Chapter 2—Alternatives

This chapter describes and compares the alternatives considered in the Giant Sequoia National Monument Management Plan Environmental Impact Statement. It describes each of the alternatives considered in detail, as well as those eliminated from detailed study. To make it easier to compare the alternatives, the land allocations and management areas they include, how they respond to the issues, and their environmental effects are presented in tabular format at the end of the chapter.

Alternatives Considered in Detail

Six alternatives are considered in detail for the Monument. All of the alternatives are aimed at achieving the desired vegetative conditions and explore different strategies for achieving the desired conditions. Since the alternatives are focused on ecological restoration rather than targeted resource outputs, they do not vary in the traditional sense. They do explore various strategies (including no change) to protect and care for the objects of interest and achieve desired conditions over time.

Alternative A is the no action alternative. It consists of current management direction from the 1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan) (USDA Forest Service 1988a), as amended by the 1991 Kings River Wild and Scenic River and Special Management Area Implementation Plan (KRSMA), the 2001 Sierra Nevada Forest Plan Amendment (2001 SNFPA) (USDA Forest Service 2001c), and the 2007 Sierra Nevada Forests Management Indicator Species Amendment (2007 SNF MIS) (USDA Forest Service 2007a). In addition, this alternative includes guidance and direction from the 1990 Sequoia National Forest Land Management Plan Mediated Settlement Agreement (MSA), the 1992 President George Bush proclamation (Bush proclamation), and the 2000 President William J. Clinton proclamation (Clinton proclamation) (Clinton 2000) that created the Monument.

As the no action alternative, Alternative A consists of no change from the current management direction, and includes all of these different layers of direction that can be complicated, confusing, and sometimes conflicting. This alternative would not result in a management plan as directed by the Clinton proclamation, nor would it amend the Forest Plan to incorporate applicable MSA provisions, as agreed to in the MSA. The effects of ongoing activities will be analyzed for this alternative and used as a baseline for the analysis of the effects of the rest of the alternatives.

Each of the five action alternatives, Alternatives B through F, were developed to comply with the Clinton proclamation and to respond to the issues identified in public comment. Alternative B is the proposed action presented for the scoping period that started on March 18, 2009. Alternatives C, D, E, and F were developed primarily to respond to one or more issues raised in scoping. All of the action alternatives (B, C, D, E, and F) were developed to meet the Purpose and Need and to comply with the Clinton proclamation. The proclamation was used as a sieve and so, in this sense, the range of alternatives is bound by that direction. Within these parameters, the alternatives consist of different approaches with some differences in priorities, respond differently to the issues, and contain some different strategies and objectives. There is also a temporal difference between the alternatives, in the time it would take to approach the desired conditions. These trade-offs are discussed in the effects analyses by resource area in Chapter 4 of this final EIS.

Summary of Alternatives

Alternative A is the no action alternative. In this alternative, current management direction would continue to guide management of the Monument through the planning period (about 10 to 15 years). Alternative A includes the management strategies that the Sequoia National Forest has developed to comply with the MSA and the Bush and Clinton proclamations. In this alternative, no amendment to current direction would be made. Alternative A includes the analysis of ongoing activities which serves as the base layer for the analysis of all alternatives.

Alternative B is the proposed action, as developed to identify the changes to current management direction needed to comply with the Clinton proclamation. This alternative was designed to achieve the desired conditions for vegetation and other resources that are the same for all of the action alternatives. Alternative B includes strategies that are

responsive to the issues of recreation and public use, fuels management/community protection, and fires spreading to tribal lands. This alternative includes restoration strategies that are expected to result in settings appropriate for a full range of recreation opportunities, such as dispersed camping, developed camping, trail related activities, and the use of off-highway vehicles on designated roads.

Alternative C is designed to manage the Monument similar to Sequoia and Kings Canyon National Parks (SEKI) in a manner that is consistent with Forest Service regulations and the direction of the Clinton proclamation. Some management policies or direction from SEKI would not be applicable to the Monument because of differences in law, regulation, and policy for the two federal agencies. This alternative includes strategies that are responsive to the issue of managing the Monument like Sequoia and Kings Canyon National Parks. For this alternative, restoration activities would focus on areas that have been affected by human use and occupation. Recreation opportunity management would be similar to SEKI management.

Alternative D focuses on managing through natural processes with little to no human manipulation. It relies on naturally-occurring fire to reduce fuels, to protect the objects of interest, and to promote giant sequoia regeneration. This alternative includes strategies that are responsive to the issues of tree removal, fuels management/community protection, and methods for sequoia regeneration. Dispersed and developed camping would still be available, although creation of new sites would be limited.

Alternative E is designed to manage the Monument as guided by the Mediated Settlement Agreement (MSA). The MSA "remains in effect to the extent it has not been amended by other NEPA-compliant amendments" (*People of the State of California, ex rel. Lockyer v. United States Department of Agriculture, et al., No. C-05-00898 CRB*). Alternative E incorporates all appropriate MSA provisions. It includes current management direction from the Forest Plan and the MSA that was modified to comply with the Bush and Clinton proclamations. This alternative includes strategies that are responsive to the issue of the obligation to analyze the MSA under NEPA, and is designed to meet that obligation to consider and analyze the actions, standards, and guidelines contained in the MSA.

