

## INTRODUCTION

This chapter analyzes the environmental impacts or effects of the management decisions presented in Chapter 2. Since this Proposed Plan describes an overall management framework, and in most cases does not propose specific on-the-ground projects or actions, the environmental consequences are often expressed in comparative, general terms. Quantitative analysis has been included when possible based on specific decisions proposed in Chapter 2, as well as estimates of reasonably foreseeable actions described below. In most cases, subsequent analysis would be required to implement resource management decisions. More detailed or site-specific studies and appropriate environmental documents will be prepared in compliance with the National Environmental Policy Act (NEPA) and its implementing regulations, as needed.

## TYPES OF IMPACTS

Impacts analyzed in this chapter include direct, indirect, and cumulative effects of the proposed actions to the extent they were identifiable for analysis. Where applicable, the short-term or long-term nature of these effects are described.

Direct effects result from activities planned or authorized by the Bureau of Land Management (BLM) and occur at the same time and place. Indirect effects are caused by these actions and occur later in time or farther removed in distance, but are still reasonably foreseeable.

Cumulative effects occur when there are multiple effects on the same values. They are incremental effects of proposed activities or projects, when combined with past, present, and future actions. As stated in 40 CFR 1508.7, a "... cumulative impact= is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time... ." The cumulative effects discussed in this chapter address resources for which direct and indirect impacts have been described earlier.

NEPA requires that the analysis of a Proposed Action in an Environmental Impact Statement address the following three topics:

1. The relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity: Short-term impacts occur during or immediately after project placement and may continue for a period of up to five years. Long-term impacts occur beyond the first five years. Impacts described in this chapter are usually direct and long-term, unless otherwise indicated.

2. Irreversible or irretrievable commitments of resources: Irreversible commitments of resources are the result of actions in which changes to resources are considered permanent. Irretrievable commitments of resources result from actions in which resources are considered permanently lost. A discussion of these impacts is included in the **Irreversible or Irretrievable Commitments of Resources** section at the end of this chapter.
3. Unavoidable adverse effects: These are the effects that cannot be avoided if the proposal and mitigation measures (incorporated as the design features of the this Plan) are implemented. These effects are described throughout this chapter in each of the resource and use impact sections. Mitigation and/or the nature of the planned actions are designed to minimize these effects. Many of these stipulations for mitigation are included in Appendix 4, **Standard Procedures for Surface Disturbing Projects or Proposals**.

The impacts of all decisions described in this Proposed Plan are analyzed. However, only those impacts and actions which are believed to have reasonably foreseeable impacts are discussed in detail. Programs or resources that were determined, through scoping and interdisciplinary evaluation, to have minimal, insignificant impacts as a result of the planned actions are not discussed in detail. A brief discussion of these topics is included at the end of this chapter.

**ANALYSIS ASSUMPTIONS AND GUIDELINES**

The following assumptions and guidelines were used to guide and direct the analysis of environmental consequences:

1. This Proposed Plan would be implemented substantially as described in Chapter 2.
2. The BLM would have sufficient funding and personnel to implement the Plan.
3. The planning period for the analysis is the next 15 years. Short-term impacts are those that would occur during the first five years of plan implementation. Long-term impacts are those that would occur beyond the first five years.
4. Measures would be taken to protect and encourage recovery of species listed as Federally endangered or threatened.
5. The geographic area that has the potential to be cumulatively affected by a combination of decisions and actions by the BLM and other agencies or persons is primarily within the boundaries of Kane and Garfield Counties, Utah, except for economic impacts, which are discussed for a five county region.
6. Current upward trends in recreation use would continue as discussed in Chapter 3 of the Draft Environmental Impact Statement (DEIS).
7. Specific actions to protect human life would be taken regardless of the management criteria in this Plan.
8. Livestock grazing would continue to be governed by applicable laws and regulations.
9. The Plan would be subject to valid existing rights and other existing authorizations in accordance with applicable laws and regulations.
10. Any projects authorized by the BLM would be required to obtain necessary permits and authorizations from other Federal, State and local agencies.
11. Research would continue to be funded, at least at current levels.
12. Impacts associated with the use of facilities, routes, and trails usually occur within **3** mile due to ease of access and use patterns.
13. Acreages reported in the analysis are Geographic Information System (GIS) numbers and not legal acreages.
14. Wild and Scenic River miles used in this analysis are for all suitable segments within the boundary of the Monument. The miles reported in Chapter 2, and in the **Wild and Scenic River** Appendix 11, include segments in the Paria Wilderness Area. It does not include small segments in the Escalante Canyons area that are being handled by Glen Canyon National Recreation Area, since the majority of these river segments are located on lands administered by the them.

**INCOMPLETE OR UNAVAILABLE INFORMATION**

There is less than complete knowledge about many of the relationships and conditions of wildlife species, vegetation associations, the economy, and communities. The ecology, inventory, and management of arid ecosystems is a complex and developing discipline. The biology of specific species prompts questions about population dynamics and habitat relationships. The interaction among resource protection, the economy, and rural communities is also poorly understood and is the subject of much debate.

Although there is a substantial amount of credible information about the general topic of arid ecosystems management, the lack of specific information creates uncertainty for managers. Still, in development of this environmental impact statement, the central relationships and basic data are sufficiently established for the formulation of decisions for this Plan. The best available information was used to evaluate and formulate these decisions. When encountering a gap in information, the question implicit in the Council on Environmental Quality (CEQ) regulations on incomplete or unavailable information was posed: Is this information "essential to a reasoned choice among alternatives"? (40 CFR 1502.22(a)). While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are

sufficiently established such that new information would be unlikely to completely reverse or nullify understood relationships. Though new information would be welcome, no missing information was considered to be essential to a reasoned choice among the decisions or alternatives as they were constituted.

Nonetheless, the precise relationships between the amount and quality of habitat or the location of other Monument resources is far from certain; there is a certain level or risk inherent in the management of any ecosystem. All other things being equal, the lesser the information, the greater the risk attributable to incomplete knowledge. That relationship is an impetus for the implementation and adaptive management framework described in Appendix 3 of this Plan. Should there be new scientific information regarding the protection of resources in the Monument, there are provisions for changing management practices to reflect the new information, as long as actions are consistent with the overall direction of this Plan. This adaptive management process - which is guided by monitoring, research, and GSENM Advisory Committee oversight - provides additional assurance that incomplete information would not undermine proper management of the ecosystem.

### MITIGATION

Mitigation is important in the design and implementation of any action. In general, mitigation is a measure taken to cause an action to become less harsh or less severe. From the CEQ Regulations (40 CFR 1508.20), mitigation includes:

- C Avoiding the impact altogether by not taking a certain action or parts of an action
- C Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- C Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- C Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- C Compensating for the impact by replacing or providing substitute resources or environments

Mitigating measures have been incorporated and evaluated for activities and decisions described in Chapter 2 of this Plan and throughout the discussion of environmental consequences in this chapter. For the actions analyzed in this Plan, mitigating measures are addressed as design features of the proposed actions themselves, primarily through land allocations, management practices, and standards as described in Chapter 2.

### REASONABLY FORESEEABLE ACTIONS

A Reasonably Foreseeable Action (RFA) is a potential future action where specific decisions cannot be determined during development of an overall plan. RFAs are used to help predict impacts. The RFAs are not actual allocations or decisions, but a best estimate or a guideline for what actions may be taken in the future, given the overall guidance in this Plan. Table 3.1

provides the RFAs that have been used in this analysis.

RFAs are developed through interdisciplinary team discussion using past and present information to make an informed estimate of the potential action and its impacts. In developing the RFAs, the BLM considered current resource conditions and trends, the restrictions or opportunities provided by the planned actions, and known or potential projects and proposals in and around Grand Staircase-Escalante National Monument (GSENM). Predictions of potential projects are based on professional judgement regarding approximate project locations, general site conditions and design features commonly applied to such projects, and do not definitively forecast the outcome of site-specific analysis required prior to implementation of any project. For example, this Plan does not make specific decisions on the number or length of new rights-of-way to private land because the need for such rights-of-way is uncertain at this time. However, an estimate of such requests over the next 15 years can be made for analysis purposes. These estimates are based on knowledge of the amount of private inholdings that do not have access currently, and estimates of miles of rights-of-way needed to access these parcels. Based on this information, an estimate of 3.5 miles was made for analysis purposes.

**Table 3.1 Reasonably Foreseeable Actions (RFAs)<sup>1</sup>**  
(RFAs are not actual decisions, but are estimates of actions used to help predict impacts)

Management Activity	Projects over 15 years	Disturbed Acres	Total Disturbance
Recreation sites	32 sites	0.5 acres/site	16 acres
Designated primitive camping areas <sup>2</sup>	35 camping areas	2 acres/area	70 acres
Communication sites	2 sites	1 acre/site	2 acres
Utility rights-of-way (ROW) (large)	1 ROW	150 acres/ROW	150 acres
Utility rights-of-way (small)	20 ROWs	5 acres/ROW	100 acres
Road rights-of-way	3.5 miles	2.4 acres/mile	8.4 acres
Water developments	10 developments	1 acres/site	10 acres
Vegetation restoration methods	20,000 acres	1,000 - 3,000 acres/year	20,000 acres

<sup>1</sup>Estimates of disturbance for valid existing rights (e.g., mineral development) are not included because insufficient information is currently available to predict where resources will be discovered or the extent of development that may occur (refer to the **Full Field Development** section in the DEIS).

<sup>2</sup>Includes estimates of areas that would be designated in the Frontcountry and Passage Zones where camping would be allowed in designated areas only. This estimate does not include areas that may be needed elsewhere to correct resource damage.

## PROPOSED PLAN IMPACT ANALYSIS

The impact analysis for resources and uses follows. A discussion of cumulative impacts is included in each resource section under **Summary of Effects**. An overall discussion of cumulative impacts of actions outside the scope of this Plan is also included in the **Cumulative Impacts** section at the end of this chapter.

In response to public comments, the impact analysis provided is more detailed for some aspects than that provided in the DEIS. For example, additional projections of reasonably foreseeable actions (RFAs) and more explicit analysis of spatial impacts of routes have been provided for this Plan. Where that additional detail would have varied appreciably among the DEIS alternatives, additional analysis for those alternatives has been provided (see Chapter 5, ACC-14). Where that additional detail would not vary appreciably by alternative (e.g., RFAs that are likely to occur under all alternatives, or the analysis of visitor impacts in the vicinity of existing recreational facilities), additional analysis of the DEIS alternatives has not been provided. Since these impacts would not have varied by alternative, more detailed analysis of such impacts by alternative would not have contributed to the selection of this Plan or altered the central relationships upon which the DEIS and this Plan are based.

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**IMPACTS ON PALEONTOLOGICAL RESOURCES****Introduction**

Paleontological sites contain a wealth of information about prehistoric life and environments during the last part of the Paleozoic Era and throughout the Mesozoic Era. The sequence of rocks found on the Kaiparowits Plateau contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world. Protection of these resources is a priority in management of the Monument. The locations of many paleontological resources within the Monument are yet unknown. However, studies show that Monument lands sustain widespread and varied paleontological resources.

**Summary of Effects**

Impacts to paleontological resources result directly from surface disturbing activities such as: vehicle and human use; construction of recreational facilities and water developments; and vegetation restoration activities. Indirect impacts also result from these activities by causing erosion and allowing access for unauthorized collection. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other uses. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use has the potential to cause surface disturbance which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed. These areas would be surveyed prior to project initiation. This Plan would afford substantial protection to paleontological resources through: closure of vehicular travel off of designated routes; avoidance when placing facilities; monitoring and surveying around current facilities and transportation corridors; surveying prior to vegetation restoration and other projects; and restrictions on visitor use (e.g., allocations, barriers, temporary closures).

**Direct and Indirect Effects of Proposed Actions***Collections*

Paleontological resources in the Monument are protected from collection by the Proclamation and this Plan. Impacts from unauthorized collection would be substantially reduced by this restriction. In sensitive areas where collection of fossils occurred prior to Monument designation, interpretive information would be developed and disseminated in order to educate the public about the sensitivity and importance of these resources. Information could include interpretive displays, brochures, visitor center displays and information on the website.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance or clearing of vegetation and associated soil erosion. These provisions include: no use of heavy equipment and no travel off of designated routes. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting paleontological resources in the Monument could help educate people

*Commercial Filming cont.*

about these resources, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in the *Recreational Facilities and Use* section.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way directly impacts paleontological resources by destroying fossils during leveling and other installations activities. These activities indirectly impact resources through clearing vegetation and biological soil crusts, which allows for erosion of soil and further degradation of fossils. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, areas with known, unique paleontological resources would be avoided. In other areas, sites would be surveyed prior to construction. In the event that unique fossils are found in these areas, the location of sites or rights-of-way would be moved to avoid these impacts. In other cases, where ubiquitous fossils are present, samples may be taken to record their presence and the site may be allowed. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of the distribution and type of paleontological resources in the Monument, or which result in stabilizing or preserving paleontological resources at risk of being damaged or destroyed, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of paleontological resources in the Monument. It would also provide a mechanism for alteration in management if degradation was determined to be occurring.

Surface disturbing research activities have the potential to damage or destroy paleontological resources. Surface disturbing research projects would be evaluated by the BLM, and the GSENM Advisory Committee would be consulted for recommendations, on whether research proposals warrant exceptions, whether they could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. The Monument science program would ensure that scientific resources are not only available for current research opportunities, but that certain scientific resources are preserved in place for future study. Prior to initiation of these projects, excavation and curation of paleontological features may be initiated, if deemed necessary.

*Livestock Grazing*

Livestock grazing has the potential to impact paleontological resources directly by trampling, and indirectly through accelerating erosion. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as

*Livestock Grazing cont.*

part of the Standards and Guidelines implementation, the effects of livestock grazing on paleontological resources would be assessed. Monitoring for sensitive paleontological resources would be initiated when necessary to determine if damage or destruction were occurring. If these impacts were found, fences or other barriers would be constructed, or other measures would be taken to prevent further impacts from livestock grazing.

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts paleontological resources by destroying fossils during leveling, construction, drilling for posts, and/or other installation activities. These activities indirectly impact resources through clearing vegetation and biological soil crusts, and from increased visitor use around sites, allowing for erosion of soil and further degradation of fossils. Unauthorized collection may also occur from increased use surrounding these sites. Projected increases in use would result in an increase of this type of impact. This type of impact is typically limited to within **3** mile of recreation sites.

Currently there are 36 recorded paleontological sites within **3** mile of existing recreation facilities and 106 known sites within **3** mile of trails. These sites would be evaluated for impacts and monitoring plots would be established when the unique nature of fossils warrants close attention. Additional surveys would be conducted in these areas to ensure impacts to unknown resources are not occurring. Due to the large number of paleontological sites present, monitoring on all sites may not be possible, resulting in damage or destruction of paleontological resources. If degradation from visitor use is found in these areas, sites may be closed or allocations initiated to reduce the number of people in the area.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to impacts to paleontological resources from trampling or unauthorized collection. Group size restrictions of 12 and 25 respectively would reduce the potential for these impacts. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas, through the implementation of an allocation system, would also help to reduce impacts from this type of use.

Although there is the potential for 32 new recreation sites disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres), areas with known, unique paleontological resources would be avoided. In other areas, sites would be surveyed prior to construction. In the event that unique fossils are found in these areas, the location of recreation sites would be moved to avoid these impacts. In other cases, where common, ubiquitous fossils are present, samples may be taken to record their presence, and the site may be allowed with interpretive displays and signs used to educate the public on the protection of paleontological resources.

*Recreational Facilities and Use cont.*

It is reasonably foreseeable that 35 new primitive camping areas would be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Surface disturbance, monitoring, curation and excavation would occur as described previously. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to paleontological resources would be addressed.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford substantial protection to paleontological resources from the direct effects of vehicle use off of designated routes (e.g., destruction, damage), and from the indirect effects (e.g., unauthorized collection, erosion) of continued cross-country vehicle access. There is the potential for direct and indirect impacts to paleontological resources from unauthorized travel of off-highway vehicles (OHVs) and bicycles off these routes. Enforcement, as described in the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these designated routes.

Use of 888 miles of designated routes may contribute to unauthorized collection. It is assumed that this type of impact on paleontological resources is generally limited to within **3** mile of routes. Projected increases in use would increase the potential for these impacts. Currently there are 245 paleontological sites known to occur within **3** mile of designated routes. As described for recreation sites, unique paleontological resources would be monitored and/or surveyed to determine impacts, and appropriate actions (e.g., barriers, excavation and curation, allocations) would be taken when determined necessary for protection.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). There are currently 12 known paleontological sites within 50 feet of these routes, which may result in damage or destruction of these resources. These sites would be monitored and protected as described previously.

Maintenance of designated routes has the potential to directly and indirectly cause impacts as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes. In the limited cases where maintenance activities would occur outside of the existing disturbance, areas would be inventoried and sites would be protected as described above for *Recreational Facilities and Use*.

*Transportation cont.*

Use of 192 miles of administrative routes throughout the Monument has the potential to indirectly impact paleontological resources by causing erosion. Erosion control structures would be installed when necessary to minimize these impacts. Maintenance of these routes would be the minimum necessary to keep them accessible to high clearance vehicles. However, any maintenance that requires new surface disturbance would require inventories and appropriate protection as described above. Unauthorized collection, and impacts to 28 sites within 3 mile, are not likely to occur since use along these routes would be limited and only by authorized users.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 includes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion in these areas. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some continued impacts to paleontological resources.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These treatments would be used to establish a natural range of native plant associations as stated in the vegetation management objective. Surveys would be conducted in these areas for paleontological resources prior to restoration, and areas with sensitive paleontological resources would be avoided, as described previously for other surface disturbing activities. Project level NEPA analysis would also be completed prior to initiation of these projects.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted in cases where an overall benefit to Monument resources could be demonstrated. There is the potential for disturbance, damage, or destruction of paleontological resources from surface disturbing construction, and from impacts associated with the subsequent concentration of use in the immediate vicinity of some water developments, such as troughs or impoundments. Areas for potential development would be surveyed for paleontological resources prior to construction, and if resources were found, the sites would be relocated. Maintenance of existing water developments has the potential to disturb, damage, or destroy paleontological sites through surface disturbing maintenance activities. Project level NEPA analysis and inventories for these resources could be required prior to the authorization of maintenance activities.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's Interim Management Policy and Guidelines for Lands under Wilderness Review (IMP) would prevent most surface disturbance on 880,857 acres currently designated as Wilderness Study Areas (WSAs). This would prevent degradation of paleontological resources from the activities described above in these areas.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Fires occur infrequently in the Monument and do not directly impact paleontological resources. Emergency use of equipment, such as chaining, for fire restoration has the potential to impact paleontological sites and resources directly by destroying fossils, or indirectly by clearing vegetation and biological soil crusts, which allows for erosion. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2. Even though it is impossible to determine where emergency fire restoration would be needed, surveys would be conducted for paleontological resources (as well as other resources) in burned areas, prior to use of equipment. Areas with sensitive paleontological resources would be avoided, as described previously for other surface disturbing activities.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to paleontological resources would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Riparian Resources Program, Special Status Species Program, Visual Resource Management (VRM), Weed Management, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON ARCHAEOLOGICAL AND HISTORIC RESOURCES**

**Introduction**

Monument lands sustain an extensive array of varied, non-renewable prehistoric archaeological sites, including clusters of unique sites which represent contact between the Fremont and Anasazi people in the Kaiparowits region. The distances, aridity, cliffs, and terraces have shaped the communities which are located on the periphery of the Monument. Early Mormon pioneers left many historic objects including: trails, inscriptions, and remnants of towns. The locations of many cultural resource sites within the Monument are yet unknown. The data on historic sites have largely been developed through oral histories and other anecdotal information over the last two years and have not been verified in the field. The majority of the archaeological sites documented to date are close to routes due to easy accessibility. Numerous unidentified sites are expected to occur throughout the Monument.

**Summary of Effects**

Damage, degradation, and destruction of archaeological and historic resources result directly from surface disturbing activities such as: vehicle, human, and livestock use; construction of facilities, communication sites, and water developments; maintenance of routes; wildfires; and vegetation restoration methods or any other ground disturbing activity. Indirect impacts also result from these activities, by causing erosion and allowing access for unauthorized collection. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other use. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use have the potential to cause surface disturbance which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the

**Summary of Effects cont.**

15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed. These areas would be surveyed prior to project initiation. This Plan would offset most of these impacts to archaeological and historic resources through: closure of vehicular travel off of designated routes; avoidance when placing facilities; monitoring and surveys around current facilities and transportation corridors; surveys prior to vegetation restoration or other projects; identification of sensitive resources for avoidance during fire suppression; restrictions on visitor use (group size, allocations, barriers, temporary closures); and visitor education. In areas where impacts could not be offset, excavation and curation of archaeological and historic resources would be initiated.

**Direct and Indirect Effects of Proposed Actions***Collections*

Archaeological and historic sites continue to be protected from destruction and artifact collection by existing laws and regulations and the Proclamation. Regardless, unauthorized collection of archaeological resources continues. In areas of known destruction or damage, sites would be closed where possible, and/or excavated as a last resort, and the artifacts curated to document the information contained in these sites. Monitoring and inventory work would be initiated in areas determined to be sensitive and high priority, which would help determine where resources and impacts occur. Information on the location of archaeological resources would be protected to maintain site integrity and prevent looting of these sites. Interpretive information would be developed and disseminated in order to educate the public about the sensitivity and importance of these resources. This would be done to prevent inadvertent damage to archaeological and historic resources. Information could include interpretive displays, guided tours, brochures, visitor center displays and information on the website.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance or clearing of vegetation and associated soil erosion. These provisions include: no use of heavy equipment and no travel off of designated routes. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting these resources in the Monument could help educate people about these resources, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in the *Recreational Facilities and Use* section.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way and road rights-of-way directly impacts archaeological and historic resources by destroying artifacts and structures during leveling and other installations activities. These activities indirectly impact resources through clearing vegetation and biological soil crusts, allowing for erosion of soil and further degradation of sites. Often it is not evident that sites are present until such activities are initiated. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way cont.*

miles of road rights-of-way, would be constructed in the Monument over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, areas with known archaeological and historic resources would be avoided. In other areas, sites would be surveyed prior to and during construction. In the event that artifacts are found, the location of sites would be moved to avoid these impacts. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing knowledge of the distribution and type of archaeological and historic resources in the Monument, or which result in stabilizing or preserving at risk resources, would be encouraged. Monitoring initiated as part of the adaptive management framework would provide information regarding the condition of archaeological and historic resources in the Monument and would provide a mechanism for alteration in management if degradation was determined to be occurring.

Surface disturbing research activities have the potential to damage or destroy artifacts, rock art, and structures in archaeological and historic sites. Surface disturbing research projects would be evaluated by the BLM, and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. The Monument science program would ensure that scientific resources are not only available for current research opportunities, but that certain scientific resources are preserved in place for future study. If the surface disturbing research were allowed to proceed, excavation and curation of archaeological sites would be initiated.

*Livestock Grazing*

Livestock grazing has the potential to impact archaeological and historic resources directly by trampling artifacts, mixing cultural materials, pushing over standing structures, rubbing on rock art panels, concentrating use in alcoves, and surface disturbance from construction of range facilities. Indirectly, livestock use has the potential to impact archaeological and historic resources by accelerating erosion, leading to the destruction of standing structures and uncovering buried artifacts, which may subsequently be trampled. Additionally, concentrating use around range facilities has the potential to impact sites in close proximity to these facilities. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on archaeological and historic resources would be assessed. Monitoring for sensitive archaeological and historic resources would be initiated when necessary to determine if damage or destruction were occurring. If these impacts were found, fences or other barriers would be constructed, or

*Livestock Grazing cont.*

other measures would be taken to protect archaeological and historic resources. Construction of new range facilities would require inventory and would avoid archaeological and historic sites, with project level NEPA analysis completed for all projects.

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts archaeological and historic resources by destroying artifacts, structures and sites during leveling, construction, drilling for posts and/or other installation activities. These activities indirectly impact resources through clearing vegetation and biological soil crusts, and from increased visitor use around sites, allowing for erosion of soil and further degradation of sites. Unauthorized collection may also occur from increased use surrounding these sites. Projected increases in use would result in an increase of this type of impact. This type of impact is typically limited to within 3 mile of recreation sites due to short travel distances for most visitors, ease of access, and ability to take artifacts away in vehicles.

Currently there are 65 recorded archaeological and historic sites within 3 mile of existing recreation facilities and 265 within 3 mile of existing trails. These sites would be evaluated for impacts, and monitoring plots would be established when sensitivity of the sites warrants close attention. Surveys would continue in these areas to locate additional sites for evaluation and protection. Due to the large number of archaeological and historic sites present, monitoring on all sites may not be possible. This has the potential to result in damage or destruction of these resources. If degradation were found from visitor use in these areas, sites may be closed or allocations initiated to reduce the number of people in the area.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to impacts to archaeological and historic resources from trampling or unauthorized collection. Group size restrictions of 12 and 25 respectively would reduce the potential for these impacts. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system would also help to reduce impacts from this type of use.

Although there is the potential for 32 new recreation sites disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres), areas with known archaeological and historic sites would be avoided. Some archaeological and historic sites may be developed for interpretation in order to educate the public about these resources. This would occur in sites where increased use could be accommodated without site degradation and where sensitive artifacts and structures are properly documented. For all proposed sites, surveys would be completed prior to construction, and areas with archaeological and historic resources would be avoided.

