



Chapter Two: FRAMEWORK FOR MANAGEMENT, USE, AND ADMINISTRATION OF THE WILDERNESS AREAS

INTRODUCTION

This chapter provides general directions for management of the Lake Mead National Recreation Area and Bureau of Land Management wilderness. A variety of administrative and operational topics are covered, including the minimum requirement process, natural and cultural resource management, scientific activities and research, administration and operations, and monitoring of wilderness character. All of the management directions included here do not vary among the alternatives in chapter three—the directions will be followed regardless of which alternative is selected for the wilderness management plan. The directions are based on the Wilderness Act and NPS and BLM policies, including NPS *Management Policies 2006*; Director's Order 41 and Reference Manual 41 (“Wilderness Preservation and

Management”); white papers from the NPS National Wilderness Steering Committee; the “Wilderness Stewardship Plan Handbook. Level II Guidance: Wilderness Stewardship Plan EIS/EA Details”; BLM Manual 8560 – Management of Designated Wilderness Areas; and BLM Manual 8561 – Wilderness Management Plans.

This chapter does not cover several topics that are addressed in chapter three, including management zoning, access into and within the wilderness areas, and user capacity indicators and standards. The management zones and directions provided for these topics in chapter three plus the general directions provided in this chapter make up the management plan for the eight wilderness areas in Lake Mead National Recreation Area and adjacent BLM lands.

WILDERNESS MANAGEMENT GOALS AND DIRECTIONS

The eight wilderness areas in Lake Mead National Recreation Area and adjacent BLM lands will be managed in a way that is consistent with the Wilderness Act and national wilderness policies. The National Park Service and the Bureau of Land Management would manage the areas to protect physical wilderness resources as well as wilderness character, consistent with the direction of the Wilderness Act and the above NPS and BLM policies. In order to protect and promote wilderness character, wilderness management must consider the purpose of an action and the spirit in which it was carried out. The Wilderness Act identifies two key components of wilderness character:

- generally appearing to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable
- having outstanding opportunities for solitude or a primitive and unconfined type of recreation

Providing opportunities for solitude would include managing for visitor experiences with the following characteristics:

- freedom from the presence of humans and human activity
- privacy and isolation in natural surroundings
- absence of distractions such as large groups, mechanization, unnatural noise, signs, and other modern artifacts

However, at its essence, wilderness character is unseen and immeasurable—creating a unique challenge to wilderness management. Wilderness character includes the natural and scenic condition of the land; natural numbers, cycles, and interactions of wildlife; and the integrity of ecological processes. At its core though, wilderness character, like personal

character, is much more than a physical condition. The character of wilderness is an unseen presence capable of refocusing peoples' perception of nature and their relationship to it.

The National Park Service and Bureau of Land Management recognize the intangible values of wilderness. In the implementation of this plan and with future management actions the agencies would, with every decision, forego actions that might have no seeming physical impact but which would detract from the idea of wilderness as a place set apart—a place where human uses, convenience, and expediency do not dominate; a place where we can know ourselves as part of something beyond our modern society and its creations.

The following list identifies the philosophy and overall directions the agencies intend to pursue in managing the eight wilderness areas:

- Provide for the long-term protection and preservation of the areas' wilderness character under a principle of non-degradation. Nature will be the primary influence and human works will be minimal and substantially unnoticeable. The areas' natural condition, opportunities for solitude and primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historical values present will be managed so that they will remain unimpaired.
- Repair where possible degradation from past nonconforming uses that have diminished wilderness character.
- Manage the wilderness areas for the use and enjoyment of visitors in a manner that will leave the areas unimpaired for future use and enjoyment as wilderness. Human use will be managed so visitors will have opportunities to experience solitude,

remoteness, challenge, self-sufficiency, and discovery as appropriate in wilderness. The wilderness resource will be dominant in all management decisions where a choice must be made between preservation of wilderness character and visitor use.

- Manage cultural resources in the wilderness areas so they will be preserved and appreciated through appropriate protection, research, education, monitoring, and treatment methods and techniques.
- Promote and perpetuate public and managers' awareness of, and appreciation for, wilderness character, resources, and ethics through interpretation and education. To foster a better understanding and awareness of wilderness preservation issues and goals, managers will work with other agencies, institutions, governments, tribal governments, and the public.
- Manage the wilderness areas using the minimum tools, equipment necessary to successfully, safely, and economically accomplish the objective. The chosen tools, equipment should be the ones that least degrade wilderness values temporarily or permanently.
- Manage nonconforming but accepted uses permitted by the Wilderness Act and subsequent laws in a manner that will prevent unnecessary or undue degradation of the areas' wilderness character. Nonconforming uses are the exception rather than the rule; therefore, emphasis is placed on maintaining wilderness character.
- Manage the NPS and BLM portions of the wilderness to provide a maximum amount of management consistency across administrative boundaries. Where possible, management, including any regulation of visitor uses, will appear seamless to the public. Where differences in agency management occur, the plan will endeavor to utilize recognizable natural features instead of agency boundaries to demarcate differing management prescriptions (as allowed by law, regulation, or policy). The National Park Service and Bureau of Land

Management will assist one another in wilderness management activities including education and public outreach, emergency management, law enforcement, and monitoring.

SUMMARY OF USES, DEVELOPMENTS, AND MANAGEMENT ACTIONS PERMITTED AND PROHIBITED IN WILDERNESS

The Wilderness Act and agency policies identify uses, facilities, and management actions that are and are not permitted in wilderness areas.

Recreational uses, management actions, and facilities **permitted** in wilderness areas under the Wilderness Act and NPS and BLM policies include the following:

- nonmechanized recreational uses (e.g., hiking, backpacking, picnicking, camping)
- hunting and trapping (where otherwise permitted by law) and fishing
- American Indian religious activities and other actions recognized under treaty-reserved rights
- guided interpretive walks and onsite talks and presentations
- wheelchair use by individuals whose disability requires its use if that wheelchair meets both parts of the definition of a wheelchair as stated in the Americans with Disabilities Act, §508(c): "the term wheelchair means a device designed solely for use by a mobility impaired person for locomotion that is suitable for use in an indoor pedestrian area."
- scientific activities, research, and monitoring (provided the activities are appropriate and use the minimum tool required to accomplish project objectives)
- management actions taken to address impacts of human use; examples of management actions include restoration of extirpated species, controlling invasive alien species, managing endangered

- species, , and protection of air and water quality
- fire management activities (including fire suppression) as approved in the fire management plan
- preservation of historic properties eligible for the National Register of Historic Places
- trails necessary for resource protection or for providing for visitor safety
- campsites when essential for resource protection and preservation or to meet other specific wilderness management objectives
- toilets where they will resolve health and sanitation problems or prevent serious resource impacts
- signs (such as those identifying routes and distances) and other infrastructure necessary for visitor safety or to protect wilderness resources
- certain administrative facilities if necessary to carry out wilderness management objectives (e.g., temporary storage or support structures, ranger station)
- uses and facilities permitted for landowners with valid property rights in a wilderness area

Certain uses and developments are specifically prohibited under the Wilderness Act. Under the definition of wilderness in §2(c) of the act permanent improvements or human habitation are prohibited.

Section 4(c) specifically prohibits the following:

- commercial enterprises
- permanent roads
- temporary roads
- use of motor vehicles
- motorized equipment or motorboats
- landing of aircraft
- other forms of mechanical transport
- structures or installations

With the exception of permanent roads and commercial enterprises, the Wilderness Act does recognize that the above uses *may be permitted* if necessary to meet the minimum requirements for the administration of the area as wilderness or for emergency purposes. Other sections of the Wilderness Act also provide for some exceptions, including the preservation of features of historical value in §2(c) and certain recreational commercial services in §4(d)(6).

Additionally, NPS policies **prohibit** some developments, which include the following:

- new utility lines
- permanent equipment caches (unless necessary for health and safety purposes or determined to be necessary through a minimum requirements analysis)
- borrow pits (except for small quantity use of borrow material for trails)
- new shelters for public use
- picnic tables
- interpretive signs, trails and waysides (unless necessary for visitor safety or to protect wilderness resources)

NATIVE AMERICAN TREATY RIGHTS

The Yuman tribes, which include the Mohave, Hualapai, Yavapai, Havasupai, Quechan, Pai pai and Maricopa, have rights guaranteed by various treaties in the geographic area in which the wilderness areas are located. Some mountains and canyons located along the Colorado River have been identified as Traditional Cultural Properties and are listed in the National Register of Historic Places because of their significance to the Yuman tribes. This area is sacred to the members of these tribes, and they continue to use the area according to their traditions. The agencies will honor those legally established rights and cooperate with tribes holding those rights. Wilderness area managers will routinely consult with tribes and their representatives on a government-to-government basis in managing wilderness resources and uses.

COOPERATIVE MANAGEMENT OF JOINTLY MANAGED WILDERNESS AREAS

NPS and BLM staff will work together and assist each other in the Eldorado, Iretaba Peaks, and Spirit Mountain wilderness areas. The managing agencies will facilitate an integrated and consistent management approach in the three wilderness areas. Agency staff will keep each other informed about activities that could affect the wilderness areas; will meet regularly to identify problems and issues of mutual concern; and will work together to anticipate, avoid, and resolve potential conflicts, protect wilderness resources, and ensure high quality visitor experiences. Whenever possible, the agencies will work together in supporting and conducting patrols, enforcing laws and regulations, and managing resources and visitor use.

RELATIONS WITH PRIVATE AND PUBLIC ORGANIZATIONS AND GOVERNMENTAL AGENCIES

To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, wilderness managers will keep landowners, other land managers, local governments, and the public informed about management activities in the wilderness areas. Periodic consultations will occur with landowners who might be affected by visitors and management actions. Wilderness managers will respond promptly to conflicts that arise over NPS or BLM activities, visitor access, and proposed activities and developments on adjacent lands that could affect the wilderness areas.

