING: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows.

NONVASCULAR PLANT: Plants that do not have specialized tissues for conducting water and synthesizing foods, as any moss or liverwort.

OFF-HIGHWAY VEHICLES (OHV): Any motorized vehicle designed for or capable of cross-country travel over lands, water, sand, snow, ice, marsh, swamp-land, or other terrain.

OFF-HIGHWAY VEHICLE DESIGNATIONS:

C Open: Designated areas and trails where OHVs may be operated.

C Limited: Designated areas and trails where the use of an OHV is subject to restrictions, such as limiting the dates and times of use (seasonal restrictions); limiting use to designated roads and trails; limiting use to existing roads and trails. Combinations of restrictions are possible.

C Closed: Designated areas, roads, and trails where the use of an OHV is permanently or temporarily prohibited. Emergency use of vehicles is allowed.

OUTCROPPING: The exposure of bedrock or strata projecting through the overlying cover of detritus and soil.

OUTSTANDING: Standing out among others of its kind; distinguished; excellent.

OUTSTANDING NATURAL AREA (ONA): These are established to preserve scenic values and areas of natural wonder. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas, and public use facilities are normally located on the periphery of the area. The public is encouraged to walk into the area for recreation purposes wherever feasible.

PALEONTOLOGY: The branch of geology that deals with life forms from the past, especially prehistoric life forms, through the study of plant and animal fossils.

PELECYPOD: Mollusks distinguished by a calcareous two-valve shell (clams). Also called bivalves.

PERCHED WATER TABLE: Water table above an impermeable bed underlain by unsaturated rocks of sufficient permeability to allow movement of ground water.

PERENNIAL STREAM: A Stream that flows continuously. Perennial streams are

GLOSSARY

generally associated with a water table in the localities through which they flow.

PERMIT: A short-term, revocable authorization to use public lands for specific purposes.

PERMITTEE: (Livestock Operator) A person or organization legally permitted to graze a specific number and class of livestock on designated areas of public land during specified seasons each year.

PETRIFIED WOOD: Fossilization of wood through introduction or replacement by silica (silicified wood) in such a manner that the original form and structure of the wood is preserved.

PHYSIOGRAPHIC REGION: Region of similar geologic structure and climate with a unified history of land formation.

PLACER DEPOSIT: A mass of gravel, sand, or similar material derived from weathering and erosion of bedrock. These masses often contain heavy mineral grains concentrated due to the action of water.

PLATEAU: An elevated, relatively flat region commonly limited on at least one side by an abrupt descent to lower land.

POTENTIOMETRIC SURFACE: A ground-water term relating to the contoured (mapped) surface showing the distribution of hydraulic head within a particular aquifer. In an unconfined aquifer, the potentiometric surface is the water table. In a confined aquifer the potentiometric surface illustrates how high water would rise in wells that penetrate the aquifer.

PRESCRIBED FIRE: Controlled application of fire to natural fuels under conditions of weather, fuel moisture, and soil moisture that will allow confinement of the fire to a predetermined area and, at the same time, will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives to wildlife, livestock, and watershed values. The overall objectives are to employ fire scientifically to realize maximum net benefits at minimum environmental damage and acceptable cost.

PREY SPECIES: An animal taken by a predator as food.

PROPERLY FUNCTIONING

CONDITION (PFC): Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment; capture bedload, and aid floodplain

development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.

RANGELAND IMPROVEMENTS: Any activity or program on or relating to rangelands that is designed to improve forage production, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, and enhance habitat for livestock, wildlife, and wild horses and burros. Rangeland improvements include land treatments (e.g., chaining, seeding, burning, etc.), stockwater developments, fences, and trails.

RAPTORS: Birds of prey, such as the eagle, falcon, hawk, owl, or vulture.

RECLAMATION: (1) The process of restoring land disturbed as a result of some human activity to nearly its original state through contouring and seeding. (2) A type of withdraw in which public lands are or may be needed in connection with the construction and maintenance of a water development or

GLOSSARY

irrigation project of the Bureau of Reclamation.

RECREATION AND PUBLIC PURPOSES ACT (R&PP): The Act of June, 1926, as amended (43 U.S.C. 869,869-4). Allows the disposal of public lands to any state, local, federal, or political instrumentality or nonprofit organization for any recreational or public purpose, at the discretion of the authorized officer.

RECREATION OPPORTUNITY SPECTRUM (ROS) CLASSES: See Appendix 20 for a description of ROS classes.

RELICT PLANT COMMUNITY: Areas of plants that have persisted despite the pronounced warming and drying of the interior west over the last few thousand years and/or have not been influenced by settlement and post-settlement activities.

RESEARCH NATURAL AREA (RNA): A natural area established and maintained for research and education, which may include: C typical or unusual plant or animal types, associations, or other biotic phenomena C characteristic or outstanding geologic, soil, or aquatic features or processes. The public may be excluded or restricted from such areas to protect studies.

RIGHT-OF-WAY: The Federal land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a ROW authorization.

RIPARIAN HABITAT: Riparian habitat is defined as an area of land directly influenced by permanent (surface of subsurface) water. They have visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream-banks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

RIPARIAN VEGETATION: Plants adapted to moist growing conditions along streams, waterways, ponds, etc.

RIP-RAP: A placement of stone, rock, or similar material that is placed on an embankment slope in order to prevent or arrest erosion

ROUTE: A path, way, trail, road, or other established travel corridor.

RUTILE: A titanium mineral [TiO₂] widespread as an accessory in igneous and metamorphic rocks. It is also common in beach sands.

SALEABLE MINERALS: Minerals that may be sold under the Material Sale Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay.

SANDSTONE: A cemented or otherwise compacted detrital sediment composed predominantly of sand-grade size quartz grains.

SEASON-OF-USE: The time of livestock grazing on a rangeland area.

SEDIMENTARY: Descriptive term for rocks formed of sediment. This includes clastic rocks such as conglomerate, sandstone, and shale formed from fragments of other rocks transported by the action of wind or water from their source. The term also includes rocks formed by inorganic precipitation from solution such as gypsum and limestone, or from secretions from living organisms as in the case of some limestone.

SEDIMENTOLOGICAL: Refers to the study of sedimentary rocks (sedimentology) and the processes by which they are formed.

SENSITIVE SPECIES: Species not yet officially listed but that are undergoing status review for listing on the Fish and Wildlife Service official threatened and endangered list; species whose populations are small and widely dispersed or restricted to a few

GLOSSARY

localities; and species whose numbers are declining so rapidly that official listing may be necessary.

SEPTARIAN NODULES: A type of concretion in sedimentary rocks consisting of an irregular polygonal system of internal cracks, which are most always occupied by calcite or other minerals.

SILICATE: A group of minerals in which the crystal lattice contains SiO₄ (silicon-oxygen) tetrahedra either isolated or joined by one or more of the oxygen atoms to form groups, chains, sheets, or 3-D structures.