Alternative F is designed to allow more flexibility in treatment methods to promote ecological restoration and maintenance, and forest health, and achieve the desired conditions in less time. This alternative includes strategies that are responsive to the issues of recreation and public use, tree removal, fuels management/community protection, fires spreading to tribal lands, and methods for giant sequoia regeneration. It is similar to Alternative B, but proposes upper diameter limits for only giant sequoias, and near nest trees in northern goshawk and California spotted owl PACs.

Reader's Guide to Alternative Descriptions

Alternative Theme

The alternative theme describes how each alternative meets the purpose and need and what it is trying to achieve. The theme describes how the alternative would move Monument resources toward the desired conditions. It describes the management approach for the alternative and the priorities for the different types of treatments proposed. Each alternative is described by:

1. A statement of the main focus of the alternative. Examples include "manage similar to Sequoia and Kings Canyon National Parks," and "rely on natural processes."
2. How it is expected to protect the objects of interest. This varies between an emphasis on management activities and a reliance on natural processes.
3. How it is expected to promote resiliency. This also varies between an emphasis on management treatments and a reliance on natural processes.
4. How it is expected to promote heterogeneity across ecosystems. This also varies between an emphasis on management treatments and a reliance on natural processes.
5. How it is expected to provide recreation opportunities. This varies by the types of opportunities emphasized and the ability to create new sites or infrastructure to respond to increasing demands.

Management Direction

This section of the alternative descriptions discusses the current management direction for Alternative A and what management direction will change in each action alternative.

Resource Areas

In response to the Clinton proclamation, the desired conditions, strategies, and objectives are focused on the resource areas that would be affected by an amendment or other alterations of the current direction provided by the Forest Plan (USDA Forest Service 1988a), as amended by KRSMA, the 2001 SNFPA (USDA Forest Service 2001c), and the 2007 SNF MIS (USDA Forest Service 2007a). These resource areas are:

- Scientific Study and Adaptive Management
- Vegetation, including Giant Sequoia Groves
- Wildlife and Plant Habitat (including Management Indicator Species; Threatened, Endangered, and Sensitive Species; Invasive Nonnative Species; Rare and Endemic Species; and Botanical Resources)
- Range
- Groundwater
- Geological Resources
- Paleontological Resources
- Soils
- Human Use (including Recreation, Scenery, and Socioeconomics)
- Cultural Resources
- Transportation (including the Transportation System and Trails and Motorized Recreation)

Desired Conditions, Strategies, and Objectives

The **desired conditions** are essentially the long-term goals for resources in the Monument. They describe the desired future state of resources in the Monument. Desired conditions may be achievable only over a long period of time. The desired conditions do not vary by alternative, so they apply to all of the action alternatives (Alternatives B, C, D, E, and F). They are derived from:

1. The presidential proclamations
2. Advisories from the Scientific Advisory Board and information presented at the Southern Sierra Science Symposium
3. Current management direction
4. Public comments on the interpretation of the Clinton proclamation and the proposed action

Strategies describe the general approach that the responsible official will use to achieve the desired conditions. Strategies establish priorities in management effort and a sense of focus for objectives. Strategies may vary by alternative, depending on the intent of the alternative and what management direction is associated with each alternative. They are not commitments or final decisions approving projects and activities.

Objectives are short-term measurable outcomes that mark progress toward the eventual achievement of desired conditions. Objectives exist for some, but not all, resource areas and may vary by alternative. The work toward achieving the objectives in this FEIS will begin upon plan implementation. When a time frame has been provided for meeting an objective, the intent is to meet the objective within that time frame, or as soon as reasonably possible thereafter, and as funding allows.

The Desired Conditions, Strategies, and Objectives section later in this chapter contains those that are proposed for the alternatives.

Standards and Guidelines

Standards and guidelines are requirements that preclude or impose limitations on resource management activities and are designed to be consistent with the desired conditions, strategies, and objectives. They direct the development of site-specific projects. The standards and guidelines act as thresholds or constraints for management activities or practices to ensure the protection of resources. They may apply to the entire Monument or they may apply only to certain land allocations. A complete list of standards and guidelines by action alternative is located in Appendix A.

Land Allocations and Management Areas

The 2001 SNFPA (USDA Forest Service 2001c) amended the Forest Plan and replaced some of its management areas, based on vegetation type, with land allocations (USDA Forest Service 2001e, pp. 2-3, 18). Management areas and land allocations are the same thing: land areas where certain sets of management direction apply. Specifically, the 2001 plan amendment removed Management Emphasis 7 (sawtimber), and the portion of Management Emphasis 5 (wildlife and dispersed recreation) that deals with wildlife management, replacing them with management goals, objectives, and standards and guidelines associated with the new land allocations (USDA Forest Service 2001e, pp. 3-12, Appendix A).