Wilderness managers will work closely with adjacent landowners, local, state, and federal agencies, and tribal governments whose programs affect, or are affected by, activities in the eight wilderness areas.

APPLICATION OF THE MINIMUM REQUIREMENT CONCEPT

The Wilderness Act of 1964 states in section 4(c) that...

... except as necessary to meet the minimum requirement for the administration of the area for the purpose of the Act (including measures required in emergencies involving the health and safety of persons within the area) there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing aircraft, no other form of mechanical transport, and no structure or installation... within a wilderness area.

The Act allows for the administrative exception, but it is an exception not to be abused and to be exercised very sparingly and only when it meets the test of being the minimum tool necessary for wilderness management. NPS and BLM policies dictate that all management decisions affecting wilderness must be consistent with the minimum requirement concept. The minimum requirement concept is

“a documented process used to determine if administrative actions, projects, or programs undertaken by the National Park Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts.” (NPS Management Policies 2006)

When determining the minimum requirement, the potential disruption of wilderness resources and character will be considered before, and given more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character in the long term or have localized, short-term adverse impacts will be accepted.

The second part of this minimum requirement process is identifying the minimum tool—defined as the least intrusive tool, equipment, device, force, regulation, or practice—that

would achieve the wilderness management objective safely and with the least impact on wilderness resources. This process however, does not preclude impacts; for example, helicopters could be determined to be the minimum tool under certain circumstances.

To apply the minimum requirement concept, a minimum requirement analysis will be completed for proposed management actions within the wilderness areas, including, but not limited to, natural and cultural resource projects, placement of administrative facilities, and trail and campsite projects. Completion of the minimum requirement analysis is part of the environmental screening process and accompanies the appropriate environmental compliance and may be subject to public review prior to approval.

The minimum requirement analysis is a two-step process. Step 1 helps determine whether the proposed management action is necessary for administration of the area as wilderness, and whether the action poses a significant impact to wilderness resources and character. Step 2 describes alternatives for the proposed action and evaluates each to determine the techniques, tools, and equipment (minimum tool) needed to ensure that overall impacts to wilderness resources and character are minimized. Minimum requirement analysis worksheets for lands managed by the National Park Service and by the Bureau of Land Management are included in Appendixes B and C respectively. (For details on filling out the BLM worksheet, and examples, see www.wilderness.net.)

A minimum requirement analysis also is required for research proposed in the wilderness areas. Methods and tools proposed for the research must consider impacts to and appropriateness for wilderness. Although research may be appropriate for wilderness or may be essential for managing and protecting wilderness, some proposed research projects might be better suited to nonwilderness settings or designed with alternative low-impact field methods. Additionally, analysis of existing datasets may be a better option than

collecting new field data. These types of considerations will be used in assessing research proposals for the wilderness areas, weighing the benefits of what can be learned against the impacts on wilderness resources and values.

The minimum requirement analysis will be accompanied by an appropriate environmental compliance document, and is subject to public involvement. Assessment of adverse impacts must consider physical resources within wilderness, as well as wilderness character and values, which include primeval character and influence, the preservation of natural conditions (including a lack of human-made noise), cultural resource values, outstanding opportunities for solitude, opportunities for primitive and unconfined recreation, and the preservation of wilderness in an unimpaired condition (NPS 1999b).

NATURAL RESOURCES MANAGEMENT

The 1964 Wilderness Act defines wilderness as a place that “generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.” Although these ideas have much in common, they are not the same. As established by the Act, the objectives to manage wilderness for ecological conditions (the forces of nature) and for wildness (minimal imprint of man’s work) can be in conflict.

In the eight wilderness areas, there are some past signs of human use, including trash, unofficial user-created trails and campsites. Although hands-off management was probably once sufficient to keep wilderness both natural and wild, land managers now realize that human use of the landscape has left evidence of that use: areas with invasive plants; diminishing populations of threatened, endangered, and extirpated plants and animals; compacted soils, artificial fire regimes; and even trash piles. The National Park Service and the Bureau of Land

Management are fully committed to the preservation of the tangible remnants that are historically significant (an equally challenging concept, also defined in federal law). However, in other cases, wilderness area managers are faced with the dilemma of whether to attempt to restore natural conditions or leave an area alone. If the latter path is selected, some areas will naturally restore themselves over time, but other areas are likely to remain in an unnatural state.

With regard to natural resource management in wilderness, NPS and BLM wilderness policies state the following, respectively:

The principle of non-degradation will be applied to wilderness management, and each wilderness area's condition will be measured and assessed against its own unimpaired standard. Natural processes will be allowed, in so far as possible, to shape and control wilderness ecosystems. Management should seek to sustain natural distribution, numbers, population composition, and interaction of indigenous species. Management intervention should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use, and the influences originating outside of wilderness boundaries. Management actions...should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals. (NPS Reference Manual 41: Wilderness Preservation and Management, §6.3.7)

BLM wilderness areas must be managed so as to be affected primarily by the forces of nature, with the imprint of human work substantially unnoticeable: so as to maintain the area's outstanding opportunities for solitude or primitive and unconfined recreation; and so as to protect any ecological, geological, or other features of scientific, educational, scenic, or historical value which the area may contain. The BLM must foster a natural distribution of native species of wildlife, fish, and plants by ensuring that natural ecosystems and ecological processes continue to function naturally. The BLM minimizes human influence on wildlife populations and works

to prevent the extinction by human causes of plants and animals found in the areas. The limits of acceptable change are identified in the wilderness management plan for each wilderness area, and the BLM endeavors to restore those sites that have dropped below this level. (BLM Manual 8560: Management of Designated Wilderness Areas, §.11A)

Thus, conservation and restoration activities should occur only when necessary, and the threshold for taking management actions (intervention) is particularly high in wilderness. Managers should be certain that only those activities that sustain or improve wilderness character are authorized.

In considering whether to take action, managers should define as precisely as possible what outcomes are desired. The following questions (as well as the minimum requirement process criteria) can help guide managers in their decision:

- Is the extent and significance of diminished naturalness known?
- Is action needed to maintain ecological integrity – the presence of all appropriate elements and processes operating at appropriate rates?
- Is the action needed to promote resilience of the wilderness – the capacity of the system to absorb change and still persist without undergoing a fundamental loss of character? Is action needed because little semblance of natural conditions is possible without intervention?
- What is the intensity of the proposed action – how big an area will be affected over how long a time? Is the intervention short or long term?
- Is there sufficient understanding about reference conditions and processes, as well as the long-term effects of the action?
- What are the benefits and risks of taking action versus not taking action? Is the threat or change facing the wilderness considered a high priority? Does the action have the most potential to make a difference?

- Is there public understanding and support for the action?

(Additional questions and ideas can be found in Cole et al 2008; Landres 2004; and Landres 2002.)

In its “Guidance White Paper Number 2,” the NPS National Wilderness Steering Committee has provided a guide for evaluating the appropriateness of restoration and other conservation activities in wilderness managed by the National Park Service. Recognizing that identifying which action should be taken versus which action should be avoided will be location-specific and subjective, the following three-tiered framework can help managers in structuring their decision:

Class I: Activities that cause short-term wilderness disturbance and result in long-term wilderness character enhancement

This class of activity entails one-time reversals of anthropogenic changes that, once accomplished, are self-sustaining. Users of wilderness might well encounter restoration activities that would typically result in impacts to wilderness character lasting a season to perhaps several years. Often, these impacts include temporary markers such as flagging, or placing tags and radio-collars on animals. Some of these types of activities, such as dam removal, may require heavy equipment. Upon completion, however, traces of the restoration activity would be extinguished over a short period of time, while the benefits of “re-wilding” and returning naturalness to wilderness character would be long term.

Examples: Reintroducing self-sustaining native species or extirpating invasive alien species.

Class II: Activities that require long-duration or recurring entry, where benefits and costs to wilderness character must be weighed

Many ecosystems that include wildernesses suffer anthropogenic disturbances for which managers lack the knowledge, the legal

authority, or the financial resources to correct permanently at the present time. For example, introduced weedy plants often invade natural areas from adjacent lands, and require regular removal and frequent monitoring. These nature-maintenance activities reflect the reality that many designated wildernesses are simply too small or disconnected to sustain their full suite of ecosystem functions without intervention. NPS managers must ultimately weigh the restoration benefits to the ecosystem against the impacts to other aspects of wilderness character.

Examples: Periodic control of persistent introduced species or reintroduced species requiring continuing support.

Class III: Activities in support of laws or NPS policies and don’t directly enhance wilderness character

These activities represent substantial impacts on wilderness character. They clearly violate the intent of the Wilderness Act. Some of these, such as pest control, reflect the incapacity of some landscapes designated as wilderness to function as such, either ecologically or politically. On the other hand, some severe interventions, such as the removal of native organisms for restoration elsewhere, illuminate the fundamental and unavoidable connections between many wildernesses and their surrounding, more modified landscapes. Ultimately, decisions in this category may require a public review for their resolution.

Examples: Habitat modification for endangered species; control of native pests or dangerous species to protect life or property outside wilderness; removal of native organisms in support of restoration elsewhere.

Finally, as noted in Hendee et al 2002, it is important to keep in mind that “...some changes are irreversible and must simply be accepted as fundamental changes in the condition of wilderness ecosystems. Loss of keystone plant species to exotic pathogens and establishment of exotic plants and

animals that alter fundamental processes . . . are examples.”

Air Quality

The Clean Air Act (42 USC 7401 et seq.) gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts. NPS *Management Policies 2006* (§4.7), and “Reference Manual 77: Natural Resource Management” provide further direction on the protection of air quality and related values for park units.

NPS staff would continue to work with appropriate federal and state government agencies and nearby communities to maintain and improve the national recreation area’s regional air quality. NPS staff would participate in regional air quality planning, research, and the implementation of air quality standards.

Air quality in the eight wilderness areas would be periodically monitored to gain baseline information and to measure any significant changes (improvement or deterioration) to the areas’ airshed.