*Recreational Facilities and Use cont.*

Delineation of these sites and installation of fences and interpretive signs would limit the size of the disturbed area and increase awareness of archaeological and historic resources, resulting in a reduction in site degradation. Concentrating use into a smaller area, where use could be accommodated without impacting sensitive resources, reduces impacts to archaeological and historic resources over a larger area of the Monument.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing up to 70 acres. Surface disturbance, monitoring, curation and excavation would occur as described previously for designated camping areas. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to archaeological and historic resources would be addressed.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford substantial protection to archaeological and historic resources from the direct effects of cross-country vehicle use (degradation, destruction and damage to artifacts and sites). Protection of archaeological and historic resources from indirect effects (unauthorized collection and erosion from surface disturbance) would also occur as a result of these restrictions. There is the potential for direct and indirect impacts to archaeological and historic resources from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Use of 888 miles of designated routes may contribute to the unauthorized collection of archaeological and historic artifacts. It is reasonably foreseeable that this type of impact on archaeological and historic sites is generally limited to within **3** mile of these routes, due to use patterns and accessibility. Projected increases in use would increase the potential for this type of impact. Although inventories for sites have not been completed throughout the Monument, there are 597 archaeological and historic sites currently recorded as occurring within **3** mile of designated open routes. As described for recreation sites, sensitive archaeological and historic sites would be monitored and/or surveyed to determine impacts, and appropriate actions (barriers, excavation and curation, allocations) would be taken when determined necessary for protection.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes).

*Transportation cont.*

Visitors would be encouraged to use areas already disturbed, and new clearing would be prohibited. There are currently 8 known archaeological and historic sites within 50 feet of these routes, which may result in damage or destruction of these resources. These sites would be monitored and protected as described above.

Maintenance of designated routes has the potential to directly and indirectly cause impacts to archaeological and historic resources as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes (see the **Maintenance** section in Chapter 2). In the limited cases where maintenance activities would occur outside of the existing disturbance, areas would be inventoried and sites would be protected through excavation, curation or avoidance. If routes were originally constructed through archaeological sites, continued degradation of the site could occur from maintenance activities. Steps would be taken in these cases to excavate and curate the remaining site contents to reduce further degradation and loss of information.

There are 192 miles of administrative routes throughout the Monument which have the potential to indirectly impact archaeological and historic resources by causing erosion. Erosion control structures would be installed when necessary to minimize these impacts. Maintenance of these routes would be the minimum necessary to keep them accessible to high clearance vehicles. However, any maintenance that requires new surface disturbance would require inventories and appropriate protection as described above. Unauthorized collection by authorized users of administrative routes would be unlikely to affect the 81 known or other undocumented sites that may occur within **3** mile of these routes.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion in these areas. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some continued impacts to archaeological and historic resources in the interim until routes are closed and restored.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. Although these areas have had vegetation manipulation in the past, resource inventories may not have been conducted. Moreover, surface disturbance from chaining may have revealed sites previously hidden. Surveys would be conducted for archaeological resources prior to any future restoration, and areas with sensitive archaeological resources would be avoided, as described for other surface disturbing activities. Project level NEPA analysis would also be completed prior to initiation of these projects.

*Water issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted in cases where an overall benefit to Monument resources could be demonstrated. There is the potential for disturbance, damage, or destruction of archaeological and historic resources from surface disturbing construction and impacts associated with the subsequent concentration of use in the immediate vicinity of some water developments, such as troughs or impoundments. Areas for potential development would be surveyed for archaeological and historic resources prior to construction, and if resources were found, the sites would be relocated. Maintenance of existing water developments could disturb, damage, or destroy archaeological and historic sites through surface disturbing maintenance activities. Project level NEPA analysis and inventories for these resources could be required prior to the authorization of maintenance activities.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the degradation of archaeological and historic resources from the activities described above.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Direct impacts to archaeological and historic resources (particularly rock art and structures with wood components) from wildfire could occur from direct combustion of these materials and obliteration or destruction of rock art. Because cross-country travel is prohibited, impacts to cultural or archeological sites could be greater if limited access hindered wildfire suppression activities. Although emergency exceptions for wildfire suppression could be granted, the lack of maintained routes in certain areas and restrictions on the use of some types of equipment could delay or affect response. However, because fire is not a significant risk in most of the Monument, these impacts would be minimal. The limited impacts which could occur would be offset by the protection that archaeological resources would receive from disturbance associated with motorized cross-country travel and access. If archaeological and historic sites with wood structures and/or rock art were close to travel corridors and sensitive in nature, they could be identified in the fire management zones for suppression activities as described in Chapter 2, **Wildfire Management**.

Emergency use of equipment, such as chaining, for fire restoration has the potential to impact archaeological and historic sites and resources directly by damaging and destroying artifacts and mixing cultural materials. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2. Even though it is impossible to determine where emergency fire restoration would be needed, surveys would be conducted for archaeological and historic resources (as well as other resources) in burned areas, prior to use of equipment. Areas with sensitive archaeological and historic resources would be avoided, as described for other surface disturbing activities.

**Proposed Actions with no Reasonably Foreseeable Effects** No reasonably foreseeable effects to archaeological and historic resources would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Riparian Resources Program, Special Status Species Program, VRM, Weed Management, Wild and Scenic Rivers, Wildlife Services.*

### IMPACTS ON BIOLOGICAL SOIL CRUSTS

#### Introduction

Biological soil crusts perform many important ecological functions including: preventing soil erosion, fixing atmospheric nitrogen, improving plant soil-water relationships, contributing to nutrient cycling, and providing sites for seed germination and plant growth. These soil crusts are particularly sensitive to ground disturbance, especially compression which has the potential to result from foot traffic by animals or humans. It is probable that impacts to biological soil crusts have impacts on many other resources and environmental factors, including soils, water quality, nutrient cycling, and on vegetation and the other organisms it supports.

#### Summary of Effects

Direct impacts on biological soil crusts occur primarily from surface disturbing activities, such as construction of facilities, and trampling by people, livestock, and wildlife. These activities also lead to an increased chance for erosion and the introduction of weeds species. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other uses. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use have the potential to cause surface disturbance and damage to biological soil crusts, which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed. Restrictions on surface disturbing activities, active control of noxious weeds, and controls on visitor and vehicle use in the Monument would contribute to the increased protection afforded by the actions in this Plan. Additionally, increased research on restoration ecology and biological soil crusts has the potential to discover new methods to restore disturbed areas to pre-disturbance condition.

#### Direct and Indirect Effects of Proposed Actions

##### *Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance or clearing of biological soil crusts, vegetation and associated soil erosion. These provisions include: no use of heavy equipment and no travel off of designated routes. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting the sensitivity of dry climate biological soil crusts could help educate people about the this resource, but filming relating to any aspect of the Monument may bring more people

*Commercial Filming cont.*

to the area, possibly causing increased use and damage as described below in *Recreational Facilities and Use*. Mechanisms to control visitor use as described in that section would be initiated to reduce these potential impacts.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way directly impacts biological soil crusts by physically removing these soils and vegetation during leveling and other construction activities. Erosion resulting from soil crust and vegetation loss and soil destabilization during these activities has the potential to further degrade biological soil crusts. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed over the next 15 years disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, the small amount of surface disturbance and low number of potential sites reduce the chance that biological soil crusts would be affected by these activities. In all instances, sites would be surveyed prior to construction. In the event sensitive soil crusts were found, the location of sites may be moved to avoid these impacts. Project level NEPA analysis would be completed for all projects, taking into account impacts on biological soil crusts. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of the distribution of biological soil crusts in the Monument, or which would help restore and protect these associations, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of vegetation in the Monument, and would provide a mechanism for alteration in management if degradation to biological soil crusts was determined to be occurring.

Surface disturbing research activities have the potential to degrade biological soil crusts. Surface disturbing research projects would be evaluated by the BLM, and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. Increased research in the Monument could increase awareness of the sensitivity of biological soil crusts, but may cause increased visitation, contributing to impacts discussed for *Recreation Facilities and Use* below.

*Livestock Grazing*

Livestock use has the potential to directly impact biological soil crusts by trampling and indirectly by accelerating erosion, leading to further damage. These crusts are especially susceptible in erodible soils and during dry seasons when the brittle nature of these crusts and loose soil result in easy destruction by trampling. Grazing on many of the allotments in the Monument occurs during winter and the early spring months, reducing the potential for impacts from these grazing activities. Additionally, concentrating use around range facilities has the potential to cause impacts to

*Livestock Grazing cont.*

biological soil crusts in close proximity to these facilities. Livestock grazing within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on biological soil crusts would be considered. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition and structure and function of rangelands, including functioning biological soil crusts. Healthy rangelands also prevent erosion and further degradation of soils. Monitoring in conjunction with grazing management would provide information on changes in vegetation and soil condition, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts biological soil crusts through physical removal. Indirect impacts to biological soil crusts occurs from visitor use around sites, which results in surface disturbance and erosion of soil. Additionally, visitors are a primary vector for the transport of noxious weed species. Construction of new sites has the potential to introduce weeds into areas where they have not previously been found. Impacts from weeds are described below in the *Weed Management* section. Projected increases in use would result in an increase of these impacts. Impacts from use in association with recreation sites are generally concentrated to within 3 mile of facilities.

Recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to direct and indirect impacts, but limited access and use in these zones would not contribute substantially to these impacts. Group size restrictions of 12 and 25 respectively would help reduce the potential for these impacts. Pack stock use also has the potential to contribute to the introduction of weed species, but requirements for weed free hay on BLM lands would reduce this possibility. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas, through the implementation of an allocation system, could also help to reduce impacts from this type of use.

There is the potential for the construction of 32 new recreation sites disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres). Direct and indirect impacts from construction and use of these facilities would be as described previously. Surveys would be completed prior to construction, and areas with sensitive soil crusts would be avoided. The small number of new sites and subsequent surface disturbance would not contribute substantially to impacts on biological soil crusts. Delineation of these sites and installation of fences and interpretive signs would limit

*Recreational Facilities and Use cont.*

the size of the disturbed area, reducing the direct effects of trampling and indirect effects of erosion. Again, the concentration of disturbance and use into areas where increased use can be accommodated without causing degradation of sensitive resources, would protect larger areas of the Monument from dispersed use disturbance.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Most of these areas would be designated where camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts to biological soil crusts. Direct and indirect effects of the surface disturbance and use of these areas would be as described previously for other facilities.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to biological soil crusts would be addressed.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Management and Emergency Exceptions** sections in Chapter 2). This would afford protection to biological soil crusts from being crushed and destroyed and from the indirect effects of these activities, which includes erosion. Additionally, use of vehicles, such as OHVs and bicycles, facilitate the transport of noxious weed species, resulting in impacts as described below in the *Weed Management* section. The combination of soil crust removal and weed introduction has the potential to have long-term detrimental effects on biological soil crusts and native vegetation associations. There is the potential for direct and indirect impacts on biological soil crusts from unauthorized travel of vehicles off of designated routes. Enforcement, as described in the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Use of 888 miles of designated routes may result in people traveling by foot off of these routes, directly and indirectly affecting biological soil crusts by trampling, compaction of soil, and surface disturbance, causing erosion. It is assumed that this type of impact on biological soil crusts is generally concentrated within **3** mile of routes due to use patterns and ease of access. Projected increases in use would increase the potential for this type of impact.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This could directly and indirectly impact biological soil crusts by crushing and by causing surface disturbance. Visitors would be encouraged to use areas already disturbed, and new clearing of vegetation would be prohibited. However, some impacts to biological soil crusts may still occur.

*Transportation cont.*

Direct impacts may occur from activities associated with the maintenance of designated open routes, as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated open routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes, protecting biological soil crusts from burial and destruction. In the limited cases where maintenance activities would occur outside of the existing disturbance, areas would be inventoried and maintenance achieved in a manner that would minimize impacts to sensitive biological soil crusts.

Although there are fewer miles of administrative routes (192 miles), lack of maintenance on these routes may increase degradation and erosion. Erosion control structures would be installed when necessary to minimize these impacts.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion. An opportunity for the study of restoring biological soil crusts exists in these areas. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some impacts to biological soil crusts.

*Vegetation Management*

Native plants would be used as a priority for all seeding projects in the Monument. This would afford biological soil crusts protection from displacement and competition from aggressive non-native species.

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this reclamation work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These activities would only be used to restore a natural range of native plant associations in the Monument, directly and indirectly improving the condition of native vegetation throughout the Monument. For example, a seeding which is primarily crested wheatgrass may be burned and seeded to promote the restoration of native plant associations in the area. Research on the restoration of biological soil crusts would be initiated in these areas and project level NEPA analysis would be completed prior to initiation.

Removal of forestry products would only occur on the 23,950 acres designated for fuelwood cutting, or in other areas where deemed necessary to restore a natural range of native plant associations. These areas are typically pinyon and juniper woodlands which, as a result of impacts from livestock, wildlife and fire suppression, have spread and contain little understory and herbaceous growth, and often little soil crust development. There is the potential for trampling of biological soil crusts during collection of forestry products exists, though the small amount of area where these activities would be allowed would not contribute substantially to impacts.

*Vegetation Management cont.*

Restoration and revegetation provisions, as discussed in Chapter 2, are required for all surface disturbing activities in the Monument as part of the project planning process. These provisions would provide substantial protection from noxious weed invasion, erosion, and further degradation of surrounding biological soil crusts.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when necessary for the protection of Monument resources. The indirect effects of surface disturbing activities would be the same as for other surface disturbing activities and associated use, as described previously. Maintenance of existing water developments has the potential to cause some minor surface disturbance. Project level NEPA analysis would be completed prior to the authorization of any construction. These water developments would most often be used to displace use away from sensitive riparian habitat, which is more easily affected by cattle and wildlife. Biological soil crusts in and around the areas where use is displaced could be affected from increased trampling and degradation of these soil crusts.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure and function of biological soil crusts in surrounding areas. Disturbance of biological soil crusts can actually lead to increased probability of weed invasion in many areas. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and further disrupt biological soil crusts. Conversion of vegetation structure by noxious weed species can make re-establishment of biological soil crusts difficult if not impossible. These species are spread by a variety of means, some of which (e.g., vehicles and foot traffic) are directly attributable to human actions and are discussed in those sections. Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. Continued degradation of biological soil crusts has the potential to occur in areas left untreated.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the degradation of biological soil crusts from the activities described above.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. In areas where annual weed species are prevalent, destruction and degradation of biological soil crusts would result from fires. Although vegetation in these areas would quickly regrow, the loss of biological soil crusts in the area may lead to an increased chance for invasion of weed species and associated impacts. Impacts from fire suppression activities can have a profound effect on biological soil crusts by crushing and disturbing the soil, changing the way water moves across the landscape, and causing erosion. These effects are difficult to reverse, especially in dry climates such as the Monument's.

Fire would be allowed to play its natural role in the Monument as much as possible, while protecting private land and providing for public safety. Most of the Monument is located in fire management areas which have little suppression

*Wildfire Management, Management Ignited Fires, and Fire Restoration cont.*

activity. This would allow fires to reach a larger size, but would protect biological soil crusts from the surface disturbing effects associated with motorized travel off of designated routes during suppression activities. Areas such as recreation sites and wooden structures would be protected from fire, but most have access routes to them. Emergency use of equipment, such as chaining, for fire restoration has the potential to impact biological soil crusts by clearing vegetation and biological soil crusts which allows for erosion. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2. Impacts to biological soil crusts from management ignited fires and emergency fire restoration projects would be evaluated prior to implementation of these activities in the Monument.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to biological soil crusts resources would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Collections, Riparian Resources Program, Special Status Species Program, VRM, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON VEGETATION**

**Introduction**

Steep canyons, limited water, seasonal flood events, unique and isolated geologic substrates, and large fluctuations in climatic conditions have all influenced the composition, structure, and diversity of vegetation associations of the Monument. Vegetation is a fundamental and vitally important element among the Monument's biological resources. Impacts to other resources are often an indirect result of clearing vegetation. Where impacts to vegetation lead to soil erosion, that erosion has the potential to damage or degrade archeological, paleontological, and historic resources, as well as water quality and air quality, as described in impact discussions for those resources. Impacts to Federally listed plant species are included in a separate section, though many of the impacts are similar in nature.

**Summary of Effects**

Impacts to vegetation resources result directly from the removal of vegetation for the construction of facilities (e.g., recreation, communication) and from trampling by visitors, livestock or wildlife. Indirect impacts include changes in composition of vegetative associations brought about by invasion of weeds and surface disturbance leading to erosion and habitat degradation. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities, such as recreation facilities, rights-of-way, and water developments, over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other uses. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use have the potential to cause surface disturbance which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed. Limited amounts of surface disturbance, restrictions on surface disturbing

**Summary of Effects cont.**

activities, controls on visitor and vehicle use, monitoring of vegetation condition, restoration and revegetation provisions, and an active noxious weed removal program, all contribute to an increase in protection for vegetation in the Monument as a result of actions in this Plan.

**Direct and Indirect Effects of Proposed Actions***Collections*

The unauthorized collection of objects, including plants and plant parts, is prohibited by the Proclamation and this Plan. Casual collection (picking flowers, leaves, cones, etc.) in the Monument has not been a problem in the past, and is not anticipated to contribute to the impacts of vegetation associations. Interpretive information would be provided to visitors in high-use areas concerning the sensitivity of vegetation resources and the prohibition on collection to prevent inadvertent damage to vegetation resources.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance or clearing of vegetation and associated soil erosion. These provisions include: no use of heavy equipment, no travel off of designated routes, no work in excess of 10 days, and no degradation of riparian habitat. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting the sensitivity of dry climate vegetation associations could help educate people about this resource, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in the *Recreational Facilities and Use* section. Mechanisms to control visitor use as described in that section would be initiated to reduce these potential impacts.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way directly impacts vegetation associations by physically removing vegetation and biological soil crusts during leveling and other installations activities. Erosion resulting from vegetation loss and soil destabilization during these activities has the potential to further degrade vegetation associations. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed in the Monument over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, the small amount of surface disturbance and low number of potential sites reduce the chance that vegetation associations would be affected by these activities. In all instances, sites would be surveyed prior to construction. In the event that sensitive vegetation associations were found, the location of sites may be moved to avoid these impacts. Project level NEPA analysis would be completed for all projects, taking into account impacts on vegetation. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of the distribution of plants and plant associations in the Monument, or which would help restore and protect these associations, would be encouraged. Monitoring initiated as part of the adaptive management framework would provide information regarding the condition of vegetation in the Monument and would provide a mechanism for alteration in management if degradation to vegetation associations was determined to be occurring.

Collection of plants is a vital component of most studies relating to vegetation associations. This type of collection would be allowed by permit as required for the proper documentation of plant specimens and to gain a better understanding of the distribution of plants in the Monument. There is the potential for degradation of vegetation associations by removing plants during surface disturbing research activities, including research relating to other resources. Surface disturbing research projects would be evaluated by the BLM and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. Evaluation of proposed research projects would take into account the short and long-term impacts these collection activities may have on vegetation associations. Increased research in the area may draw attention to vegetation or other resources in the Monument, possibly contributing to impacts discussed previously.

*Livestock Grazing*

Livestock use has the potential to directly impact vegetation resources by consumption and trampling of vegetation, and indirectly by accelerating erosion leading to further damage of vegetation associations. Additionally, concentrating use around range facilities has the potential to impact plants in close proximity to these facilities. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on vegetation is a primary measure of range condition. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands. Healthy rangelands also prevent erosion and degradation of soils and water. Monitoring in conjunction with grazing management would provide information on changes in vegetation condition, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts vegetation associations by removing plants and biological soil crusts. Indirect impacts to vegetation come from visitor use around sites which results in surface disturbance and erosion of soil. Additionally, visitors are one of the primary vectors for the transport of noxious weed species. Construction of new sites has the potential to introduce weeds into areas where they have not previously been found. Impacts from weeds would be as described below in the *Weed Management* section. Projected increases in use would result in an increase of these impacts.

*Recreational Facilities and Use cont.*

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to direct and indirect impacts, but limited access and use in these zones would not contribute substantially to these impacts. Group size restrictions of 12 and 25 respectively would reduce the potential for these impacts. Pack stock use also has the potential to introduce weed species, but requirements for weed-free hay on BLM lands would reduce this possibility. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system would also help to reduce impacts from this type of use.

There is the potential for the construction of 32 new recreation sites, disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres). Direct and indirect impacts from construction and use of these facilities would be as described above. The small number of new sites and subsequent surface disturbance would not contribute substantially to impacts on vegetation associations. Delineation of these sites and installation of fences and interpretive signs would limit the size of the disturbed area, reducing the direct effects of trampling and indirect effect of erosion. Concentrating use into a smaller area, where use could be accommodated without impacting sensitive resources, reduces impacts to vegetation resources over a larger area of the Monument.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing up to 70 acres. Direct and indirect effects of the surface disturbance and use of these areas would be as described previously for other facilities. As above, the limited number of areas and surface disturbance would not contribute substantially to the impacts on vegetation associations. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to vegetation would be addressed.

*Riparian Resources Program*

Restoration and maintenance of riparian areas to proper functioning condition would enhance vegetation associated with these systems and contribute to the overall protection of vegetation associations in the Monument. Impacts specific to riparian resources are discussed separately under the **Impacts on Riparian Resources** section of this chapter. Restoration and inventory of all of these areas simultaneously is impossible, but steps are being taken to complete this process through the implementation of the Standards and Guidelines and additional inventory efforts over the next three years. Plants occurring in non-functioning or at risk riparian areas have the potential to see

<i>Riparian Resources Program cont.</i>	direct mortality and degradation. Impacts to riparian resources are discussed in detail under a separate heading in this chapter.
<i>Special Status Species Program</i>	Protection of habitat for Federally listed threatened and endangered species (both plants and animals), as described in Chapter 2, <b>Special Status Plants Species</b> and <b>Special Status Animals Species</b> , would benefit vegetation in the immediate areas of protected habitats. Impacts on special status species are described separately for wildlife and plants in this chapter.
<i>Transportation</i>	<p>Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the <b>Transportation and Access</b> section of Chapter 2). This would prevent vegetation from the direct effects of being crushed and uprooted and from the indirect effects of these activities, which include removal of vegetation resulting in erosion and degradation of water quality. Additionally, use of vehicles facilitate the transport of noxious weed species, resulting in impacts as described below in the <i>Weed Management</i> section. There is the potential for direct and indirect impacts to vegetation resources from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the <b>Enforcement</b> section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.</p> <p>Use of 888 miles of routes designated open may result in people traveling by foot off of these routes directly and indirectly impacting vegetation by trampling, compaction of soil, and surface disturbance causing erosion. It is assumed that this type of impact on vegetation is generally limited to within <b>3</b> mile of routes due to use patterns. Projected increases in use would increase the potential for this type of impact.</p> <p>While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This would directly and indirectly impact vegetation by crushing and by causing surface disturbance. Visitors would be encouraged to use areas already disturbed, and new clearing of vegetation would be prohibited. However, some vegetation removal may still occur.</p> <p>Direct impacts may occur from activities associated with the maintenance of routes, as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes (see the <b>Maintenance</b> section in Chapter 2). In the limited cases where maintenance activities would occur outside of the existing disturbance, areas would be inventoried to avoid sensitive vegetation, and restoration or revegetation would occur as discussed in that section of Chapter 2. Although there are fewer miles of administrative routes (192 miles), lack of routine maintenance on these routes may increase degradation and erosion. Erosion control structures would be installed when necessary to minimize these impacts.</p>

*Transportation cont.*

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some impacts to vegetation associations.

*Vegetation Management*

Native plants would be used as a priority for all restoration projects in the Monument. This would afford native plant associations protection from displacement and competition from aggressive non-native species.

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. Restoration methods would only be used to restore a natural range of native plant associations in the Monument, directly and indirectly improving the condition of native vegetation throughout the Monument. For example, a seeding which is primarily crested wheatgrass may be burned and seeded to promote the restoration of native plant associations in the area. Again, these treatments would be used to establish a natural range of native plant associations.

Removal of forestry products would only occur on the 23,950 acres currently designated as fuelwood cutting areas, unless more areas are identified as necessary to meet the objective of restoring a natural range of native plant associations. These areas are typically pinyon and juniper woodlands which, as a result of impacts from livestock, wildlife, and fire suppression, have spread and contain little understory and herbaceous growth. Opening of areas through thinning would allow shrub, grass and forb species to increase, improving the condition of these vegetation associations. Trampling of vegetation during collection of forestry products has the potential to occur.

Restoration and revegetation provisions, as discussed in Chapter 2, are required for all surface disturbing activities in the Monument as part of the project planning process. These provisions would provide substantial protection from noxious weed invasion, erosion and further degradation of surrounding vegetation associations.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when necessary for the protection of Monument resources. The indirect effects of these surface disturbing activities would be the same as for other surface disturbing activities and associated use as described previously. Maintenance of existing water developments has the potential to cause some minor surface disturbance. Project level NEPA analysis would be completed prior to the authorization of any construction activities. These water developments would most often be used to displace use away from sensitive riparian habitat, which is more easily affected by cattle and wildlife. Vegetation in the areas where use is displaced to would see increased use by cattle and wildlife, causing

*Water Issues cont.*

trampling and degradation of these associations. These impacts would be taken into consideration during the NEPA analysis for future water development projects.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations. Noxious weeds can also impact water quality and wildlife species dependent on native vegetation by displacing native species and de-watering of streams. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and disrupt natural plant and animal associations. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult if not impossible. These species are spread by a variety of means, some of which (e.g., vehicles and foot traffic) are directly attributable to human actions and are discussed in those sections.

An active noxious weed control program would focus on the removal of these species in the most sensitive of habitats, such as riparian areas and special status species areas. The use of chemicals in the treatment of weed species, under limited circumstances as described in Chapter 2, has the potential to directly impact some non-target species, but the reestablishment of natural vegetation structure and function would increase the habitat conditions for all species over the long-term. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to non-target species. NEPA analysis would be required prior to project initiation.

Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. Continued degradation of vegetation associations has the potential to occur in areas left untreated.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities on vegetation, as described previously. Research on restoration ecology in conjunction with the adaptive management framework (Appendix 3) would provide mechanisms for restoration of these areas in the future.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. Short-term loss of vegetation would result from fires, but would quickly regrow in areas with diverse vegetation within a growing season. Reseeding with native species would be initiated in areas where species diversity was low prior to burning. Impacts from fire suppression activities can have a profound effect on vegetation, changing the way water moves across the landscape and causing erosion. These effects are difficult to reverse, especially in dry climates such as the Monument's.