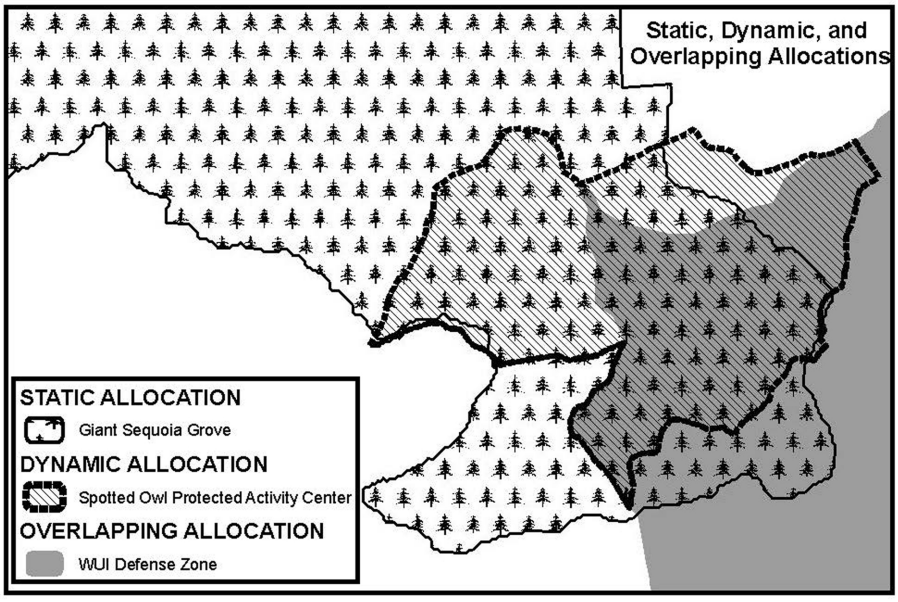
Land allocations/management areas are different land areas in the Monument that are differentiated and named in the 2001 SNFPA or in this FEIS. Management emphasis varies between land allocations, and different sets of standards and guidelines apply. All alternatives have some type of land allocation, but the land allocations included in each alternative, and the size of the allocations, differ by alternative.

There are three categories of land allocations/management areas for the Monument: static, overlapping, and dynamic.

- **Static** land allocations/management areas are those not likely to change in size and location over time. They include designated wildernesses, wild and scenic river corridors, the Kings River Special Management Area (KRSMA), backcountry (inventoried roadless areas), the giant sequoia groves, old forest emphasis area, the Southern Sierra Fisher Conservation Area, research natural areas, botanical areas, and a geological area. The static land allocations are displayed by alternative on maps in the FEIS Map Packet.
- **Overlapping** land allocations/management areas are those that are likely to overlap with static and dynamic areas. Where they overlap, the area with the more restrictive standards and guidelines would be applied, except where noted in the Dominant Management Direction Table (Table 4). For example, when a wildland urban intermix (WUI) defense zone overlaps designated wilderness, the management direction for the more restrictive land allocation/management area—in this case the direction for the wilderness because of the importance of its legal status—is followed.
- **Dynamic** land allocations/management areas are those that are most likely to change in size and location over time with the introduction of new information. For example, as Pacific fisher populations are tracked, new den sites may be identified and mapped. Dynamic land allocations/management areas may, at times, overlap the other types. Since most of the dynamic land allocations/management areas are related to the protection of wildlife species, the standards and guidelines associated with them are usually given priority over most land allocations/management areas they overlap.

An example of how the three categories of land allocations relate to each other is shown in the following graphic.

Figure 1 Land Allocations/Management Areas



Static Land Allocations/Management Areas

Giant Sequoia Groves

A grove is a group of trees; a giant sequoia grove is a group of giant sequoias and other tree species. In the MSA, a giant sequoia grove is defined as a group of 10 or more naturally-occurring giant sequoias with at least 4 trees that are 3 feet or larger in diameter at 4.5 feet above ground, and located within 500 feet of each other (MSA 1990, p. 13 (e) i), p. 21 xii). A naturally-occurring giant sequoia is one that has not been planted (artificial regeneration). All of the giant sequoia groves within the Monument are officially named.

The giant sequoia grove land allocation varies in size by alternative, depending upon whether administrative boundaries, grove influence zones (GIZs), or grove zones of influence (ZOIs) are considered the outer boundaries. The administrative boundaries of the groves include an average 500-foot buffer outside of the tree-line (outermost giant sequoia trees) boundary. The grove influence zones (GIZs) add a 300 or 500-foot buffer outside of the grove administrative boundaries to protect the groves. The grove zones of influence (ZOIs), designed to protect the giant sequoia groves and their associated ecosystems, are even larger, including area outside the administrative boundary of the groves as determined by watershed boundaries and other topographical features.

Wilderness

Any area of land designated by Congress as part of the National Wilderness Preservation System (16 U.S.C. 1131-1136; 36 CFR 219.16).

Wild and Scenic Rivers

Rivers that are designated as part of or recommended for inclusion in the National Wild and Scenic Rivers System (Public Law 90-542; 16 U.S.C. 1271 et seq.).

Kings River Special Management Area (KRSMA)

This special management area was created by Public Law 100-150 in 1987 to provide for public outdoor recreation use and enjoyment; for protection of the natural, archaeological, and scenic resources; and for fish and wildlife management. Approximately 24,280 acres of the 48,000-acre KRSMA are located within the boundaries of the Monument.

Backcountry (Inventoried Roadless Areas)

This land allocation includes areas identified in a set of inventoried roadless area maps, contained in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000, and any subsequent update or revision of those maps through the land management planning process (36 CFR 294.11).

Old Forest Emphasis Area

Old forest emphasis area is a land allocation from the 2001 SNFPA consisting of large, relatively contiguous landscapes where old forest conditions and associated ecological processes occur. These areas provide ecological conditions to maintain populations of old forest-associated species.

Southern Sierra Fisher Conservation Area (SSFCA)

The SSFCA is a land allocation from the 2001 SNFPA that encompasses the known occupied range of the Pacific fisher in the Sierra Nevada. This consists of an elevation band from 4,500 to 8,000 feet in the Sierra and Sequoia National Forests.