Nonnative (Exotic) Vegetation

Several invasive, nonnative species are present in the wilderness areas, including red brome (*Bromus rubens*), tamarisk (*Tamarix spp.*), Sahara mustard (*Brassica tournefortii*), and cheat grass (*Bromus tectorum*). The highest priority is to control tamarisk growing by springs in the wilderness areas. Control of the other three species noted above is also a high priority. Medium priority species include African mustard (*Malcomia Africana*), tree tobacco (*Nicotiana glauca*), London rocket (*Sisymbrium irio*), and hedgemustard (*S. orientale*).

In the prevention and control of nonnative species, the management ideal is to sustain only native species in the wilderness. To achieve this, active weed management will

occur to prevent, control, or eradicate weeds from the native plant communities within the wilderness. Activities that facilitate the introduction or spread of nonnative species will be scrutinized to determine if the activity should be disallowed, or if special stipulations will be satisfactory to mitigate the activity. Other management actions, such as seasonal closures or weed free forage requirements may be employed.

Where nonnative plants are found, emphasis will be placed on controlling small infestations, those weeds likely to spread and displace native plants, or those plants that may disrupt ecosystem function. The Nevada noxious weed classification system also will be consulted in setting control priorities for specific weed species. Monitoring for nonnative plants will occur on a regular basis.

Weed treatment will focus first on reducing infestation size and ultimately seek complete eradication of weed species. Treatment activities will utilize the current knowledge of effective treatment methods, as well as treatment strategies appropriate for the target plant and compatible with the wilderness setting. The level of treatment intensity and the minimum tool necessary will be determined prior to site-specific weed treatment activities.

Hand pulling weeds in wilderness areas will not be subject to Minimum Requirements Analysis, as long as no prohibited use is implemented, less than twelve people are in the work crew, and Leave No Trace principles are followed. If there were a need for herbicide application, a separate Minimum Requirements Analysis would be completed as part of project-related environmental analyses and would be reviewed by the wilderness coordinator, environmental compliance specialist, and Superintendent. This process assures that the proposed project activity is necessary for management of the area as wilderness and that the minimum tool has been selected. It also assures consistency with other wilderness-related planning documents and provides a record of management

activities involving prohibited uses important in wilderness monitoring purposes.

Recognizing that treatment combinations may be necessary in some situations, the following methods could be used for treatment and control:

- Hand grubbing may be used with or without hand tools if plants will not re-sprout and where infestations are of a size manageable by small hand crews (this may occur concurrent with monitoring).
- In accordance with a site-specific pesticide use proposal, herbicides may be applied by backpack or horse pack spraying equipment (or other wilderness compatible methods) when grubbing is not effective. Treatment may include the use of hand or power tools to cut plants down prior to treatment.
- Herbicides may be applied with or in conjunction with motorized/mechanized equipment, in accordance with a site-specific pesticide use proposal, where the infestation is of such size that treatment by hand tools and herbicides are impractical, and secondary impacts from the control activity are minor and easily rehabilitated. Treatment may include cutting plants down prior to treatment. No ground vehicles would be driven into wilderness. Reseeding control areas with native species, with a preference for local genetic stocks, will be incorporated where on-site seed sources are not adequate for natural recruitment.
- Biological control agents approved by the Animal and Plant Health Inspection Service (APHIS) may be employed where infestations are of such size that eradication is not feasible. Additional environmental compliance would be required before release of a biological control agent by the National Park Service could occur.

Ecological Restoration and Removal or Rehabilitation of Human Disturbances and Inappropriate Traces of People

If a decision is made to actively rehabilitate or restore an area, active rehabilitation will occur at sections visible from key observation points, while other sections will be left to rehabilitate naturally. Where soils are compacted, the surface may be loosened with hand or power tools anywhere along the rehabilitated route.

Active rehabilitation will include visually obscuring the surface disturbance by breaking up compaction, “planting” dead vegetation collected near the site or brought in from offsite salvage areas (only native vegetation), and by scattering rock to mimic the form and texture of the surrounding landscape. Hand tools will be used for the work. Obscuring the site will help prevent continuing human-caused disturbance and will help trap native seeds to foster natural recruitment. The seeding or planting live vegetation may also be used in those sites where there is a poor likelihood of native vegetation recruitment or a high likelihood of infestation by a noxious weed.

When seeding is necessary, native species—with a preference for local genetic stocks—will be used exclusively. A mix of species will be selected that closely represents the plant composition for the site being reseeded. Active rehabilitation of any future disturbance that involves digging (for example, fire line construction) will include re-contouring to restore slopes.

Structures and installations will be removed if they are not historically significant or are not the minimum necessary for administration of the area as wilderness.

As called for in the alternatives, portions of roads would be closed (e.g., parts of Approved Road 21) and the land rehabilitated and restored. Another high priority would be restoring the land affected by old road cuts along the western edge of Approved Road 30

along the Nellis Wash Wilderness. Heavy equipment may be needed in these and other similar locations to restore affected areas.

Management of Unofficial User-Created Hiking Trails

In addition to designated routes and trails, unofficial user-created hiking trails may be present within the wilderness areas. Examples of adverse impacts to wilderness character from these unofficial trails include excessive erosion (for example, creation of a gully or making a tread surface difficult to maintain footing on), excessive impacts (such as trail braiding or widening), or other unacceptable impact to the wilderness resource. User-created trails will not be signed, displayed on agency maps or brochures, or normally receive maintenance. They may be available for use upon discovery by hikers simply because numerous hikers are visiting the same location, but creation of user-created trails will be discouraged if possible.

Flat-bottomed sandy or gravelly washes will not be defined as user-created trails. Field monitoring will be combined with a periodic review of private sector published route descriptions. As new user-created trails are discovered, they will be evaluated for impact to wilderness character (including cultural or biological) and the management objectives of this plan. New user-created trails may lead to popular sites and receive regular use to the extent that rehabilitation may not be possible. These may be retained. Rock cairns will be knocked down unless needed to minimize visitor impacts to a single retained path. Where user-created trails are retained, but the trail is found to be unstable or causing an adverse impact, the trail may be rerouted, improved, or maintained in the problem section only (following designated trail guidelines). This work will be designed to make the trail compatible with protecting resources; but not to attract use or make the trail easier to travel.

An inventory of user-created trails will be maintained and monitored for resource damage. Field monitoring will identify paths

that have cut vegetation, lead to camping areas, or show other evidence of use. Monitoring of user-created trails will specifically occur at Pinto Valley and Redstone, Spirit Mountain, Sacatone Canyon and the Catacombs area, Boy Scout Canyon, and Tule Springs.

Fire Management

The Lake Mead National Recreation Area's *Fire Management Plan/Environmental Assessment* (NPS 2004b) and the Bureau of Land Management's *Las Vegas Field Office Fire Management Plan* (BLM 2004) provide guidance on management of fires in wilderness areas.

Appropriate management responses would be developed following the initial report for wildland fires in the planning area and would include a range of specific actions including monitoring, confinement, initial attack and suppression/ extinguishment, or wildfire suppression with multiple strategies, and may include use of mechanized equipment and retardant. Appropriate management responses would be determined for each wildland fire based on site factors (including fuel loading and fire behavior, protection of natural and cultural resources), and the circumstances under which a fire occurs, while ensuring the safety of firefighter, the public, and protection of private property.

All of the wilderness areas are located in the BLM Tortoise Area of Critical Environmental Concern (ACEC) South Fire Management Unit, and the NPS Lower Lake Mead Fire Management Unit. Fire suppression will occur on all wildland fires and all escaped prescribed fires. All wildland fires in the wilderness areas will be managed to include the application of minimum impact suppression techniques (MIST), and the consideration of firefighter safety, public safety, cultural resources, and sensitive habitat resource concerns. Motorized vehicles used in fire suppression efforts will remain on existing roads. Off-highway vehicle use and heavy equipment is prohibited in these fire management units unless approved by the

NPS superintendent and/or BLM district manager. Air resources including helicopters and single engine air tankers will be included in the WILDCAD system for all wilderness fire suppression activities. The use of retardant must be approved by the NPS superintendent and/or BLM district manager. However, if retardant is not approved, water may be dropped from aircraft.

Wildfire management priorities include maintaining a diversity of native vegetation by managing fire size to minimize the spread and density of noxious or invasive weeds, such as red brome.

Prescribed burns and mechanical fuel treatments could be proposed in wilderness to restore “natural conditions,” although no prescribed burns or mechanical fuel treatments are foreseen as being necessary at this time.

A resource advisor will be notified for all fires occurring in or threatening a wilderness area.

Wildlife

The agencies will continue to work closely with the Nevada Department of Wildlife (NDOW) in managing wildlife populations in the wilderness areas. Wildlife management activities within BLM managed wilderness areas would be conducted in conformance with the current (2003) and subsequent BLM-NDOW Memorandum of Understanding. Actions may include, on a case by case basis, the occasional and temporary use of motorized vehicles or mechanized equipment (see appendix E).

Wildlife will be protected as much as possible from incidences of humans touching, feeding, teasing, and frightening them, and from general harassment. This will mainly be accomplished through visitor education. If necessary, temporary closures or use limits may be set in specific areas to protect wildlife during critical periods of time or in critical habitats.

Wildlife Relocation

Transplanting (i.e., removal or reintroduction of terrestrial wildlife species) may be permitted if necessary to accomplish either of the following: 1) perpetuate or recover a threatened or endangered species; or 2) restore the population of indigenous species eliminated or reduced by human influence. Sites and locations outside of the wilderness will be used first, and if not available, transplants may be made to or from the wilderness in a manner most compatible with preserving the wilderness character of the area. Only the species whose indigenous range includes the eight wilderness areas will be considered for relocation into the respective wilderness area. When a species is in need of augmentation in the wilderness, and until the population is thriving on its own, the National Park Service and the Bureau of Land Management will consult with the Nevada Department of Wildlife in taking actions to suspend or reduce activities contributing to the condition until the population is self-sustainable.