*Wildfire Management, Management Ignited Fires, and Fire Restoration cont.*

Fire would be allowed to play its natural role in the Monument as much as possible, while protecting private land and providing for public safety. Most of the Monument is located in fire management areas which have little suppression activity. This would allow fires to reach a larger size, but would protect vegetation from the surface disturbing effects associated with motorized travel off of designated routes. Areas such as recreation sites and wooden structures would be protected from fire as much as possible and most have access routes to them. Emergency use of equipment, such as chaining, for fire restoration has the potential to impact vegetation associations by clearing vegetation and biological soil crusts which allows for erosion. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to vegetation resources would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, VRM, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON SPECIAL STATUS PLANT SPECIES**

**Introduction**

Various factors have contributed to the overall diversity and unique nature of the Monument's flora. The isolation and presence of hanging gardens and relict plant communities also provide opportunities for rare or unusual plants. Currently, Jones=cycladenia and Ute ladies=tresses are listed as Federally threatened and Kodachrome bladderpod is listed as Federally endangered. In addition to these three species, there are 14 species listed by the Utah BLM as sensitive species. A list of these species is provided in Appendix 9.

**Summary of Effects**

Impacts to special status plant populations occur primarily from soil compaction, trampling, and introduction of weed species. Because vehicles are restricted to designated routes, impacts would result primarily from trampling or collection by visitors, or trampling by livestock or wildlife. Restrictions on surface disturbing activities, mechanisms to control visitor use, restoration, and an active weed removal program all contribute to the protection and promote recovery of special status plant species. The BLM concludes that the actions proposed in this Plan are not likely to adversely affect the Kodachrome bladderpod, Jones=cycladenia or sensitive plant populations or habitat in the Monument. Furthermore, the actions described in this Plan would likely be beneficial to the recovery and conservation of these species. Most actions described in this Plan would likely be beneficial to the recovery and conservation of Ute ladies=tresses populations and habitat. As a result, the BLM concludes that the actions proposed in this Plan may affect, but do not adversely impact, Ute ladies=tresses populations or habitat. The BLM would continue to work in conjunction with the U.S. Fish and Wildlife Service (USFWS) and adjacent land managers to protect and restore special status species populations and habitat.

**Direct and Indirect Effects of Proposed Actions***Collections*

The unauthorized collection of objects, including plants and plant parts, is prohibited by the Proclamation and this Plan. Furthermore, the Endangered Species Act prohibits the collection of Federally listed plant species without a permit from the USFWS. The prohibition of these actions would help eliminate the casual collection or taking of protected species in the Monument. Coupled with an education program and increased law enforcement presence in the Monument, there should be little threat from unauthorized collection of listed species in the Monument. Collection of any specimens near known listed species populations for scientific purposes is discussed below in the *Inventory, Monitoring, Research and Adaptive Management* section, and would be closely monitored.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards and would not be permitted in known special status species populations for any reason.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Communication sites, utility rights-of-way, and road rights-of-way would not be permitted in known special status species populations for any reason. As permits are granted for these activities, surveys would be completed to determine the presence of special status species in the area. If they were found, these activities would be moved to another location. This would protect these resources from the direct and indirect effects of surface disturbance associated with the construction and use of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of special status species in the Monument, or which would help restore and protect these resources, would be encouraged. Surface disturbing research activities would not be allowed in threatened or endangered species habitat. All scientific research projects in close proximity to listed species populations or habitat would be evaluated by Monument biologists, the USFWS, and appropriate experts prior to initiation to determine impacts to these populations or habitat. Any research project which may have an effect on populations of listed species would be coordinated with the USFWS, and appropriate permits and Section 7 consultation would be completed as determined necessary. Projects which provide new information and understanding of listed species, their populations, and/or their habitat, may be allowed after approval by the BLM and the review and issuance of permits by the USFWS. All projects would be evaluated on a case-by-case basis. Increased research in the area may draw attention to these unique associations, possibly contributing to impacts, the introduction of weeds, and degradation of habitat.

*Livestock Grazing*

Livestock grazing, though allowed in Kodachrome bladderpod and Jones=cycladenia habitat, has little effect on these populations, as stated in the Federal Register listing these species. Furthermore, cattle infrequently use the areas where these plants grow due to the sparse nature of the vegetation, providing little available forage.

*Livestock Grazing cont.*

Effects of livestock grazing on Ute ladies=tresses has the potential to be detrimental through trampling, soil compaction, and disturbance of riparian vegetation during certain seasons. Grazing can also be beneficial by keeping the density of the competing vegetation low, allowing the orchid to get enough light to grow. In fact, the Ute ladies=tresses population is currently healthy, leading to the conclusion that grazing is either benign or beneficial to the population.

Livestock grazing allotments would be evaluated, consistent with the BLM-wide grazing permit review process described in the **Livestock Grazing** section of Chapter 2. Grazing as it relates to all special status plant species would be addressed during this process and would incorporate the latest research and information in the protection of species. Section 7 consultation would be conducted for all allotments that may affect threatened and endangered species during the individual allotment evaluations. This process would provide increased protection for listed and sensitive species. Monitoring in conjunction with grazing management would provide information on impacts on special status animal species, and if impacts were found, changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3) would be taken.

*Recreational Facilities and Use*

Clearing areas for the construction and placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) would not be permitted in special status plant species populations. Small interpretive signs for resource protection may be placed in close proximity to populations, but would not involve surface disturbance in populations. Since people act as one of the primary vectors for the transport of noxious weed species, an allocation system may be initiated to facilitate the protection of these sensitive resources. Impacts from weeds would be as described below in the *Weed Management* section. Projected increases in use would result in an increase in these impacts.

No recreation facilities (including camping areas and trails) currently occur in Kodachrome bladderpod and Jones=cycladenia populations. New designated primitive camping areas, overnights stays, and pack stock use are also forbidden in these populations, except in existing campgrounds.

There is one trail which occurs within the Ute ladies=tresses population. Compaction of soil, degradation of vegetation associations, and introduction of weed species all have the potential to impact this population. This trail would be relocated out of the riparian area, wherever possible, and the old trail would be restored with native vegetation. Interpretive signs and barriers could be installed in order to educate the public about the sensitivity of resources in the area. Monitoring of use in these areas would be initiated and implementation of allocations may be initiated if degradation was determined to be occurring.

Ute ladies=tresses have been documented as growing in Deer Creek Campground. Surveys for this species would be completed and appropriate actions taken to prevent trampling of the plants by visitors in the campground area. These actions may include replanting native vegetation or construction of barriers if these actions would be appropriate for

*Recreational Facilities and Use cont.*

conservation of this species. Individual sites may be closed if necessary to protect these plants in the campground. Monitoring would continue yearly to assure that these plants are protected. Plans which propose expansion of the campground would be evaluated for the impacts to this species. If expansion results in moving sites out of the immediate riparian zone, and restoring these sites to the natural condition, they would be favored. No expansion which proposes further impact to the riparian area would be considered, as it would increase the potential for impacts to this population.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed, which would include a special status species inventory addressing site specific impacts to special status species.

*Riparian Resources Program and Special Status Species Program*

Ute ladies=tresses occur in riparian areas. Restoration and maintenance of riparian areas to proper functioning condition would enhance habitat and potential habitat for this species. Provisions in the Endangered Species Act and BLM policy require the protection of listed species from actions which would lead to further decline or extinction. The BLM would work toward the recovery of species and habitat which are listed as Federally threatened or endangered. The BLM is dedicated to working with the USFWS and adjacent land managers in the recovery and enhancement of listed species populations and habitat.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford protection to known special status species populations from the direct effects of being crushed and uprooted, and from the indirect effects of these activities (surface disturbance and removal of vegetation resulting in erosion and degradation of water quality). Additionally, the use of vehicles facilitates the transport of noxious weed species, resulting in impacts as described below in the *Weed Management* section.

Jones=cycladenia grows in areas which have not been used by OHVs or bicycles in the past and no routes occur within 4 miles of recorded plant locations. Unauthorized use in these areas would be unlikely due to a lack of past use, however, monitoring of the areas would continue to ensure damage is not occurring.

The entire population of Ute ladies=tresses grows in an area which is closed to OHV use due to Outstanding Natural Area designation, and this would continue under this Plan. The Burr Trail crosses the Ute ladies=tresses population, but impacts would occur primarily from use of facilities (e.g., parking area, campground) rather than the route. The paved nature of the road may bring more people into the areas, increasing the impacts described in the *Recreation Facilities and Use* section above.

Kodachrome bladderpod habitat and population has been threatened in the past from the use of vehicles off of routes, and on existing two-track routes within the population. Monitoring has indicated mortality as a result of

*Transportation cont.*

vehicle use in the area. There is currently one route which would remain open (0.18 miles) through the Kodachrome bladderpod population, but this route has been historically maintained and no plants grow in close proximity to this route. This route would not be open to OHV use. Unauthorized travel off this route has the potential to result in impacts as discussed above. Physical barriers, as well as closed signs, would be placed in strategic locations to prevent access into areas where the Kodachrome bladderpod grows. Restoration of some of the site may be initiated to repair damage from vehicle use. Monitoring would continue in order to determine effects of closures and to measure the resilience of the population. Use of routes and people traveling by foot into these areas may also result in trampling and transport of weed species into the Kodachrome bladderpod population.

The BLM would pursue cooperative agreements with the Sheriff departments in Kane and Garfield Counties to facilitate shared law enforcement and support for enforcing established closures. BLM law enforcement personnel are being hired to help with some of the increased enforcement of proposed closures. The increased field presence of BLM field personnel would help deter non-compliance activities in closed areas.

*Vegetation Management*

Seeding, vegetation restoration methods, and forestry product collection would not be allowed in special status species populations. Methods for removal of noxious weed species may be initiated if these species are found in these areas, or to restore these areas to natural conditions. Details on impacts from weeds and actions to be taken are described below. Project level NEPA analysis would be completed prior to initiation of these projects.

*Water Issues*

The information in the **Water** section of Chapter 2 describes a strategy for assuring water availability. Priority would be to maintain natural flows and flood events. The measures described in that section would be initiated to accomplish this goal. In addition, the maintenance of instream flows would provide adequate water for natural structure and function of riparian vegetation. No new water developments would be authorized in special status species populations.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations. This can be more pronounced in areas where water is sufficient to facilitate establishment and maintenance of these species, such as in the Ute ladies-tresses populations. Noxious weeds can also impact water quantity and quality and native vegetation by displacing native species and de-watering these areas. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and disrupt natural plant associations. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult if not impossible. These species are spread by a variety of means, some of which (e.g., foot traffic) are directly attributable to human actions and were discussed previously.

An active noxious weed control program would focus on the removal of these species in the most sensitive of habitats, such as special status species populations. The use of chemicals in the treatment of weed species, under

*Weed Management cont.*

limited circumstances as described in Chapter 2, has the potential to directly impact some non-target species, but reestablishment of natural vegetation structure and function would increase the habitat conditions for all species over the long-term. These chemicals would not be used in close proximity to listed species to ensure they are not affected by these actions. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to non-target plant species. NEPA analysis would be required prior to project initiation.

Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. Special status species populations would be targeted as a top priority for removal of weed species. There is the potential for continued degradation of special status species habitat in areas left untreated.

*Wild and Scenic Rivers*

There are 223 miles of river recommended suitable in this Plan. These segments would be managed for the preservation of identified outstandingly remarkable values. This could prevent damming and diversions upstream (and associated disruption of special status plant habitat such as Ute ladies-tresses which is along a suitable segment in the Monument), if such activities would harm identified outstandingly remarkable values.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities on Ute ladies-tresses and Kodachrome bladderpod whose populations partially occur in WSAs.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystem, natural fires do occasionally occur in the area. Due to the sparse nature of vegetation in Kodachrome bladderpod and Jones-cycladenia populations, there is little likelihood that fire was a major component of these systems. Still, natural fires do occur in these areas and these process would not be altered. Reseeding or surface disturbing restoration after fires in these areas would not be allowed. Natural diversity and vegetation structure would provide adequate regeneration of areas. Management ignited fires would also not be allowed in these areas.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to special status plant species would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, VRM, Wildlife Services.*

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**IMPACTS ON RELICT PLANT COMMUNITIES AND HANGING GARDENS**
**Introduction**

Relict plant communities and hanging gardens contain unique vegetation assemblages as well as associated wildlife species which are not found elsewhere in the Monument. The unique quality of these areas is directly related to their isolation over time and/or from disturbance. This isolation also provides an opportunity to gauge impacts occurring elsewhere in the Monument and on the Colorado Plateau. Although the location of some of these areas are known in the Monument, the potential for additional areas is high.

**Summary of Effects**

While relict plant communities and hanging gardens can be damaged by surface disturbance and the introduction of weed species, limited access to these areas limits disturbance which would alter their structure and function. Continued protection from surface disturbing activities, uncontrolled visitor use, and weed infestations would substantially protect these associations from degradation. Additionally, inventory and research projects in the Monument would provide information on the location and distribution of these areas, which allows for better protection.

**Direct and Indirect Effects of Proposed Actions***Collections*

The unauthorized collection of objects, including plants and plant parts, is prohibited by the Proclamation and this Plan. Casual collection (picking flowers, leaves, cones, etc.) in the Monument has not been a problem in the past, and is not anticipated as contributing to the impacts of relict plant communities and hanging gardens in the Monument, due to the inaccessibility of the locations where they occur. Collection for scientific purposes are discussed below in the *Inventory, Monitoring, Research and Adaptive Management* section, and would be closely monitored.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent damage or destruction in relict plant communities and hanging gardens. These provisions include: no use of heavy equipment and no travel off of designated routes. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting these unique associations could help educate people about the this resource, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in the *Recreational Facilities and Use* section. Mechanisms to control visitor use as described in that section would be initiated to reduce these potential impacts.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Communication sites, utility rights-of-way, and road rights-of-way would not be permitted in relict plant communities or hanging gardens for any reason. This would protect these resources from the direct and indirect effects of surface disturbance associated with the construction and use of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of relict plant communities and hanging gardens in the Monument, or which would help restore and protect these resources, would be encouraged. Inventory projects would be initiated to determine the overall distribution and species composition of relict plant communities and hanging gardens in the Monument. This would provide guidance for increased protection of these resources.

Surface disturbing research activities would not be allowed in relict plant communities and hanging gardens, unless necessary for the restoration of individual sites. Surface disturbing research projects would be evaluated by the BLM, and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. Evaluation of proposed research projects would take into account the short and long-term impacts these collection activities may have on these associations. Increased research in the area may draw attention to these unique associations, possibly contributing to the introduction of weeds and degradation of vegetation and associated species.

*Livestock Grazing*

The relict plant communities which have been identified in the Monument exist partially due to the fact that little if any livestock use has occurred. For this reason, there is little potential for impacts to occur. Although access to many hanging gardens by livestock is not possible, there are some areas where access has been observed. In these cases, the presence of cattle in these sites has the potential to directly impact vegetation resources by consumption and trampling of vegetation, and indirectly by accelerating erosion, leading to further damage of hanging gardens. Water and increased vegetation associated with hanging gardens attract cattle, increasing the potential for impacts. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands. Inventories would help identify the locations of these resources to facilitate monitoring and protection. Fences, barriers, or other management techniques could be used to prevent cattle from degrading hanging garden associations.

*Recreational Facilities and Use*

No current recreation facilities occur in relict plant communities and hanging gardens, although trails are in close proximity to some hanging gardens and trails lead to some relict plant areas. Compaction of soil, degradation of vegetation communities and introduction of weed species all have the potential to impact these associations. Monitoring of use in these areas and implementation of allocations may be initiated if degradation is determined to be occurring. Primitive camping, campfires, and pack stock use are also forbidden in relict plant communities. Although these activities are allowed near hanging gardens, they are not allowed directly in them. The prohibition of pack stock

*Recreational Facilities and Use cont.*

use in these areas would eliminate the possibility of weeds transport by pack stock and the associated feed. This would reduce the possibility of impacts from weeds as described below.

Clearing areas for the construction and placement of new visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) would not be permitted in relict plant communities and hanging gardens. Since people would still be allowed in these areas, and they act as one of the primary vectors for the transport of noxious weed species, limits on the number of people through the implementation of an allocation system may be initiated to facilitate the protection of these sensitive resources. Potential impacts from weeds would be as described below in the *Weed Management* section. Projected increases in use would result in an increase in all of these impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to relict plant communities and hanging gardens would be addressed if applicable.

*Riparian Resources Program and Special Status Species Program*

Protection of riparian resources would help to protect relict plant communities and hanging gardens associated with them. Restoration and maintenance of riparian areas to proper functioning condition has the potential to enhance sensitive areas associated with these riparian resources. There are currently no known Federally listed species associated with known relict plant communities and hanging gardens. As these sites are inventoried, new species or locations of currently listed species may be found. These species would be protected, and the protection of these species and habitat would contribute to the protection of relict plant communities and hanging gardens.

*Transportation*

There are no routes in known relict plant communities and hanging gardens. There are 379 acres of relict plant communities within **3** mile of designated open routes. Increased use on these routes has the potential to impact relict plant communities by visitors introducing weeds or causing surface disturbance. Additionally, there are 25 acres of relict plant communities within **3** mile of administrative routes, but these would not likely be affected due to the low amount of use and the fact that routes are not directly located in relict plant communities. Motorized and mechanized vehicles have had little effect on relict plant communities and hanging gardens due to inaccessibility and remoteness of these sites. Due to the limitation on vehicles to stay on designated routes, except in limited situations, there is little potential for future damage from vehicle use. The ongoing inventory and adaptive management framework (Appendix 3) would identify new resources or unforeseen conflicts between vehicles and these resources.

*Vegetation Management*

Seeding, vegetation restoration methods, and forestry product collection would not be allowed in relict plant communities and hanging gardens. Methods for removal of noxious weed species may be initiated if these species are found in these areas, or to restore these areas to natural conditions. Project level NEPA analysis would be completed prior to initiation of these projects.

*Water Issues*

No new water developments would be authorized in relict plant communities or hanging gardens, and maintenance activities that would harm these resources would not be allowed.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations. This can be more pronounced in areas where water is sufficient to facilitate establishment and maintenance of these species, such as hanging gardens. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and disrupt natural plant and animal associations. Relict plant communities are defined as relatively undisturbed native plant associations. Weed species in these associations are a serious concern to the protection of the integrity of these associations. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult if not impossible. These species are spread by a variety of means, some of which (e.g., foot traffic) are directly attributable to human actions and were discussed previously.

An active noxious weed control program would focus on the removal of these species in the most sensitive of habitats, such as relict plant communities and hanging gardens. The use of chemicals in the treatment of weed species, under limited circumstances as described in Chapter 2, has the potential to directly impact some non-target species, but the reestablishment of natural vegetation structure and function would increase the habitat conditions for all species over the long-term. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to non-target plant species. NEPA analysis would be required prior to project initiation.

Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. Continued degradation of relict plant communities and hanging gardens has the potential to occur in areas left untreated.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities in relict plant communities and hanging gardens, many of which occur in existing WSAs.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. Since relict plant communities and hanging gardens are generally isolated and protected from disturbance, there is little likelihood that fire was a major component of these system. Still, natural fires do occur in areas and these processes would not be altered. The isolation of these areas also contributes to inaccessibility even if fire suppression activities were desired. Short-term loss of vegetation would result from fires, but would quickly regrow in areas with diverse vegetation within a growing season. Reseeding after fires in these areas would not be allowed. Natural diversity and

*Wildfire Management, Management Ignited Fires, and Fire Restoration cont.*

vegetation structure would provide adequate regeneration of the area. Management ignited fires would also not be allowed in these areas, unless it was determined that fire had been historically and purposefully excluded from an area.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to relict plant communities and hanging gardens would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, VRM, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON RIPARIAN RESOURCES**

**Introduction**

Riparian areas, comprising less than 1 percent of the total lands in the Monument, are some of the most productive, ecologically valuable, and utilized resources in the Monument. Many wildlife species utilize riparian areas for forage, nesting, migration and year around habitat. This species richness is made possible by the plant diversity, availability of water, prey species, and the proximity to upland communities with their floral and faunal diversity. Impacts to riparian resources are similar to impacts on wildlife and vegetation and have been discussed in those sections when applicable. Comprehensive data collection on riparian resources has not been completed at this time, but preliminary inventory information is available and has been used in the analysis when possible.

**Summary of Effects**

Impacts to riparian resources result directly and indirectly from the removal of vegetation and degradation of water quality from the construction of facilities (e.g., recreation, communication), and from trampling by visitors, livestock, and wildlife. These activities change the composition of vegetative associations by causing weed invasion and surface disturbance, which leads to erosion and habitat degradation. There is a potential for cumulative surface disturbance of approximately 360 acres within the Monument from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. However, some of this disturbance (86 acres) can be attributed to new recreation facilities which are prohibited in riparian areas. The remainder of the disturbance estimates would be from activities that would avoid riparian areas whenever possible. In addition, visitor and livestock use have the potential to cause surface disturbance which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed, outside of riparian areas. The following actions all contribute to an increase in protection for riparian resources in the Monument as a result of actions in this Plan: prohibition of facilities in riparian areas; limits and restrictions on all surface disturbing activities; mechanisms to control visitor use; closure of vehicular travel off of designated routes; monitoring of Proper Functioning Condition for riparian areas; monitoring of vegetation condition; restoration and revegetation provisions; and an active noxious weed removal program. Additionally, research and the adaptive

**Summary of Effects cont.**

management framework (Appendix 3) would facilitate and increase knowledge of these areas in the Monument, and provide mechanisms for changing management to increase protection of these unique and vital resources.

**Direct and Indirect Effects of Proposed Actions***Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance or clearing of vegetation and associated soil erosion. These provisions include: no use of heavy equipment, no travel off of designated routes, no work in excess of 10 days, and no degradation of riparian habitat. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting the sensitivity of riparian resources could help educate people about this resource, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in *Recreational Facilities and Use*. Mechanisms to control visitor use as described in that section would be initiated to reduce these potential impacts.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way has the potential to directly impact riparian resources by physically removing vegetation and biological soil crusts during leveling and other installations activities. Erosion resulting from vegetation loss and soil destabilization during these activities has the potential to further degrade water quality and subsequently riparian resources. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way would be constructed in the Monument over the next 15 years disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites which may be allowed in these areas for safety purposes only and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, the small amount of surface disturbance and low number of potential sites reduce the chance that riparian resources would be affected by these activities. Furthermore, these facilities would avoid riparian areas whenever possible. In all instances, sites would be surveyed prior to construction. In the event that sensitive riparian resources are found, the location of sites or rights-of-way may be moved to avoid these impacts. Project level NEPA analysis would be completed for all projects, taking into account impacts on vegetation and riparian resources. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of riparian resources in the Monument, or which would help restore and protect these resources, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of riparian resources in the Monument and would provide a mechanism for alteration in management if degradation to riparian resources was determined to be occurring.

*Inventory, Monitoring, Research and Adaptive Management cont.*

There is the potential for degradation of riparian resources by removing plants during surface disturbing research activities, including research relating to other resources. Surface disturbing research projects would be evaluated by the BLM and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. Increased research in the area may draw attention to riparian areas or other resources in the Monument, possibly contributing to impacts discussed previously.

*Livestock Grazing*

Livestock use has the potential to impact riparian resources directly by consumption and trampling of vegetation, and indirectly by accelerating erosion leading to further damage of riparian resources. Water and increased vegetation associated with riparian areas attract cattle, increasing the potential for impacts. Additionally, concentrating use around range facilities in riparian areas has the potential to impact plants, animals and soil in close proximity or downstream from these facilities. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on riparian resources is a primary measure of range condition. Assessment of riparian Proper Functioning Condition (PFC) is a standard method of evaluation used to determine condition and impacts to riparian areas (see *Riparian Resources* section below for further discussion). Continued evaluation of these areas is just one aspect of grazing and resource management. Proper grazing, vegetation and riparian management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands. Healthy rangelands also prevent erosion and degradation of soils and water. Monitoring in conjunction with grazing management would provide information on changes in vegetation condition, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts riparian resources by removing vegetation and causing ground disturbance leading to erosion and increased sedimentation. Indirect impacts to riparian areas are caused by visitor use around sites, resulting in further surface disturbance and soil erosion. Additionally, people are one of the primary vectors for the transport of noxious weed species. Construction of new sites has the potential of introducing weeds into areas where they have not previously been found. Impacts from weeds would be as described below in the *Weed Management* section. Projected increases in use of all facilities would result in an increase in all of these impacts. Impacts from use in association with recreation sites are generally limited to within 3 mile of facilities due to ease of access.

New recreation facilities in riparian areas would be limited to small signs for resource protection throughout the Monument. This would afford substantial protection to riparian areas, not only from a lack of surface disturbance

*Recreational Facilities and Use cont.*

related to construction, but also from the increased use which facilities would bring to these areas. Trails could be delineated in riparian areas, if necessary to prevent widespread impacts from multiple trails. Trails would be delineated outside of riparian areas wherever possible.

Dispersed primitive camping and pack stock use in the Primitive and Outback Zones may lead to direct and indirect impacts. Due to the presence of water and vegetation for shade, these areas are used preferentially over surrounding areas, concentrating use and subsequent impacts. Limited access and group size restrictions of 12 (Primitive) and 25 (Outback) would help reduce the potential for these impacts. Pack stock use also has the potential to contribute to the introduction of weed species, but requirements for weed free hay on BLM lands would reduce this possibility. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated for resource protection purposes in these zones and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system could also help to reduce impacts from this type of use.

While new recreation facilities (other than signs and trails) would not be allowed in riparian areas, there is the potential for direct and indirect impacts from the use of facilities in close proximity to (within 3 mile of) riparian areas. Currently there are 15 recreation sites that are within 3 mile of riparian habitat, possibly contributing to impacts as described previously. Due to the small number of potential new sites (32 over 15 years, all outside riparian areas), impacts on riparian resources are not expected to be substantial. Some of these facilities would simply better delineate existing parking areas and trailheads to limit and concentrate disturbance in a smaller area. This would protect sensitive resources over a larger area.