SILTSTONE: A very fine-grained, clastic rock composed predominantly of particles of silt grade.

SPECIAL STATUS SPECIES: Wildlife and plant species either Federally listed or proposed for listing as endangered or threatened; state-listed or BLM determined priority species.

STRATA: The plural form of stratum, which is a single sedimentary layer or bed, regardless of thickness.

STRATIGRAPHY: The branch of geology which treats the formation, composition, sequence, and correlation of stratified rocks as part of the Earth's crust.

STRATUM: A single sedimentary bed or layer, regardless of thickness.

STREET LEGAL MOTORCYCLE: Utah law defines this as a motorcycle which has a tail light, headlight, turn signal, and is registered.

SUBSTRATA: Layers of earth or rock lying beneath soil or other layers (strata).

SURFICIAL DEPOSIT: Unconsolidated, residual alluvial or glacial deposits lying on bedrock.

SUSPENDED: Term used when describing an administrative state of mining operations or oil, gas, and mineral leases, whereby the operation or lease is "suspended" or on standby while an administrative action is contemplated. When mineral leases are suspended, the lessee cannot explore, develop, or otherwise enjoy the benefits of the lease. Also, the term (time period) of the lease is suspended.

SYNCLINE: A geological downfold opening upward.

TAR SAND: A commonly used name to describe a sedimentary rock reservoir impregnated with a very heavy, viscous crude oil which cannot be produced by conventional production techniques. Tar-sand infers a sandy sedimentary rock as the host, but this is not

always the case as other porous rocks such as siltstone and fractured carbonates have also been classified as tar-sand.

TAXONOMIC: The classification of biological organisms.

TERRESTRIAL: Growing or living on land rather than in water, in the air, in trees, etc.

THREATENED SPECIES: Any animal or plant species likely to become endangered within the foreseeable future throughout all of a significant portion of its range. These species are listed by the FWS.

TINAJAS: Surface depressions in rock formations, particularly sandstone, that collect water and provide habitat for specialized plant and animal species.

TITANIUM: A gray, light and strong metallic chemical element used in metal alloys. Alloys of titanium are used in aerospace and other applications where high strength-to-weight ratios are required.

TOPOGRAPHY: The accurate and detailed description of a place.

TOTAL DISSOLVED SOLIDS (TDS): The total quantity (reported in milligrams per liter) of dissolved materials in water.

GLOSSARY

TREND IN RANGE CONDITION: An interpretation of the direction of change in range condition. These determinations may relate to ecological site or forage conditions. Also vegetation trend that is improving (upward) not changing (static) and declining (downward).

TWO-WHEEL-DRIVE (2WD): Vehicle clearance generally lower than with a 4WD. Not designed to travel off-pavement.

UTILITY: A service provided by a public utility, such as electricity, telephone, or water.

VANADIUM: A soft, ductile chemical element used to form iron and steel alloys.

VEGETATION TREATMENT: Changing the characteristics of an established vegetation type for the purpose of improving rangeland forage or wildlife habitat resources. Treatments are designed for specific areas and differ according to the area's suitability and potential. The most common land treatment methods alter the vegetation by chaining, spraying with pesticides, burning, and plowing, followed by seeding with well adapted desirable plant species.

VERTEBRATE SPECIES: Any animal with a backbone or spinal column.

VISITOR DAY: Twelve visitor hours which may be aggregated by one or more persons in single or multiple visits.

VISITOR USE: Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES: Management classes are determined on the basis of overall scenic quality, distance from travel routes, and sensitivity to change.

C Class I: Provides primarily for natural ecological changes only. It is applied to wilderness areas, some natural areas, and similar situations where management activities are to be restricted.

C Class II: Changes in the basic elements caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the existing character.

C Class III: Changes in the basic elements caused by a management activity may be evident in the characteristic landscape, but the changes should remain subordinate to the visual strength of the existing character.

C Class IV: Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.

WATERSHED: All land and water within the confines of a drainage divide.

WETLANDS: Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

WILD AND SCENIC RIVERS: See National Wild and Scenic River System.

WILDERNESS AREA: An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to "the public purposes of recreation, scenic, scientific, educational, conservation, and historical use."

WILDERNESS STUDY AREA (WSA): Areas under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

WILDFIRE: A free-burning fire requiring a suppression response.

WITHDRAWAL: Removal or "withholding" of public lands from operation of some or all of the public land laws (settlement, sale, mining, and/or mineral leasing). An action which restricts the use or disposal of public lands, segregating the land from the operation of some or all of the public