In furtherance of the values of the wilderness areas to the larger region, and when a species is sufficiently in excess of its viable population level in the wilderness areas, wildlife relocation from the wilderness areas may be approved to restore the population of the species at indigenous habitat elsewhere where long-term measures to mitigate the conditions affecting the species have been implemented.

Relocation activities may be supported by motorized equipment or transport where it is the minimum necessary for the administration of the area as wilderness as determined by the National Park Service or the Bureau of Land Management. Staging will occur outside the wilderness boundary. Timing will consider visitor use of the area—whenever possible activities will be scheduled during periods when visitor use is low. In order to inform visitors of impending activity, relocation days will be posted on the NPS and BLM websites well in advance of the activity.

Bighorn Sheep Management

The wilderness areas provide habitat for and support bighorn sheep. Wilderness managers will work closely with the Nevada Department of Wildlife to ensure state managers know what activities can and cannot occur in the wilderness areas. A minimum requirement analysis will be completed to make sure state operations are consistent with wilderness requirements.

Burro Management

Burros are present in the wilderness areas, particularly in the Jimbilnan and Pinto Valley Wilderness areas. NPS legislative mandates and policies dictate that the long-term goal of burro management is to manage for zero burros within Lake Mead National Recreation Area, including the wilderness areas. NPS wilderness managers will follow the guidelines provided in Lake Mead National Recreation Area's 1995 *Burro Management Plan*, and BLM wilderness managers will follow the guidelines in the *Las Vegas Resource Management Plan* and subsequent plans and amendments (BLM 1998).

Wildlife Water Developments (Guzzlers)

Currently, there are no wildlife water developments within the wilderness areas. New water developments may be considered only when essential to preserve the wilderness areas' resources and when necessary to maintain the local indigenous wildlife population where human activity has caused loss of water within the local population's indigenous range, and an artificial water source cannot be located outside the wilderness areas to achieve the same purpose. Construction may be supported by motorized equipment or transport. Inspection and maintenance of facilities will take place by nonmotorized means except for major maintenance requiring large parts or tools which cannot be transported by foot or pack stock. Water replenishment activities may occur by helicopter when a guzzler has broken or during times of prolonged drought if sustainable forage remains available. Consideration of guzzlers on lands within Lake Mead National Recreation Area will be

within the guidance of the NPS management policies.

Threatened and Endangered Species

Management of the federally threatened desert tortoise will continue to be closely coordinated with the U.S. Fish and Wildlife Service; management of state protected species (including, but not limited to Las Vegas bear poppy, banded Gila monster, burrowing owl, Swainson's hawk, and ferruginous hawk) will continue to be coordinated with the Nevada Department of Wildlife. The agencies will continue to monitor these populations. If disruptions to the populations occur because of visitor use, appropriate management actions, including use restrictions, will be taken to protect these species.

Soundscapes

Lake Mead National Recreation Area collected baseline data in the wilderness areas from 2007-2009 (see appendix F). The data included audio recordings of overflights and all other sounds within the wilderness areas. This study provided valuable information that will allow NPS and BLM managers to better understand the acoustical environment and manage human-caused sounds. As recommended in the report, acoustic monitoring will be a priority; the areas will be monitored for trends every 2-5 years or more frequently if any significant impact is expected. Future monitoring will focus on maintaining this baseline, as well as monitoring additional sites closer to Lakes Mead and Mohave.

Paleontological Resources

Paleontological sites containing significant fossils of invertebrates, vertebrates, plants, and traces are an important nonrenewable resource, possessing scientific and educational values. The Lake Mead National Recreation Area and surrounding lands contain paleontological resources. The majority of the sites inventoried for paleontological resources in the national recreation area are located in areas just outside of wilderness. Although the

eight wilderness areas have not been extensively studied, the potential for new paleontological discoveries within the wilderness areas is great. Currently, the only documented wilderness site is located in the Pinto Valley Wilderness: one documented petrified wood site is present (NPS 2004c).

The following strategies will be followed to better understand and protect paleontological resources consistent with the Wilderness Act:

- Paleontological resources in the wilderness areas will be surveyed and assessed to determine their extent and scientific significance, and to ensure that these nonrenewable resources are not lost. Permits will be issued for the surveys.
- Collection of any paleontological materials will be permitted only with the approval of the superintendent and BLM state director, as appropriate. Approval will be granted only for scientific research or public education. All collection must be conducted in a fashion that leaves the site in a substantially unnoticeable condition. All collected material must be housed in an approved repository.
- Excavation permits to collect fossil material will be issued only a case-by-case basis and after an environmental assessment determines that the proposed action will not degrade the overall wilderness character.
- Any research will be conducted under the minimum requirement concept.

CULTURAL RESOURCES MANAGEMENT

The eight wilderness areas include several cultural resources, including archeological sites, and ethnographic resources. Cultural resources are included under the Wilderness Act as part of wilderness and historic values to be protected. In addition, laws intended to preserve the nation's cultural heritage, including the National Historic Preservation Act, Archeological Resources Protection Act,

and American Indian Religious Freedom Act, among others, all fully apply in wilderness. Management will be consistent with these laws as well as the Wilderness Act; NPS Reference Manual 41: "Wilderness Preservation and Management"; NPS 28: "Cultural Resource Management Guideline"; and BLM Manual 8560, "Management of Designated Wilderness Areas."

As called for in §6.3.8 of NPS Reference Manual 41 and §.32 of BLM Manual 8560, historic properties in the wilderness areas that are listed in or eligible for listing in the National Register of Historic Places will be protected and maintained according to the pertinent laws and policies governing cultural resources. Cultural resources (such as historic sites, structures, and objects) in the eight wilderness areas will be preserved through a range of management actions (such as inventories, documentation, photographic record, and stabilization). However, the methods used to protect and maintain cultural resources must be consistent with the preservation of wilderness character and values—cultural resource management activities, including inventory, monitoring, treatment, and research, must be done in compliance with the provisions of the Wilderness Act. If these management actions are proposed in the wilderness areas, they must be evaluated in the minimum requirement process, with advance public involvement, to avoid or minimize impacts to wilderness character and values.

In particular, proposals for the use of motorized and mechanical equipment for cultural resource work (e.g., archeological coring and excavations, use of remote control airplanes, maintenance of historic structures) within the wilderness areas will be reviewed through the minimum requirement analysis process (see page 33). Thus, whether conducting inventories or documenting objects and sites before allowing them to "melt into the land," wilderness and cultural resource managers will work closely to ensure that both wilderness and cultural resources

are effectively documented and protected in ways that best preserve the integrity of both resources. No national register-listed or national register-eligible structure would be allowed to decay naturally (“molder”) without prior review by park and region cultural resource specialists and consultation with the Nevada state historic preservation office. Before a national register-listed or national register-eligible structure is allowed to molder, appropriate documentation recording the structure would be prepared in accordance with Section 110 (b) of the National Historic Preservation Act and the documentation submitted to the HABS/HAER/HALS program.

Any adverse impacts on cultural resources within the wilderness areas will be avoided if at all possible, as the protection of these resources is a critical facet of wilderness management. Any actions that involve ground disturbance or possible disturbance of cultural structures or landscapes must involve mitigation measures developed by the agencies in consultation with the Nevada State Historic Preservation Office the Advisory Council on Historic Preservation, and the appropriate tribal cultural office or tribal historic preservation office.

Much work still needs to be done to understand the human history of the wilderness areas. Any proposed surveys or excavations will go through the minimum requirement analysis to determine the minimum tool and determine how best to avoid or minimize wilderness impacts.

To better understand and manage cultural resources in wilderness areas, cultural resource inventories will continue to be developed and research will continue to be conducted along with continued consultations with cultural associated American Indian tribes.

With the exception of Spirit Mountain, where there is evidence of visitor use, cultural resources in the wilderness areas do not show impacts from visitation. Cultural sites will continue to be monitored and management

actions taken if visitor use begins to affect sites.

It is important to stress that any action affecting cultural resources in the wilderness area will undertaken only after appropriate consultations with the Nevada state historic preservation office, any affiliated American Indian tribes, other interested agencies or organizations, and the general public.

Traditional Cultural Properties

The Spirit Mountain traditional cultural property will continue to be protected from illegal activities such as vandalism and unauthorized collecting of artifacts. Managers will continue to consult with the tribes to ensure their concerns are being met. It is anticipated that visitor use would continue to increase, and expanded educational efforts and law enforcement efforts will occur if needed to address visitor use problems that may arise. Information about the protection and interpretation of the resources may be conveyed through brochures and wayside exhibits at entrances to the wilderness areas as well as through public outreach. Managers will also monitor the expected increase in visitor use in the wilderness areas, including the traditional cultural properties.

Historic Structures

Present in the wilderness areas are a small number of historic structures, primarily associated with past mining activity that predates wilderness designation. Most of these sites have not been evaluated for listing in the National Register of Historic Places, although several are considered potentially eligible. In general, historic properties eligible for the National Register of Historic Places that have been included in wilderness would be protected and maintained according to the pertinent laws and policies governing cultural resources, using management methods that are consistent with preservation of wilderness character and values. (NPS 1999a) If appropriate, public outreach, expanded law enforcement, and educational efforts will be undertaken to address problems such as

vandalism or illegal collection of historic items.

Archeological Sites

The wilderness areas have not been extensively surveyed for archeological sites. Archeological research, including excavations, collection of specialized soil samples from cores or excavation units, and the use of remote sensing devices, may be permitted after review through a minimum requirement analysis.

Any ground-disturbing activities, such as the construction of access points, have the potential to affect archeological resources. NPS or BLM archeologists will review all such proposals and conduct field surveys before such activities occur. Proposed facilities may be relocated, if found to have the potential for significant adverse impacts on cultural resources and wilderness values due to location or visitor use.

Native American Concerns

The locations of Native American sites or areas will be identified and recorded as ethnographic resources. Such recording is important for addressing management and treatment of resources that might be included under the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, and Executive Order 13007, "Indian Sacred Sites," or as traditional cultural properties under the National Historic Preservation Act.