Trail use would have similar impacts on riparian areas as other recreation facilities, although the farther away from routes and parking areas, the fewer the number of people, and the less substantial the impacts. There are 120 miles of riparian habitat that occur within 3 mile of trails in the Monument, possibly contributing to these effects. Of these miles, 95 are in proper functioning condition and the remainder are either non-functioning, functioning at risk, or no data is available. Many of the trails that are in close proximity to riparian areas occur in the Escalante Canyons, where canyons are narrow and placement of trails more than 3 mile from riparian areas is impossible. In areas where placement of trails out of riparian areas is not possible, trails would be designed to minimize impacts by placing trails away from streams, using soil stabilization structures to prevent erosion, and planting native plants in areas where vegetation has been removed.

It is also anticipated that up to 35 primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these

*Recreational Facilities and Use cont.*

two zones (except in existing campgrounds), reducing the potential for more widespread impacts. The delineation of these areas and installation of fences and interpretive signs would limit the size of the disturbed area, reducing the direct effects of trampling and indirect effects of erosion. These areas would be designated where increased use could be accommodated without compromising sensitive resources. Some currently used areas in sensitive riparian habitat may be closed. Any new areas designated for primitive camping would not be located in or in close proximity to sensitive riparian areas.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to riparian resources would be addressed.

*Riparian Resources Program*

Restoration and maintenance of riparian areas to proper functioning condition would enhance these areas throughout the Monument. There are 439 miles of riparian habitat inventoried in the Monument, representing 80 percent of the total riparian habitat assumed to occur within the Monument boundary. Of these miles, 192 are in proper functioning condition, 120 are non-functioning or functioning at risk, and 122 miles have no data available on classification status. Restoration and inventory of all of riparian areas simultaneously is impossible, but steps are being taken to complete this process through the implementation of the Standards and Guidelines and additional inventory efforts over the next three years. Non-functioning and at risk riparian areas have the potential for continued degradation until actions are taken to reverse or stop activities causing these impacts.

*Special Status Species Program*

Protection of habitat for Federally listed threatened or endangered species (both plants and animals), as described in Chapter 2, would protect riparian areas which occur in conjunction with these species=habitat. Protection of these habitats would reduce or eliminate impacts to riparian areas as well as these listed species. Impacts on special status species are described separately for wildlife and plants in this chapter.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford protection to riparian areas from vehicles traveling in stream beds and in adjacent riparian vegetation. Keeping vehicles out of these areas would prevent removal of vegetation, accelerated erosion of stream banks, and degradation of water quality. Additionally, use of vehicles off of designated routes facilitates the widespread transport of noxious weed species, resulting in impacts as described below in the *Weed Management* impacts section. There is the potential for direct and indirect impacts to riparian resources from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Direct impacts to riparian resources may occur from activities associated with the maintenance of designated routes, as described for other surface disturbing activities, such as communication sites and recreation sites.

*Transportation cont.*

Riparian areas are also common stopping places for visitors when traveling along routes, due to shade and proximity to water. This may result in people traveling by foot off of these routes, directly and indirectly impacting riparian areas by trampling vegetation, compacting soil, disturbing wildlife use patterns, and contributing to erosion. There are approximately 27 miles of riparian habitat within 3 mile of designated open routes. Of these, there are 6.9 miles in proper functioning condition, 3.9 miles non-functioning or functioning at risk, and 16.2 miles where no data is available. These areas would be most susceptible to these impacts. Projected increases in use would increase the potential for this type of impact.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). Travel 50 feet off of designated routes in the Outback Zone does not include travel in riparian areas, and these areas would be signed to reflect this restriction.

Maintenance activities would occur on 888 miles of designated routes in the Monument, although these activities would not be allowed outside the current disturbance on most routes. There are approximately 27 miles of riparian habitat within 3 mile of these routes as mentioned above. Although some of these routes are not located directly in riparian areas, erosion and increased sedimentation from run-off have the potential to impact riparian resources. In many cases, maintenance activities could help to channel water off routes, reducing erosion and sedimentation.

Although there are fewer miles of administrative routes (192 miles, with approximately 6 miles of riparian habitat within 3 mile), the lack of maintenance on these routes may increase degradation and erosion. Erosion control structures would be installed when necessary to minimize these impacts to riparian resources.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion. Although restoration would be a priority for the protection of sensitive resources, and non-functioning or functioning-at-risk riparian areas would be a high priority, not all sites can be restored simultaneously, which may result in some impacts to riparian resources.

*Vegetation Management*

Native plants would be used as a priority for all restoration projects in the Monument. This would afford native plant associations protection from displacement and competition from aggressive non-native species.

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These methods would only be used to restore a natural range of native plant

*Vegetation Management cont.*

associations, directly and indirectly improving the condition of native vegetation and riparian areas throughout the Monument.

Forestry product collection would not be permitted in riparian areas, since pinyon and juniper stands are seldom dense enough in these areas to warrant such activities, and soil disturbance may lead to increased sedimentation. Restoration and revegetation provisions, as discussed in Chapter 2, are required for all surface disturbing activities in the Monument as part of the project planning process. These provisions would provide substantial protection from noxious weed invasion, erosion and further degradation of surrounding riparian resources.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when necessary for the protection of Monument resources. The effects of this surface disturbing activity would be the same as for other surface disturbing activities and associated use as described previously. These water developments would most often be used to displace use away from sensitive riparian habitat, which is more easily affected by livestock and wildlife use. Maintenance of existing water developments has the potential to cause some minor surface disturbance, but most maintenance activities would be to fix facilities and prevent further degradation of the surrounding area. Project level NEPA analysis would be completed prior to the authorization of any construction activities. Impacts to riparian resources would be taken into consideration during NEPA analysis for future water development projects.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations, especially in riparian areas where water is sufficient to facilitate establishment and maintenance of these species. Noxious weeds can also impact water quality and wildlife species dependent on native vegetation by displacing native species and dewatering streams. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and disrupt natural plant and animal associations. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult if not impossible. These species are spread by a variety of means, some of which (e.g., vehicles and foot traffic) are directly attributable to human actions and are discussed in those sections.

An active noxious weed control program would focus on the removal of these species in the most sensitive of habitats, such as riparian areas. The use of chemicals in the treatment of weed species has the potential to directly impact some non-target species, but reestablishment of natural vegetation structure and function would increase the habitat conditions for all species over the long-term. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to non-target species. NEPA analysis would be required prior to project initiation.

*Weed Management cont.*

Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. There is the potential for continued degradation of riparian resources in areas left untreated.

*Wild and Scenic Rivers*

There are 223 miles of river recommended suitable in this Plan. These segments would be managed for the preservation of identified outstandingly remarkable values. This could prevent damming and diversions on upstream segments (and associated disruption of riparian resources on the Monument) if such activities would harm identified outstandingly remarkable values.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities in riparian areas, where they occur in WSAs. Vegetation restoration methods in these areas would only be done where compatible with the BLM's IMP. Research on restoration ecology in conjunction with the adaptive management framework (Appendix 3) would provide mechanisms for restoration of these areas in the future.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. Riparian areas are even less likely to have fires, and are consequently less adapted to the effects of fire. Short-term loss of vegetation would result from fires, but would quickly regrow in areas with diverse vegetation within a growing season. Due to the fact that many riparian areas have evolved without the influence of fire, some species may not recover to pre-burned condition. Emergency seeding measures may be initiated if accelerated erosion is anticipated in large riparian systems. These practices would be in accordance with recommendations from the Burned Area Emergency Rehabilitation (BAER) Team report. Reseeding with native species would be a priority and would be initiated in areas of where species diversity was low prior to burning.

Impacts from fire suppression activities can have a profound effect on vegetation, including riparian areas, changing the way water moves across the landscape and causing erosion. These effects are difficult to reverse, especially in dry climates such as the Monument. Fire would be allowed to play its natural role in the Monument as much as possible, while protecting private land and providing for public safety. Little chance exists for fires to occur in riparian areas due to the prohibition of campfires in the Escalante Canyons and Paria Hackberry areas, and the small amount of natural fires which have historically occurred in riparian areas. Most of these canyons are inaccessible, making suppression difficult if not impossible. This protects these areas from the impacts of suppression activities.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to riparian resources would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Collection, VRM, Wildlife Services.*

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**IMPACTS ON WILDLIFE****Introduction**

The Proclamation establishing the Monument states: "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." At the same time, the proclamation refers to the "outstanding biological resources" and "important ecological values" in the Monument. These resources, which encompass entire natural systems, including fish and wildlife habitat, are among those the BLM has been given responsibility to manage and protect. Monument wildlife includes all vertebrate and invertebrate animal species (aquatic and terrestrial), including insects, reptiles and amphibians, fish, birds, and mammals. Threatened and endangered wildlife species are discussed separately. Wildlife species are interrelated and interdependent; impacts to any one are likely to impact others. Data on the presence and distribution of wildlife in the Monument area is scarce. Collaborative inventory and monitoring projects would help improve current baseline data, including spatial information, which improves future habitat and species management.

**Summary of Effects**

Impacts to wildlife species populations and habitat occur primarily from the alteration of foraging habitat through surface disturbing activities and from use of facilities such as recreation sites and routes. Increased erosion, degradation of riparian habitat, disruption of nesting activities, and introduction of weed species are a direct result of these activities. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other uses. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use have the potential to cause surface disturbance, which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations in areas already disturbed, which would improve habitat for native wildlife species. Restrictions on surface disturbing activities, mechanisms to control visitor use (e.g., allocations, groups size restrictions, designated camping areas), closure to vehicular travel off of designated routes, restoration, avoidance, and an active weed removal program all contribute to the protection of all wildlife species.

**Direct and Indirect Effects of Proposed Actions***Collections*

The collection of objects, including wildlife, is prohibited by the Proclamation and this Plan, with the exception of wildlife controlled by the State of Utah, Division of Wildlife Resources. Collection of wildlife or wildlife parts is controlled by regulations set forth by the Utah Wildlife Board. This includes the collection of antlers and horns, and the collection of wildlife for scientific research. Unauthorized collection of wildlife in the Monument has not

*Collections cont.*

been a problem in the past, and is not anticipated to contribute to the impacts of wildlife populations in the Monument.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions that would prevent disturbance of wildlife habitat. These provisions include: no use of heavy equipment, no travel off of designated routes, no work in excess of 10 days, and no degradation of riparian habitat. A full list of these restrictions is found in Chapter 2, **Commercial Filming**. Films documenting wildlife in the Monument could help educate people about the habitat needs and wildlife sensitivity, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in *Recreational Facilities and Use*. Mechanisms to control visitor use as described in that section would be initiated in order to reduce these potential impacts.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way has the potential to impact wildlife species by destroying or degrading habitat and causing erosion. The construction of powerlines has the potential to impact raptor species. Raptor provision for powerlines, which are a standard procedure discussed in the **Rights-of-Way** section of Chapter 2, would reduce or eliminate this type of impact. It is assumed that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed in the Monument over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). Although these sites are allowed on 654,034 acres, the small amount of surface disturbance and low number of potential sites reduce the chance that wildlife habitat, use patterns, or other activities would be disrupted by these facilities. In all instances, sites would be surveyed prior to construction. In the event sensitive wildlife species or habitat are found in these areas, the location of sites or rights-of-way may be moved to avoid these impacts. Project level NEPA analysis would be completed for all projects, taking into account wildlife impacts. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of the distribution and presence of wildlife species in the Monument, or which would help restore and protect wildlife habitat, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of wildlife species in the Monument and would provide a mechanism for alteration in management if impacts on wildlife species or habitat were determined to be occurring.

There is the potential for the degradation of wildlife habitat, as described previously, from surface disturbing research activities, including research relating to other resources. Surface disturbing research projects would be

*Inventory, Monitoring, Research and Adaptive Management cont.*

evaluated by the BLM and the GSENM Advisory Committee would be consulted for recommendations on whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives. Taking of animals is often a component of wildlife studies, though becoming less common. Wildlife taken in conjunction with scientific research requires a Certificate of Registrations from the Utah Division of Wildlife Resources. Evaluation of proposed research projects would take into account the short and long-term impacts these collection activities may have on wildlife populations. Increased research in the area may draw attention to the wildlife or other resources in the Monument, possibly contributing to impacts discussed previously.

*Livestock Grazing*

Livestock grazing has the potential to directly impact wildlife by competing for habitat, especially in riparian areas. Livestock grazing also has the potential to indirectly impact wildlife by changing vegetation composition, structure, and function. Aquatic wildlife has the potential to be affected by water quality degradation resulting from a reduction of vegetative cover and erosion in and near streams and water sources. A discussion of impacts to wildlife in relation to water developments is included in the *Water Issues* section below. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. The effects of livestock grazing on wildlife species would be assessed in the evaluation of allotments as part of the Standards and Guidelines implementation. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands, with ample forage for both wildlife and livestock. Healthy rangelands also prevent erosion and degradation of water quality, protecting aquatic habitat and species from mortality and habitat loss. Monitoring in conjunction with grazing management would provide information on changes in vegetation condition, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) indirectly impacts wildlife species by clearing vegetation and biological soil crusts, and from increased visitor use around sites, allowing for erosion of soil and degradation of vegetation associations. Use of recreation sites close to waterways and riparian areas may lead to increased erosion and sedimentation, affecting water quality and aquatic habitats. Direct impacts result from disruption during construction activities and subsequent use of sites, possibly disrupting travel patterns, nesting activities, roosting, foraging, and migration. Projected increases in use would result in an increase of these impacts.

Currently there are 15 recreation sites within 3 mile of riparian areas, possibly affecting aquatic wildlife habitat and riparian habitat for species associated with these areas. These sites would be evaluated for impacts and appropriate actions taken if degradation of habitat or species population decline was identified as a result of increased use at

*Recreational Facilities and Use cont.*

recreation sites. Actions may include: site stabilization, implementation of allocations, establishment of monitoring plots, construction of barriers, temporary closures, and interpretive information provided for education about the sensitivity of affected wildlife species. Additional surveys and research projects would contribute to the knowledge of species distribution, providing for increased protection of these species. Due to the large size of the Monument, inventory and distribution information for all species is unlikely, resulting in possible mortality and/or habitat destruction. If mortality or habitat destruction for wildlife species were found from visitor use, actions would be taken as described previously to reduce these impacts.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to indirect impacts, but due to limited access and use in these zones these uses would not contribute substantially to these impacts. Group size restrictions of 12 and 25 respectively, would help reduce the potential for these impacts. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system could also help to reduce impacts from this type of use.

There is the potential for 32 new recreation sites, disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres). Direct and indirect impacts from construction and use of these facilities would be as mentioned previously. The small number of new sites and subsequent surface disturbance would not contribute substantially to impacts on wildlife species. For all proposed sites, surveys would be completed prior to construction and impacts on wildlife species considered in facility placement. Delineation of these sites and installation of fences and interpretive signs would limit the size of the disturbed area. Concentrating use into a smaller area, where use could be accommodated without impacting sensitive resources, reduces impacts to wildlife habitat over a larger area of the Monument.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing up to 70 acres. Direct and indirect effects of the surface disturbance and use of these areas would be as described previously for other facilities. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts to wildlife habitat. As above, the limited number of areas and surface disturbance would not contribute substantially to the impacts on wildlife species and habitat.

*Recreational Facilities and Use cont.*

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to wildlife species and habitat would be addressed.

*Riparian Resources Program*

Restoration and maintenance of riparian areas to proper functioning condition would enhance wildlife habitat and contribute to the overall protection of these species. Impacts specific to riparian resources are discussed separately under the **Impacts on Riparian Resources** section of this chapter. Restoration and inventory of all of these areas simultaneously is impossible, but steps are being taken to complete this process, through the implementation of the Standards and Guidelines and additional inventory efforts over the next three years. Wildlife species, especially aquatic wildlife, occurring in non-functioning or at risk riparian areas have the potential to see a population decline from habitat degradation.

*Special Status Species Program*

Protection of habitat for Federally listed threatened and endangered species and state listed species (both plants and animals), as described in Chapter 2, would additionally protect other wildlife species habitat. Impacts on special status species are described separately for wildlife and plants in this chapter.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford protection to wildlife species from the direct effects of vehicle use off of designated routes, including noise and the presence of people and vehicles in the area, possibly disrupting travel patterns, nesting activities, roosting, foraging, and migration. Protection from indirect effects, including removal and damage of vegetation and habitat, erosion from surface disturbance causing loss of habitat, and degradation of water quality, would also occur as a result of these restrictions. There is the potential for direct and indirect impacts to wildlife from unauthorized vehicle travel off of designated routes in the Monument. Efforts for enforcement, as described in the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Use of 888 miles of designated open routes may result in indirect impacts to wildlife species, loss of habitat from people traveling off routes on foot, and erosion from surface disturbance causing loss of habitat and degradation of water quality. It is assumed that this type of impact on wildlife species is generally limited to within **3** mile of routes. Projected increases in use would increase the potential for this type of impact.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). Visitors would be encouraged to use areas already disturbed, and new clearing would be prohibited. However, some vegetation removal may still occur. This is expected to have little direct and indirect impact on wildlife species and habitat.

*Transportation cont.*

In addition to the number of miles open to vehicle travel, the orientation of these designated routes in relation to wildlife migration routes also affects these species. Often it is difficult to determine impacts from these types of activities since wildlife species may adapt to regular use in an area, changing use and timing of use in areas in response to disturbance. There are approximately 588 miles of designated open routes and 109 miles of administrative routes within mule deer habitat, 52 miles of designated open routes and 2 miles of administrative routes in elk habitat, 45 miles of designated open routes and 1 mile of administrative routes in black bear habitat, 45 miles of designated open routes and 13 miles of administrative routes in bighorn sheep habitat, and 64 miles of designated open routes and 5 miles of administrative routes in upland bird habitat. The closure of 1,087 miles of routes in the Monument, could reduce wildlife disturbance and vehicle strikes. The resulting increased traffic on the remaining routes has the potential to increase mortality of wildlife, especially deer, where routes cross migration paths.

Temporary, short-term direct impacts may occur from activities associated with the maintenance of designated routes, as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes (see the **Maintenance** section in Chapter 2). Maintenance activities would not occur with enough regularity to have a substantial impact on wildlife species. However, in the limited cases where maintenance activities would occur outside of the existing disturbance, areas would be inventoried to minimize impacts to sensitive wildlife habitat.

Administrative routes (192 miles) throughout the Monument could indirectly impact wildlife species by causing erosion. Erosion control structures would be installed when necessary to minimize these impacts. Limited use on these routes would minimize the disruption to wildlife.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some impacts to wildlife habitat.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. In accordance with the vegetation management objectives, these treatments would only be used to restore a natural range of plant associations. For example, a seeding which is primarily crested wheatgrass may be burned and seeded to promote the restoration of native plant associations in the area. Restoration of native plant associations would provide forage and habitat for native wildlife species with which they evolved.

*Vegetation Management cont.*

Removal of forestry products in the Monument would only occur on 23,950 acres in the Monument unless more areas are identified as necessary to meet the objective of having a natural range of native plant associations. Opening of areas through thinning would benefit species dependent on grassland and small shrub browse species, but has the potential of impacting species dependent on pinyon and juniper communities. The small amount of area where these activities would be allowed would not contribute substantially to impacts on wildlife species.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when deemed beneficial overall for Monument resources. The indirect effects of surface disturbing activities would be the same as for other surface disturbing activities and associated use as described previously. All new water developments would have provisions for wildlife use, benefitting certain wildlife species. Maintenance of existing water developments has the potential to cause some minor surface disturbance, some of which would be associated with measures to adapt developments so they are compatible for wildlife use. Project level NEPA analysis would be completed prior to the authorization of any construction activities. These water developments would most often be used to displace use away from sensitive riparian habitat, crucial for many wildlife species in the Monument. This would facilitate the protection and enhancement of water quality in the Monument and subsequently reduce population pressures on aquatic wildlife species and their habitat.

*Weed Management*

Noxious weeds can impact wildlife indirectly by replacing native species and de-watering critical riparian habitat. Removal of these species, though temporarily removing cover, would facilitate the return of native species in the long-term. The recovery of native vegetation structure and function would improve habitat and populations of wildlife species, since these species evolved together. The use of chemicals in the treatment of weed species under limited circumstances as described in Chapter 2, has the potential to directly impact some species of wildlife in the short-term. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to wildlife species. NEPA analysis would be completed prior to project initiation. Although removal of noxious weed species is a priority, all areas can not be targeted for removal efforts at once. There is the potential for continued degradation of wildlife habitat in areas left untreated.

*Wild and Scenic Rivers*

There are 223 miles of river recommended suitable in this Plan. These segments would be managed for the preservation of identified outstandingly remarkable values. This could prevent damming and diversions on upstream segments (and associated disruption of riparian wildlife habitat in the Monument) if such activities would harm identified outstandingly remarkable values.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities on wildlife habitat in WSAs. Vegetation restoration methods in these areas would only be allowed where consistent with the Interim Management Policy. Research on restoration ecology in conjunction with the adaptive management framework would provide mechanisms for restoration of these areas in the future.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. A short-term loss of habitat would result to species dependent on these plants. Forage and habitat would quickly return to these areas, providing ample forage within a growing season. There is the potential for impacts to result from an immediate reduction in prey species. Again, these would be short-term impacts, as population numbers would rebound for prey species as forage increased. Most of the Monument is located in fire management areas which have little suppression activity. This would allow fire to reach a larger size, but would protect wildlife species from the surface disturbing effects associated with motorized cross-country travel and access. Emergency use of equipment, such as chaining, for fire restoration has the potential to impact wildlife habitat by clearing vegetation and biological soil crusts which allows for erosion. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2. Effects of such activities on sensitive wildlife species would be assessed prior to their use.

*Wildlife Services(Animal Damage Control)*

Animal damage control activities would directly impact targeted wildlife species by removing individual animals from the population. Use of poisons or other pre-control methods, or methods which target entire populations, would not be allowed as described in the **Wildlife Services** section of Chapter 2. Restrictions on Wildlife Services methods in the Monument would prevent inadvertent mortality of non-predator species.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to wildlife species or habitat would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, VRM.*

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**IMPACTS ON SPECIAL STATUS ANIMAL SPECIES****Introduction**

There are two Federally listed threatened species and six Federally listed endangered species known to occur within the Monument. The threatened species are the bald eagle and the Mexican spotted owl. The endangered species are: the California condor (an experimental, non-essential population), the Colorado pikeminnow, the American peregrine falcon, the razorback sucker, the Kanab ambersnail, and the southwestern willow flycatcher. There are no known candidate species within the boundaries of the Monument. The Mexican spotted owl and American peregrine falcon are the only listed bird species known to nest in the Monument, and additional information on nesting locations needs to be collected. In addition to these listed species, there are also sensitive species which are included in the special status animal species discussed here and described in the **Special Status Animal Species** section of Chapter 2. Surveys to gather additional information on the distribution and population of special status animal species in the Monument are discussed below.

**Summary of Effects**

Impacts to special status animal populations and habitat occur primarily from the alteration of foraging habitat through surface disturbing activities and from use of facilities such as recreation sites and routes. Increased erosion, degradation of riparian habitat, disruption of nesting activities, and introduction of weed species are all direct results of these activities. Because vehicles are restricted to designated routes, impacts would result primarily from trampling or collection by visitors. Restrictions on surface disturbing activities, mechanisms to control use (allocations, groups size restrictions, designated camping areas), restoration, and an active weed removal program all contribute to the protection and recovery of these listed species. The BLM concludes that the actions proposed in this Plan are not likely to adversely affect bald eagle, American peregrine falcon, Mexican spotted owl, southwestern willow flycatcher, California condor, Kanab ambersnail, Colorado pikeminnow, razorback sucker or sensitive wildlife species populations or habitats in the Monument. Furthermore, the actions described in this Plan would likely be beneficial to the recovery and conservation of these species. The BLM would work in conjunction with the USFWS and adjacent land managers to protect and restore special status animal species populations and habitat.

**Direct and Indirect Effects of Proposed Actions***Collections*

The collection of objects, including special status animal species, is prohibited by the Proclamation and this Plan. Furthermore, the Endangered Species Act prohibits the collection of Federally listed animal species without a permit from the USFWS. The prohibition of these actions would help eliminate the casual collection or taking of protected species in the Monument. Coupled with an education program and increased law enforcement presence in the Monument, there should be little threat from unauthorized collection of listed species in the Monument. Collection of listed species for scientific purposes is discussed below in the *Inventory, Monitoring, Research and Adaptive Management* section, and would be closely monitored.

*Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards and is restricted by many provisions as described in the **Commercial Filming** section of Chapter 2. Commercial filming in the Monument would not be permitted in known special status species nesting areas. Films documenting special status animal species in the Monument could help educate people about the habitat needs and wildlife sensitivity, but filming relating to any aspect of the Monument may bring more people to the area, possibly causing increased use and damage as described below in *Recreational Facilities and Use*. Mechanisms to control visitor use as described in that section would be initiated to reduce these potential impacts

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Communication sites, utility rights-of-way, and road rights-of-way would not be permitted in known special status species nesting areas. Prior to the initiation of these activities, surveys for special status animal species would be completed. Projects determined to affect special status animal species would be moved to avoid impacts. Although the construction of powerlines (where they are allowed) has the potential to impact raptor species, raptor protection guidelines, as discussed in the **Rights-of-Way** section of Chapter 2, would reduce or eliminate this type of impact. Project level NEPA analysis would be completed for all projects, taking into account impacts on special status animal species.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of the distribution and presence of special status animal species in the Monument, or which would help restore and protect special status animal species habitat would be encouraged. Surface disturbing research activities would not be allowed in known nesting areas for threatened or endangered species. All scientific research projects in close proximity to listed species populations or habitat would be evaluated by Monument biologists, the USFWS, and appropriate experts prior to initiation to determine impacts to these populations or habitats. Any research project which may have an effect on populations of listed species would be coordinated with the USFWS, and appropriate permits and Section 7 consultation would be completed as determined necessary. Projects which provide new information and understanding of listed species, their populations, and/or their habitat may be allowed after approval by the BLM and the review and issuance of permits by the USFWS. All projects would be evaluated on a case-by-case basis.