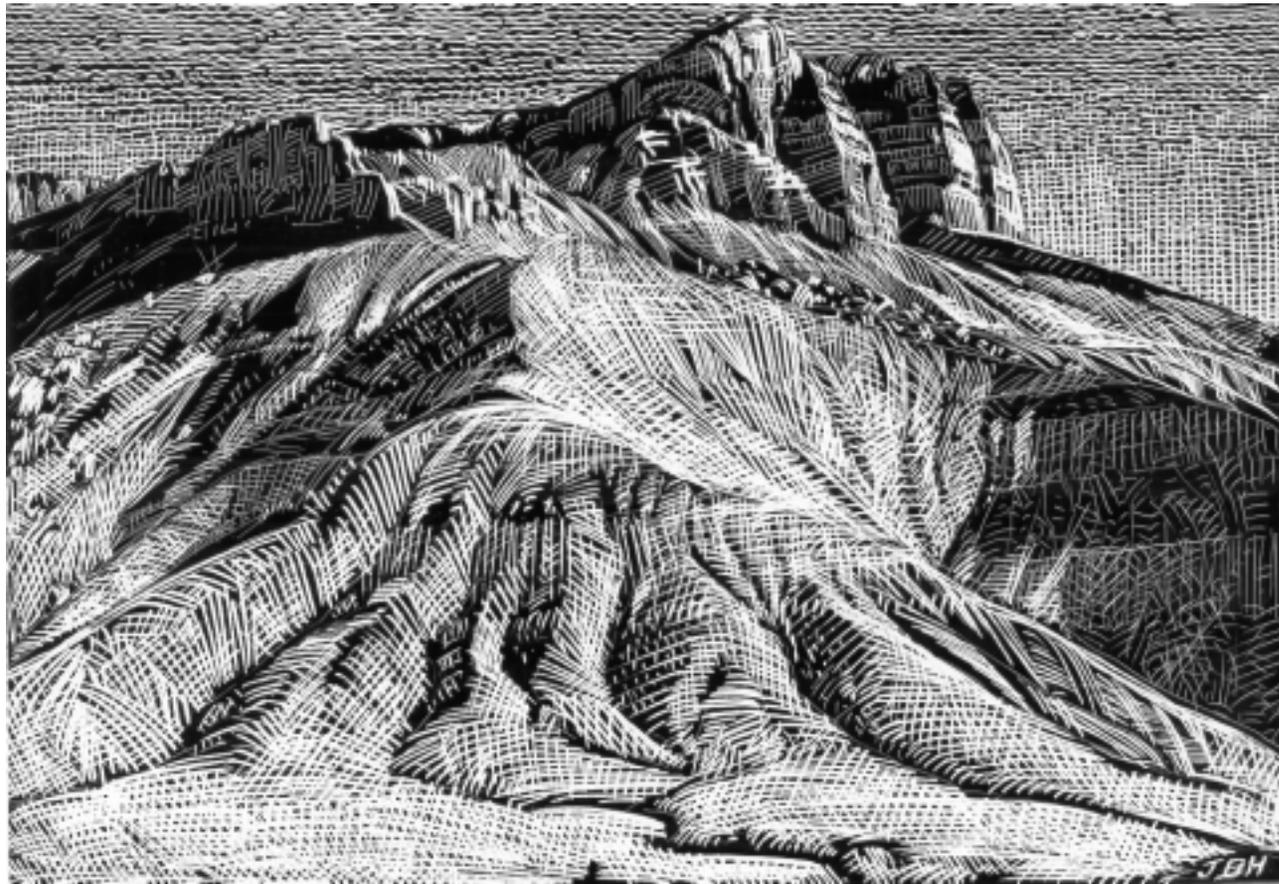
GLOSSARY

land and/or mineral laws and holding it for a specific public purpose. Withdrawals may also be used to transfer jurisdiction of management to other Federal agencies.

WOODLAND: Forest lands stocked with other than timber species (i.e., piñon, juniper, mountain mahogany, etc.). Uses of the woodland products are generally limited to firewood, posts, and harvest of piñon pine nuts.

ZIRCON: A mineral [$ZrSiO_4$] used as a refractory and as the gem, hyacinth. The chief ore-mineral of zirconium, and a common accessory mineral in igneous rocks. Because zircon is resistant to mechanical and chemical weathering, it can occur as a detrital (sand grains) mineral in river and beach sands.

References



REFERENCES

- Albee, Beverly J., Leila M. Schultz, Sherel Goodrich. 1988. *Atlas of the Vascular Plants of Utah*. Salt Lake City: Utah Museum of Natural History.
- Allin, D.L. 1993. Upper Valley, in Hill, B.G., and Bereskin, S.R., editors, Oil and gas fields of Utah: *Utah Geological Association Publication 22*, non-paginated.
- Atwood, N. Duane, Clyde L. Pritchett, Richard D. Porter and Benjamin W. Wood. 1980. Terrestrial Vertebrate Fauna of the Kaiparowits Basin. *Great Basin Naturalist* Vol. 40, No. 4 (December 1980): 303.
- Atwood, N.D., J. Holland, R. Bolander, M.A. Franklin, D.E. House, V.A. Armstrong, K.H. Thorne, J.L. England. 1991. *Utah threatened, endangered, and sensitive plant field guide*. USDA Forest Service, Intermountain Region, Ogden, UT.
- Baker, A.A., Duncan, D.C., and Hunt, C.B. 1952. Manganese deposits of southeastern Utah: *U.S. Geological Survey Bulletin* 979-B., 157 p.
- Barneby, R.C. 1989. *Intermountain Flora*, vol. 3B: Fabales. Bronx: New York Botanic Garden. 279 pp.
- Belnap, J. K.T. Harper, and S.D. Warren. 1994. *Surface disturbance of cryptobiotic soil crusts: nitrogenase activity, chlorophyll content, and chlorophyll degradation*. Arid Soil Research and Rehabilitation.
- Betencourt, J. 1984. Late Quaternary plant zonation and climate in southeastern Utah. *Great Basin Naturalist* 44: 1-32.
- Blanchard, Paul. 1986. Ground-water Conditions in the Kaiparowits Plateau Area, Utah and Arizona, with Emphasis on the Navajo Sandstone. *State of Utah, Department of Natural Resources Technical Publication* 81, 87 p.
- Boettinger, J. and J.D. Sipes. 1998. Soil properties influence the distribution of Jones cycladenia (*Cycladenia humilis* var. *jonesii*), a rare endemic plant of the Colorado plateau. In the science symposium proceedings.
- Bowers, W.E. 1972. The Canaan Peak, Pine Hollow, and Wasatch Formations in the Table Cliff Region, Garfield County, Utah: *U.S. Geological Survey Bulletin* 1331-B.
- Brunson, Mark W. and Blahna, Dale J. 1997. *Progress Report: Assessing Low-Impact Recreation Behaviors and Attitudes in Desert Wilderness Areas*. Utah State University, January 31, 1997.
- Buranek, A.M. 1945. Notes on the Manganese King property near Kanab, Kane County, Utah: *Utah Department of Publicity and Industrial Development Circular* 33, 11 p.
- Butler, B.S., Loughlin, G.F., Heikes, V.C. et al. 1920. The Ore Deposits of Utah: *U.S. Geological Survey Professional Paper* 111, 672 p.
- Carter, L. M. H., and Sargent, K. A. 1983 (1984). Scenic features related to geology in the Kaiparowits Plateau area, Utah: *U.S. Geological Survey Miscellaneous Investigations Map* I-1033-K, scale 1:125,000.
- Cifelli, R.L. 1990a. Cretaceous mammals of southern Utah, I: Marsupials from the Kaiparowits Formation (Judithian): *Journal of Vertebrate Paleontology*, v. 10, no. 3, p. 295-319.
- Cifelli, R.L. 1990b. Cretaceous mammals of southern Utah, II: Marsupials and marsupial-like mammals from the Wahweap Formation (early Campanian): *Journal of Vertebrate Paleontology*, v. 10, no. 3, p. 320-331.
- Cifelli, R.L. 1990c. Cretaceous mammals of southern Utah, III: Therian mammals from the Turonian (early Late Cretaceous): *Journal*