General Monument

Similar to the general forest allocation from the 2001 SNFPA, the general monument allocation consists of National Forest System lands within the Monument that are not included in other land allocations.

Research Natural Areas

A research natural area is one in as near a natural condition as possible and that exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic resources. The area is established by the Forest Service to preserve a representative sample of an ecological community primarily for scientific and educational purposes.

Botanical Areas

A botanical area is a unit of land that contains plant specimens, plant groups, or plant communities that are significant because of their form, color, occurrence, habitat, location, life history, arrangement, ecology, rarity, or other features.

Geological Areas

A geological area is a unit of land with outstanding formations or unique geological features of the earth's

development such as caves, fossils, dikes, cliffs, or faults.

Overlapping Land Allocations/ Management Areas

Wildland Urban Intermix (WUI)

The WUI is an area where human habitation is mixed with areas of wildland vegetation. It extends out from the edge of developed private land into federal, private, and state jurisdictions. The WUI is composed of two zones: the defense zone and the threat zone. This layer is a land management allocation from the 2001 SNFPA.

Tribal Fuels Emphasis Treatment Area (TFETA)

The TFETA was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

Dynamic Land Allocations/Management Areas

Riparian Conservation Areas (RCAs)

Areas delineated next to water features requiring special management practices to maintain and/or improve watershed and riparian-dependent resource conditions.

Critical Aquatic Refuges (CARs)

Relatively small watersheds, ranging in size from about 3,000 to 85,000 acres, that have localized populations of rare and/or at-risk populations of native fish and/or amphibians.

California Spotted Owl Protected Activity Centers (PACs)

California spotted owl PACs are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986.

Goshawk PACs

Northern goshawk PACs are delineated surrounding all known and newly discovered breeding territories detected on National Forest System lands.

Great Gray Owl PACs

Great gray owl PACs are established and maintained to include the forested area and adjacent meadow around all known great gray owl nest stands. The PAC encompasses at least 50 acres of the highest quality nesting habitat (CWHR types 6, 5D, and 5M) available in the forested area surrounding the nest. The PAC also includes the meadow or meadow complex that supports the prey base for nesting owls.

Furbearer (Pacific fisher and American marten) Den Sites

Fisher den sites are 700-acre buffers consisting of the highest quality habitat (CWHR size class 4 or greater and canopy cover greater than 60 percent) in a compact arrangement surrounding verified fisher birthing and kit rearing dens in the largest, most contiguous blocks available.

Marten den sites are 100-acre buffers consisting of the highest quality habitat in a compact arrangement surrounding the den site. CWHR types 6, 5D, 5M, 4D, and 4M in descending order of priority, based on availability, provide highest quality habitat for the marten.

California Spotted Owl Home Range Core Areas (HRCAs)

A home range core area is established surrounding each territorial spotted owl activity center detected after 1986.

California Spotted Owl Habitat Areas (SOHAs)

SOHAs were delineated for the Sequoia National Forest prior to the 1988 Forest Plan. Each SOHA consists of 1,000 acres of suitable habitat, plus replacement habitat, within a 1½-mile radius of a known or estimated location of a nest site.

The static land allocations and management areas for each alternative are displayed on the alternative maps in the accompanying FEIS Map Packet. This packet includes:

1. Alternative A
2. Alternatives B and F
3. Alternatives C and D
4. Alternative E
5. Giant Sequoia Groves
6. Wildland Urban Intermix (Alternatives A, B, E, and F)

7. Wildland Urban Intermix (Alternative C)
8. Wildland Urban Intermix (Alternative D)
9. Fire Return Interval Departure
10. Motor Vehicle Use Maps (MVUMs)

The acres of each land allocation and management area included in each alternative are listed in the Comparison of Alternatives by Acres of Land Allocation and Management Area table in the Comparison of Alternatives section at the end of this chapter.

The following table, Dominant Management Direction When Land Allocations/Management Areas Overlap, illustrates what management direction would be followed when land allocations or management areas overlap. Where there is an overlap, the table indicates which area's direction applies. Except where noted in the following table, land allocations with standards and guidelines that protect special habitats or protected species have a higher priority than land allocations or management areas that allow more active management. For example, standards and guidelines for California spotted owl protected activity centers (PACs) protect owl habitat and breeding by limiting the types and intensities of fuel treatments within their boundaries. Therefore, where PACs overlap old forest emphasis areas, the standards and guidelines for PACs would take precedence over those for old forest emphasis areas (in which some mechanical fuel treatments are permitted). Standards and guidelines for designated wilderness and backcountry (inventoried roadless areas) would supersede all of those for other land allocations. Where the standards and guidelines for the two overlapping allocations areequally restrictive, or use different measures, so that both sets should be used in the overlapping area, the table indicates"apply both." For example, standards andguidelines for RCAs and CARs minimize disturbance of ground cover and riparianvegetation, while those for the SSFCAsupport fisher habitat requirements such asoverstory trees and canopy cover. Therefore, where these allocations overlap, both sets of standards andguidelines can and should be applied in the overlapping area, asshown in Table 3.