WILDERNESS ROUTES AND TRAILS

If designated routes are established in the wilderness areas, they will receive minimal maintenance. Cairns may be used as necessary to define a route or for public safety; however, the construction of new cairns will be minimized and be discernable from historic cairns. Cairns should be no bigger than one foot high. (Specific design standards for agency-identifiable cairns will be developed.) The locations of all cairns will be recorded by global positioning system (GPS). If cairns are

found off designated routes, they will be dismantled. Flagging and other temporary markings in any area will be prohibited except during emergency operations or as approved for research and monitoring. If used in any of these ways, the markings must be removed once the activity has concluded.

Designated routes will be watched for serious degradation and may be modified to minimize impacts. Where serious degradation is occurring on routes, the following actions will be considered through the minimum requirement process:

- minimal maintenance to correct the problem
- minor construction to correct the problem
- reroute portions or all of the route
- closure and rehabilitation of portions or all of the route

Designated maintained trails generally will not be built in the wilderness areas unless they are determined to be necessary for resource protection or for providing appropriate use of wilderness. If trails are provided, they will meet NPS and BLM standards for wilderness trails. The trails will be unsurfaced, narrow, modest in character (except where a more durable surface is needed), and generally unimproved except for clearing and some work on dangerous areas. Tread width should generally be 18 inches, with an overall grade less than 15%. For distances less than 150 feet, grade should not exceed 20%. Trail maintenance structures (such as water bars and gabions) may be provided, under minimum requirement protocols, where they are essential for resource preservation, or where significant safety hazards exist during normal use periods. Maintenance will strive to limit trail width to 24 inches, and not exceed 36 inches except on sections along precipices (where it may be wider for safety) or sections in washes. On steep slopes, rolling dips or rock enforced water bars will be used to reduce water caused soil erosion.

Trails may be rerouted where they are causing damage or are anticipated to cause damage to wilderness character. Trail rerouting will be limited to short sections within the areas cleared by cultural and botanical inventory. Examples of where trail rerouting will occur include

- 1) On slopes greater than 15% beyond which potential for excessive soil erosion and trail deterioration is high. (Very short steep sections may be retained where reinforcement with native rock will prevent soil erosion.)
- 2) Where trail braiding exists or is beginning to occur, the most appropriate trail will be selected by improving its tread surface or trimming back vegetation. The alternate trail(s) will be obstructed and rehabilitated with rock or native vegetation.
- 3) Trails may be rerouted to avoid damage to natural or cultural resources.

VEHICLE ACCESS POINTS

If new vehicle access points are developed for visitors to enter the wilderness areas, they will be on existing roads at or near the wilderness boundaries. No roads will be improved to facilitate wilderness access. Vehicle access points will be defined by creating turnarounds at suitable locations at or before the wilderness boundary to help direct vehicles from continuing into the wilderness. Turnarounds will be located at already established, sufficiently sized pullouts that exist within 0.25 miles of the wilderness boundary. Otherwise, new turnarounds will be created near the boundary in appropriate locations. Turnarounds will occupy approximately 0.1 acres and have adequate space for two vehicles to park parallel to the road without blocking the turnaround. Vehicle barriers will be constructed where natural barriers are not adequate to keep vehicles from traveling past the turnaround. The following barrier types, listed in order of least intrusive to most intrusive, may be used:

- 1) wilderness sign, berm associated with the turnaround, small rocks, or vegetation placement or restoration
- 2) large boulders moved by heavy equipment
- 3) post and cable
- 4) fence or gates

The least intrusive method appropriate for the location will be used. Tread Lightly practices will be encouraged through literature and other contacts.

Access points may also include registers to monitor visitor use, signs or signboards, and waysides with orientation, interpretive, or regulatory information, as appropriate.

VISITOR USE MANAGEMENT

Backcountry Permits

Permits are not needed to access the wilderness areas, although they may be considered in the future if conditions warrant. To get a sense of use levels and to track use patterns, voluntary self-registration boxes may be installed at access points. Other possible methods of obtaining use levels information include monitoring the number of vehicles at key access points, installing agency-monitored registers on selected mountain summits, and estimating visitor use of areas during park overflights.

Individual visitors do not need a permit to access the wilderness areas; however, a permit is required for commercial use (i.e., guided groups).

In the future, the use of permits could change if necessary to ensure levels of wilderness use are consistent with a high quality visitor experience, safety, and resource protection. Permits can have many uses, including the following:

- providing education concerning resource protection and Leave No Trace practices
- providing education concerning safety issues

- providing a means to track visitor use
- identifying a starting point for search and rescue efforts
- regulating use

Climbing, Mountaineering, and Canyoneering

Rock climbing and scrambling is allowed without the placement of fixed anchors in designated wilderness areas in Lake Mead National Recreation Area and on the adjacent BLM lands. No new permanent means of support (i.e., bolting) can be left in place on routes. In general, fixed anchors discovered in wilderness areas will be removed and the holes patched if removal would not cause undue damage to the rock. Areas close to sensitive resources, such as bird nesting areas, will be closed to climbing or scrambling during nesting periods. Use of climbing equipment (including climbing chalk) within 50 feet of rock art will be prohibited. Climbing, scrambling, or walking upon rock art surfaces will be prohibited.

Camping and Campfires

Camping is allowed in the wilderness areas. Visitors are asked to use Leave No Trace minimum impact principles. Backpackers may camp anywhere in the wilderness areas. If monitoring indicates that unacceptable impacts are occurring to resources or visitors, specific campsites may be closed or become designated campsites. Campsites must be at least 0.5 miles off designated roads and 100 feet from any spring, waterhole, seep, or other watering device. They also must be located farther than 100 feet from any archeological site including rock art. Some areas may be closed to camping or restricted if there are sensitive resources present. Sites will not be designated for camping unless there are resource protection concerns. Camping is allowed for up to 14 consecutive days in any one area.

In the future, if designated campsites need to be established, new sites would be located based on the following criteria:

- resource protection would be of primary importance
- campsites would be placed out of view of trails and routes, and not within 100 feet of sensitive resources
- campsites would be placed far enough apart so that campers cannot hear other campers from their site [campsites would be at least 0.25 miles apart]
- campsite placement would be subject to cultural resource mitigation
- campsites would be placed in areas with slopes, buried rocks, or other features that limit the unintended expansion of sites

Campfires are permitted. Visitors must bring their own wood, unless they use driftwood found below the high water line. All traces of campfires are to be removed, including ashes and unburned wood, and fire rings should be scattered before leaving. Because of the lack of firewood, visitors will be encouraged to use camp stoves. Fire restrictions may be in place as part of local fire closures when fire risk is greatest—dates vary but usually June through August present the greatest risk.

Shooting, Hunting and Trapping

Hunting, including bird hunting, and trapping are permitted within the wilderness areas in accordance with state and federal law. Commercial trapping in the wilderness areas is prohibited under the Wilderness Act.

The creation or construction of permanent blinds in the wilderness areas is not allowed. However, portable or “pop-up” blinds may be temporarily allowed for hunting, photography, wildlife observation, and similar purposes for a period of fourteen (14) days if they are packed or carried in and out and do not require the disturbance or destruction of native soil, rock, or vegetation. Portable and “pop-up” blinds must be attended or occupied at least some portion of a ten day period within the 14 day period of use. If blinds are not attended or occupied for 10 days, they will be considered unattended property or permanent structures and will be subject to removal and subject to disposition

under the Federal Property and Administrative Services Act of 1949, as amended. It is suggested that anyone who packs or carries a portable or “pop-up” blind into a wilderness area affix to the blind their name, address, phone number, the date the blind was placed, and the dates the blind will be unattended or unoccupied.

NPS and BLM administered wilderness lands are closed to target shooting.

Horses and Pack Stock

The use of horses or pack animals is generally allowed in the wilderness areas. However, in the Pinto Valley, horse and pack animal use will be limited to washes due to the presence of sensitive cryptogamic soils. In other areas, pack stock will be encouraged to use washes and may be excluded in other sensitive soil areas. Other than incidental browsing, riding and pack stock animals may be fed only with packed-in, certified, weed-free feed.

Geochaches and Other Physical Evidence of Human Activity

Geocaching will not be permitted in the wilderness areas. Leaving signs of human use in a wilderness area is inconsistent with the purpose of wilderness areas.

Wilderness rangers will be given instruction on the identification of human artifacts 50 years old or older. When human artifacts 50 years old or older are identified, the resources staff will be contacted. Items that are obviously less than 50 years old will be considered unattended personal property or refuse. Unattended personal property not associated with an active camp, including geochaches, will be removed by NPS or BLM personnel upon discovery, and will be held at the appropriate office. If possible, the owner of the personal property will be contacted to retrieve it. In the case of a geocache, the National Park Service or the Bureau of Land Management will request the geocache sponsor to remove the site listing from the internet. Human effects for which questions

of age exist will be photographed for further consideration by the archeologist.

Paint or marks on rock from graffiti, paintballs, or other forms of vandalism will be removed from the surface in a timely manner. The process of removal will vary according to the types of paint or marks and the type of rock affected. For example, water-soluble paints on hard rock surfaces may be removed with only water and a sponge, whereas markers used on sandstone may require more invasive procedures such as sandblasting. The least invasive methods will be used following a minimum tool analysis and the following priorities:

- 1) water with soft washing implement
- 2) water with scrubbing or scraping implement
- 3) solvent with scrubbing or scraping implement
- 4) wet or dry sandblasting equipment (where compressor is located outside wilderness and a hose can reach to the site in the wilderness)
- 5) dry sandblasting equipment transported into the wilderness by wheeled cart or pack animal.