REFERENCES

- of *Vertebrate Paleontology*, v. 10, no.3, p. 332-345.
- Cifelli, R.L. 1990d. Cretaceous mammals of southern Utah, IV: Eutherian mammals from the Wahweap (Aquilian) and Kaiparowits (Judithian) Formations: *Journal of Vertebrate Paleontology*, v. 10, no. 3, p. 346-360.
- Cifelli, R.L. and Eaton, J.G., 1987. Marsupial from the earliest Late Cretaceous of the western U.S.: *Nature*, v. 265, no. 6104, p. 520-522.
- Cifelli, R.L., and Johanson, Zerina. 1994. New Marsupial from the Upper Cretaceous of Utah: *Journal of Vertebrate Paleontology*, v. 14, no. 2, p. 292-295.
- Cifelli, R.L., and Madsen, S.K. 1986. An Upper Cretaceous symmetrodont (Mammalia) from southern Utah: *Journal of Vertebrate Paleontology*, v. 6, no.3, p. 258-263.
- Cobban, W.A. 1993. Diversity and distribution of Late Cretaceous ammonites, Western Interior, United States, in Caldwell, W.G.E., and Kauffman, E.G., editors, *Evolution of the Western Interior Basin: Geological Association of Canada Special Paper 39*, p. 435-451.
- Cronquist, A. 1994. *Intermountain flora, vol. 5: Asterales*. Bronx: New York Botanic Garden. 496 pp.
- Cronquist, A., A.H. Holmgren, N.H. Holmgren, and J.L. Reveal. 1972. *Intermountain flora, vol. 1: geological and botanical history of the region, its plant geography and glossary. The vascular cryptogams and the gymnosperms*. New York: Hafner. 270 pp.
- Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal and P.K. Holmgren. 1977. *Intermountain flora, vol. 6: Monocotyledons*. New York: Columbia Univ. Press. 584 pp.
- Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal and P.K. Holmgren. 1984. *Intermountain flora, vol. 4: Subclass Asteridae (except Asteraceae)*. Bronx: New York Botanic Garden. 573 pp.
- Cronquist, A., N.H. Holmgren, and P.K. Holmgren. 1997. *Intermountain flora, vol. 3A: Subclass Rosidae (except Fabales)*. Bronx: New York Botanic Garden. 446 pp.
- Davidson, E.S. 1967. Geology of the Circle Cliffs areas. Garfield and Kane counties, Utah: *U.S. Geological Survey Bulletin 1229*, 140 p.
- Doelling, Hellmut H. 1975. Geology and mineral resources of Garfield County, Utah: *Utah Geological and Mineralogical Survey Bulletin 107*, 175 p.
- Doelling, Hellmut H., Davis, Fitzhugh D., and Brandt, Cynthia J. 1989. The geology of Kane County, Utah--Geology, mineral resources, geologic hazards: *Utah Geological and Mineral Survey Bulletin 124* and Map 121, 192 p., 10 pls., scale 1:100,000.
- Doelling, Hellmut H. and Graham, R. L. 1972. Southwestern Utah coal fields -- Alton, Kaiparowits Plateau and Kolob-Harmony: *Utah Geological and Mineralogical Survey Monograph I*, 333 p.
- Dow, V.T., and Batty, J.V. 1961. Reconnaissance of titaniferous sandstone deposits of Utah, Wyoming, New Mexico and Colorado: *U.S. Bureau of Mines Report of Investigation 5860*, 51 p.
- Eaton, J.G. 1987a. *Stratigraphy, depositional environments, and age of Cretaceous mammal-bearing rocks in Utah, and systematics of the Multituberculata*. Boulder, University of Colorado, Ph.D. dissertation, 315 p.
- Eaton, J.G. 1987b. Biostratigraphic framework for Late Cretaceous nonmarine sequence, Kaiparowits Plateau, southern Utah

REFERENCES

[abs.]: *Geological Society of America, 1987 Annual Meeting, Phoenix, Arizona, Abstracts with Programs*, v. 19, p. 650-651.

Eaton, J.G. 1988. Cretaceous multituberculates (Mammalia) from Utah [abs.]: *Abstracts of the 48th Annual Meeting of the Society of Vertebrate Paleontology*, no. 40, p. 13A-14A.

Eaton, J.G. 1991. Biostratigraphic framework for Upper Cretaceous rocks of the Kaiparowits Plateau, southern Utah in Nations, J.D., and Eaton, J.G., editors, Stratigraphy, depositional environments, and sedimentary tectonics of the western margin, Cretaceous Western Interior Seaway: *Geological Society of America Special Paper 260*, P. 47-63.

Eaton, J.G. 1993a. Therian mammals of the Cenomanian (Late Cretaceous) Dakota Formation, southwestern Utah: *Journal of Vertebrate Paleontology*, v. 13, p. 105-124.

Eaton, J.G. 1993b. Mammalian paleontology and correlation of uppermost Cretaceous rocks of the Paunsaugunt Plateau, Utah, in Aspects of Mesozoic geology and Paleontology of the Colorado Plateau: *Museum of Northern Arizona Bulletin 59*, p. 163-180.

Eaton, J.G. 1995. Cenomanian and Turonian (early Late Cretaceous) multituberculate mammals from southwestern Utah: *Journal of Vertebrate Paleontology*, v. 15, p. 761-784.

Eaton, J.G., and Cifelli, R.L. 1988. *Preliminary report on Late Cretaceous mammals of the Kaiparowits Plateau, southern Utah: Contributions to geology*, University of Wyoming, v. 26, no. 2, p. 45-55.

Eaton, J.G., and Nations, J.D. 1991. Introduction: Tectonic setting along the margin of the Cretaceous Western Interior Seaway, southwestern Utah and northern Arizona, in Nations, J.D., and Eaton, J.G., editors, Stratigraphy, depositional environments, and sedimentary tectonics of the western margin, Cretaceous Western Interior Seaway: *Geological Society of America Special Paper 260*, P. 47-63.

Eaton, J.G., Kirkland, J.I., Gustason, E.R., Nations, J.D., Graczyk, K.J., Ryer, T.A., and Carr, D.A. 1987. Stratigraphy, Correlations, and tectonic setting of the Late Cretaceous rocks in the Kaiparowits and Black Mesa Basins in Davis, G.H., and VanderDolder, E.M. (Editors), *Geologic diversity of Arizona and its margins. Excursions to choice areas: Geological Society of America, 100th annual meeting field Trip guidebook, Arizona*

Bureau of Geology and Mineral Technology Special Paper 5, p. 113-135.

Eaton, J.G., Kirkland, J.I., Hutchison, J.H., Denton, R., O'Neill, R.C., and Parrish, J.M. 1997. Nonmarine extinction across the Cenomanian-Turonian (C-T) boundary, southwestern Utah, with a comparison to the Cretaceous-Tertiary (K-T) extinction Event: *Geological Society of America Bulletin*, v. 109, no. 5, p. 560-567.

Freethy, Geoffrey W. 1997. Hydrogeology of the Grand Staircase-Escalante National Monument [Abs]: *Learning From the Land*, a science symposium sponsored by the Bureau of Land Management and the Governor's Office of Planning and Budget, November 4-5, 1997, Cedar City, Utah.

Gillette, David D. and Hayden, Martha C. 1997. A preliminary inventory of paleontological resources within the Grand Staircase-Escalante National Monument, Utah: *Utah Geological Survey Circular 96*, 34 p.

Gregory, H.E., and Moore, R.C. 1931. The Kaiparowits region, a geographic and geologic reconnaissance of parts of Utah and Arizona: *U.S. Geological Survey Professional Paper 164*, 161 p.