A comprehensive inventory for Mexican spotted owls in the Monument began in 1999. This project will look at occurrence of owls, current habitat, and potential habitat if modifications are made. After the surveys in 1999, the BLM would designate protected activity centers in accordance with the recovery plan. These protected activity centers would place limitations on activities as described below in the *Recreation Facilities and Use* section. Limitations would be based on the identification of activities which may be affecting this species.

A comprehensive inventory for southwestern willow flycatcher populations in the Monument began in 1999. This study will look at occurrence of southwestern willow flycatchers, current habitat, and potential habitat if modifications are made (e.g., removal of tamarisk). This inventory would help to identify some of the impacts which may be

*Inventory, Monitoring, Research and Adaptive Management cont.*

occurring in the area, which would help the BLM determine when and where limits on activities (such as recreational use) need to be implemented to protect the southwestern willow flycatcher.

Although the primary habitat for the Kanab ambersnail is along Kanab Creek (a drainage not connected to the Monument), there is a potential for this species to occur within the Monument. Surveys for this species have begun in the 1999 field season. Surveys will be conducted in potential habitat, moist seeps and along water courses in the Grand Staircase portion of the Monument. Results of this survey would be used to determine the potential for further surveys.

If this species is discovered in the Monument, actions would be taken to improve habitat as consistent with the recovery plan objectives. Actions may include assuring flows in appropriate streams and seeps by removing non-native plants affecting the water table, and reducing impacts from visitors and/or livestock. Surveys would also identify current habitat and potential habitat if modifications are made (e.g., removal of tamarisk).

Increased research in the area may draw attention to the special status animal species or other resources in the Monument, possibly contributing to impacts discussed previously. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of special status animal species in the Monument and would provide a mechanism for alteration in management if degradation to special status animal species was determined to be occurring.

*Livestock Grazing*

Livestock grazing has the potential to directly impact special status animal species by competing for habitat, especially in riparian areas. Livestock grazing has the potential to indirectly impact special status animal species by changing vegetation composition, structure, and function. Aquatic special status animal species have the potential to be affected by water quality degradation resulting from erosion in and near streams and water sources. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on special status animal species would be assessed. Section 7 consultation would be conducted for all allotments that may affect Federally listed species. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands, with ample foraging habitat for both wildlife and cattle. Healthy rangelands also prevent erosion and degradation of water quality, protecting aquatic habitat and species from mortality and habitat loss. Monitoring in conjunction with grazing management would provide information on impacts on special status animal species, and if impacts were found, changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3) would be taken.

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails and toilets) indirectly impacts special status animal species by clearing vegetation and biological soil crusts allowing for erosion of soil and degradation of vegetation associations and habitat. Use of recreation sites close to waterways and riparian areas may lead to increased erosion and sedimentation, impacting water quality and aquatic based habitats. These impacts are discussed in the **Impacts on Riparian Resources** section in this chapter. Direct impacts result from disruption during construction activities and subsequent use of sites, possibly disrupting travel patterns, nesting activities, roosting, foraging, and migration. This type of impact would have the most effect on nesting activities of spotted owls and peregrine falcons. It is assumed that this type of impact would be limited to 2 mile for spotted owls and 1 mile for peregrine falcons. Projected increases in use would result in an increase of these impacts.

Currently there is 1 recreation site and 34.2 miles of trails within the above distances of nesting sites, possibly affecting these species. These sites would be evaluated for impacts and appropriate actions taken if degradation of habitat or species population decline was identified as a result of increased use at recreation sites. Actions related to spotted owls would be in conjunction with future identification of protected activity centers, as outlined in the Mexican Spotted Owl Recovery Plan. Actions may include: site stabilization, implementation of allocations, establishment of monitoring plots, construction of barriers, temporary closures for restoration, and interpretive information provided for education about the sensitivity of affected special status animal species.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to indirect impacts, but due to limited access and use in these zones these activities would not contribute substantially to these impacts. Group size restrictions of 12 and 25 respectively, would help reduce the potential for these impacts. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be designated in these zones for resource protection purposes and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system would also help to reduce impacts from this type of use.

There is the potential for construction of 32 new recreation sites disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres). Direct and indirect impacts from construction and use of these facilities would be as described previously. The small number of new sites and subsequent surface disturbance would not contribute substantially to direct impacts on special status animal species, but indirect use may affect these species. For all proposed sites, surveys would be completed prior to construction and special status animal species and habitats would be considered in facility placement. Sites would not be constructed within 2 mile of spotted owl nesting areas or 1 mile of peregrine

*Recreation Facilities and Use cont.*

falcon nesting areas without concurrence of the USFWS. NEPA analysis would be completed on all new recreation facilities, including consultation with USFWS for those projects that may affect special status animal species. Delineation of these sites and installation of fences and interpretive signs would limit the size of the disturbed area, reducing water quality degradation caused by erosion.

It is reasonably foreseeable that 35 new primitive camping areas would be designated, disturbing 70 acres. Most of these areas would be located in areas where primitive camping is already occurring. Direct and indirect effects of the surface disturbance and use of these areas would be as described previously for other facilities. Again, these areas would not be located within 2 mile of spotted owl nesting areas or 1 mile of peregrine falcon nesting areas without the concurrence of the USFWS. The delineation and use of areas would affect special status animal species as described previously for recreation sites.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed, consultation with the USFWS would occur where listed species may be affected, and site specific impacts to special status animal species would be addressed.

Although there is currently not extensive use of the Monument for rock climbing, criteria for designation of climbing areas would be established for the Monument. Climbing is currently not permitted on arches, natural bridges, in archaeological sites or in known special status animal species nest sites. If nest sites are identified in areas designated for climbing, seasonal or permanent closures would be established in those areas to assure disturbance of nesting activities does not occur.

*Riparian Resources Program*

Restoration and maintenance of riparian areas to proper functioning condition would enhance habitat for spotted owls, peregrine falcons, southwestern willow flycatchers, and bald eagles, and would contribute to the overall protection of these special status animal species dependent on these areas for food and shelter. Impacts to riparian areas are discussed in the **Impacts on Riparian Resources** section of this chapter.

*Special Status Species Program*

BLM policy and provisions in the Endangered Species Act require the protection of listed species from actions which would lead to further decline or extinction. The BLM would work toward the recovery of species which are listed as Federally threatened and endangered. The BLM is dedicated to working with the USFWS and adjacent land managers in the recovery and enhancement of listed species populations and habitat.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford protection to special status animal species from the direct effects of vehicle use off of designated routes, which include: noise and the presence of people and vehicles in the area, possibly disrupting travel patterns, nesting

*Transportation cont.*

activities, roosting, foraging, and migration. Protection from the indirect effects, which include removal and damage to vegetation for forage and habitat, erosion from surface disturbance causing loss of habitat and degradation of water quality, would also occur as a result of these restrictions. There is the potential for unauthorized vehicle travel off of designated routes, resulting in the impacts discussed above. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Use of 888 miles of designated routes may result in indirect impacts to special status animal species due to loss of habitat from people traveling off of designated routes on foot. This use has the potential to lead to erosion and surface disturbance causing loss of habitat and degradation of water quality. Additionally, direct physical disturbance of nesting species (spotted owls, peregrines) may occur as a result of this use. It is assumed that this type of impact on special status animal species is generally limited to within **2** mile of routes for spotted owls and 1 mile for peregrine falcons. Projected increases in use would increase the potential for this type of impact.

Currently there are 9 recorded nest sites within the above distances of designated open routes. Monitoring in these areas would determine if impacts to these populations were occurring from activities associated with these routes. Additionally, 70 sightings of bald eagle, southwestern willow flycatcher, and other State sensitive species have been documented within **3** mile of these routes. Restrictions on foot traffic in these areas would be implemented if impacts were determined to be occurring to special status animal species.

Temporary, short-term direct impacts may occur from activities associated with the maintenance of designated routes, as described for other surface disturbing activities such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes. Maintenance activities would not occur with enough regularity to have a substantial impact on special status animal species. Nonetheless, potential impacts to special status animal species would be evaluated, and steps taken to minimize impacts, prior to any maintenance activities.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). It is expected that this would have little direct or indirect impacts on special status animal species because habitat requirements and known sites are generally not adjacent to routes. If nest sites were identified within 50 feet of these routes, the area would be signed to close the area to pulling off routes.

There are 192 miles of administrative routes throughout the Monument which have the potential to indirectly impact special status animal species by causing erosion. There are 9 recorded nest sites within the above distances

*Transportation cont.*

of administrative routes. There have also been 4 sightings of bald eagle, southwestern willow flycatcher, and other State sensitive species which have been documented within 3 mile of these routes. Due to the limited amount of use of the routes it is unlikely that impacts would result from use of the routes. Erosion control structures would be installed when necessary to minimize these impacts.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some impacts to special status animal species habitat.

*Vegetation Management*

Vegetation manipulation would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These areas would not be located in areas where special status animal species roost or nest. Restoration of native plant associations would provide foraging areas and habitat for special status animal species with which they evolved.

Removal of forestry products in the Monument would only occur on 23,950 acres in the Monument, unless more areas are identified as necessary to meet the objective of having a natural range of native plant associations. No known nesting or roosting sites for special status animal species would be included in these areas. Opening of areas through thinning would benefit species dependent on open areas for foraging such as spotted owls. The small amount of area where these activities would be allowed would not contribute substantially to impacts on special status animal species.

*Water Issues*

The information in the **Water** section of Chapter 2 describes a strategy for assuring water availability. Priority would be to maintain natural flows and flood events. The measures described in that section would be initiated to accomplish this goal. In addition, the maintenance of instream flows would provide adequate water for natural structure and function of riparian vegetation, on which many of these species depend.

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when deemed to benefit overall protection of Monument resources. The indirect effects of surface disturbing activities would be the same as for other surface disturbing activities and associated uses as described previously. All new water developments would have provisions for special status animal species use. Maintenance of existing water developments has the potential to cause some minor surface disturbance, but would also be necessary to adapt current developments to be compatible with special status animal species use. Project level NEPA analysis and inventories for

*Water Issues cont.*

these resources could be required prior to the authorization of maintenance activities. These water developments would most often be used to displace use away from sensitive riparian habitat, crucial for many wildlife species, including special status species.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations. This can be more pronounced in areas where water is sufficient to facilitate establishment and maintenance of these species. Noxious weeds can also impact water quantity and quality and native vegetation by displacing native species and dewatering these areas. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands and disrupt natural plant associations. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult if not impossible. These species are spread by a variety of means, some of which (e.g., foot traffic) are directly attributable to human actions and were discussed previously.

An active noxious weed control program would focus on the removal of these species in the most sensitive of habitats, such as special status species populations and riparian areas. The use of chemicals in the treatment of weed species has the potential to directly impact some non-target species (such as endangered fish), but the reestablishment of natural vegetation structure and function would increase the habitat conditions for all species over the long-term. These chemicals would not be used in close proximity to listed species to ensure they are not affected by these actions. Special care would be taken near streams and watercourses to ensure poisons are not entering these systems. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to non-target species. NEPA analysis would be required prior to project initiation.

Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. Special status species habitat would be targeted as a top priority for removal of weed species. There is the potential for continued degradation of special status animal species habitat in areas left untreated.

*Wild and Scenic Rivers*

There are 223 miles of river recommended suitable in this Plan. These segments would be managed for the preservation of identified outstandingly remarkable values. This could prevent damming and diversions on upstream segments (and associated disruption of special status animal species habitat downstream) if such activities would harm identified outstandingly remarkable values.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities to special status animal species habitat described previously. Research on restoration ecology in conjunction with the adaptive management framework (Appendix 3) would provide mechanisms for restoration of these areas in the future.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. Short-term loss of habitat would result to species dependent on these areas for foraging, such as the spotted owl. This habitat would quickly return to these areas, as population numbers would rebound for prey species as forage increased. Most of the Monument is located in fire management areas which have little suppression activity. This would allow fire to reach a larger size, but would protect special status animal species from the surface disturbing effects associated with motorized travel off of designated routes. Emergency use of equipment, such as chaining, for fire restoration has the potential to impact vegetation associations by clearing vegetation, and biological soil crusts, which allows for erosion. These methods would not be used for management ignited fires and are only allowed under limited circumstances as described in the **Vegetation Restoration Methods** section of Chapter 2. Native species would be used in these areas as a priority to restore native habitat for prey species.

*Wildlife Services (Animal Damage Control)*

The use of poisons or methods which target entire populations would not be allowed in the Monument, as described in the **Wildlife Services** section of Chapter 2. Restrictions on Wildlife Services activities in the Monument would prevent inadvertent poisoning of listed species resulting in decreased pressures on these species populations.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to special status animal species would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, VRM.*

**IMPACTS ON WATER QUALITY**

**Introduction**

Water resources within and around the Monument are vital to sustaining many of the Monument's resources. Among others, these resources include the communities of plants and animals associated with hanging gardens, seeps, springs, tinajas, and with ephemeral, intermittent, and perennial streams and ponds. Sensitive plant and animal species also rely upon scarce water resources, as do the riparian zones and entire natural systems that support those and other species. The maintenance of water quality is also of great economic importance to the surrounding communities and the ranching industry within the region.

**Summary of Effects**

Negative, short-term impacts to water quality in the Monument could result from activities that decrease vegetative cover and increase soil erosion. These types of activities would include facilities construction, maintenance of routes, livestock grazing, increased visitor use, and vegetation restoration. There is a potential for cumulative surface disturbance of approximately 360 acres from reasonably foreseeable activities such as recreation facilities, rights-of-way, and water developments over the 15 year planning horizon. Much of the surface disturbance associated with recreational facilities would occur in areas already disturbed by existing camping or other uses. Subsequently, acres of disturbance from these activities would likely be less than are reported here. In addition, visitor and livestock use have

**Summary of Effects cont.**

the potential to cause surface disturbance, which is difficult to estimate. Vegetation restoration methods also have the potential to cause surface disturbance on 20,000 acres over the 15 year planning horizon. These methods would be used to restore native plant associations and would occur primarily in areas already disturbed. Implementation of this Plan would have the long-term, overall effect of improving water quality to the benefit of other Monument resources. Plan implementation would result in improved visitor management, reduction in vehicular travel off of designated routes, and other management practices leading toward restoring natural biophysical systems.

**Direct and Indirect Effects of Proposed Actions***Commercial Filming*

Commercial filming in the Monument would be limited to minimum impact standards, which include provisions to prevent disturbance which could lead to erosion and water quality degradation. These provisions include: no use of heavy equipment and no travel off of designated routes. A full list of these restrictions is found in Chapter 2,

**Commercial Filming.***Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way has the potential to directly impact water quality through clearing vegetation and biological soil crusts, allowing for erosion of soil. These sites have the potential, depending on the location and setting, to create temporary sediment increases to surface streams in the immediate vicinity. However, these sites are typically located in upland areas along ridge tops or buttes and water quality near the site is usually not an issue. Nonetheless, before any sites are permitted, an evaluation of impacts to water quality would be made through a NEPA process, and alterations to the proposal or appropriate water quality protection measures (e.g., sediment and erosion control) would be taken. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed in the Monument over the next 15 years disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing knowledge about the conditions of springs, wells, seeps, diversions, and other water-related features, or which result in stabilizing or preserving at risk resources, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix 3) would provide information regarding the condition of water quality in the Monument and would provide a mechanism for alteration in management if degradation was determined to be occurring. Surface-disturbing research activities on other resources may cause temporary degradation of water quality in the immediate vicinity. Surface disturbing research projects would be evaluated by the BLM and the GSENM Advisory Committee would be consulted for recommendations on,

*Inventory, Monitoring, Research and Adaptive Management cont.*

whether research proposals warrant exceptions, could be permitted in a manner consistent with the protection of Monument resources, and whether the methods proposed are the minimum necessary to achieve desired research objectives.

*Livestock Grazing*

Livestock grazing has the potential to impact water quality through the removal of vegetative cover, which thereby increases soil erosion and subsequently increases the turbidity of streams. In riparian areas, livestock waste has the potential to increase the bacterial content of the water in streamcourses. Livestock grazing within the Monument would be managed in keeping with applicable laws and regulations, and with the statewide Standards for Rangeland Health and Guidelines for Grazing Management. In evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on water quality would be assessed and appropriate actions under the Standards and Guidelines would be taken. Water quality of springs and water-bodies is currently being monitored in the Monument and would be continued to determine if impacts are occurring.

*Recreational Facilities and Use*

Construction of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) directly impacts surface water quality by temporarily increasing sediment load to nearby watercourses. Following construction of facilities, increased visitor use in and around the site(s) may indirectly degrade water quality within nearby surface water courses and within shallow ground water aquifers. Impacts to water quality from recreational use would generally occur within **3** mile of areas with water. The BLM is currently embarking on a comprehensive water quality monitoring effort to ensure that State and Federal water quality standards would be met. Monitoring of other water sources (e.g., springs, streams) in the vicinity of facilities would be initiated if degradation to water quality was determined. Visitor management at the facility could then be modified in order to reduce water quality degradation.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Dispersed primitive camping and pack stock use in these zones may lead to impacts to water quality from soil destabilization and subsequent erosion. Group size restrictions of 12 and 25 respectively would reduce the potential for these impacts. Where impacts are documented in a given area, camping may be restricted to a designated and clearly delineated area away from sensitive resources. This would limit more widespread impacts and disturbance. Such areas would only be used for resource protection purposes in these zones and would most often be designated in areas currently disturbed by camping use. Limits on the number of people in these areas through the implementation of an allocation system would also help to reduce impacts from this type of use.

While new recreation facilities (other than signs and trails) would not be allowed in riparian areas, direct and indirect impacts to water quality from the use of facilities within **3** mile of riparian areas (which are indicative of water resources) may occur. Currently there are 15 recreation sites within **3** mile of riparian habitat, possibly contributing to water quality impacts as mentioned previously. Due to the small number of potential new sites (32 over 15 years, all

*Recreational Facilities and Use cont.*

outside riparian areas), impacts to water quality are not expected to be substantial from these new sites. Some of these facilities would simply be efforts to better delineate existing parking areas and trailheads to minimize and concentrate disturbance in a smaller area. This would protect sensitive water resources over a larger area.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Surface disturbance would occur as described previously for recreation sites. The use of these areas and surface disturbance in these areas are not expected to contribute to impacts on water quality because these sites would be located away from open water. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to water quality would be addressed.

*Riparian Resources Program*

Throughout the Monument, riparian resources would be managed so as to either maintain or improve proper functioning condition. This overall management goal to improve riparian zones would indirectly improve water quality throughout the Monument.

*Special Status Species Program*

Programs to protect and promote the recovery of populations of threatened and endangered plant and animal habitats within the Monument would both directly and indirectly improve water quality. Because many of the Federally listed species within the Monument are associated with riparian habitats, the management prescriptions to protect these species would also help protect the riparian habitat from disturbances. This would, in turn, provide indirect protection of water quality within the Monument.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would afford substantial protection from surface disturbance and erosion that could lead to degradation of water quality. There is the potential for impacts to water quality from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Use of 1,080 miles of designated open routes, including administrative routes, may contribute to impacts on water quality from erosion and subsequent increases in sedimentation. It is assumed that this type of impact would occur where routes are in close proximity to watercourses due to the increased potential for erosion. There are 54 places

*Transportation cont.*

where designated and administrative routes cross riparian habitat (which is indicative of sensitive water resources). Projected increases in use would increase the potential for this type of impact.

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This increased surface disturbance in the Outback Zone has the potential to contribute to water quality impacts in these areas.

Maintenance of designated routes has the potential to impact water quality as described for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated routes in the Monument, and could possibly occur on 192 miles of administrative routes, but these activities would not be allowed outside the current disturbance on most of the routes (see the **Maintenance** section in Chapter 2). In the limited cases where maintenance activities would occur outside of the existing disturbance, impacts to water quality would be a primary concern, and measures to prevent temporary and long-term water quality impacts (sedimentation and erosion control measures) would be taken.

This Plan would close approximately 1,087 miles of routes currently open to public travel, eliminating impacts from those routes crossing riparian habitat and water resources. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing indirect impacts from erosion in these areas. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in some impacts to water quality from erosion in the interim until routes are closed and restored.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. Although there may be temporary impacts to water quality immediately after fires, the restoration of a natural range of native plant associations in the Monument would improve water quality in affected watersheds. Chaining and seeding may be used in limited, emergency situations after wildfire where loss of soil and degradation of water quality are anticipated.

*Water Issues*

It is reasonably foreseeable that 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when necessary for the overall protection of Monument resources. The indirect effects of these activities would be the same as for other surface disturbing activities and associated use as described previously. Maintenance of existing water developments has the potential to cause some minor surface disturbance. Project level NEPA analysis would be completed prior to the authorization of any construction activities. One of the overall goals of prescriptions for water development within the Monument is to improve water quality. Water developments would often be used to

<i>Water Issues cont.</i>	displace use away from sensitive riparian habitat where water quality degradation would be an issue. Impacts that may occur from diverting surface water or taking groundwater from nearby areas would be assessed during the NEPA process. In general, water developments could only be allowed if they do not degrade riparian habitat through de-watering of natural springs or perennial streams.
<i>Weed Management</i>	Non-native plants and noxious weeds displace native species and affect the structure of plant associations. Noxious weeds can also impact water quality by displacing native species and de-watering of streams and drainages. Control of noxious weeds is a priority of the BLM in order to achieve general vegetation management objectives. Use of chemicals (aerial spraying, hand spraying, and painting), hand cutting, biological control agents, and manual pulling are all viable methods for control of noxious weed species. The long-term effect of the control of weeds within the Monument would be beneficial to water quality as the goal is to help restore natural systems. Short-term effects of weed control projects in and around riparian zones, particularly those using chemical agents, may degrade water quality if herbicides wash into stream courses or enter shallow ground water systems. Aerial spraying could only be used in limited circumstances as described in Chapter 2. Project level NEPA analysis would be completed prior to initiation of weed control projects. BLM employees or contractors with appropriate certification would be responsible for use of these chemicals and would take precautions to prevent possible effects to surface and ground water. Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. There is the potential for continued degradation of water quality in areas left untreated.
<i>Wild and Scenic Rivers</i>	There are 223 miles of rivers that would be recommended suitable in this Plan. These segments would be managed for the preservation of identified outstandingly remarkable values. This could prevent damming and diversions on upstream segments, and associated effects on water quality and quantity downstream from these sites, if such actions would harm identified outstandingly remarkable values.
<i>Wilderness Study Area Protection</i>	Until legislation takes affect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the direct and indirect impacts of surface disturbing activities on water quality, as mentioned previously.
<i>Wildfire Management, Management Ignited Fires, and Fire Restoration</i>	The overall goal of the fire management program would be to help restore native vegetative associations and natural systems. The long-term effects of this program would be the improvement of water quality through decreased sediment and salinity loads. Short-term negative effects of management ignited fires and fire management may include localized increases in turbidity and salinity of nearby streams. Project-level NEPA analysis would be completed prior to initiation of fire management projects.
<b>Proposed Actions with no Reasonably Foreseeable Effects</b>	No reasonably foreseeable effects to water quality resources would be expected from proposed decisions listed under the following sections of this Plan: <i>Air Quality Program, Collections, VRM, Wildlife Services.</i>

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**IMPACTS ON AIR QUALITY****Introduction**

Typical of undeveloped regions in the western United States, ambient pollutant levels in and around the Monument are usually near or below the measurable limits. The entire management area has been designated as either attainment or unclassified for all pollutants and has also been designated as Prevention of Significant Deterioration (PSD) Class II. Nearby PSD Class I areas include Capitol Reef, Canyonlands, and Arches National Parks to the east and north, Bryce Canyon and Zion National Parks to the west, and Grand Canyon National Park to the South.

**Summary of Effects**

Implementation of this Plan would help maintain the air-shed of the Monument as PSD Class II. Reductions in the number of routes open to the public and eliminating cross-country vehicular travel would lessen the amount of fugitive dust across the Monument. Short-term degradation to the air quality could occur from management ignited fires and surface disturbing activities. The Navajo Generating Station (NGS) at Page, Arizona, a point source of airborne sulfur compounds to the area, consists of three 750 MW units which burn up to 25,000 tons of coal per day. The NGS plant has recently completed the installation of the first of three wet limestone scrubbers which will remove most of the sulfur dioxide from the emission plumes of the plant.

**Direct and Indirect Effects of Proposed Actions***Air Quality Program*

The entire management area has been designated as either attainment or unclassified for all pollutants and has also been designated as PSD Class II. There are no actions proposed in this Plan that would cause long-term effects to air quality, although increases in vehicular use on designated open and administrative dirt routes (986 miles) has the potential to cause temporary increases in fugitive dust. The BLM would work to maintain the PSD Class II air-shed, and would work with surrounding land management agencies to prevent deterioration of their Class I air-sheds. High, short-term, localized concentrations of particulates (primarily wind blown dust), ozone, and carbon monoxide have the potential to occur in the Monument from natural and human disturbance. Locations vulnerable to decreasing air quality, generally on the periphery of the Monument, include the areas around mining and farm tilling, local population centers affected by residential emissions, and areas affected by long-range transport of pollutants.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way has the potential to impact air quality by clearing vegetation and biological soil crusts, allowing for wind erosion of soil and the generation of fugitive dust. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way would be constructed in the Monument over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres, (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). This would lessen the generation of fugitive dust from these activities in this part

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way cont.*

of the Monument. All areas would be reseeded with native vegetation resulting in a reduction of fugitive dust from the site after completion of the project.

*Livestock Grazing*

Livestock grazing has the potential to have short term impacts on air quality by trampling and consumption of vegetation. Additionally, concentrating use around range facilities has the potential to decrease vegetation in close proximity to these facilities. These activities have the potential to contribute to the generation of fugitive dust in the area. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands. Healthy rangelands also prevent wind erosion and the degradation of air quality by fugitive dust generation.