Suitability

The Sequoia National Forest, as the administrator of the Monument, has identified generally suitable uses for the Monument as guided by current management direction and the Clinton proclamation. The suitability section later in this chapter describes general land use suitability and provides guidance for making decisions about future proposed projects and activities, but does not constitute a commitment or a decision to approve any particular projects or activities. The tables in that section display the suitability of specific land uses or activities in both static and overlapping land allocations and management areas. The uses identified as suitable are analyzed for the indirect effects of those uses.

Special Areas, including Special Interest Areas

Special areas are places on National Forest System lands identified or designated because of their unique or special characteristics. These include wildernesses, wild and scenic rivers, special management areas, research natural areas, backcountry (Inventoried Roadless Areas), botanical areas, scenic byways, and geological areas. The special areas have their own sets of management direction and vary by alternative. The Monument Plan describes the existing special areas in the Monument. The Special Areas section later in this chapter describes those special areas that would be added or amended in the alternatives considered in this FEIS.

Ecological Restoration

> These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, pp. 24095-24096).

The Clinton proclamation recommended managing the Monument for ecological restoration and mainte nance of those restored conditions, but did not define the term. The Forest Service definition for ecological restoration can be found in the Forest Service Manual, Chapter 2020, Ecological Restoration and Resilience (FSM 2000, Sept. 22, 2008), which defines it as:

> The process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions.

Land Allocations/ Management Areas	Southern Sierra Fisher Conservation Area (SSFCA)	Old Forest Emphasis Area	Wildland Urban Intermix (WUI): Defense Zone	Wildland Urban Intermix (WUI): Threat Zone	Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	General Monument[1]	Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Giant Sequoia Groves	Tribal Fuels Emphasis Treatment Area (TFETA)
Southern Sierra Fisher Conservation Area (SSFCA)	N/A	Apply Old Forest.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply both.	Apply SSFCA and General Monument.[2]
Old Forest Emphasis Area	Apply Old Forest.	N/A	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply both.	Apply Old Forest.
Wildland Urban Intermix (WUI): Defense Zone	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	N/A	N/A	Apply both.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Defense Zone in HRCAs outside of den sites.	Apply Groves.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).
Wildland Urban Intermix (WUI): Threat Zone	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	N/A	N/A	Apply both.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone in HRCAs outside of den sites.	Apply Groves.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).

[1] The 2001 SNFPA called this land allocation General Forest. For the Monument, it is called General Monument and includes any area in the Monument that is outside of other allocations. It therefore does not overlap with any other allocations.

[2] There are no standards and guidelines specific to the TFETA, so fire and fuels management in the TFETA is accomplished using the standards and guidelines for the General Monument allocation, in addition to those standards and guidelines specific to the SSFCA.

Land Allocations/ Management Areas	Southern Sierra Fisher Conservation Area (SSFCA)	Old Forest Emphasis Area	Wildland Urban Intermix (WUI): Defense Zone	Wildland Urban Intermix (WUI): Threat Zone	Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	General Monument[3]	Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Giant Sequoia Groves	Tribal Fuels Emphasis Treatment Area (TFETA)
Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	Apply both.	Apply both.	Apply both.	Apply both.	N/A	N/A	Apply all applicable S&Gs. Exception: where S&Gs conflict, apply most restrictive.	Apply both.	Apply RCAs and CARs.
General Monument	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Defense Zone in HRCAs outside of den sites.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone in HRCAs outside of den sites.	Apply all applicable S&Gs. Exception: where S&Gs conflict, apply most restrictive.	N/A	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone[4] in HRCAs outside of den sites.
Giant Sequoia Groves	Apply both.	Apply both.	Apply Groves.	Apply Groves.	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations	N/A	Apply Groves.
Tribal Fuels Emphasis Treatment Area (TFETA)	Apply SSFCA and General Monument.[5]	Apply Old Forest.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85)	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86)	Apply RCAs and CARs.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone[6] in HRCAs outside of den sites.	Apply Groves.	N/A

[3] The 2001 SNFPA called this land allocation General Forest. For the Monument, it is called General Monument and includes any area in the Monument that is outside of other allocations. It therefore does not overlap with any other allocations.
[4] There are no standards and guidelines specific to the TFETA, so the standards and guidelines for the WUI Threat Zone would be used in the HRCAs outside of den sites.
[5] There are no standards and guidelines specific to the TFETA, so fire and fuels management in the TFETA is accomplished using the standards and guidelines for the General Monument allocation, in addition to those standards and guidelines specific to the SSFCA.
[6] There are no standards and guidelines specific to the TFETA, so the standards and guidelines for the WUI Threat Zone would be used in the HRCAs outside of den sites.

In addition, the Pacific Southwest Region of the Forest Service has published a Region 5 Ecological Restoration Leadership Intent that states:

> Our goal for the Pacific Southwest Region is to retain and restore ecological resilience of the National Forest lands to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms. Ecologically healthy and resilient landscapes, rich in biodiversity, will have greater capacity to adapt and thrive in the face of natural disturbances and large scale threats to sustainability, especially under changing and uncertain future environmental conditions such as those driven by climate change and increasing human use (USDA 2011).