REFERENCES

- Grover, Lenore R. 1990. *Coyote Gulch Campsite Survey 1990*. Division of Resource Management Glen Canyon National Recreation Area. September 21, 1990.
- Hansen, D.E. 1978a. Map showing extent and total thickness of coal beds in the Kaiparowits coal basin, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-C*, scale 1:125,000.
- Hansen, D.E. 1978b. Maps showing amount of overburden on major coal zones in the Kaiparowits coal basin, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-D*, scale 1:125,000.
- Harper 1994.
- Haven, R. and Agey, W.W. 1949. Concentration of manganese ores from Piute and Kane Counties, southern Utah: *U.S. Bureau of Mines Report of Investigation 4551*, 9 p.
- Heath, Steven H. 1997. *A Historical Sketch of the Scientific Exploration of the Region Containing the Grand Staircase-Escalante National Monument*. Paper presented to Conference on the Grand Staircase - Escalante National Monument, November 1-5, 1997, Cedar City, Utah.
- Hecox, Walter E and Ack, Bradley L. 1996. *Charting the Colorado Plateau: An Economic and Demographic Exploration*. Grand Canyon Trust.
- Hettinger, R.D., McCabe, P.J., and Shanley, K.W. 1994. Detailed facies anatomy of transgressive and highstand systems tracts from the Upper Cretaceous of southern Utah, U.S.A., in Posamentier, H.W., and Weimer, P., eds., Recent advances in siliciclastic sequence stratigraphy: *American Association of Petroleum Geologists Memoir 58*, p. 235-257.
- Hettinger, Robert D. 1995. Sedimentological descriptions and depositional interpretations, in sequence stratigraphic context, of two 300-m cores from the Upper Cretaceous Straight Cliffs Formation, Kaiparowits Plateau, Kane County, Utah: *U.S. Geological Survey Bulletin 2115-A*, 32 p.
- Hettinger, Robert D., Roberts, Laura N.R., Biewick, Laura R.H., and Kirschbaum, Mark A. 1996. Preliminary investigations of the distribution and resources of coal in the Kaiparowits Plateau, southern Utah: *U.S. Geological Survey Open-File Report 96-539*, 72 p., 1 pl.
- Holden, Paul B. 1974. Distribution and Abundance of the Fishes of The Lower Escalante River, Utah.(1974) 1-10
- Jackson, Jennifer G. and Herder, Michael J. 1997. Baseline Bat Inventory of Southern Utah Using Mist Nets and Ultrasonic Detectors. *Publication No. 97-10 Utah Division of Wildlife Resources* (September 1997) 13-20.
- Kirkland, J.L. 1987. Upper Jurassic and Cretaceous lungfish toothplates from the Western Interior, last dipnoan faunas of North America: *Hunteria*, v. 2, p. 1-16.
- Klimack, Paul W. and Messmer, Terry A. 1996. *Paunsaugunt Plateau/Buckskin Mountain Mule Deer Herd Study*.
- Lawson, A.C. 1913. The gold of the Shinarump at Paria: *Economic Geology*, v. 8, p. 434-446.
- LeFevre, Lenora H. 1973. *The Boulder Country and Its People*. Springville, Utah: Art City Publishing.
- Lidke, K.J. and Sargent, K.A. 1983. Geologic cross sections of the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-J*, scale 1:125,000.
- McCabe, P.J., and Shanley, K.W. 1992. An organic control on shoreface stacking patterns. Bogged down in the mire: *Geology*, v. 20, p. 741-744.

REFERENCES

- Murdock, Joseph R., Welsh, Stanley L., and Benjamin W. Wood. 1971-1974. *Navajo-Kaiparowits Environmental Baseline Studies, Summary Report*. Center for Health and Environmental Studies and Botany and Range Science Department, BYU.
- Parrish, J.M., and Eaton, J.G. 1991. Diversity and evolution of dinosaurs in the Cretaceous of the Kaiparowits Plateau, Utah [abs.]: *Journal of Vertebrate Paleontology*, v. 11, supplement to no.3, p. 50A.
- Peterson, Cordell L. And O'Neill, Deborah. 1997. Southwestern Willow Flycatcher Occurrence and Habitat in the Escalante river, Kanab Creek, and Paria River Drainage in 1997. *Publication Number 97-12 Utah Division of Wildlife Resources* (1997)
- Peterson, Fred. 1969. Four new members of the upper Cretaceous Straight Cliffs Formation in the southeastern Kaiparowits region Kane County, Utah: *U. S. Geological Survey Bulletin* 1274-J, p. J1-J28.
- Phillips, C.H. 1985. Intermountain gold anomaly -- significance and potential: *Engineering and Mining Journal*, v. 186, May, p. 34-38.
- Presidential Proclamation 6920 of September 18, 1996. Establishment of the Grand Staircase-Escalante National Monument, as published in *Federal Register* Vol. 61, No. 186 (50223-50227), Tuesday, September 24, 1996.
- Price, Don. 1977a. Map showing general chemical quality of ground water in the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-A*, scale 1:125,000.
- Price, Don. 1977b. Map showing general availability of ground water in the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-B*, scale 1:125,000.
- Price, Don. 1978. Map showing principal runoff-producing areas, and selected streamflow data in the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-E*, scale 1:125,000.
- Price, Don. 1979. Map showing general chemical quality of surface water in the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-F*, scale 1:125,000.
- Ritzma, H.R. 1979. Oil-impregnated rock deposits of Utah: *Utah Geological and Mineral Survey Map 47*, scale 1:750,000.
- Ritzma, H.R. 1980. Oil-impregnated sandstone deposits, Circle Cliffs Uplift, Utah; in Picard, M.D., editor, Henry Mountains Symposium, Guidebook: *Utah Geological Association Publication 8*, p. 343-351.
- Ruehrwein, Joseph J. 1998. *Exploring Knowledge, Attitudes and Reported Behavior of Southern Utah Back-Country Recreationists*. Utah State University.
- Sargent, Kenneth A., and Hansen, Dan E. 1980. Landform map of the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-G*, scale 1:125,000.
- Sargent, Kenneth A., and Hansen, Dan E. 1982. Bedrock geologic map of the Kaiparowits coal basing area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-I*, scale 1:125,000.
- Shanley, K.W., and McCabe, P.J. 1991. Predicting facies architecture through sequence stratigraphy. An example from the Kaiparowits Plateau, Utah: *Geology*, v. 19, p. 742-745.