Except for dry sandblasting as noted above, all equipment and personnel would be transported into the wilderness by foot or pack animal. If the natural patina is lost during paint removal, an oxidizing process such as Permeon® would be applied to restore the patina and more closely replicate the surrounding rock. The objective would be to remove graffiti in as short a time as possible after its discovery, but to schedule the activity for a weekday during low use periods to avoid disruption of visitors. The site will be examined to ensure that cultural resources are not present on the affected site. Removal of graffiti within 100 feet of rock art will require separate, site-specific analysis and consultation with a Native American representative. If graffiti is found within a cultural resource site or within the viewshed of rock art, the NPS or BLM cultural resource specialist or archeologist will be contacted to

determine removal method or required consultation.

Accessibility

The National Park Service, under Section 504 of the Rehabilitation Act and 29 CFR part 17, has legal obligations to ensure that no person who has a disability is denied the opportunity to participate in a program solely because they have a disability; this includes the opportunity to participate in wilderness experiences. All participants, including people who have disabilities, are to be allowed to participate as long as they “meet the essential eligibility requirements” applied to all people for participation in a given program or activity and they are able “to achieve the purpose of the program or activity without modification to that program or activity that fundamentally alters the nature of that program or activity.”

Title V, section 507c of the Americans with Disabilities Act specifies that in federally designated wilderness, a person who has a mobility impairment may use a wheelchair that is 1) designed solely for use by a mobility impaired person for locomotion and 2) suitable for use in an indoor pedestrian area. Wheelchairs that meet both parts of that definition are legally recognized as wheelchairs when used for personal locomotion by a person who has a mobility impairment; these devices may be used anywhere foot travel is allowed, and are not to be considered as forms of mechanical transport.

While providing for the use of wheelchairs in wilderness, section 507c also states that “no agency is required to provide any form of special treatment, or accommodation, or to construct any facility or modify any conditions of lands within a wilderness area in order to facilitate the use of a wheelchair.” In addition, the Architectural Barriers Act (ABA) requires that when a federal agency constructs or alters a facility, it is to be accessible. Therefore, for example, if the decision is made for environmental purposes to construct a facility such as a pit toilet in a wilderness area, that

structure is to be appropriate to the setting and to comply with the height and clear adjacent space specifications required by the current ABA accessibility guidelines.

The use of service animals is provided for under NPS policy and would be allowed within these eight wilderness areas, except where wildlife sensitivity would necessitate prohibition of service animals. Persons with disabilities requiring the aid of service animals are encouraged to contact the park staff for help in planning their outing.

In the case of the eight wilderness areas, all visitors will be encouraged to enjoy the wilderness areas on their own terms.

Public Use of Motorized and Mechanical Transport

Consistent with the Wilderness Act and NPS and BLM management policies for wilderness management, public use of motorized and mechanical transport, including bicycles and portage wheels, will not be permitted within the eight wilderness areas. At Lake Mead National Recreation Area, some existing approved roads allow vehicle access along the boundary of wilderness areas, but no off-highway vehicle travel is permitted. The Code of Federal Regulations states

Public use of motorized equipment or any form of mechanical transport will be prohibited in wilderness except as provided for in specific legislation. Operating a motor vehicle or possessing a bicycle in designated wilderness ... is prohibited [36 CFR 4.30(d)(1)].

Off-road/Off-highway Vehicle (OHV) Use

OHV use by the public is not permitted in the wilderness areas. However, illegal OHV use is occurring along several wilderness area boundaries, such as Black Canyon and Nellis Wash. The agencies will continue to monitor the areas for signs of OHV use. Signing the wilderness areas' boundaries should help reduce this illegal use. Wilderness managers will work with Boulder City and other

appropriate local officials, and other adjacent landowners to inform OHV users where they can and cannot drive.

Wilderness managers will also increase efforts to educate user groups about the presence of the wilderness areas and identify areas where OHVs are and are not permitted. If necessary, increased ranger patrols will occur to enforce the prohibition on this use. In some areas, access points may need to be closed to eliminate impacts from OHV use.

Special Events

Under NPS *Management Policies 2006* (§6.4.5) special events are not permitted in wilderness areas if they are inconsistent with wilderness resources and character or if they do not require a wilderness setting to occur. Permits for commercial enterprises or competitive events (e.g., races) are not permitted under both NPS policies and the BLM Manual 8560 (§.3D)

INTERPRETATION AND EDUCATION

Public information is a critical component of any wilderness management program. Education is important for visitors, the public who do not visit the wilderness areas, and agency and partner employees. With regard to wilderness, education and interpretation efforts will focus on the following:

- promoting and perpetuating public awareness and appreciation for wilderness character, resources, and ethics while providing for acceptable use limits
- fostering an understanding of the concept of wilderness that includes respect for the resource and willingness to exercise self-restraint in demanding access to it
- encouraging the public to use and accept wilderness on its own term, recognizing wilderness is an undeveloped, primitive environment and that there are potential risks and responsibilities involved in using and enjoying wilderness

- fostering public stewardship, Leave No Trace ethics, and minimizing adverse human impacts to wilderness resources and values
- presenting information on wilderness safety

Wilderness character and resources, as well as the above points, will be included in the agencies' interpretation and educational programs, and included as an integral element in the park's long-range interpretation plan and annual implementation plan. Appendix I of NPS Reference Manual 41 provides a description of primary interpretive themes for NPS wilderness areas.

A variety of educational and interpretive outreach approaches may be used to provide visitors and the public with information on the eight wilderness areas and appropriate uses, such as talks and other presentations to user groups and schools, waysides, publications, exhibits in visitor centers, websites, and curriculum-based educational programs. Wilderness information should be provided to boaters and marina visitors. Information can also be provided on safety and Leave No Trace principles when people go into the areas. All education and interpretive efforts will be consistent with the Southern Nevada Interagency Wilderness Education Plan. According to this plan, delivery methods include outreach, entry point, and field-based wilderness education techniques. (Southern Nevada Interagency DRAFT Wilderness Education Plan, 2007)

Agency-published maps accurately depicting hiking opportunities, applicable regulations, and interpretive information will be produced. Interpretive information will address wilderness character, wilderness ethics, protection of resources (especially avoiding impact to cryptogamic soil crusts, Las Vegas buckwheat, Las Vegas bear poppy, threecorner mikvetch and archeological resources), appropriate recreation (especially directing use to where it is most sustainable), and visitors' acceptance of risk when entering wilderness. Interpretive information may be

included on kiosks (at trailheads outside wilderness), websites, or brochures. No interpretive trails will be designated.

Interpretation will be primarily on maps, but a small sign may be erected at a site to foster protection of the resource by explaining regulations (including closure of the site to camping). Any sign would be small, minor to the setting, and set back from the site (not greater than eight square inches and not higher than two feet).

Staff education is also an important part of the wilderness education effort. Wilderness awareness training will be incorporated into all appropriate training programs, such as orientation training for seasonal and new staff, concession staff, and volunteers. Wilderness training will be a priority for staff with significant work responsibilities within the wilderness area, managing resources, or involving significant time working with the wilderness visitors.

Education may also be used as a tool for addressing wilderness use and management problems, and will generally be applied before more restrictive management actions.

Signs within the Wilderness Areas

Signs detract from wilderness character and make the imprint of people and management more noticeable. Consequently, NPS *Management Policies 2006* and the BLM Manual 8560 state that only signs necessary for visitor safety or to protect wilderness resources are permitted in wilderness. Signs that provide extensive information, such as natural and cultural history, will not be located within the wilderness area. If needed, signs in the wilderness areas would be the minimum size and number necessary and would be compatible with their surroundings. BLM and NPS signs in the three wilderness areas that are jointly managed will be consistent in their dimensions, appearance, and content.

Agency-led Hikes

Agency-led trips may be permitted in the wilderness areas to interpret and educate visitors about the wilderness. Agency-led hikes will primarily travel over washes, rock, and trails in order to limit impacts to soils and vegetation. If use levels increase such that visitor encounter standards are exceeded, agency-led hikes will be limited to no more than two per month, and will be alternated between routes. Interpretive hikes will have a maximum group size of 12. All agency-led trips will be subject to the same user capacity standards as other groups. If the number of trips increases or resource or visitor experience conditions are determined to be degrading, the agencies will manage more closely how many groups go into the wilderness areas, which wilderness areas the groups visit, and when they go.

WILDERNESS PATROLS, EDUCATION, AND LAW ENFORCEMENT

A visible patrol and education/enforcement program is necessary to ensure all elements of this management plan are successfully implemented. An important aspect of the patrol function is the incorporation of education, research, monitoring, and impact mitigation. Wilderness patrols are predicated on the commitment to protect the resource, educate visitors, guard against illegal activities, provide necessary assistance, and perform search and rescue functions in case of emergency incidents.

In the eight wilderness areas addressed in this plan, patrols will focus primarily on 1) the education of visitors about resource impact issues, minimum impact techniques, and preventative search and rescue, and 2) enforcement of applicable laws and regulations when necessary and appropriate.

Patrols would be conducted within wilderness on foot or on horseback. Pending NPS superintendent or BLM district manager approval, as appropriate, motorized

equipment, including helicopters may be allowed within wilderness when necessary to meet temporary emergencies involving violations of criminal law, including the pursuit of fugitives, or operations involving search and rescue.

SCIENTIFIC ACTIVITIES AND RESEARCH

The Wilderness Act, NPS *Management Policies 2006* (§6.3.6), NPS Director's Order 41, and BLM Manual 8560 (§.18) all provide for and encourage scientific activities in wilderness when they are consistent with the agencies' responsibilities to preserve and manage wilderness. NPS Director's Order 41 states:

“Scientific activities are to be encouraged in wilderness, provided that the benefits of what may be learned outweigh the negative impacts of other wilderness values... The increase of scientific knowledge, even if it serves no immediate management purpose, may be an appropriate wilderness research objective when it does not compromise wilderness resources and character.”

Thus, scientific activities that potentially impact wilderness resources or values, including access, ground disturbance, use of equipment, and animal welfare, may be permitted provided the activities cannot be performed outside of wilderness and the benefits of the gained knowledge outweigh the impacts to wilderness resources or values.