The Clinton proclamation provides the context in which to use ecological restoration and maintenance for protecting and caring for the objects of interest. The Monument is located in a Mediterranean climate where species are adapted to frequent disturbances, usually due to wildfire. Ecological restoration in the Monument is likely to be strongly correlated to fuel treatments in the wildland urban intermix (WUI). However, focusing solely on burning to achieve ecological restoration would not address state air quality requirements or the need to achieve and maintain resiliency and heterogeneity. Advisory IV, Restoration of the Natural Fire Regime, from the Scientific Advisory Board, questions whether fire alone can be used to reach the desired conditions for giant sequoia groves and their ecosystems:

> Fire often is a useful tool for restoring giant sequoia groves and other fire-adapted ecosystems (Hardy and Arno 1996; Stephenson 1996, 1999). However, issues such as human safety, air quality, water quality, endangered species, cumulative impacts with other management actions, current and desired forest structure, and current fuel loads mean that fire alone cannot always be used to achieve desired forest conditions (Weatherspoon 1996; Fulé et al. 1997; Piirto and Rogers 1999). In areas where fire alone cannot be used to achieve desired conditions, mechanical thinning often proves to be a useful alternative (Weatherspoon 1996) (The Scientific Advisory Board 2003).

And Advisory IX, Undesirable Fire Effects, from the Scientific Advisory Board states:

> Fuels reduction strategies in the Sierra Nevada Forest Plan Amendment [2001 SNFPA] may not adequately protect the giant sequoias and mixed conifer ecosystem from catastrophic fire... One of the goals stated in the Monument proclamation is to restore "natural forest resilience" (Clinton 2000). Some foresters, forest ecologists, and others believe that in some areas of the Monument, the standards set forth in the Forest Plan Amendment may be too restrictive to meet this goal with regard to catastrophic wildfire, and to protect other objects of interest in the Monument (The Scientific Advisory Board 2003).

As a result, restoration and maintenance activities will likely involve the use of both fire and mechanical treatments to reduce fuels and manage vegetation to protect the objects of interest, to accomplish critical restoration objectives, and to improve resilience in this fire-adapted ecosystem. Ecological integrity will be maintained, making use of the same management tools, to keep landscapes ecologically healthy and resilient.

Types of Treatments

Two types of treatment are considered for ecological restoration in the Monument: fire (prescribed fire, managed wildfire, and the hand treatments that accompany them, including chainsaws) and mechanical (self-propelled ground-based machines). Site-specific project analysis will determine the scope and percentage of fire and mechanical treatments necessary to restore and maintain ecosystems, provide for public safety, and meet the desired conditions for the Monument.

There are two types of wildland fires: wildfires and prescribed fires. Prescribed fires are planned and used for ecological restoration following site-specific project analysis. Wildfires are caused by natural ignitions, such as lightning, or some type of human interaction. The term "managed wildfire" refers to the use of wildfires started by natural ignitions to protect, maintain, and enhance resources, and, whenever possible, allow fire to function in its natural ecological role. This is one tool used to restore and maintain the natural fire regime. Human-caused wildfires will continue to be suppressed, and not managed for resource benefits.

Unplanned natural ignitions will be evaluated on a case-by-case basis at the project level to determine if the fire should be allowed to burn. Managed wildfires would use strategies and tactics which provide for the protection of human health, safety, and natural and cultural resource values. Risks and complexities for all ignitions would be analyzed in order to determine those ignitions which could be successfully managed for ecological benefit. Managed wildfire can be used as a tool to reintroduce fire to the ecosystem, reduce unnatural fuel accumulations, and promote resilient forest structures under appropriate conditions (Fites-Kaufman 2005).

Throughout the Monument, even in WUI zones and the Tribal Fuels Emphasis Treatment Area (TFETA), mechanical treatments will be limited or prohibited:

- in wilderness (existing and proposed)
- in wild and scenic river corridors
- in inventoried roadless areas
- in research natural areas
- in riparian conservation areas
- on slopes exceeding 35 percent
- in areas greater than 9,000 feet in elevation
- in areas more than ¼ mile from a road

Based on these constraints, approximately 23 percent of the 328,315 acres of National Forest System land in the Monument could be considered for mechanical treatments (alone or in conjunction with fire treatments), compared to about 77 percent that could be considered for fire treatments.

Removal of Trees from Within the Monument

Any treatments that involve the removal of trees from within the Monument area, including both standing trees and downed logs, will only be permitted following a determination that removal of the trees is "clearly needed for ecological restoration and maintenance or public safety" (Clinton 2000, p. 24097).

> Removal of trees, except for personal use fuel wood, from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety (Clinton 2000, p. 24097).

In July 2008, the Forest Service provided a public comment period for reviewing the advisories from the Scientific Advisory Board and key terms used in the Clinton proclamation. These comments were summarized in a report and then used to prepare an interpretation by the Forest Supervisor of the key principles of the Clinton proclamation (Terrell 2009). The Forest Service interpretation includes this discussion on tree removal:

> **Tree Removal:** Trees may only be removed if clearly needed for ecological restoration and maintenance or public safety. I have reviewed the comments received on the term "removal," in the particular context of "tree removal" as stated in the proclamation, to determine which definition to use for resource management in the Monument. I agree that "tree removal" is defined as "to take away or off of the Monument."
>
> As the Monument plan is developed, the environmental impact statement will be prepared to evaluate tree removal within the context of biomass removal during restoration activities. A number of restoration activities are likely to remove some form of biomass. The biomass removal may be in the form of burning on site, or production of secondary products such as wood chips, lumber, or other wood products (Terrell 2009).

An evaluation of clear need is required and will be completed before any site-specific projects that propose tree removal take place in the Monument. When evaluating if tree removal is clearly needed for ecological restoration and maintenance or public safety, the following removal criteria (numbered R1 through R3) will be applied. If the proposed treatment will also involve the felling of standing trees, the Forest Service will first apply the tree felling criteria (F1 through F5) outlined below, and will then apply the tree removal criteria.