REFERENCES

- Shanley, K.W., McCabe, P.J., and Hettinger, R.D. 1992. Tidal influence in Cretaceous fluvial strata from Utah, U.S.A. A key to sequence stratigraphic interpretation: *Sedimentology*, v. 39, p. 905-930.
- Sharp, G.C. 1976. Reservoir variations at Upper Valley field, Garfield County, Utah, in Hill, J. Gilmore, editor, Symposium on the geology of the Cordilleran Hingeline: *Rocky Mountain Association of Geologists Guidebook*, p. 325-344.
- Smith, Arthur D., Donald M. Beale. 1980. Antelope in Utah. *Utah Division of Wildlife Publication No. 80-13*.
- Spence, J.R. 1994. *Demography and monitoring of the threatened Cycladenia jonesii Eastwood (Apocynaceae), Glen Canyon National Recreation Area*. National Park Service report.
- Stokes, Wm. Lee. 1973. *Scenes of the Plateau Lands and How They Came To Be*. Salt lake City: Publishers Press.
- Webb, Robert H. 1985. *Late Holocene flooding on the Escalante River, south-central Utah*: University of Arizona, PhD Thesis, 204 p.
- Webb, Robert H., Spence S. Smith, and V. Alexander S. McCord. 1992. *Historic Channel Change of Kanab Creek*. Grand Canyon: Grand Canyon Natural History Association.
- Welsh, S.L. and C.A. Toft. 1981. Biotic communities of hanging gardens in southeastern Utah. *National Geographic Society Research Reports* 13:663-681.
- Welsh, S.L. N.D. Atwood, S. Goodrich and L.C. Higgins. 1993. *A Utah Flora*. Provo: Life Science Museum, BYU 986 pp.
- Welsh, S.L. N.D. Atwood, and J.L. Reveal. 1975. Endangered, threatened, extinct, endemic and rare plants or restricted Utah vascular plants. *Great Basin Naturalist* 35: 327-376.
- Welsh, S.L. N.D. Atwood, and J.R. Murdock. 1978. Kaiparowits flora. *Great Basin Naturalist* 38: No. 2, 125-179
- Williams, J.D. 1995. *Microbiotic Crusts: A Review*. 55p. Contract Report.
- Williams, Van S. 1985. Surficial geologic map of the Kaiparowits coal-basin area, Utah: *U.S. Geological Survey Miscellaneous Investigations Series Map I-1033-L*, scale 1:125,000.
- Five County Association of Governments. 1996. *Consolidated Plan: Housing Element*.
- Five County Association of Governments. 1996. *Consolidated Plan: Overall Economic Development Program*.
- Five County Association of Governments. 1998. *Consolidated Plan Update 1998-1999*.
- Garfield County, Utah. *Garfield County, Utah General Plan*. 1995. Five County Association of Governments.
- Kane County, Utah. *Kane County, Utah General Plan*. 1993. Five County Association of Governments.
- Utah Governor's Office of Planning and Budget. 1997. *Kane and Garfield County Data*.
- Utah Governor's Office of Planning and Budget. 1997. *1997 Economic Report to the Governor*.
- Utah Governor's Office of Planning and Budget. 1998. *1998 Economic Report to the Governor*.
- Utah Department of Workforce Services. 1997. *Utah's Southwestern District Quarterly Newsletter*.

REFERENCES

- United States Bureau of the Census. 1991. *1990 Census of Population and Housing: Summary File Tape 1A*.
- United States Bureau of the Census. 1992. *1990 Census of Population and Housing: Summary File Tape 3A*.
- United States Bureau of the Census. 1992. *USA Counties*.
- United States Bureau of the Census. 1997. *1992 Economic Census*.
- United States Bureau of the Census. 1995. *County Business Patterns 1992&1993*.
- United States Bureau of the Census. 1992. *Census of Agriculture*.
- United States Economics and Statistics Administration. 1997. *Regional Economic Information System: 1969-1995*.
- U.S.D.A. Natural Resources Conservation Service. 1997. *Introduction to Microbiotic Crusts*.
- U.S. Department of Interior, Bureau of Land Management. January 1997. *Partners Against Weeds, Final Action Plan for the Bureau of Land Management*.
- U.S. Department of Interior, Bureau of Land Management. Instruction Memorandum No: 96-67. *Mitigation and Planning Standards for the Management of Paleontological Resources on Public Lands*. (Section V. Deals with Paleontological Resources in Wilderness Areas.) Planning and Mitigation Standards for Paleontological Resources on Public Lands: A Decision maker's Guide. Describes standards, guidelines and procedures for implementing policies identified in the preceding section for the management of paleontological resources on Public Lands administered by the Bureau of Land Management (BLM). 1996a.
- U.S. Department of Interior, Bureau of Land Management. Instruction Memorandum No: 96-175. *Handling Requests for Paleontological Locality Information*. 1996b.
- U.S. Department of Interior, Bureau of Land Management. Instruction Memorandum No: 96-177. *Paleontology . Announces a partnership agreement with the Society of Vertebrate Paleontology (SVP) for access to SVP information and technical expertise*. 1996c.
- U.S. Department of Interior, Bureau of Land Management. *Reference Manual 2800. Rights-of-Way*.
- U.S. Department of Interior, Bureau of Land Management, Service Center, Denver, CO. 1994. *Technical Reference 1737-11, Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas*.
- U.S. Department of Interior, Bureau of Land Management, Service Center, Denver, CO. 1993, Revised 1995. *Technical Reference 1737-9, Process for Assessing Proper Functioning Condition*.
- U.S. Department of Interior, Bureau of Land Management, Utah State Office, Ecosphere Environmental Services, Farmington, New Mexico. 1997. *Grand Staircase-Escalante National Monument Noxious Weed Survey, Summary Report*.
- U.S. Department of Interior, Bureau of Land Management, Utah State Office. 1997. *Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah*.
- U.S. Department of Interior, Bureau of Land Management, Utah State Office, October 1991. *Utah Statewide Wilderness Study Report, Volume 11B-Summary Analysis of Study Area Recommendations*.
- U.S. Department of Interior, Bureau of Land Management, Utah State Office, 1990. *Utah*

REFERENCES

BLM Statewide Wilderness Environmental Impact Statement, Final.