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) have short-term impacts on air quality through clearing vegetation and biological soil crusts, and from increased visitor use around sites, allowing for wind erosion of soil and the generation of fugitive dust.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, eliminating the generation of fugitive dust from these activities in this part of the Monument. Use in these zones would be low, due to accessibility and group size restrictions, reducing the potential for trampling and surface disturbance contributing to the short-term generation of fugitive dust. Although there is the potential for 32 new recreation sites disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres), some of these sites are already used for this purpose. Better delineation of these sites and installation of fences would limit the size of the disturbed area, resulting in a reduction in wind erosion and air quality degradation. This small amount of disturbance would not contribute substantially to air quality impacts. For all proposed sites, restoration activities would reseed disturbed sites in order to reduce continued surface erosion. Concentrating use into a smaller area, where use could be accommodated without affecting sensitive resources, reduces short-term impacts to air quality over a larger area of the Monument.

It is assumed that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Surface disturbance would occur as described previously for recreation sites. The use of these areas may contribute to fugitive dust and localized, short-term degradation of air quality. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

*Recreational Facilities and Use cont.*

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to air quality would be addressed.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would reduce the amount of short-term air quality degradation by fugitive dust generation over a large area of the Monument. There is the potential for impacts to air quality from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

Of the 888 miles of routes designated open, 794 miles are unpaved. Use of these designated open dirt routes would contribute to the fugitive dust and short-term air quality degradation. Projected increases in use would increase the potential for this type of impact. While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This has the potential to lead to an increase in fugitive dust generation in the Outback Zone from increased surface disturbance in this area. Visitors would be encouraged to use areas that were already disturbed, reducing the amount of new disturbance. Clearing of vegetation for pulling off routes would not be permitted, further reducing the potential for fugitive dust generation.

Maintenance of designated routes has the potential to result in air quality impacts as discussed for other surface disturbing activities, such as communication sites and recreation sites. Maintenance activities would occur on 888 miles of designated routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes (see the **Maintenance** section in Chapter 2). The limited cases where maintenance activities would occur outside of the existing disturbance would not contribute substantially to fugitive dust generation and air quality degradation.

There are 192 miles of administrative routes throughout the Monument, all of which are dirt, which have the potential to contribute to short-term impacts on air quality through fugitive dust generation. Use on these routes would be limited and infrequent, minimizing the potential for these impacts. Maintenance of these routes would be the minimum necessary to keep them accessible to high clearance vehicles.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing short-term impacts from fugitive dust generation in these areas. Although restoration would be a priority for the protection of sensitive resources, not all sites can be restored simultaneously, which may result in continued short-term fugitive dust generation and air quality degradation in the interim until routes are closed and restored.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. Restoration of disturbed areas would decrease the amount of bare ground and allow native vegetation to stabilize the soil, reducing the potential for short-term impacts to air quality from fugitive dust generation. Since fire would be the primary tool for completion of these projects, impacts from fire may contribute to air quality as described below.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Management ignited fires have the potential to degrade air quality during the period of the fire, and would cause some fugitive dust from the burned area. These fires would be initiated in accordance with State air quality standards and the BLM would obtain appropriate permits. The long-term effects of management ignited fires would be to reduce levels of particulate matter (due to dust) by restoring native vegetation cover.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to air quality would be expected from proposed decisions listed under the following sections of this Plan: *Collections, Commercial Filming, Inventory, Monitoring, Research and Adaptive Management, Riparian Resource Program, Special Status Species, VRM, Water Issues, Weed Management, Wild and Scenic Rivers, Wilderness Study Area Protection, Wildlife Services.*

**IMPACTS ON SCENIC QUALITY**

**Introduction**

The wealth of landforms, geology, colors, elevation changes, and vegetation types in the Monument contribute to its outstanding scenery. The BLM’s objective would be to preserve these spectacular scenic assets by conforming to assigned Visual Resource Management (VRM) class objectives and meeting other visual quality objectives such as (1) using natural or natural appearing material, (2) meeting restoration/revegetation objectives, and (3) complying with the Monument Facilities Master Plan.

**Summary of Effects**

This Plan would provide long-term, overall improvement of the scenic qualities of the Monument. Restoration of areas containing non-native vegetation would be a focus, as would restoration of closed routes. New visitor facilities, primarily located within the Frontcountry and Passage Zones (6 percent of the Monument), could contrast with the surrounding landscape. New facilities such as pullouts, parking areas, and interpretive sites would be minimal, however, disturbing a total of only 16 acres, and would be designed to meet visual resource quality objectives as discussed in Chapter 2. Surface disturbing projects would generally not be permitted within about 65 percent of the Monument (Primitive Zone). Vegetative restoration methods would focus on restoring the natural vegetation from prior disturbance, also resulting in less contrasting landscapes.

**Direct and Indirect Effects of Proposed Actions***Air Quality Program*

Implementation of this Plan would provide for maintenance of a Class II air-shed across the Monument, and no activities would be permitted that would degrade the Class I air-shed on adjacent land-management units. This would protect the scenic qualities of the Monument from impacts associated with poor air quality (e.g., diminished sight distance).

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for communication sites, utility rights-of-way, and road rights-of-way has the potential to impact scenic quality by placement of facilities and clearing of vegetation and biological soil crusts, causing visual contrasts with the surrounding area. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way would be constructed in the Monument over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. All sites would have to meet visual resource quality objectives, and placement would take into account scenic quality impacts in the area (see VRM below). These sites would generally not be allowed on 1,211,386 acres, (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). All areas would be reseeded with native vegetation, resulting in a reduction of contrast directly surrounding these sites after completion of the project.

*Livestock Grazing*

Livestock grazing has the potential to have impacts on scenic quality by causing cattle trails, trampling and consumption of vegetation. Additionally, concentrating use around range facilities has the potential to impact sites in close proximity to these facilities, increasing visual contrast around these sites. Livestock grazing within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. All new range facilities would be required to meet visual resource quality objectives. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands, promoting native plant growth and reducing visual contrasts.

*Recreational Facilities and Use*

Clearing areas for the placement of visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) and subsequent use of these sites contributes to visual contrasts and impacts to scenic quality.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, except for those necessary to protect resources. Use in these zones would be low due to accessibility and group size restrictions, reducing the potential for trampling, surface disturbance and scenic quality degradation in these areas. Although there is the potential for 32 new recreation sites (e.g., picnic areas, parking areas), disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres), many of these sites are already used for this purpose. All sites would

*Recreational Facilities and Use cont.*

be required to meet visual resource quality objectives. Better delineation of these sites and installation of fences would limit the size of the disturbed area. This small amount of disturbance would not contribute substantially to scenic quality impacts. For all proposed projects, restoration activities would reseed disturbed sites in order to reduce contrasts with surrounding areas. Concentrating use into a smaller area, where use could be accommodated without affecting sensitive resources, reduces visual contrasts over a larger area of the Monument.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts to scenic quality.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to scenic quality would be addressed.

*Riparian Resources Program and Special Status Species Program*

The overall objective of restoring riparian habitat to proper functioning condition and protecting special status species habitat would enhance visual qualities by decreasing vegetation contrasts. Restoring degraded areas would re-introduce native vegetation that, in the long-term, would blend more favorably with surrounding habitats.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would reduce the amount of vehicle tracks in un-roaded areas over a large area of the Monument. There is the potential for impacts to scenic quality from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

The continued presence of 1,080 miles of designated open and administrative routes throughout the Monument would contribute to the visual impacts. While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This has the potential to lead to an increase in visual contrast adjacent to these routes in the Outback Zone from increased surface disturbance in this area. Visitors would be encouraged to use areas that were already disturbed, reducing the amount of new disturbance. Clearing of vegetation for pulling off routes in this zone would not be permitted, helping to reduce the amount of visual contrast.

*Transportation cont.*

Maintenance of designated routes has the potential to result in scenic quality impacts if maintenance occurs outside of the current disturbance. These activities would not be allowed outside the current disturbance on most of the routes (see the **Maintenance** section in Chapter 2). The limited cases where maintenance activities could occur outside of the existing disturbance would not contribute substantially to scenic quality degradation.

This Plan would close approximately 1,087 miles of routes currently open to public travel. Chapter 2 describes a strategy for closing and restoring these routes to conditions present before disturbance, minimizing visual contrasts and scenic quality degradation in these areas. Although restoration would be a priority for the protection of sensitive resources, not all routes can be restored simultaneously, which may result in continued visual contrasts in the interim until routes are closed and restored.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These projects may lead to temporary visual contrasts, but restoration of native plant associations would reduce this contrast in the long-term. For example, a seeding which is primarily crested wheatgrass may be burned or seeded to restore native plant associations in the area.

Removal of forestry products would only occur on the 23,950 acres designated for that use, unless more areas are identified as necessary to meet the objective of restoring a natural range of native plant associations. These activities may create visual contrasts with the surrounding areas, but existing and new areas would take into account the impacts on scenic quality and the long-term restoration of native vegetation.

Restoration and revegetation provisions, as discussed in Chapter 2, are required for all surface disturbing activities in the Monument as part of the project planning process. These provisions would decrease visual contrasts immediately surrounding these projects.

*Visual Resource Management*

The VRM program for the Monument is designed to reduce the visual impact of past, present, and future development projects. Scenic quality is affected by surface disturbance, which creates a contrast with the natural environment as mentioned above. Approximately 68 percent of the Monument is categorized as Visual Class II, in which the objective is to retain the existing character of the landscape. The remaining 32 percent is categorized as Visual Class III, in which the objectives are to partially retain the existing character of the landscape and to prevent management actions from dominating the view. All projects would assess impacts to visual quality and would have to be designed to create as little visual contrast as possible, regardless of the VRM classification.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted when necessary for the protection of Monument resources. These water developments have the potential to cause visual impacts, but would be designed to limit visual contrasts as much as possible. Project level NEPA analysis would be completed, and visual resources would be taken into account prior to the authorization of any construction activities.

*Weed Management*

Non-native plants and noxious weeds displace native species and affect the structure of plant associations. The replacement of native species by noxious weed species often creates a visual contrast in an area, until these species completely replace native vegetation. Once established in disturbed sites, weeds may spread into adjacent undisturbed lands causing further visual contrasts. Conversion of vegetation structure by noxious weed species can make reestablishment of native plant associations difficult, if not impossible. An active noxious weed control program would focus on the removal of these species. Although removal of noxious weed species in the Monument is a priority, not all areas can be targeted for removal efforts simultaneously. There is the potential for continued impacts to scenic quality in areas left untreated.

*Wild and Scenic Rivers*

Scenic quality is one of the outstandingly remarkable values for which rivers were found suitable. Of the 223 miles of river found suitable, approximately 202 miles have scenic quality which would be protected as an outstandingly remarkable value. This would contribute to the overall scenic quality of the Monument.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This would prevent much of the scenic quality degradation from these activities in WSAs.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Scenic quality could be directly affected both during and following natural or management ignited fires. During the fires, localized air quality would deteriorate temporarily, and following the fires, vegetation contrasts would be very noticeable. Natural and management ignited fires, however, have been rare within the boundaries of the Monument, and restoration of these areas with native species would reduce visual contrasts over the long-term.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to scenic quality would be expected from proposed decisions listed under the following sections of this Plan: *Collections, Commercial Filming, Inventory, Monitoring, Research and Adaptive Management, Wildlife Services.*

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**IMPACTS ON WILD AND SCENIC RIVER VALUES**
**Introduction**

Wild and Scenic River (WSR) values are those outstandingly remarkable values (ORVs) identified for river segments in the WSR planning process (Appendix 11). These ORVs include: scenic, recreational, geologic, fish and wildlife, ecological (riparian), botanical, paleontological, hydrological, and scientific study. Impacts on each of these values Monument-wide are discussed in individual sections of this chapter. For example, impacts on paleontological resources are discussed in detail in the **Impacts on Paleontological Resources** section. As such, detailed impacts on each of these resources are not repeated here. Instead, general discussions of overall impacts on suitable WSR segments are included. Actions that may affect the free-flowing status of suitable rivers are also included. Impacts on identified ORVs for rivers found eligible, but found non-suitable, are covered under the specific resource impact sections (e.g., riparian, paleontology), since these values would be protected under general plan provisions.

**Summary of Effects**

Impacts to WSR values could result directly from activities such as diverting water from streams, livestock grazing, and use of routes and trails in riparian areas that lead to impacts on the ORVs for which the streams were determined suitable. These segments would be protected from these impacts such that the ORVs for which they were determined suitable are not degraded. Plan provisions such as limiting development and disturbance in riparian areas would contribute to that protection.

**Direct and Indirect Effects of Proposed Actions***Collections*

The unauthorized collection of objects is prohibited by the Proclamation and this Plan. Unauthorized collection of objects in and around rivers determined suitable for WSR designation may impact ORVs for which these rivers were determined suitable. Interpretive information would be provided to visitors in high-use areas concerning the sensitivity of resources and the prohibition on collection.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

The placement of communication sites, utility rights-of-way, and road rights-of-way would not be allowed in suitable river segments where ORVs may be affected. Proposed projects in close proximity to these resources would be evaluated for impacts to ORVs and relocated if necessary to avoid impacts to these values.

*Livestock Grazing*

Livestock grazing has the potential to impact WSR values directly by trampling vegetation and through bank erosion, which could degrade the riparian system. This degradation to the riparian system could include impacts to ORVs such as threatened and endangered plants or animals, archaeological resources, etc. Management of livestock grazing within the Monument would be in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines

<i>Livestock Grazing cont.</i>	for Rangeland Health. Each grazing allotment would be evaluated to ensure that grazing management conforms with these Standards and Guidelines and does not impact ORVs.
<i>Recreational Facilities and Use</i>	New recreation sites (except limited signs and trails for resource protection) would not be permitted in riparian areas, including suitable WSRs. This would protect the ORVs on these river segments from the direct impacts from installation activities. There are 10 existing recreation sites within <b>3</b> mile of suitable river segments, possibly leading to impacts to ORVs from destruction, collection or degradation. These areas would be monitored, and restrictions on visitor use (allocations, smaller group size limits, etc.) would be used where impacts to ORVs are occurring.
<i>Riparian Resources Program</i>	The overall objective of the riparian resources program within the Monument would be to manage riparian areas so as to maintain or restore them to properly functioning condition. This program would enhance the habitat for ORVs such as southwestern willow flycatcher and Ute ladies-tresses (special status species). The riparian resources program would indirectly affect WSR values by improving riparian condition for ORVs in these areas.
<i>Special Status Species Program</i>	The special status species program within the Monument, as described in Chapter 2, would indirectly affect WSR values by providing increased protection for listed and sensitive species and their habitat, some of which are ORVs for suitable river segments. This increased protection, along with implementation of recovery plans, should result in increased population viability over time.
<i>Transportation</i>	There are 19 miles of suitable WSRs segments within <b>3</b> mile of designated open routes and 1.5 miles of suitable WSR within <b>3</b> mile of administrative routes. Use on these routes would be unlikely to impact any ORVs on these river segments, but travel off these routes has the potential to result in destruction, collection, or degradation of ORVs. These areas would be monitored and protected as described above.
<i>Visual Resource Management</i>	The VRM program for the Monument is designed to reduce the visual impact of development projects. Scenic quality is one of the ORVs for which rivers were found suitable. Of the approximately 202 miles of suitable river segments that have scenic quality as an ORV, approximately 201 miles are within a VRM class II category with an objective of retaining the existing character of the landscape. The remaining 1 mile is within a VRM Class III, which would allow some changes to the character of the landscape. Regardless of the VRM classification, the ORVs for suitable segments (including scenic quality) would be considered and protected and visual resource quality objectives described in Chapter 2 would be met.
<i>Water Issues</i>	It is reasonably foreseeable that 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted in cases where an overall benefit to Monument resources could be demonstrated. These water

*Water Issues cont.*

developments would not be placed in areas where impacts to the ORVs or the free-flowing status of suitable segments may occur. These water developments would most often be used to displace use away from sensitive riparian habitat where ORVs would occur. Water developments would not be allowed to jeopardize or de-water streams, thus the free-flowing status of these segments would be protected.

*Weed Management*

An active noxious weed control program would help remove weed species from areas where impacts to ORVs, such as threatened and endangered plant species may occur. Although removal of noxious weed species in sensitive habitats is a priority in the Monument, not all areas can be treated simultaneously, leading to possible effects to ORVs in some areas.

**Proposed Actions with No Reasonably Foreseeable Effects**

No reasonably foreseeable effects to WSR values would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Commercial Filming, Inventory, Monitoring, Research and Adaptive Management, Vegetation Management, Wild and Scenic Rivers, Wilderness Study Area Protection, Wildfire Management, Management Ignited Fires, and Fire Restoration, Wildlife Services.*

**IMPACTS ON WILDERNESS VALUES (Impacts to Primitive Unconfined Values in the DEIS)****Introduction**

Wilderness values include naturalness, outstanding opportunities for solitude, and primitive and unconfined type of recreation opportunities. Values may also include ecological, geological, or other features of scientific, educational, scenic, or historical value. Wilderness values can be affected by noticeable imprints of humans, recreation that requires motorized and mechanized equipment or facilities, and the ability of a user to find solitude. These values were used by the BLM in designating some 880,857 acres of WSAs in the Monument prior to designation. Recently (1999), the BLM completed a reinventory of potential wilderness character lands within Utah. As a result of this reinventory, an additional 457,049 acres of BLM lands within the Monument have been noted as possessing wilderness character, and may eventually become classified as Wilderness Study Areas. This section discusses impacts on wilderness values of both designated WSAs and areas found to have wilderness character.

**Summary of Effects**

Implementation of this Plan would enhance wilderness values, as management prescriptions call for limited visitor development and protection of the frontier quality that enhances Monument resources. Restoration programs would be performed as part of vegetation and riparian restoration. Other prescriptions such as VRM, route and trail closures, and visitor management would effectively enhance wilderness values.

The largest potential for conflicts between wilderness values and Proposed Plan prescriptions is in the Frontcountry and Passage Zones (6 percent of the Monument), where facilities such as interpretive signs, pull-outs, and picnic areas may be allowed. There are 14,228 acres of existing WSAs within these two zones. As discussed in the **Wilderness Study**

**Summary of Effects cont.**

**Areas** section of Chapter 2, where conflicts occur between the zone prescriptions and existing WSA management under IMP, IMP would take precedence until action is taken by Congress to either designate them or release them from further protection.

Outside of designated WSAs there are 26,616 acres found to have wilderness character within the Frontcountry and Passage Zones. The BLM would continue to give careful consideration before acting affirmatively on any proposals for activities within these areas, and NEPA analysis would be required. In this process, the BLM would evaluate the potential for harm to wilderness character areas, and proposed actions may be modified or the ANo Action@Alternative would be considered if actions were deemed to have the potential to negate the areas eligibility for wilderness designation. Nonetheless, actions could be taken in these areas that may impair their wilderness values.

**Direct and Indirect Effects of Proposed Actions***Commercial Filming*

Commercial filming activities in the Monument would be limited to minimum impact and are restricted by many provisions which would prevent surface disturbing impacts from occurring, as discussed in Chapter 2. Solitude opportunities have the potential to be directly affected during the duration of a particular filming activity (minimum-impact filming would not continue for more than 10 days). Where there are wilderness values in the Frontcountry and Passage Zones, there would be a greater possibility for impacts to solitude due to the large group sizes allowed or lack of groups size restrictions. Minimum-impact filming within all zones would need to conform to the zone prescription for types of equipment needed, group sizes, and project duration.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

Clearing areas for the placement of communication sites, utility rights-of-way, and road rights-of-way has the potential to directly impact wilderness values by causing surface disturbance. Erosion resulting from biological soil crust and vegetation loss and soil destabilization during these activities has the potential to further degrade these areas. It is reasonably foreseeable that 1 large and 22 small communication or utility rights-of-way facilities, and 3.5 miles of road rights-of-way, would be constructed over the next 15 years, disturbing 150, 102, and 8.4 acres respectively. These sites would generally not be allowed on 1,211,386 acres of the Monument, protecting wilderness values from these impacts. Areas with wilderness character outside WSAs would be the most likely to be affected by these activities, but there would be consideration of these values during site selection. Project level NEPA analysis would be completed for all projects, taking into account impacts to wilderness values. A feasibility study for communication sites in the Monument would be completed, identifying appropriate areas for construction of these facilities.

*Livestock Grazing*

Livestock grazing has the potential to impact primitive wilderness values through increased soil-erosion due to vegetation removal. Management of livestock grazing within the Monument would be in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation composition, structure and function of rangelands. Healthy rangelands also prevent erosion and further degradation of soils. Monitoring in conjunction with grazing management would provide information on changes in vegetation and soil condition which may affect wilderness values, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, which include 98 percent of designated WSAs and 94 percent of areas with wilderness character in the Monument. Dispersed primitive camping and pack stock use in these zones may lead to impacts to solitude but group size restrictions of 12 and 25 respectively would reduce the potential for these impacts. Limits on the number of people in these areas through the implementation of an allocation system would also help to reduce impacts from this type of use.

There is the potential for construction of 32 new recreation sites, disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres). This could impact wilderness values in wilderness character areas, but would not impact WSAs directly as long as they are under IMP protection, because such developments are not allowed under IMP. Increased use associated with sites near areas with wilderness values has the potential to impact wilderness character areas and WSAs from increased use associated with new sites. Delineation of these sites and installation of fences and interpretive signs would limit the size of the disturbed area.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing up to 70 acres. This has the potential to result in impacts to solitude and cause surface disturbance in areas with wilderness values. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. These areas would also not likely be located in WSAs due to IMP protection. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts.

Prior to the construction of any facility in the Monument, project level NEPA analysis would be completed and site specific impacts to wilderness values would be addressed.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would protect WSAs and areas with wilderness character from the intrusions and surface disturbance associated with this

*Transportation cont.*

vehicle use off of routes. There is the potential for direct and indirect impacts to wilderness values from unauthorized vehicle travel off of designated routes in the Monument. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

By definition, areas that have wilderness values do not have routes present. While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This would not be allowed in areas where WSAs are in close proximity to routes, which only accounts for 2 miles in this zone. This has the potential to affect areas with wilderness character that abut routes in the Outback Zone (137 miles).

Maintenance of designated routes has the potential to cause surface disturbance and affect solitude in areas adjacent to routes. Maintenance activities would occur on 888 miles of designated routes in the Monument, but these activities would not be allowed outside the current disturbance on most of the routes and would not be allowed where WSAs abut routes (see the **Maintenance** section in Chapter 2).

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. Due to the surface disturbance associated with previous vegetation manipulations, these areas generally do not occur within WSAs or areas with wilderness character. Removal of forestry products would only occur on designated areas and would not occur in WSAs. There are 2,317 acres of forestry product areas in areas with wilderness character.

*Visual Resource Management*

The VRM program for the Monument is designed to reduce the visual impact of development projects. Scenic quality is integral to primitive experiences which areas with wilderness values possess. Approximately 662,898 acres of WSAs and 298,516 acres with wilderness character are within a VRM class II category with an objective of retaining the existing character of the landscape. The remaining 217,240 acres of WSA and 157,835 acres with wilderness character are in VRM class III, which would allow some changes to the character of the landscape. Regardless of the VRM classification, WSA IMP would prevent surface disturbance in areas designated as WSAs and visual resource quality objectives as described in Chapter 2 would be met in all areas.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on the 880,857 acres currently designated as WSAs. Under this policy, intrusive, mechanized forms of activities are either prohibited or severely restricted, thereby enhancing opportunities for wilderness experience.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Although fire is not a major component of the Monument's ecosystems, natural fires do occasionally occur in the area. Short-term loss of vegetation would result from fires, but would quickly regrow in areas with diverse vegetation within a growing season. Impacts from fire suppression activities can have a profound effect on vegetation, changing the way

*Wildfire Management, Management Ignited Fires, and Fire Restoration cont.*

water moves across the landscape and causing erosion. These effects are difficult to reverse, especially in dry climates such as the Monument.

Fire would be allowed to play its natural role in most of the Monument, except where noted in this Plan for the protection of private property or other features. Most of the Monument is located in fire management areas which have little suppression activity, including most WSAs and areas with wilderness character. Heavy equipment use in the Monument is only allowed through authorization of the Monument Manager. A resource advisor familiar with WSA issues would be consulted on all fires in the Monument that involve WSAs. Emergency use of equipment, such as chaining, for fire restoration could be used under limited circumstances as described in Chapter 2. This could be done to establish native species and prevent erosion and degradation of habitat, but would not occur in WSAs unless compatible with IMP.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to wilderness values would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Collections, Inventory, Monitoring, Research and Adaptive Management, Riparian Resources Program, Special Status Species Program, Water Issues, Weed Management, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON RESEARCH ACTIVITIES**

**Introduction**

The primary purpose for establishing GSENM is to protect the scientific and historic resources as described in the Proclamation. Monument management priorities and budgets would focus on obtaining a comprehensive understanding of the resources of the Monument, while assisting in the development of improved and innovative land management. The first priority for conducting BLM-sponsored research would be to study, collect, or record scientific information that is most at risk of being damaged or lost through disturbance or the passage of time, including oral histories and ethnologies related to the Monument area. The second priority would be to continue gathering baseline data on the biological, physical, cultural, and social sciences within the Monument. A third priority would be to conduct applied research regarding the management of natural systems, including disturbance and recovery strategies.

**Summary of Effects**

This plan has the potential to affect future research activities within the Monument, affording more opportunities in some respects, but creating more restrictions for some types of research. Research activities directed at studying the broad effects of past land management and restoration practices on various resources would be afforded new opportunities as several new programs are planned. Research activities requiring vehicular access or use of mechanized equipment may be affected by restrictions on travel off of designated routes.

**Direct and Indirect Effects of Proposed Actions***Collections*

The unauthorized collection of objects is prohibited by the Proclamation and this Plan. Scientific collection could be authorized in conjunction with research projects in the Monument. These projects would be evaluated for their merits and permits would be issued for collection when projects are determined to contribute to the understanding of the natural, physical and social environment of the Monument and the Colorado Plateau ecosystems.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing scientific research would be supported and encouraged, but intrusive or destructive investigations would be carefully reviewed to avoid conflicts with the BLM's responsibility to protect and preserve scientific and historic Monument resources. The GSENM Advisory Committee would play a role in evaluating research proposals and making recommendations to management on projects that may need exceptions to plan prescriptions. A comprehensive and integrated research and science program would ensure that scientific resources are not only available for current research opportunities, but that certain scientific resources are preserved in place for future study. The adaptive management framework described in Appendix 3 may directly affect research activities through increasing the amount of inventorying and monitoring, thereby increasing opportunities for study.