The criteria to be applied in determining a clear need for the removal of trees are as follows:

> **R1. Protection of Objects of Interest:** If keeping one or more trees on site would cause unacceptable fuels accumulation and fire severity effects (high tree mortality when fire is reintroduced); if removing trees would reduce the risk of wildfire to the giant sequoia groves, sensitive wildlife habitat, and adjacent communities at risk.

> Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, pp. 24095-24096).

R2. Resiliency: If keeping one or more trees on site would provide a vector for insect or disease infestations at levels higher than currently known endemic levels.

> These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times (Clinton 2000, p. 24095).

R3. Public Safety: If keeping one or more trees on site would create a public safety hazard or attractive nuisance. For example, Forest Service policy is to mitigate safety hazards in developed recreation sites, including trees or tree limbs identified as hazardous (FSM 2330.6a). Depending on the situation, down trees in a developed recreation site or administrative site may present a hazard if people are likely to climb on them and potentially fall and get hurt (becomes more likely if the logs are large and/or they are piled on top of one another). Down trees may also present a hazard in administrative sites, developed recreation sites, and along roadsides where they would add to existing fuel loads, making fire control and emergency evacuation more difficult; or increase the likelihood of vehicle accidents along roadways. Examples of where down trees could contribute to traffic accidents include but are not limited to instances where trees or tree limbs would obstruct drivers' lines of sight, provide hiding cover for wildlife, or could become an obstruction in the roadway (FSH 7709.59, Sec. 41.7).

Tree Felling

Any projects which propose the felling of trees inside the Monument will be subject to the following five criteria (numbered F1 through F5) for tree felling. These five criteria shall apply to any treatments which involve the felling of trees, whether or not removal of those trees from the Monument is also proposed.

Where removal of the felled trees from the Monument is proposed, the proposal will also be subject to the "clearly needed" evaluation for tree and down log removal (criteria numbered R1 through R3) outlined above.

The Forest Service shall apply the following five criteria when proposing the felling of trees inside the Monument.

F1. Resiliency: If maintaining one or more standing trees on a site would deplete moisture, light, or nutritional resources critical to the health and survival of the plant community or forest.

> These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times (Clinton 2000, p. 24095).

F2. Regeneration: If maintaining one or more standing trees on a site would adversely affect the regeneration, longevity, or growth of giant sequoias and other desired species.

> ...a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves (Clinton 2000, p. 24095).

F3. Heterogeneity: If maintaining one or more standing trees on a site would adversely affect the desired diversity or structure of a stand or forest.

> Sequoias and their surrounding ecosystems provide a context for understanding ongoing environmental changes (Clinton 2000, p. 24095).

F4. Public Safety: If maintaining one or more standing trees on site would create a public safety hazard. Forest Service policy is to mitigate safety hazards from recreation sites, administrative sites, and the public transportation system of roads and trails, including trees or tree limbs identified as hazardous (FSM 2332).

F5. Recreation and Administrative Sites: Other projects that may be proposed in the Monument

that could require tree felling include recreation or administrative site development and maintenance, scenic vistas, and road access and parking for these sites. These activities would meet the intent of the Clinton proclamation, which provides the following:

> The plan will provide for and encourage continued public and recreational access and use consistent with the purposes of the monument (Clinton 2000, p. 24097).
>
> The management plan shall contain a transportation plan for the monument that provides for visitor enjoyment and understanding about the scientific and historic objects in the monument, consistent with their protection. For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative purposes or to provide access for persons with disabilities. No new roads or trails will be authorized within the monument except to further the purposes of the monument (Clinton 2000, p. 24098).

Items That Were Changed Between the DEIS and FEIS

There were several changes made after publication of the draft EIS (DEIS) and while preparing this final EIS (FEIS). These changes include, but are not limited to:

- Added explanation of the Purpose and Need to better reflect the intent of the Monument and add the objects of interest.
- Modified explanation of the planning rule and transition procedures being followed to reflect changes in the 2012 Planning Rule.
- Added section on Ecological Restoration, which includes the types of treatments being considered, an analysis of the percent of the WUI and the TFETA that could be considered for mechanical treatment, and the criteria for determining clear need for tree cutting and tree removal.
- Added graphic to better display the three types of land allocations.
- Updated desired conditions to better describe the goals for Monument management.
- Updated strategies and objectives to clarify how they differ between the alternatives.
- Updated standards and guidelines for the giant sequoia groves to better specify where limitations apply.
- Re-ran the SPECTRUM (model) for all alternatives.
- Removed the proposal of the Tribal Fuels Emphasis Treatment Area (TFETA) from Alternative C. The TFETA is still proposed in Alternatives B and F.
- Deleted language referring to timber management in the vegetation effects analysis. According to the proclamation, none of the Monument is to be viewed as a source of timber or to be used to produce volume for the timber industry. Even though this was not our intent, there is the perception that we were looking at the Monument in this manner in the DEIS.
- Added separate climate change sections in Chapter 3 (Affected Environment) and Chapter 4 (Environmental Consequences).
- Added more discussion and analysis of snags and down wood to the wildlife sections. Added standards and guidelines for snags and down wood.
- Added standards and guidelines for soils.
- Added a Decision Tree, in response to Scientific Advisory Board Advisory IV (The Scientific Advisory Board 2003), to Appendix A.
- Added the Wildlife Biological Evaluation as Appendix M and the Wildlife Biological Assessment as Appendix N to the FEIS.