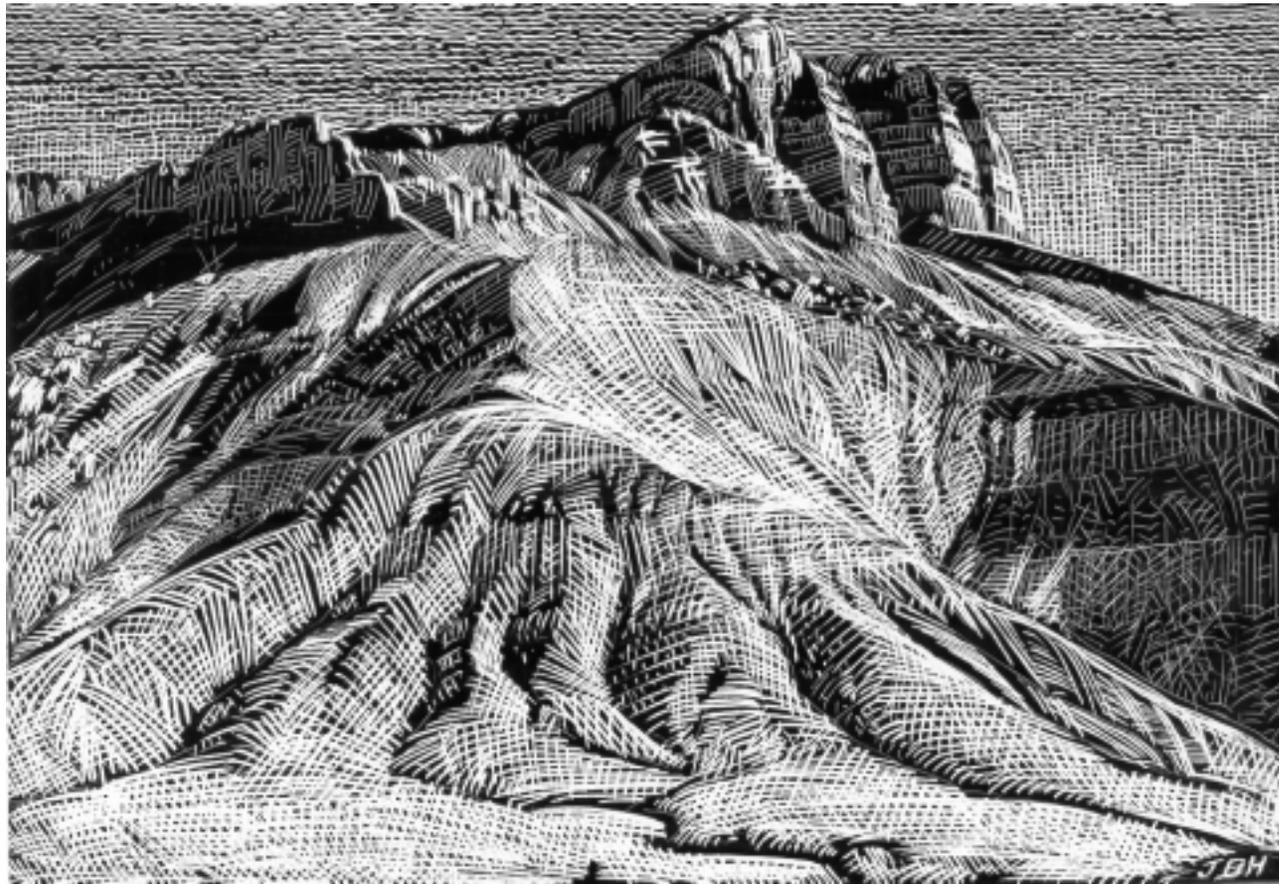
U.S. Department of Interior, National Park Service, 1997. *A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol*. Technical Report NPS/NAUCPRS/NRTR-97/12. Colorado Plateau Research Station, Northern Arizona University.

Utah Cooperative Fish and Wildlife Research Unit, 1995. *Utah Gap Analysis: An Environmental Information System*. Final Project Report 95-1. Utah State University, Logan, UT.

Utah Division of Parks and Recreation, Division of Natural Resources, 1992. *1992 Utah SCORP, Utah's State Comprehensive Outdoor Recreation Plan*.

Utah School and Institutional Trust Lands Administration. 1998. *State Oil and Gas Leases, and State Coal Leases*.

Index



INDEX

Anasazi	3.11, 3.12, 3.51
Aquifer	2.90, 2.91, 3.24, 3.26
Areas of Critical Environmental Concern	1.5, 1.6, 1.8, 2.75, 2.100, 4.53
Bald eagle	3.22, 3.27
Big Water	3.16, 3.49, 3.66, 4.49
Boulder	3.13, 3.15, 3.24, 3.28, 3.29, 3.51, 3.52, 3.66
Bryce Valley	3.24, 3.50
Burr Trail	2.4, 2.5, 2.8, 2.12, 2.21, 2.58, 3.45, 3.49, 3.52, 3.66, 4.53
Calf Creek	S.9, 2.11, 2.45, 2.50, 2.57, 2.83, 3.24, 3.27, 3.46, 3.50, 3.51, 3.55, 3.66, 4.2, 4.4, 4.13, 4.16, 4.19, 4.22, 4.39
Calf Creek Trail	3.24
California condor	3.22
Campfires	S.7, 2.4, 2.5, 2.12, 2.15, 2.21, 2.30, 2.36, 2.45, 2.50, 2.58, 2.65, 2.72, 2.76, 2.82
Camping	S.4, S.9, S.10, 2.2, 2.4, 2.5, 2.8, 2.12, 2.21, 2.30, 2.36, 2.39, 2.45, 2.50, 2.53, 2.54, 2.58, 2.65, 2.72, 2.89-2.91, 2.95, 3.50, 3.51, 4.2, 4.3, 4.5, 4.7, 4.9, 4.10, 4.12-4.14, 4.16-4.19, 4.21-4.24, 4.32, 4.40, 4.43-4.45
Cannonville	2.59, 3.13, 3.15, 3.31, 3.32, 3.52, 3.66
Church Wells	3.52, 3.66
Circle Cliffs	3.2, 3.10, 3.16, 3.49, 3.56, 3.61
Colorado squawfish	3.22, 3.28, 4.27, 4.28
Competitive and special events	S.3, S.4, S.7, 2.4, 2.5, 2.15, 2.22, 2.30, 2.37, 2.39, 2.46, 2.51, 2.53, 2.58, 2.66, 2.72, 2.89, 2.99, 2.100, 3.51
Cottonwood Wash Road	2.16, 2.58, 2.59, 3.50, 3.66
Cryptobiotic crusts	S.16, 2.76, 2.84, 3.15, 4.20-4.24, 4.53, 4.62
Dance Hall Rock	2.50, 2.83, 3.55
Deer Creek	2.45, 2.83, 3.24, 3.27, 3.29, 3.45, 3.46, 3.50, 3.51, 3.55
Devils Garden	2.83, 3.50, 3.55
Escalante	3.13, 3.15, 3.28-3.30, 3.47, 3.49, 3.51, 3.52, 3.55, 3.61, 3.66
Escalante Canyons	S.7, 2.3-2.5, 2.11, 2.12, 2.21, 2.30, 2.36, 2.37, 2.45, 2.50, 2.58, 2.65, 2.72, 2.82, 2.83, 3.1, 3.2, 3.10, 3.11, 3.18, 3.26, 3.27, 3.48, 3.49, 3.51, 3.55, 3.64, 4.17
Escalante River	3.19, 3.23, 3.24, 3.26-3.30, 3.45, 3.46, 3.51, 4.28, 4.30
Fiftymile Mountain	2.4, 2.5, 2.58, 3.16, 3.21, 3.49, 3.61
Fossils	2.76, 3.2, 3.10, 3.11, 3.61, 4.4
Fremont	3.11, 3.12
Fuelwood cutting	S.4, S.24, 1.3, 2.53, 2.89, 3.18, 3.21, 4.39, 4.70
Garfield County	2.15, 2.59, 2.83, 2.99, 3.1, 3.11, 3.13, 3.47, 3.48, 4.54
Grand Staircase	3.2, 3.10, 3.11, 3.17, 3.18, 3.26, 3.49, 3.50, 3.66