Conducting basic and specific inventory, monitoring, and research is important to wilderness management and to attain the benefits wilderness may provide as a benchmark area. In other words, collecting information about wilderness resources and visitors may be permitted provided the activity is carried out in a manner compatible with the preservation of wilderness character and resources. Researchers will be required to provide a copy of their findings to the National Park Service and Bureau of Land Management, and data will be collected in a manner consistent with section 4(c) of the Wilderness Act. The Nevada Department of

Wildlife may fly over (but not land within) the wilderness for wildlife monitoring without authorization from the National Park Service or Bureau of Land Management.

Scientific research must be conducted in accord with wilderness preservation principles. All scientific activities, including the installation, servicing, removal, and monitoring of research devices, must be evaluated using the minimum requirement concept and include documented compliance that assesses impacts against benefits to wilderness. Applications for research and scientific work in the wilderness area must include a minimum requirements analysis of the project's methodologies. Scientific activities that involve activities or structures prohibited in §4c of the Wilderness Act (e.g., motorized equipment, mechanical transport) may occur in wilderness if several requirements are satisfied (see §6.3.6.1 in NPS *Management Policies 2006* and §.16D in BLM Manual 8560).

Research and monitoring devices may be installed and operated in the eight wilderness areas if both of the following conditions occur:

- the desired information is essential for the administration and preservation of wilderness and cannot be obtained from a location outside wilderness without a significant loss of precision and applicability
- the proposed device is the minimum requirement necessary to accomplish the research objective, as determined through an appropriate environmental compliance process

The devices will be removed when it is determined that they are no longer essential. Permanent equipment caches are prohibited in wilderness; temporary caches may be permitted if they satisfy the minimum requirement concept.

COMMERCIAL SERVICES

Under the Wilderness Act, commercial enterprises are not permitted in wilderness areas with the exceptions of commercial services deemed necessary for realizing the recreational or other wilderness purposes of the area. *NPS Management Policies 2006* further states

Wilderness-oriented commercial services that contribute to public education and visitor enjoyment of wilderness values or provide opportunities for primitive and unconfined types of recreation may be authorized if they meet the “necessary and appropriate” tests of the National Park Service Concessions Management Improvement Act of 1998 and section 4(d)(6) of the Wilderness Act...and if they are consistent with the wilderness management objectives contained in the park’s wilderness management plan...

The BLM Manual 8560, “Management of Designated Wilderness Areas” states

Commercial services such as those provided by packers, outfitters, and guides may be provided within wilderness areas to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.

With regard to the “necessary and appropriate” test noted above, commercial guiding must meet the following criteria to be considered necessary:

- contribute to visitor understanding and appreciation of the wilderness areas’ resources and values
- enhance visitor experience consistent with the purpose and significance of the national recreation area
- assist the agency staff in managing visitor use and educating visitors in appropriate, safe, and minimum impact techniques
- make available an essential visitor service not provided by the National Park Service at the national recreation area

Commercial guiding also must meet the following criteria to be considered appropriate:

- services are consistent with the purposes and values for which the national recreation area and wilderness area were established, as well as with applicable laws, regulations and policies
- services are consistent with laws, regulations, and policies
- services do not compromise public health, safety, or well-being
- services do not result in unacceptable impacts on wilderness resources and values
- services do not unduly conflict with other authorized park uses and activities or services outside the national recreation area
- services do not monopolize limited recreational activities at the expense of the general public

Commercial guiding will be permitted for 1) hunting, with big game hunting limited to the number of big game hunting tags issued for the area by the Nevada Department of Wildlife; 2) academically oriented organizations whose primary purpose is wilderness or environmental education and whose group size is no more than 12 people; and 3) organizations whose service is primarily for the support of people with disabilities. Other commercial guiding services will not be permitted.

Limits on the number of commercial guides may be imposed if monitoring identifies unacceptable impacts to wilderness character or resources. No limitations on the number of trips will be applied to big game hunting guides other than those created by the availability of hunting tags issued by the Nevada Department of Wildlife. Guides will receive information from the agency regarding wilderness character and wilderness ethics, including Leave No Trace practices, to provide to clients.

Commercial use authorization (CUA) permits are required of all businesses, groups, organizations, or individuals that provide guided trips or services for hire, compensation, or reimbursement within Lake Mead National Recreation Area. The Bureau of Land Management issues special recreation permits for these uses on their lands.

The use of permanent equipment and supply caches by commercial operators is prohibited within wilderness. Commercial operators also must adhere to the minimum requirement concept in all aspects of their activities in wilderness.

MINERAL DEVELOPMENT

All NPS and BLM lands in the wilderness areas are closed to new mining claims. There are existing mining claims on BLM lands in the Ireteba Peaks Wilderness. Should they be determined to be valid locations under the mining laws, they would be managed under a separate plan of operations in a manner that does not cause unnecessary or undue degradation of the wilderness lands.

ADMINISTRATION/OPERATIONS

Emergency Services

Protecting human health and safety is a priority for wilderness managers. Although wilderness is to be experienced on its own terms with inherent risks and challenges, agency staff will continue to provide emergency services for all visitors. During emergency incidents, consideration will be given to protecting wilderness resources. While hazard mitigation may be required, under no circumstances will pure convenience dictate the destruction of any wilderness resources. Leave No Trace minimum impact techniques will be incorporated into incident action plans and used whenever possible to lessen impacts to wilderness resources during emergency operations.

NPS *Management Policies 2006* (§6.3.5) and the BLM Manual 8560 (§.39C) provide for the administrative use of motorized equipment or mechanical transport, including helicopters, in emergencies involving human health and safety. For the purposes of this plan, emergencies include the following:

- response to those in need of medical or physical assistance when threats to human health and safety are reasonably assumed
- response to those who are determined to be unjustifiably overdue and threats to human health and safety are reasonably assumed
- any response to downed aircraft
- any response to an “unknown emergency” (e.g., mirror flash, second-hand visitor report, radio distress signal)
- any reported disaster
- special law enforcement operations when threats to human health and safety are reasonably assumed
- responses to wildland fires that threaten life, property, cultural or natural resources

In an emergency, temporary radio repeaters may be installed in the wilderness areas, provided they meet the minimum requirement process criteria.

Administrative Use of Motorized and Mechanized Equipment and General Maintenance Activities

Administrative use of motorized or mechanized equipment must meet the requirements identified in the Minimum Requirement Decision Process.” (See appendixes B and C.) Use of motorized or mechanized equipment for administrative purposes can only occur when this use has been determined to be the least intrusive method on wilderness character and values.

Following completion of this plan, maintenance projects in the wilderness (e.g., trails) will be categorized with appropriate minimum tools for each type of project. Thus,

the minimum tool process will not have to be applied to each individual project.

Use of Native Materials

In keeping with wilderness character, local natural materials are preferred for the repair or construction of wilderness facilities (e.g., water bars, campsites) or to restore desired conditions to impacted areas. Any proposed rehabilitation or construction will need to go through the environmental screening process, including the completion of the minimum requirement analysis, and be approved by the agency managers.

Administrative Facilities

As stated in *NPS Management Policies 2006* (§6.3.10), and *BLM Manual 8560* (§.41), administrative facilities (e.g., radio repeater sites, storage or support structures), will not be built in wilderness areas unless they are essential to meet the minimum requirements for the administration of the wilderness area. Permanent storage caches are prohibited in wilderness unless necessary for health and safety purposes or when they are determined to be necessary through a minimum requirements analysis.

No administrative facilities are present in the wilderness areas, and none are foreseen as being needed to administer the wilderness areas. However, if such a facility is determined to be necessary in the future, it must meet the following requirement: “A decision to construct, maintain, or remove an administrative facility will be based primarily on whether or not the facility is required to preserve wilderness character or values, not on considerations of administrative convenience, economic effect, or convenience to the public or ...staff.” (*NPS Management Policies 2006*, §6.3.10)

Aircraft Overflights

In 2005, the National Park Service prepared an aerial operations plan, which provided interim guidance for administrative aircraft overflights and landings within wilderness

areas in Lake Mead National Recreation Area. All of the actions in the preferred alternative of that plan, identified in the 2005 “Finding of No Significant Impact,” will continue to be followed. Appropriate uses of overflights for NPS and cooperating agency operations include wildfire monitoring, emergency and safety services, and limited wildlife monitoring where such flights are determined to be the minimum tool. Specifically, the following actions will continue:

- Fixed-wing aerial patrols (2 flights per week/maximum 104 flights per year, excluding emergencies)
- Wildlife surveys, monitoring, and removal, including
 - burro and horse management activities
 - desert bighorn sheep management activities
 - native fish monitoring
 - raptor surveys
 - Nevada Division of Wildlife monitoring flights
- Other resource management activities that occur in remote locations of the national recreation area, with no road access, and require the use of helicopters to haul equipment to and from the project site (e.g., spring restoration, tamarisk removal, native plant replanting, and mine closures and restoration)

Boundary Identification

Once the legal descriptions of the wilderness areas have been completed, the boundaries will be signed. The wilderness boundaries will be identified by fiberglass wilderness signs at key locations. Signs will not be located to identify the boundary between NPS and BLM lands within the wilderness areas. Wilderness boundary signs at entry points may be larger, aesthetically pleasing signs that include the name of the wilderness.

In priority order, the wilderness boundaries needing signing include

Black Canyon (almost completed)
Bridge Canyon

Spirit Mountain
Nellis Wash
Eldorado
Pinto Valley
Jimbilnan
Ireteba Peaks

Monitoring of Wilderness Character

Wilderness character has been described as “...the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and subtle set of relationships among the land, its management, its users, and the meanings people associate with wilderness” (Interagency Wilderness Character Monitoring Team 2008).

Both the Wilderness Act and NPS *Management Policies 2006* require that conditions and long-term trends of wilderness conditions be monitored.