*Livestock Grazing*

Livestock grazing has the potential to impact resources as discussed under the impacts for the individual resources. Degradation of these resources may reduce the potential for scientific study of these affected objects.

*Recreational Facilities and Use*

Inventories conducted prior to construction of recreational facilities have the potential to indirectly affect research activities by providing a small amount of new scientific data (paleontology, archaeology, etc.). Increased visitor use in the immediate vicinity of recreational facilities has the potential to cause surface disturbance and degradation of resources, resulting in damage and thereby directly impacting some research opportunities.

*Riparian Resources Program*

The goal of the riparian program is to restore riparian zones to proper functioning condition. The program has the potential to directly affect research by providing additional riparian research opportunities. Research projects requiring surface disturbance would be discouraged or prohibited in riparian zones.

*Special Status Species Program*

Cooperation with the USFWS has the potential to provide additional research opportunities for management of threatened and endangered species. Some surface disturbing research projects may be directly affected by special status species, as intrusive activities would generally be precluded from threatened and endangered species areas.

*Transportation*

Zone prescriptions, including restrictions on travel off of designated routes, would generally apply to researchers, except where extremely high-value opportunities for scientific discovery exist (see **Management of Science and Research** in Chapter 2). In addition, route closures may preclude access to some areas of potential research. Thus, routine research projects that require vehicular access may be directly affected by the prohibition on cross-country travel and route closures. Projects that require motorized or mechanized access where no designated route exists would have to be evaluated to determine if they warrant exceptions, if the proposed research could be permitted in a manner consistent with the protection of Monument resources, and whether the access proposed is the minimum necessary to achieve the desired research objective.

An indirect effect of route closures would be that some types of resources, such as riparian zones or sensitive soils, would not be degraded further by the action of vehicles and visitor activities. This has the potential to provide more opportunities for research on restoration strategies. Fewer routes could reduce visitor impacts to research areas or research sites that previously had vehicle access.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. Opportunities would exist for research on restoration ecology in the completion of these vegetation projects. Effects of forestry product collection and use of non-natives also provide opportunities for research.

*Weed Management*

An active weed removal program would facilitate research in the removal of invasive, non-native plants, and research in the area of recovery of native plant associations. Opportunities would be afforded indirectly for the study of the relationships of weed removal to wildlife populations, water quality, and soil stabilization. The removal of noxious weed species may cause unanticipated effects on plant and animal species, and other resources, possibly affecting research opportunities for these species or resources.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. These restrictions provide opportunities for study and research based on these intact systems, but research relying on surface disturbance or mechanized access could be prohibited by these restrictions.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Part of the science and research program would be to study the effects of fire on the Monument's native and non-native plant associations. The opportunities for studying fire ecology within the Monument may occur, but would not be significant due to the limited amount of natural fire that occurs in the area. The study of restoration fire ecology would also help to determine appropriate restoration protocols. Fires and suppression activities also have the potential to

*Wildfire Management, Management*

*Ignited Fires, and Fire Restoration cont.*

impact specific sensitive resources, such as archaeological sites. These activities may destroy these resources, eliminating these resources for comparison study.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to research activities would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Commercial Filming, Communication Sites, Utility Rights-of-Way, Road Rights-of-Way, VRM, Water Issues, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON RECREATIONAL USE**

**Introduction**

The Monument is outstanding among America's great places where solitude, unconfined experiences, and a sense of adventure still exist. Visitor use in the area has been steadily increasing. Visitor use peaks in April and May, and again in September and October.

The BLM provides camping in two small developed areas in the Escalante Canyons region of the Monument. There are no developed campgrounds in the Grand Staircase or Kaiparowits regions. Most visitors to the Monument camp in remote, dispersed, primitive areas. There is a developed picnic area at the Paria movie set and a parking area at Grosvenor Arch.

**Summary of Effects**

A variety of recreational opportunities would be available within the Monument. Impacts to recreational use would result primarily from closing areas to certain types of use (such as prohibiting travel of vehicles off of designated routes) and from conflicts with other uses (such as livestock grazing, commercial filming, and other recreational users). It is reasonably foreseeable that 32 new recreation sites and 35 new designated primitive camping areas would be designated or constructed over the 15 year planning horizon. These facilities would accommodate visitation and provide visitors with educational materials and experiences. These facilities would generally not be allowed on 1,211,386 acres, which would accommodate visitors looking for a primitive and self-directed experiences. Group size restrictions and allocations would limit the number of people in much of the Monument, but would also promote primitive experiences. The lack of group size restrictions or allocations in the Frontcountry Zone would provide large groups with opportunities in the Monument. There would be 888 miles of designated routes for travel by visitors, with 556 of these available for ATV use.

**Direct and Indirect Effects of Proposed Actions***Commercial Filming*

Permits for commercial filming in the Monument would continue to be issued for a minimum impact to activities. Filming activities could lead to conflicts between filming crews and recreational users, although the conflicts would be only short-term (activities would not be allowed longer than 10 days). Increased filming of the area could publicize the area, resulting in increased visitation and recreational use of the Monument. This may lead to fewer opportunities for solitude and primitive experiences in some of the Monument.

*Inventory, Monitoring, Research and Adaptive Management*

Non-surface disturbing research activities which focus on increasing the knowledge of visitor use patterns as well as impacts created by recreational use would be encouraged. These studies may indicate where and when use patterns are shifting. Monitoring in conjunction with other resource programs, discussed throughout this chapter, may indicate that impacts from visitor and recreational use are occurring. These data may lead to restrictions on visitor numbers in an area, through the implementation of an allocation system, in order to protect these resources. Seasonal restrictions, physical barriers, interpretive displays and educational material may also be used to reduce impacts to sensitive resources. The adaptive management framework (Appendix 3) would provide the mechanism for changes in management based on new data being gathered.

*Livestock Grazing*

Livestock grazing has the potential to impact recreational use by contaminating water sources and by altering vegetation. Additionally, although some visitors may enjoy viewing livestock and livestock operations in the Monument, others may find their presence an aesthetic and physical intrusion. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. In the evaluation of allotments as part of the Standards and Guidelines implementation, the effects of livestock grazing on other land uses, including recreation, would be evaluated.

*Recreational Facilities and Use*

Each of the zones provides different types of visitor experiences, as described in the **Zone Management Direction** section of Chapter 2. The facilities included in this discussion are: trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones. This would limit the amount of directed recreation opportunities in these zones, but would provide for vast opportunities for solitude and self-directed experiences for which the Monument is known. Dispersed primitive camping and pack stock use would be permitted in these zones, but resource damage may lead to the designation of primitive camping areas. Group size restrictions of 12 in the Primitive Zone and 25 in the Outback Zone would limit the number of large groups in these zones, but self-directed primitive experiences would be enhanced by these restrictions. Limits on the number

*Recreational Facilities and Use cont.*

of people in these areas through the implementation of an allocation system would also benefit the primitive experiences, but may reduce the number of people able to access these opportunities.

There is the potential for the construction of 32 new recreation sites in the Frontcountry and Passage Zones (116,372 acres). These sites would be developed mainly in areas already used for these activities or in some cases in new areas to highlight Monument resources. These sites would provide visitors looking for directed recreation opportunities with trails, interpretive sites and parking areas. Highlighting Monument resources in these areas would provide visitors with information and educational experiences. Increased use may lead to overcrowding in these areas due to the limited number that would be developed.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing up to 70 acres. Visitors looking for primitive camping areas near the edge of the Monument would be accommodated by the designation of these camping areas. Most of these areas would be designated where primitive camping currently occurs, and amenities (such as toilets, water, etc.) would not be provided. Two existing campgrounds in the Monument and developed campgrounds in areas outside of the Monument would provide visitors the only developed campground experiences.

*Riparian Resources Program*

The overall objective of the riparian resources program within the Monument would be to manage riparian areas so as to maintain or restore them to properly functioning condition. This program would enhance these riparian areas and would provide the widest variety of vegetation and habitat diversity for wildlife and fish, as well as watershed protection. These objectives would indirectly affect recreational use of the Monument by providing a more pristine environment for visitors to experience. However, restrictions on recreational use in these areas may close or limit access to specific areas during restoration. This would reduce the opportunity for visiting these areas.

*Special Status Species Program*

The BLM is required to protect these species from impacts. If recreational use is determined to be the cause of impacts to populations of Federally-listed species, allocations or barriers may be installed to prevent further degradation. Interpretive information and educational materials would be provided in order to educate visitors about the sensitivity of these resources.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). This would restrict visitors looking for a motorized experience to the 888 miles of designated routes (543 miles for non-street legal vehicle use). Visitors looking for a more primitive experience, away from vehicles, would find ample opportunity throughout the Monument. There is the potential for unauthorized vehicle travel off of designated routes in the Monument, affecting visitors looking for a more primitive experience. Enforcement, as described the **Enforcement** section of Chapter 2, would reduce the possibility of unauthorized use off of these routes.

*Transportation cont.*

While motorized and mechanized travel is limited to designated routes, there is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes). This would provide visitors with areas for dispersed camping. Visitors would be encouraged to use areas that were already disturbed, and clearing of vegetation would not be permitted.

All designated open routes within the Monument would be maintained to current conditions, some of which would be accessible by passenger vehicles, while others would be seasonally available for high clearance vehicles. Lack of route improvements and development may restrict access for some visitors into areas of the Monument. See the **Maintenance** section of Chapter 2 for a full discussion of these activities.

*Vegetation Management*

Vegetation restoration methods may be used to restore and promote a natural range of plant associations in the Monument. Although visitors may notice these treatments, educational materials and interpretive displays would be used to educate the public regarding restoration projects in the Monument.

*Visual Resource Management*

Visual resources management can affect recreational experiences within the Monument to the extent that the character of the landscape is retained or altered. The **Impacts on Scenic Quality** section in this chapter discusses the management of scenic quality, including visual resources management.

*Water Issues*

It is reasonably foreseeable that up to 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted in cases where an overall benefit to Monument resources could be demonstrated. Water developments could be provided for recreational use in the Frontcountry and Passage Zones, although the circumstances in which they would be allowed would be extremely limited since the only facilities that would be provided are a small number of modest pullouts, parking areas, trailheads, and picnic sites.

Impacts to water quality come from removal of vegetation, displaced soil particles, increased soil compaction, creation of new flow paths and channels, and increased runoff. These impacts can be caused by a variety of sources, including vehicles, people, livestock, and wildlife, especially near riparian areas. There is the potential for degradation of water quality from these uses, making water unavailable or unusable for recreational use. This degradation of water quality may also require the restriction of these uses, including recreational use, in order to restore water quality.

*Weed Management*

Removal of noxious weeds such as tamarisk and Russian olive would likely increase water in areas where these plants are removed. A variety of methods may be used to control these invasive species, including use of chemicals. The use of these chemicals may require the temporary closure of areas to recreational use. Visitors may also be excluded from treated areas for a period of time in order to ensure the success of weed removal and the reestablishment of native plant species.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Management ignited fire may be used in order to promote and restore native plant associations. Use of fire would have short-term impacts on the visitor experience, including smoke and visual effects. Visual effects of wildfires would occur, but fires occur infrequently in the Monument, reducing the potential for these impacts. The effects of smoke on visitor experiences would be temporary. Visitors may also be excluded from burned areas for a period of time in order to facilitate the reestablishment of native plant species.

*Wildlife Services (Animal Damage Control)*

Animal Damage Control activities could directly impact recreational use if the activities were observed by visitors. These activities could indirectly impact recreational use by removing animals that are part of the experience visitors may seek. Wildlife Services activities within the Monument would be limited to the taking of individual coyotes within the immediate vicinity of verified livestock kills, where reasonable livestock management measures to prevent predation had been taken and failed. No traps, poisons, snares, or M44s would be allowed. Limiting the allowable methods would reduce potential conflicts with recreational users.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to recreational use would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Communication Sites, Utility Rights-of-Way, Road Rights-of-Way, Wild and Scenic Rivers, Wilderness Study Area Protection.*

**IMPACTS ON OUTFITTERS AND GUIDES****Introduction**

Outfitter and guide services have operated within the Monument area for many years prior to the Monument's designation. These services provide various types of primitive to catered recreational experiences. Outfitter and guide operations would be allowed throughout the Monument, in compliance with the constraints of the zone, and allocation and use limits set by the BLM.

**Summary of Effects**

Changes to transportation routes and zone restrictions would have effects on outfitter and guide services operating within the Monument. Route closures and restrictions on travel off of designated routes could affect how outfitters and guides shuttle clients and pack stock to ingress and egress points. Zone restrictions such as group size limits also may require outfitters and guides to alter trip arrangements to accommodate the changes in management. Further impacts on outfitter and guide operations would be similar to those discussed under **Impacts on Recreational Use** section in this chapter. These impacts are not repeated in this section.

**Direct and Indirect Effects of Proposed Actions***Recreational Facilities and Use*

Pullouts, trailheads and interpretive sites located within 116,372 acres of the Frontcountry and Passage Zones would offer outfitters and guides facilities for assisting with their operations. A lack of such facilities within the remaining 1,749,048 acres of the Outback and Primitive Zones would provide clients a more remote experience.

Group size restrictions of 25 people (Passage and Outback Zone) and 12 people and 12 pack stock (Primitive Zone) may affect outfitter and guide operations that cater to larger groups. Most of these services in the Monument have historically catered to groups equal or smaller than these limits, thus impacts should not be substantial. An exception to the group size limit in the Paria River corridor in the Primitive Zone (25 people instead of 12) is included in this Plan. This would allow outfitters and guides operating in that area to continue to guide larger groups, if consistent with protection of resources.

Other restrictions on recreational activities and visitor use could affect the activities that outfitters and guides engage in within the Monument. These restrictions include limitations on campfire use, camping, collections, and other activities. These impacts are discussed in more detail in the **Impacts on Recreational Use** section of this chapter. Limits on the overall numbers of people visiting an area (allocations) would also apply to outfitters and guides if those limits become necessary to protect Monument resources.

*Transportation*

The changes to transportation and access within this Plan may affect the operations of outfitters and guides more than any other aspect. As many existing routes would be closed, outfitters and guides may need to alter trips and itineraries in order to conform to these closures. Outfitters and guides that use OHVs and bicycles as part of their business would be required to confine these vehicles to the 543 miles of routes designated as open to their use.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to outfitters and guides would be expected from proposed decisions listed under the following sections of this Plan: *Air quality Program, Collections, Commercial Filming, Communication Sites, Utility Rights-of-Way, Road Rights- of-Way, Inventory, Monitoring, Research and Adaptive Management, Livestock Grazing, Riparian Resources Program, Special Status Species Program, Vegetation Management, VRM, Water Issues, Weed Management, Wild and Scenic Rivers, Wilderness Study Area Protection, Wildfire Management, Management Ignited Fires, and Fire Restoration, Wildlife Services.*

## IMPACTS ON LIVESTOCK OPERATIONS

### Introduction

Livestock operations occur throughout the Monument. Livestock use is permitted at different times and seasons throughout the year, although this use does not occur everywhere or in the same areas every year. The majority of livestock permittees do not graze on the Monument year-round. There are 73 separate grazing allotments within the Monument (Appendix 6).

### Summary of Effects

Most impacts to livestock operations would come as a result of actions taken outside the scope of this Plan, since the Proclamation stated that livestock grazing would be governed by applicable laws and regulations other than [the] proclamation.<sup>6</sup> This Plan outlines a process for managing existing permits and levels of grazing under existing laws and regulations, including the Utah Standards and Guidelines. Some Proposed Plan actions have the potential to impact livestock operations. For example, policies on the use of non-native species, vegetation management, and the placement of water developments could have effects on these operations. Restrictions on visitor use (such as group size) and restoration of native species could offset these impacts to some extent.

### Direct and Indirect Effects of Proposed Actions

#### *Inventory, Monitoring, Research and Adaptive Management*

Monitoring of rangeland health, in accordance with applicable laws and regulations and the Utah Standards and Guidelines for Rangeland Health, would indicate if range conditions were being degraded. Monitoring activities would continue in the Monument, with adaptive management framework (Appendix 3) providing information on how to modify management actions to reduce impacts to Monument resources from grazing activities. Actions taken to change livestock use in response to monitoring and adaptive management would be initiated through the Utah Standards and Guidelines for Rangeland Health. These actions, which would be determined on a case-by-case basis, may affect livestock operations.

#### *Livestock Grazing*

Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. The **Livestock Grazing** section in Chapter 2 describes a process for implementing the Standards and Guidelines in a separate process from this Plan. This process would result in the evaluation of allotments, determinations of rangeland health, and the development of allotment management plans. Since this process is governed by existing laws and regulations, its impacts on grazing management would be assessed in associated NEPA documents other than this Plan.

#### *Recreational Facilities and Use*

Visitor site facilities (trailheads, interpretive sites, parking areas, picnic areas, pullouts, designated primitive camping areas, trails, and toilets) could directly impact livestock operations through disruption to livestock movement and/or grazing patterns. Recreational users could also leave gates open, resulting in unscheduled livestock use. This occurs

*Recreational Facilities and Use cont.*

particularly in canyons where interactions with humans are more likely to occur. In addition, use of sites has the potential to degrade surrounding vegetation, allowing for erosion of soil and further degradation of vegetation/forage.

New recreation sites would generally not be allowed on 1,749,048 acres in the Primitive and Outback Zones, eliminating the impacts to livestock operations in this part of the Monument. Use in these zones would be low due to accessibility and group size restrictions, reducing the potential for trampling and surface disturbance. Although there is the potential for 32 new recreation sites, disturbing 16 acres in the Frontcountry and Passage Zones (116,372 acres), many of these sites are already used for this purpose. Better delineation of these sites and installation of fences would limit the size of the disturbed area, resulting in a reduction in vegetation degradation in the surrounding areas. This small amount of disturbance would not contribute substantially to impacts on livestock operations. For all proposed sites, restoration activities would reseed disturbed sites in order to reduce contrasts with surrounding areas. Livestock would be excluded from restored areas for a period of time to facilitate establishment of native species.

It is reasonably foreseeable that 35 new primitive camping areas could be designated in the Frontcountry and Passage Zones, disturbing 70 acres. Surface disturbance would occur as described previously for recreation sites. Most of these areas would be designated where primitive camping currently occurs, so new surface disturbance would actually be less than 70 acres. Camping would not be allowed elsewhere in these two zones (except in existing campgrounds), reducing the potential for more widespread impacts to vegetation and livestock operations.

*Special Status Species Program*

The BLM, in conjunction with the USFWS, the UDWR and adjacent agencies, is required to protect Federally listed plant and animal species from actions that would lead to population decline or extinction. Furthermore, the BLM would work with these agencies to promote the recovery of these species. If livestock grazing was determined to be the cause of impacts to populations of Federally-listed species, actions would be taken to eliminate these impacts, including exclusion of cattle from these areas.

*Transportation*

The type and availability of access are factors which affect the ability of livestock permittees to operate within the Monument. Under this Plan, motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). There are currently 888 miles of designated routes open for public travel; 543 miles of these would be open to OHV use. In addition, administrative use of those routes shown on Map 2.1 would be allowed to certain authorized users, including grazing permittees. Additional access could be authorized if access is considered necessary for the operation of grazing permits. These access restrictions could facilitate livestock operations by reducing

*Transportation cont.*

vehicular access for the general public. Restricted public access has the potential to reduce livestock harassment, damage to range improvements, and gate problems.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires. These projects would lead to a long-term restoration of native plant associations, which may or may not benefit forage for livestock. The increased diversity of native species in these areas may provide equivalent forage for livestock in these areas. However, livestock may be excluded from those areas for a period of time after treatment in order to ensure the success of the vegetative treatment and the reestablishment of native plant species.

Removal of forestry products would only occur on the 23,950 acres of designated fuelwood cutting areas, unless more areas are identified as necessary to meet the objective of restoring a natural range of native plant associations. These areas are typically pinyon and juniper woodlands which, as a result of impacts from livestock, wildlife and fire suppression, have little understory and herbaceous growth. Opening of areas through thinning would allow shrub, grass and forb species to increase, improving the condition of these vegetation associations.

Restoration and revegetation provisions, as discussed in Chapter 2, are required for all surface disturbing activities in the Monument as part of the NEPA process. These provisions would decrease impacts to vegetation and forage as described previously.

*Water Issues*

It is reasonably foreseeable that 10 new water developments, disturbing 10 acres over the next 15 years, could be permitted in cases where an overall benefit to Monument resources could be demonstrated. These water developments would most often be used to displace livestock use away from sensitive riparian habitat. Monitoring in conjunction with the Utah Standards and Guidelines for Rangeland Health would indicate when this would be necessary.

*Weed Management*

Removal of noxious weeds would increase forage in areas that were previously unpalatable to livestock. However, in order to ensure the success of weed removal and the reestablishment of native plant species, livestock may be excluded from those areas for a period of time after treatment.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Restoration after fires would include returning disturbed areas to a natural range of native plant associations. Previously used non-native forage species would not be used in reseeding after fires. Livestock grazing after native seedings would be modified to ensure the survival of these native species. The livestock exclusion period required to

*Wildfire Management, Management Ignited Fires, and Fire Restoration cont.*

allow full establishment of native species and recovery after wildfires may be two years or more. Site evaluations would be required to determine when native seedlings could be grazed again and the effectiveness of the current or new grazing system on the persistence of native species.

*Wildlife Services (Animal Damage Control)*

Animal Damage Control activities within the Monument would be limited to the taking of individual coyotes within the immediate vicinity of verified livestock kills, where reasonable livestock management measures to prevent predation had been taken and failed. This has the potential to reduce predation, which would directly impact livestock operations by removing animals known to have killed livestock. However, restricting allowable methods (by not allowing traps, poisons, snares, or M44s) has the potential to impact livestock operators' ability to control predators.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to livestock operations would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Collections, Commercial Filming, Communication Sites, Utility Rights-of-Way, Road Rights-of-Way, Livestock Grazing, Riparian Resources Program, VRM, Wild and Scenic Rivers, Wilderness Study Area Protection.*

**IMPACTS ON FORESTRY PRODUCT USE**

**Introduction**

Forestry product use in the Monument includes collection of personal use fuelwood, juniper posts, and Christmas trees. Collecting of dead and down wood would be allowed where campfires are allowed (see the **Camping** section in Chapter 2). There are also limited areas currently designated for green fuelwood and post cutting. Current forestry product collection use is low. No commercial timber harvesting has occurred in the Monument for decades.

**Summary of Effects**

Removal of forestry products could occur on the 23,950 acres that were already designated as fuelwood cutting areas prior to this Plan. Restrictions on travel off of designated routes may impact these activities, but additional areas may also be designated if necessary to meet the objective of restoring a natural range of native plant associations.

**Direct and Indirect Effects of Proposed Actions**

*Inventory, Monitoring, Research and Adaptive Management*

Research activities which focus on increasing the knowledge of pinyon and juniper woodlands would be encouraged and could provide new areas in the Monument where forestry product collection would be allowed. The adaptive management framework in Appendix 3 would provide the mechanism for designating new forestry product collection areas in the Monument. These areas would be allowed in conjunction with the overall vegetation management objective of promoting a natural range of native plant associations. Monitoring in areas where forestry product

*Inventory, Monitoring, Research and Adaptive Management cont.*

collection is currently occurring could indicate impacts to Monument resources, and restrictions on cutting in these areas may follow.

*Special Status Species Program*

Collection of forestry products would only occur in areas specifically designated for these activities. No collection would occur in areas where special status species occur. If a special status species were discovered in a designated area, that area would be closed, which would impact forestry product collection activities.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and **Emergency and Management Exceptions** sections of Chapter 2). There is a provision for pulling no more than 50 feet off of designated routes for parking or primitive camping in the Outback Zone (618 miles of routes) where current forestry product collection areas are located. These restrictions would apply to people participating in forestry product collection activities and may limit their ability to access cutting areas and to haul these products away.

This Plan would close approximately 1,087 miles of routes currently open to public travel, some of which would be in forestry product collection areas. These routes would not be available for forestry product collection activities and may impact these activities by restricting access and the ability for these users to haul products away. The limited number of route closures in these areas would not substantially impact forestry product collection activities.

*Vegetation Management*

Vegetation restoration methods would be used primarily to restore previously seeded or otherwise disturbed areas to a natural range of native plant associations. It is reasonably foreseeable that this restoration work could be completed on 1,000 to 3,000 acres per year, or up to 20,000 acres over 15 years. These treatments would primarily consist of management ignited fires, but could include the removal of pinyon and juniper by other means. These projects may provide a temporary opportunity for the collection of forestry products in the Monument.

Removal of forestry products could occur on the 23,950 acres currently designated as fuelwood cutting areas in the Monument. These areas are the same as they have been for years. Thus, this use would not be substantially restricted as a result of this Plan. Future reduction of the size of these sites may impact these activities, but additional areas may be designated if necessary to meet the objective of restoring a natural range of native plant associations.

*Visual Resource Management*

Areas cleared of vegetation can be visually obtrusive. VRM classes have been established for the entire Monument. These would be considered in decisions for designating new areas for forestry product collection. This could restrict opportunities to add new areas as old areas are harvested.

*Wilderness Study Area Protection*

Until legislation takes effect to change their status, the BLM's IMP would prevent most surface disturbance on 880,857 acres currently designated as WSAs. This restricts opportunities to add new areas for the removal of forestry products.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

Areas where wildfires have occurred may provide a temporary opportunity for collection of forestry products, if such collection would help meet the overall vegetation management objective of promoting a natural range of native plant associations. While these opportunities would be limited, they would still provide additional areas where forestry product collection could occur.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to forestry product use would be expected from proposed decisions listed under the following sections of this Plan: *Air Quality Program, Collections, Commercial Filming, Communication Sites, Utility Rights-of-Way, Road Rights-of-Way, Livestock Grazing, Recreational Facilities and Use, Riparian Resources Program, Water Issues, Weed Management, Wild and Scenic Rivers, Wildlife Services.*

**IMPACTS ON LOCAL ECONOMIES****Introduction**

The Monument Planning Office contracted with the Utah Governor's Office of Planning and Budget to provide data and analysis relating to the economic and social impacts of this Plan. The Utah Governor's Office of Planning and Budget report presented background data on the economics and demographics of the region surrounding the Monument, and detailed the process and results of the analysis of socio-economic impacts. A summary of this information is provided below. More detailed information about background data and the analysis process can be found in Appendix 12.