INDEX

Grosvenor Arch	2.59, 3.27, 3.50
Group size	S.2, S.3, S.7, S.9, S.10, S.12-S.19, S.21, S.24-S.26, 2.1, 2.4, 2.5, 2.7, 2.15, 2.21, 2.30, 2.36, 2.39, 2.45, 2.50, 2.58, 2.65, 2.72, 3.51, 4.2, 4.3, 4.8, 4.11, 4.16, 4.17, 4.19, 4.21-4.23, 4.39-4.45, 4.52, 4.58-4.65, 4.67, 4.70-4.72
Hackberry Canyon	2.3, 2.4, 2.11, 2.12, 2.21, 2.30, 2.36, 2.37, 2.45, 2.50, 2.58, 2.65, 2.82, 3.17, 3.24, 3.46, 3.50
Hanging gardens	3.17, 3.18, 3.27
Henrieville	3.13, 3.15, 3.31, 3.32, 3.52, 3.66
Hiking	2.46, 3.49, 3.51, 4.17, 4.30
Historic sites	3.13, 3.51
Hole-in-the-Rock Road	2.4, 2.5, 2.12, 2.16, 2.58, 2.59, 3.16, 3.45, 3.49, 3.66
Hole-in-the-Rock Trail	2.50
Hunting and fishing	S.4, 1.5, 1.7, 2.76, 3.12, 3.13, 3.22, 3.23, 3.49, 3.51, 4.32
Inholdings	1.7, 2.4, 2.6, 2.88, 2.91, 2.94, 3.66, 4.54
Johnson Canyon	3.16, 3.24, 3.28, 3.33, 3.34, 3.50, 3.52, 3.66
Jones' Cycladenia	S.14, 3.18, 4.13-4.15, 4.60
Kaiparowits Plateau	2.4, 2.100, 3.1, 3.2, 3.10-3.12, 3.24, 3.26, 3.49, 3.50, 3.55, 3.61
Kanab	3.47, 3.50, 3.51, 3.66
Kanab ambersnail	3.22, 3.28, 4.27, 4.28
Kane County	2.15, 2.59, 2.83, 3.1, 3.11, 3.15, 3.47, 3.48
Kodachrome bladderpod	S.14, 3.18, 4.13-4.15, 4.60
Livestock grazing	S.4, 1.4, 1.5, 1.8, 2.2, 2.77, 2.79-2.81, 2.88, 2.97, 3.13, 3.17, 3.21, 3.47, 3.64, 3.65, 4.1, 4.4-4.6, 4.8, 4.9, 4.11-4.15, 4.17, 4.18, 4.20, 4.21, 4.23, 4.25, 4.26, 4.29, 4.31-4.34, 4.39-4.41, 4.48, 4.49, 4.52
Mexican spotted owl	3.22, 3.27, 4.30, 4.31
Mountain bicycle	2.15, 2.23, 2.31, 2.38, 2.46, 2.51, 2.59, 2.67, 3.51
Native American Indians	2.75, 2.76, 2.82, 3.13
No Mans Mesa	2.12, 2.15, 2.21, 2.23, 2.83
Outfitter and guides	S.7, S.25, 1.3, 1.8, 2.4, 2.6, 2.15, 2.22, 2.30, 2.37, 2.46, 2.51, 2.58, 2.66, 2.73, 2.82, 2.88, 2.100, 3.12, 3.51, 4.1, 4.41, 4.71
Pack animals	2.1, 2.8, 2.15, 2.21, 2.23, 2.30, 2.31, 2.36-2.38, 2.45, 2.46, 2.50, 2.51, 2.58, 2.59, 2.65, 2.67, 2.72, 2.82, 3.51, 4.17
Panguitch	3.13, 3.15, 3.47
Paria River	2.3, 2.4, 2.11, 2.12, 2.21, 2.30, 2.36, 2.37, 2.45, 2.50, 2.58, 2.59, 2.65, 2.82, 3.13, 3.22, 3.24, 3.26-3.28, 3.31-3.33, 3.46, 3.66, 4.28, 4.30, 4.40
Paunsaugunt deer	S.19, S.20, 3.23, 4.1, 4.31, 4.32, 4.66
Peregrine falcon	3.22, 3.27, 4.28
Petrified wood	2.76, 2.83, 3.2, 3.11, 3.63
Razorback sucker	3.22, 3.28, 4.27
Relict plant communities	S.14, 2.12, 2.21, 2.82, 3.17, 3.18, 4.1, 4.15, 4.16, 4.60

INDEX

Rights-of-way	S.4, S.7, 1.3, 2.4, 2.6, 2.15, 2.22, 2.30, 2.37, 2.46, 2.51, 2.53, 2.58, 2.66, 2.73, 2.82, 2.83, 2.87, 2.88, 2.90, 3.52, 3.56, 4.52
Riparian	S.15, 2.4, 2.6, 2.11, 2.80, 3.18-3.20, 3.22, 3.23, 3.27, 3.28, 3.32, 3.64, 4.1, 4.14, 4.15, 4.17-4.19, 4.25, 4.26, 4.28, 4.30, 4.38, 4.48, 4.61
Skutumpah	2.16, 2.58, 2.59, 3.17, 3.33, 3.50
Smoky Mountain Road	2.16, 2.58, 2.59, 3.49, 3.66
Southwestern willow flycatcher	3.22, 3.23, 4.27, 4.28, 4.30, 4.31
Straight Cliffs	3.2, 3.10, 3.16, 3.24, 3.49, 3.55, 3.61
Tropic	3.13, 3.15, 3.31, 3.32, 3.52, 3.66
Utah School Institutional and Trust Lands Administration	2.87, 2.88, 3.1, 3.30-3.33, 3.56
Ute ladies'-tresses	S.14, 3.18, 3.27, 4.13-4.15, 4.60
Valid existing rights	S.4, 1.3-1.5, 1.7, 1.8, 2.3, 2.46, 2.83-2.86, 2.88, 2.91, 2.93, 2.95, 2.98-2.100, 3.39, 4.36, 4.54
Visual Resource Management	S.25, 2.89, 3.34, 4.42-4.44, 4.71
Water rights	2.88, 2.90-2.93, 3.28-3.34
Weeds	S.16, 2.89, 3.16, 3.19, 4.1, 4.10, 4.11, 4.13, 4.15, 4.16, 4.18-4.22, 4.48, 4.50, 4.62
Wild and Scenic Rivers	S.5, S.22, 1.4, 1.8, 2.3, 2.11, 2.29, 2.40, 2.57, 2.69, 2.90, 2.92, 3.39, 4.1, 4.36, 4.68
Wilderness Study Areas	1.6, 2.1, 2.16, 2.59, 2.85, 2.94, 2.95, 2.97, 2.99, 3.34, 3.39, 3.65
Withdrawals	S.4, 1.5, 2.93, 2.95 3.20, 3.30, 3.32, 3.52, 3.55
Wolverine Petrified Wood Area	2.83, 3.55