Visitor impacts to wilderness and monitoring of user capacity indicators and standards is one facet of wilderness character. However, these indicators are addressed in chapter three. This section focuses on monitoring indicators of wilderness character that are not directly tied to visitor impacts (although there may be some overlap between the two sets of indicators). The monitoring being addressed in this section is also different from the NPS Inventory and Monitoring program’s vital signs effort (although there may be some overlap in the monitoring efforts).

The Interagency Wilderness Character Monitoring Team has identified four key wilderness qualities that may be monitored as an approximation of wilderness character:

- **Untrammeled** – wilderness is essentially unhindered and free from modern human control or manipulation
- **Natural** – wilderness ecological systems are substantially free from the effects of modern civilization
- **Undeveloped** – wilderness retains its primeval character and influence, and is

essentially without permanent improvement or modern human occupation

- **Solitude or primitive and unconfined recreation** – wilderness provides outstanding opportunities for visitors to be alone or remote from signs of society, to be self-reliant, to be free from the constraints of culture, to experience personal challenge, self-discovery, and physical and mental inspiration

The indicators in table 2 have been identified as being appropriate and feasible for use in monitoring wilderness character. These indicators may be replaced or additional indicators may be identified if better ways are found to measure changes in wilderness character, if the indicators prove not to be sufficiently sensitive to measuring changes, or if the indicators prove not to be cost-effective to check regularly. Some of these indicators are already monitored by park staff and/or are monitored to satisfy Government Performance and Results Act (GPRA) requirements. (For more information on these indicators, see the Interagency Wilderness Character Monitoring Team 2008; Landres et al 2009; and NPS 2007.)

Since activities may affect several qualities, different activities undertaken for different purposes may cumulatively diminish a single quality of wilderness character. For example, a trail might be designated to control visitor impacts on vegetation. In the same vicinity, a fence may be constructed around a spring to protect it from damage by feral horses. Though the two activities are unrelated, both activities have an effect on the “undeveloped” quality of wilderness character. Monitoring the effects of individual activities to multiple qualities of wilderness character will improve understanding of cumulative effects.

Effects of intentional, unintentional, and unauthorized activities would all be captured under the monitoring system. The monitoring program will provide a greater understanding of the overall and specific condition of the wilderness and will alert wilderness managers

of the need to initiate corrective actions, or adapt management practices to new situations. Monitoring will also provide wilderness managers with more complete information that will improve the evaluation of future proposed activities. Monitoring would not be used to compare this wilderness with other wilderness areas in the national wilderness preservation system, but would be used to track the conditions and changes within the wilderness itself.

Monitoring will occur as funding, staffing, and volunteer capabilities allow. To assist in the monitoring effort, the Bureau of Land Management and the National Park Service, in cooperation with the other federal land management agencies, are working to establish a wilderness stewardship program. This program, with start-up support from the Southern Nevada Agency Partnership, will train volunteers with an interest in wilderness management to assist the agencies in monitoring, including visitor use and resource monitoring.

All field reports, photographs, and monitoring data (including a copy of or reference to those data already collected by resource disciplines) will be maintained in the official wilderness files at the NPS Lake Mead National Recreation Area Office, or the BLM Las Vegas Field Office. A database will be established of the wilderness areas resources and visitor experience conditions. The National Park Service and Bureau of Land Management will share monitoring data annually for inclusion into each agency's permanent file.

The following monitoring will occur to assist the National Park Service and Bureau of Land Management in tracking and improving the untrammeled condition of the wilderness areas:

- A log of all annual management and other activities that control or manipulate flora, fauna, soils, water, or natural disturbance factors present in the wilderness areas will be maintained in the permanent wilderness file. A description, location, purpose, and

expected outcome of each activity will be documented. Activities that may be tracked include, but are not limited to the following:

- rehabilitation projects
- fire suppression activities
- treatments of non-native vegetation
- relocation of wildlife
- alteration of water availability

The following monitoring will occur to assist the National Park Service and the Bureau of Land Management in preserving the outstanding opportunities for solitude or a primitive and unconfined type of recreation:

- A log of the sights and sounds of civilization will be maintained in the permanent wilderness file. A description and location of the activity, whether originating from within or outside of the wilderness, will be documented.
- Because of the high frequency of aircraft overflights, the agencies will conduct acoustical monitoring to quantify the effect on wilderness character.
- A log of all regulations or restrictions on primitive and unconfined visitor use occurring in the wilderness will be maintained in the permanent wilderness file. A description of the regulation and its purpose will be included.
- Visitor use encounters on designated routes will be monitored through one or more of the following methods and recorded in the permanent wilderness file. Opportunities for visitor sign-in and comment may be available at the trailheads. Public comments received at the trailhead, by mail, or by email will be periodically compiled and reviewed. Automated visitor counters may be located at trailheads. In addition, assigned staff will visit trailheads to record the number of parked vehicles and collect written comments (if any) or record trail counter data. Staff will hike each route to record the number of encounters and route conditions.
- Visitor use encounters off-route are unlikely to exceed acceptable limits and

will not be as frequently monitored, however, any off-route encounter with agency staff will be recorded, as well as any public comments or volunteer reports regarding off-route encounters or conditions. An important focus for monitoring off-route use will be to identify the development of informal user-created trails. A review of published or internet information will also be used to identify areas of new popularity that will then be inspected in the field. Where monitoring identifies elevated use patterns, and especially if violations are detected, patrols will be increased. Trail counters may also be used where elevated use patterns are detected.

- The wilderness will be monitored at boundary roads or access points by law enforcement rangers to detect vehicle entry violations. Low-level overflight monitoring may be used to assist in detecting motor vehicle violations in progress, or to identify other activities undetected by ground monitoring.
- Route conditions will be monitored by the assigned staff to assure standards established in this plan are maintained. Tread measurements and photos will be taken at several monitoring points at each route and recorded electronically by a Global Positioning System (GPS). Photo and measurement monitoring will take place as needed at locations observed to be in the early stages of deterioration or high use.
- Campsites will be recorded by the assigned staff to assure compliance with plan standards. Campsites will be recorded by GPS and photos taken to track long-term trends.

The following monitoring will occur to assist the NPS and BLM in tracking and, where possible, improving the undeveloped and natural appearance of the wilderness areas:

- A log of all the developments, structures, and facilities present in the wilderness areas will be maintained in the permanent

wilderness file. Description, location, and purpose will be documented.

- All former vehicle trails that are converted to route use or rehabilitated will be checked in the field to ensure they are not continuing to receive motorized use; if rehabilitated, they will be monitored to check on the success of the rehabilitation. If unauthorized vehicle use continues, modifications as described in the plan will be made to the closure.

The following monitoring will occur to assist the National Park Service and the Bureau of Land Management in preserving the naturalness and primeval character and influence of the wilderness:

- A log of all known human alterations to the ecosystem will be maintained in the permanent wilderness file. A description and location (where applicable) will be documented or referenced. Conditions that may be tracked include, but are not limited to the following:
 - nonnative species
 - threatened, endangered, and sensitive species
 - species no longer present in the wilderness areas
 - air quality
 - presence, abundance, and distribution of native species
- A log of natural (or similar human-caused) disturbances will be maintained in the permanent wilderness file. A description and location will be documented or referenced. Activities that may be tracked include, but are not limited to the following:
 - fire
 - flood
 - insect or disease outbreaks
- The priority would be to monitor areas that are most vulnerable to weed invasions (i.e., near roads, access points, etc.) and areas that are sensitive from a resource standpoint (i.e., springs). Monitoring for noxious weeds will occur on a regular basis. Monitoring will be especially focused

on routes or in washes receiving regular visitor use. Records and GPS locations will be shared between the NPS and BLM wilderness staff and noxious weed coordinators.

- Infrequent but formal burro monitoring will be conducted. Informal monitoring of burros occurs through observations from backcountry staff.
- Wildlife monitoring will be conducted predominately by the Nevada Department of Wildlife according to the agency's established protocol. NPS and BLM staff will also record wildlife sightings, especially nesting raptors, bighorn sheep, Gila monsters, desert tortoises, kit foxes,

bobcats, and cougars. Monitoring or research by other entities may occur according to protocol described in the plan.

- Findings, or a reference to the findings, from inventory, monitoring, and research projects completed in the wilderness areas will be included in the wilderness file. Other known research outside the wilderness areas but applicable to the understanding of the wilderness ecosystem may be referenced.

Table 2: Indicators for Monitoring Wilderness Character

Wilderness Character Quality	Indicator
Untrammeled	Number of actions taken or authorized by NPS managers to manage plants, animals, pathogens, soil, water, or fire in the wilderness
Natural	Number of indigenous species that are listed as threatened, endangered, sensitive, or of concern Total acres of the wilderness where nonnative vegetation is present and not considered contained* Extent and magnitude of change in water quality of springs
Undeveloped	Extent of wilderness acreage affected by development that does not support wilderness uses, such as homes or cabins, temporary structures, and utility line corridors* Type and amount of administrative and nonemergency use of motor vehicles, motorized equipment, or mechanical transport* Occurrences of noncompliant uses, including unauthorized use of motor vehicles, motorized equipment, or mechanical transport*
Solitude or Primitive and Unconfined Recreation	Extent and magnitude of intrusions on the natural soundscape Number of encounters with other visitor groups during a visit to the wilderness area more than a ½ mile from the wilderness boundary Type and number of agency-provided recreation facilities (routes, campsites) Type and extent of management restrictions (e.g., requiring permits for wilderness visits, area closures, prohibitions or limited use of campfires)

*Indicators monitored to satisfy GPRA requirements

Wilderness Management Coordination

Continued close coordination between the National Park Service and the Bureau of Land Management is important for the successful management of the three shared wilderness areas. Regular meetings will be held between the coordinators to ensure effective and efficient management of the areas; resolve

issues, concerns, and conflicts that arise; and address opportunities to protect wilderness resources and provide for visitor enjoyment of the areas.

General coordination also will be done for the five areas that are exclusively located within the national recreation area.