**Summary of Effects**

Overall, the economic impacts of this Plan on local economies are expected to be positive, but small. The annual growth in visitation is assumed to be 5.2 percent, with 442,633 visitor days in 2012. Regional population growth attributable to this Plan would be 422 people in 2012. By 2012, the additional employment generated would be 248 jobs. Employee earnings would reach \$6.6 million in 2012 and net revenue to local governments attributable to implementation of this Plan would be \$598,000. Many factors that are not directly the result of BLM actions, but may be influenced by how the Monument is managed, may also have socio-economic impacts on the region. These include growth in the region leading to increased needs for local government services and infrastructure, and changing economies and character of the region due to an ongoing transition toward a greater reliance on tourism.

**Economic and Demographic Context**

The impacts of this Plan have been modeled at the regional level which includes: Beaver, Iron, Garfield, Kane, and Washington Counties. This is because the people of the region are interdependent economically and socially, and the region forms a functional economy. In addition, the region has a closed labor market in the sense that about 90 percent of the income generated in the region is also received there, and, conversely, about 90 percent of the income received in the region is also generated there.

The Monument is located in both Garfield and Kane Counties. The population in both Kane and Garfield Counties can be characterized relative to the State as small, sparsely distributed, increasing slowly, and relatively old. Approximately 10,500 people live in the area. Population growth in the Counties has generally been lower than the State average, and populations in both Counties are among the oldest in the State.

These unique demographic characteristics are closely associated with the economic realities faced by both Counties. The population is small because there are relatively few employment opportunities for local residents. The population is old and net out migration is common because many of those aging into the labor force have to leave to find work.

The performance of the economies in Kane and Garfield Counties can be characterized as cyclical and sluggish compared to the vibrant performance of the State's economy in recent years. Both Counties struggle with unemployment rates higher than the State average, per capita personal income lower than the State average, and a lack of employment diversity.

Many of the economic problems in both Counties can be explained by a general lack of diversity in the economic structure. The area relies heavily on the economic performance of just four major industries: agriculture, government, timber, and tourism. The first three of these industries are fairly stagnant or declining. For instance, while agriculture is an important economic resource to both Counties, employment in agriculture has been stagnant and at times declining for many years. Employment in the timber industry has been cyclical and declining as sawmills have downsized and closed. Employment in local, State, and Federal government has been increasing, but slowly. It is mainly in the tourism industry that employment growth has been sustained. In fact, dependence on the tourism industry has steadily increased.

**Impacts of this Plan**

The impacts of this Plan are driven by BLM spending and employment, as well as visitor spending. The direct, indirect, and induced effects of this employment and spending on population, employment, employee earnings, and local government revenues in southwest Utah are the focus of this analysis. Key findings of the analysis follow.

**Impacts of this Plan cont.**

Overall impacts of this Plan on the southwestern Utah population base are relatively small. The largest increase in population is during construction of new Monument facilities in the year 2000, in which 961 people are projected. However, in 2001 this number is expected to decline to 284 and then grow slowly each year to reach 422 additional persons to the population base in 2012.

Employment attributable to Monument activities is expected to peak during facility construction in the year 2000, when Monument activities could add 615 jobs to an employment base of 74,457 in southwestern Utah. However, in 2001 this number declines to 172 jobs, then increases slowly to 248 jobs in 2012.

For the most part, unchanging direct employment by the BLM results in a fairly steady earnings stream throughout the study period analyzed. However, during facility construction, the highest earnings (\$18.4 million) occur in the year 2000. After construction, earnings stay quite steady, ranging between \$4.9 million and \$6.6 million until 2012.

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 are projected to be \$565,000, then increasing steadily from \$165,000 in 2001 to \$236,000 in 2012. This is a small proportion of expected local government revenues, which total in the tens of millions of dollars.

**Other Impacts**

The socio-economic impacts reported are driven by two factors: direct BLM spending and employment, and spending by visitors. The direct, indirect and induced effects of this spending on population, employment, employee earnings, and government revenues in the southwestern region are the focus of this analysis. The analysis relies on the current structure of the economy and historical averages to estimate these impacts. However, the economy in southwestern Utah would be affected by many factors that are not directly the result of BLM actions, but may be influenced by how the Monument is managed. Some of these factors may have socio-economic impacts that are even larger than those associated with this Plan analyzed here.

Private enterprises, local government and others make decisions regarding infrastructure, business development, service expansions and the like. These decisions may result in significant economic impacts. For example, a decision made by a private business to open a lodging establishment could have the effect of capturing more visitor spending, employing more people, and generating higher tax revenues. Similarly, decisions made about restaurants, tow truck companies, car rental companies, outdoor supplies sales/rental companies, grocery stores, tour guides, and research projects are not decisions made by the BLM, but impact the southwestern economy and are not captured in this analysis.

**Other Impacts cont.**

Another example of factors beyond the scope of this analysis includes actions taken by local governments. Local governments may need to increase or decrease levels of services such as emergency search and rescue, law enforcement, emergency medical services, road maintenance, police protection, fire protection, waste management services, etc. Decisions about service levels would affect revenues and expenditures.

Many small rural communities in the western United States that have been supported by extractive industries or agriculture have experienced a transition toward greater reliance on tourism. This of course drives a different type of development in these communities, bringing in services that had not previously been present and changing the economies and character of these communities. Property values are often driven upward and greater demands are made on local governments to provide for the increased infrastructure and service needs. Adequate data does not exist to systematically evaluate or quantify these potential impacts to the area.

**IMPACTS ON ADJACENT AGENCIES MANAGEMENT****Introduction**

Several Federal land management units border the Monument. On the west side lies Bryce Canyon National Park, portions of the Dixie National Forest, as well as Kodachrome Basin State Park, and other lands managed by the BLM. Along the northern boundary lies primarily Dixie National Forest. To the east lies Capitol Reef National Park and Glen Canyon National Recreation Area, and to the south lies the southern part of Glen Canyon National Recreation area and other lands managed by the BLM. Consideration of the management of these adjacent Federal land units was of primary importance during planning consistency and consultation with adjacent agencies. A discussion of potential impacts on the Monument from action of adjacent agencies is included in the **Cumulative Impacts** section of this chapter.

**Summary of Effects**

Implementation of this Plan could result in a wide range of visitation effects on adjacent land management units. However, because the Monument experiences relatively low visitation compared to most other agencies, few detrimental impacts on adjacent units would be expected. Recent notoriety concerning the Monument has resulted in more people becoming aware of its existence. Some people come to the region specifically to spend time within the Monument, which could result in increases in visitation on adjacent agencies. Other people wishing to experience the surrounding National Parks may choose to spend time investigating the new Monument. This could result in visitors spending less time in the National Parks and more time in the Monument. Other aspects of management concerning environmental programs (e.g., vegetation, riparian, fire) are generally currently in place and would continue.

**Direct and Indirect Effects of Proposed Actions***Air Quality Program*

The entire management area has been designated as either attainment or unclassified for all pollutants and has also been designated as PSD Class II. All BLM actions and use authorizations would be designed or stipulated so as to protect air quality within the Monument and the Class I areas on surrounding Federal lands. Site-specific project proposals affecting BLM and adjacent lands would be reviewed for compliance with existing laws and policies protecting the areas. Projects would be designed to minimize further degradation of existing air quality. There are no new emission sources proposed in the Monument.

*Collections*

The unauthorized collection of objects, as described in the **Collections** section of Chapter 2 is prohibited by the Proclamation and this Plan. These restrictions would help protect areas adjacent to National Park Service lands where these activities are also prohibited. Due to the fact that collection of some items (e.g., plant parts, rocks) is permitted on U.S. Forest Service lands and adjacent BLM lands, collections on these lands may increase from the displacement of these activities.

*Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way*

The placement of communication sites, utility rights-of-way, and road rights-of-way, has the potential to have visual impacts on adjacent land management agencies if these facilities were visible from adjacent agency land. These sites or rights-of-way would generally not be allowed on 1,211,386 acres, (except for communication sites, which may be allowed throughout the Monument for safety purposes only, and road rights-of-way for private inholdings). In areas where they would be allowed, sites or rights-of-way would have to meet visual resource quality objectives and placement would take into account scenic quality impacts on adjacent land management agencies.

*Inventory, Monitoring, Research and Adaptive Management*

Inventory and monitoring activities by the BLM within the Monument would be coordinated with adjacent land management agencies as much as possible. Many of the studies that are initiated by the BLM and adjacent agencies have application for all agencies administering lands on the Colorado Plateau. The coordination of efforts for study of resources could take the form of interagency teams, shared resources, and the extension of projects onto adjacent lands. Any surface disturbing research projects that are in close proximity to adjacent lands, or which may affect adjacent agencies (i.e., downstream from a surface disturbing activity) would be coordinated with these agencies to ensure that impacts were not occurring to resources on their lands.

*Livestock Grazing*

Livestock use has the potential to indirectly impact adjacent agencies lands by accelerating erosion, leading to degradation of water quality in these areas. Livestock grazing uses within the Monument would be managed in keeping with applicable laws and regulations, and with the Utah Standards and Guidelines for Rangeland Health. Proper grazing and vegetation management, as outlined in the Standards and Guidelines, maintains natural vegetation

*Livestock Grazing cont.*

composition, structure and function of rangelands. Healthy rangelands also prevent erosion and degradation of soils and water. Monitoring in conjunction with grazing management, provides information on changes in condition, allowing for changes in grazing management strategies in conjunction with the adaptive management framework (Appendix 3).

*Recreational Facilities and Use*

Although there are 32 recreation facilities and 35 primitive camping areas foreseeable over the next 15 years, these facilities would occur primarily in areas already used for these purposes and would be on the periphery of the Monument. More developed campgrounds on adjacent U.S. Forest Service and National Park Service lands would most likely not be impacted by these facilities. People who otherwise would spend time on surrounding National Park Service lands or National Forest lands would possibly be attracted to Monument lands due to the new designation. Five new Monument visitor contact facilities located in gateway communities would provide visitors with Monument information, and would tend to concentrate visitors in these communities. Conversely, recreational restrictions such as group size limits within the Monument could cause people to seek recreational opportunities on adjacent lands such as U.S. Forest Service lands or BLM lands where group sizes limits are larger.

*Riparian Resources Program and Special Status Species Program*

Restoration of riparian areas within the Monument would also help improve water quality downstream within Glen Canyon National Recreation Area. The protection of special status species would be coordinated across agency boundaries for those species with distributions beyond the Monument's boundaries. These coordinated activities would help to protect and restore these species and their habitat on Monument as well as adjacent agency lands.

*Transportation*

Motorized and mechanized travel off of designated routes would not be allowed, except in limited situations (see the **Transportation and Access** and the **Management and Emergency Exceptions** sections in Chapter 2). There are 1,080 miles of designated open and administrative routes. Of these open routes, 543 miles would be open to use by OHVs. Due to these restrictions on mechanized and motorized use within the Monument, OHV and bicycle use has the potential to increase on adjacent U.S. Forest Service and other BLM lands where these activities are not as strictly regulated. However, OHV use is estimated to be fairly low in the Monument based on data collected in the Recreation Management Information System. Thus, displacement of current use would not be extensive, although overall increases in use in the region have the potential to disproportionately increase use on adjacent agency land.

*Visual Resource Management*

The management of visual resources on the Monument can affect scenic vistas from adjacent land management agencies. As discussed above in the *Communication Sites, Utility Rights-of-Way, and Road Rights-of-Way* section, all developments would have to meet selected VRM classes and objectives. Visual impacts on adjacent agencies would be taken into account in site specific NEPA analysis for all proposals.

*Water Issues*

The management of streams and riparian areas has the potential to impact water quality and quantity on downstream agencies. Construction of recreation sites, management of grazing, and other activities could affect water downstream.

*Water Issues cont.*

However, the objective of the BLM would be to protect water quality in the Monument and ensure that adequate water is available to sustain Monument resources (see the **Impacts on Water Quality** section in this chapter). Efforts to meet these objectives would protect water downstream.

*Weed Management*

The BLM is presently working cooperatively with adjacent agencies toward controlling and managing weed problems within and around the Monument. These activities would provide increased protection for vegetation and wildlife species in the Monument and on adjacent agencies lands. Although the removal of noxious weed species is a priority in the Monument, not all areas can be treated simultaneously. If weed populations in the Monument are left untreated they may spread onto adjacent agencies lands. Cooperative control programs would likely reduce these impacts.

*Wild and Scenic Rivers*

In the analysis of stream-course segments within the Monument for recommendations to the National Wild and Scenic River System, the BLM worked closely with the U.S. Forest Service and National Park Service in determining eligibility of stream segments. Because of this coordinated effort, there are consistent eligibility determinations for adjacent segments. Differences in management philosophy and agency missions may result in suitability recommendations that are inconsistent with the BLM's recommendations (although suitability was coordinated across jurisdictions to the extent possible). Regardless of recommendations for suitability, all river segments in the Monument would be protected from degradation that would substantially affect adjacent agencies.

*Wildfire Management, Management Ignited Fires, and Fire Restoration*

The Color Country Fire Management Area includes the agencies of the U.S. Forest Service, the National Park Service, and the BLM. These agencies work cooperatively on fire management issues throughout the region. The management of fires in conjunction with these agencies would continue under this Plan.

**Proposed Actions with no Reasonably Foreseeable Effects**

No reasonably foreseeable effects to adjacent agencies management would be expected from proposed decisions listed under the following sections of this Plan: *Commercial Filming, Vegetation Management, Wilderness Study Area Protection, Wildlife Services.*

## CUMULATIVE IMPACTS

### Introduction

Cumulative impacts are the effects on the environment which result from the incremental impact of this Plan in combination with other past, present, and reasonably foreseeable future actions outside the scope of this Plan, either within the Monument or outside it. Cumulative impacts are discussed because the quality of the human environment is the result of many different factors acting together. The real effect of any single action cannot be determined by considering that action in isolation, but must be determined by considering the likely effect of that action when acting in conjunction with other actions. These involve determinations that are necessarily complex, and are to some degree intuitive.

Cumulative impacts on specific resources, local communities, adjacent agencies, and other users of the Monument that result from BLM actions within the scope of this Plan are included in each of the resource discussions above under the *Summary of Effects* sections. The cumulative impacts discussion below considers this Proposed Plan in the context of the broader human environment. It includes a discussion of factors such as livestock grazing that have brought that environment to its current state, and a discussion of factors such as population growth that could be expected to influence that environment in the future.

### Cumulative Effects of Past, Present and Reasonably Foreseeable Future Actions

The lands adjacent to the Monument are generally Federal lands, managed by the BLM, the U.S. Forest Service, and the National Park Service. Management of those lands is likely to protect Monument resources, particularly biological and visual resources that benefit from large contiguous tracts of undeveloped land. However, it is possible that, in the long term, visitation associated with the National Parks and National Recreation Area around the Monument would affect the Monument, both by overflow<sup>6</sup> visitation, and through visitor-related developments near the Monument boundary. This could lead to increased surface disturbance and other impacts associated with visitor use described in previous sections.

Water quality within the Monument is, to an extent, dependent upon land and water-use management upstream. Land management practices on adjacent U.S. Forest Service lands along the northern Monument boundary could affect water quality within the Monument. Future logging and road building operations on U.S. Forest Service lands could temporarily degrade surface water quality within the Monument during construction. Conversely, erosion control practices like those at Bryce Canyon National Park may tend to improve overall surface water quality.

Differences in management policies on adjacent agencies could also cause cumulative effects on

Monument resources. For example, visitor use on adjacent U.S. Forest Service and BLM lands where some collection is permitted could impact paleontological and biological resources on the periphery of the Monument where boundaries and differing policies are not evident. Likewise, cross-country vehicle use is allowed on adjacent BLM lands, which could result in damage to resources on the periphery of the Monument that are sensitive to surface disturbance. Information would be provided to visitors on the prohibition of collections and cross-country vehicle travel, which would reduce the potential for these impacts. In sensitive areas where collections or cross-country travel occurred before designation, or where these activities become a problem, interpretive displays could be constructed to provide visitors with information restrictions, and enforcement patrols would be emphasized.

Private lands can also have effects on Monument resources. Nearly 15,000 acres of private land exist within the Monument boundary, and the boundary abuts private lands in several areas, largely near adjacent communities. Private lands within the boundaries of the Monument are

largely undeveloped and used mainly for livestock operations. Since private landowners generally have rights to reasonable access to their lands across public lands, future requests for road rights-of-way could impact Monument resources sensitive to surface disturbance. These effects should be minimal, however, because only six private land inholdings within the Monument do not have road access. Future needs for utility rights-of-ways to these lands could effect resources, depending upon surface disturbance and visual quality impacts. As discussed in the **Utility Rights-of-Way** section of Chapter 2, the BLM would work with the sponsor of a project to meet this Plan's objectives for protecting resources. Alternative locations for projects would be identified when unavoidable conflicts arise, and projects would be focused in appropriate zones.

Private lands can also have effects on visual resources in the vicinity of the Monument, especially on the periphery of the Monument where housing and other developments could alter the scenic quality. Water resources could also be affected by private lands to the north of the Monument and on inholdings within the Monument. Private landowners that have water rights and divert water out of streams could affect instream flows within the Monument. Return flow from municipal water developments within the communities may also tend to degrade both surface and ground water quality within the Monument. The **Water** section of Chapter 2 discusses a strategy for ensuring that adequate water is available to protect Monument resources

and discusses a monitoring strategy to ensure that water quality is maintained or improved.

Livestock grazing in the region has evolved and changed considerably since it began in the 1860s, and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil and water relationships. Some speculate that the changes were permanent and irreversible, turning plant communities from grass and herbaceous species to brush and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills and gullies.

In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations, and policy changes have resulted in adjustments in livestock numbers, season-of-use changes, and other management changes. Given the past experiences with livestock impacts on the resources in the Monument and the cumulative impacts that could occur on the larger ecosystem from grazing on various public and private lands in the region, management of livestock grazing is an important factor in ensuring the protection of Monument resources

The Proclamation which established the Monument stated that "...grazing use shall continue to be governed by applicable laws and regulations." Livestock grazing regulations were most recently revised in 1995, leading to the

adoption of the Utah Standards and Guidelines for Rangeland Health in 1997, which are now beginning to be applied Statewide, including within the Monument. The new regulations, and the Standards for Rangeland Health and Guidelines for Grazing Management, give management priority to maintaining functioning ecosystems. Although they are just beginning to be implemented, it is likely that the new regulations, Standards, and Guidelines would have a beneficial effect on Monument resources over time.

The Proclamation closed the Monument to new mineral entry, but valid rights existing at the time of the Proclamation may be exercised. If existing rights were exercised, effects on Monument resources could occur from surface disturbance and infrastructure development. Full development scenarios for mineral activities are not analyzed as discussed in the **Alternatives Considered but Eliminated From Detailed Analysis** section in Chapter 2 of the DEIS. Full environmental analysis would be required at the time development proposals occur.

The area surrounding the Monument is currently sparsely populated. Nevertheless, population growth is among the factors that would influence the Monument environment in the long-term. Population growth in the region is projected to increase by 3 to 4 percent per year over the next 15 years. The potential for development of retirement communities is considered high in the southern part of the region, particularly near the town of Big Water where large amounts of State land are available for development. Tourism in the region, specifically visitation to the Monument and other public lands, is expected to continue to grow, which could add to the level of development beyond that attributable to population growth alone. Such development in the communities surrounding the Monument could lead to more noise and visual impacts, as well as greater demands for water, all of which could impair the quality of the Monument environment.

Several projects have been proposed for future development in or near the Monument, all of which could have impacts on Monument resources. These include the upgrade of PacifiCorp's Cottonwood Canyon powerline from 230 kilovolts to 345 kilovolts, the Lake Powell to Sand Hollow Reservoir water pipeline, and the Wide Hollow Reservoir on BLM land north of the Monument.

The timing and exact specifications for all of these projects are uncertain. The Cottonwood powerline proposal refers to a December 1975 application to increase the voltage in the Cottonwood Canyon powerline from 245-

kilovolts to 345-kilovolts (filed by Utah Power and Light, a subsidiary of PacifiCorp). A more specific description of the proposal is that it would raise the cross arms five feet on the existing wood towers, add three insulators to each conductor, bundle the conductors, and add one X-brace to each existing tower for increased support. There has been no subsequent application filed for this proposed upgrade and no determination of whether such a proposal would be consistent with this Plan. As stated in the **Rights-of-Way** section of Chapter 2 of this Plan, subsequent environmental analysis and a determination of conformance with this Plan would be required before any action is taken.

No application has formally been filed for the Lake Powell to Sand Hollow water pipeline. However, the tentative route would follow Highway 89 for most of its length. Per Public Law-105-355, signed by President Clinton on October 31, 1998, a utility corridor was designated along Highway 89 in Kane County, including that portion of Highway 89 within the Monument. The utility corridor extends 240 feet north from the center line of the highway, and 500 feet south from the center line of the highway. The proposed water pipeline would most likely be built within this utility corridor. Cumulative impacts of the surface disturbance associated with this pipeline, combined with other surface disturbing activities (such as livestock grazing and recreational uses), could have impacts on visual quality, vegetation, archaeology, and other resources. Given the lack of a detailed proposal for this pipeline, and the fact that it is unclear if the project would be

proposed within the next 15 years, it is difficult to ascertain the exact impacts. Subsequent environmental analysis would be required on any specific water pipeline proposal. A determination as to its conformance with this Plan would also be required.

The proposed Wide Hollow reservoir would be located on BLM land outside of the Monument boundary. At the time that this document went to print, there was no detailed proposal for the project. Subsequent environmental analysis would be required on any specific reservoir proposal to determine the potential impacts, including impacts on Monument resources downstream.

#### **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

The implementation of actions in accordance with this Plan is not likely to result in significant impacts that may be characterized as irreversible and irretrievable commitments. However, some small-scale disruption to resources may occur, which may in turn prove long-term or permanent. These are most likely to be associated with this Plan's concentration of visitation in the

Frontcountry Zone along major roads (Highways 12 & 89). Provisions for visitor experience (including day-use) such as trails, overlooks and interpretive sites could yield irremediable impacts on resources such as biological soil crusts. Similarly, increased visitor access in the Frontcountry and Passage Zones could increase the risk of spreading noxious weeds and disrupt the habitat of certain species. Impacts would be monitored to determine the extent to which they may prove irreversible and irremediable, and adaptive management as described in Appendix 3 would be employed as appropriate.

### **ISSUES CONSIDERED BUT NOT ANALYZED IN DETAIL**

There are several factors that must be considered in all Environmental Impact Statements because of laws, regulations, and executive orders, but which are not necessarily analyzed in detail. They are discussed below.

#### **IMPACTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN**

There are no existing Areas of Critical Environmental Concern (ACECs) in the Monument and ACECs are not proposed in this Plan (see the **ACEC** section in Chapter 2 and Appendix 10). Therefore, there would be no impact on the relevance and importance criteria for any ACEC.

#### **IMPACTS ON PRIME AND UNIQUE FARMLANDS**

There are no prime or unique farmlands or farmland of Statewide or local importance on public lands in the Monument. None of the actions proposed in this Plan would disturb farmlands. Therefore, impacts on prime and unique farmlands are not analyzed further in this Environmental Impact Statement.

#### **IMPACTS ON FLOODPLAINS**

No projects or activities that would result in permanent fills or diversions in, or placement of permanent facilities on special floodplain areas (as designated by the Federal Emergency Management Agency), would occur with implementation of this Plan. Therefore, impacts on floodplains are not analyzed in detail.

#### **IMPACTS ON GEOLOGICAL RESOURCES**

Specific impacts on geological resources are not identified. This is because impacts on geology are difficult to separate from impacts to other resources which the geology of the Monument supports. Thus, impacts on geology are discussed elsewhere, either implicitly or explicitly, in the discussions of impacts to other resources such as paleontology and scenic quality.

#### **IMPACTS ON OR FROM HAZARDOUS AND SOLID WASTES**

No hazardous, toxic, or unapproved solid waste sites are known to occur on public lands in the Monument. None of the actions, activities, and uses projected to occur with implementation of this Plan would require the handling, storage, or release of large quantities of these wastes. Therefore, impacts on or from hazardous and solid wastes are not analyzed in detail.

#### **IMPACTS ON NATIVE AMERICAN TRUST RIGHTS**

Impacts on Native American Trust Rights are not analyzed in detail in this Environmental Impact Statement because no trust rights are associated with lands inside the Monument. As described in the **Consultation with Native American Indians** section of Chapter 3, the BLM would consult with tribes in order to minimize impacts on ancestral sites and traditionally associated resources.

#### **IMPACTS ON ENVIRONMENTAL JUSTICE**

The local communities in and around the Monument are typically below the State average per capita annual income of approximately \$17,000 and are almost exclusively Caucasian.

For example, the percentage of Caucasian people in Garfield county is about 98 percent. The implementation of this Plan would have a greater effect on the well-being of the local low income populations than on the more affluent populations in other areas of the State and Country. However, because the affected local communities are homogenous and would be uniformly affected, there would not be an unequal distribution of risks and benefits in those communities from implementation of this Plan.

Native American Indian populations would not be disproportionately affected by decisions in this Plan. Exceptions to restrictions on uses of plants, collection of natural resources and access to certain locations would be granted for Native American traditional practices.

#### **IMPACTS OF VALID EXISTING RIGHTS ON MONUMENT RESOURCES AND MANAGEMENT**

The effects of valid existing rights on public lands are not analyzed in detail in this Environmental Impact Statement for reasons similar to those explained in Chapter 2 of the DEIS for Full Field Mineral Development. Valid existing rights are described in Chapter 2 of this Plan. Refer to the **Cumulative Impacts** section above for a general discussion of impacts of current operations.