Other modifications and edits to the FEIS, made in response to the Science Review Panel Report, are listed in the response table in Appendix F.

Alternative A

Alternative Theme

Alternative A is the no action alternative. The Monument is currently being managed under direction from a court order. The Judgment for Case 3:05-cv-00898-CRB, Document 76, filed 10/11/2006, page 1 of 3, United States District Court for the Northern District of California, by Judge Charles R. Breyer, ruled that the Monument area would be managed as follows:

In the interim, and until the Forest Service issues a new Management Plan, the Monument shall be managed consistent with the Monument [Clinton] Proclamation of April 15, 2000, and in accordance with direction from the 1988 Sequoia National Forest Land and Resource Management Plan, as amended by the 1990 Mediated Settlement Agreement and the 2001 Sierra Nevada Forest Plan Amendment.

Subsequent to this judgment, in June 2007, the Record of Decision for the Sierra Nevada Forests Management Indicator Species Amendment (2007 SNF MIS) (USDA Forest Service 2007a) further amended the 1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan) (USDA Forest Service 1988a). This direction, as well as the 1994 Kings River Wild and Scenic River and Special Management Area Implementation Plan (KRSMA) and the 1992 Bush proclamation, has been incorporated into the current management of the Monument.

In this alternative, no formal, legal actions for amendment to current direction would be made. This alternative is needed to provide a baseline for measuring the effects of the other alternatives and to demonstrate expected changes from the way the Monument is currently managed.

In Alternative A, no NEPA decisions would be made to include the direction in the Bush and Clinton proclamations or the relevant parts of the MSA. This alternative would continue using current management direction. The difficulties associated with managing the Monument with the many separate sources of direction developed since the original Forest Plan would continue. Currently, there is no single plan to follow. When site-specific projects are developed, several different documents must be considered, including the Forest Plan, MSA, KRSMA, the Bush proclamation, the Clinton proclamation, the 2001 SNFPA, and the 2007 SNF MIS.

Management Direction

The management direction and guidance in Alternative A comes from multiple sources, some of which have been through the NEPA process and some of which have not, and include the following:

1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan) (USDA Forest Service 1988a): This document contains management direction for recreation, cultural resources, designated and proposed wilderness, special interest areas, inventoried roadless areas, watershed, vegetation including groves, fuels, grazing, wildlife habitat, lands, minerals, transportation, geology, and soils by establishing management areas and their associated management emphases.

1990 Sequoia National Forest Land Management Plan Mediated Settlement Agreement (MSA) (USDA Forest Service 1990b): This agreement includes a number of provisions to implement and incorporate into a forest plan amendment. The MSA recommends standards and guidelines and other management guidance for giant sequoia groves, fuels, grazing, wildlife, timber harvesting, recreation (mainly trails and off-highway vehicle use), watersheds, and soils. Only the portions of the MSA applicable to the Monument portion of the Sequoia National Forest are considered in this FEIS. In addition, as stated in the MSA, "It is understood that since this new round of the NEPA process is open and public, the decision may not conform to this Agreement verbatim" (MSA 1990, p. 154). The 2001 SNFPA, in replacing all of the management areas and several of the associated management emphases set forth in the Forest Plan, along with their standards and guidelines, satisfied some of the MSA provisions applicable to both the Sequoia National Forest and the Monument.

1991 Kings River Wild and Scenic River and Special Management Area Implementation Plan (KRSMA): In the Roadless Area Review

and Evaluation of 1979 (RARE II), this area was identified as two adjoining segments along the Kings River. This roadless area is located in both the Sierra and Sequoia National Forests. Roadless Area B5198 was then designated on November 3, 1987, under Public Law 100-150, as the Kings Wild and Scenic River and Special Management Area, to be administered by the Sierra National Forest. The KRSMA implementation plan provides management direction similar to that for roadless areas, with a focus on primitive recreation and grazing (KRSMA Record of Decision [ROD], July 1991). The KRSMA ROD established land allocations for the wild and scenic river corridor and the management area, along with standards and guidelines. The act establishing the KRSMA also provides direction to "permit off-road vehicular use of off-road trails to the same extent and in the same locations as was permitted before enactment of this Act" (PL 100-150). Therefore, there are two motorized (motorcycle) trails, 27E04 and 27E05, in the Monument.

1992 Presidential Proclamation (Bush proclamation): This proclamation and executive order required that the Forest Service:

- Delineate the location of sequoia groves, as set forth in the MSA;
- Provide a list of the designated groves with a description of the boundaries of each of the groves;
- Not manage the designated giant sequoia groves for timber production, nor include them in the land base used to establish the allowable sale quantities for the affected national forests;
- Protect the designated giant sequoia groves as natural areas with minimal development;
- Assure that any proposed development, consistent with the best scientific information available, provides for aesthetic, recreational, ecological, and scientific values;
- Manage Converse Basin Grove as set forth in the MSA; and
- Withdraw the designated groves from all forms of location and entry under the general mining laws, and from any disposition under the mineral and geothermal leasing laws and laws pertaining to the disposal of mineral material, subject to valid existing rights.

Compliance with the requirements to delineate sequoia grove boundaries and withdraw them from mineral and geothermal leasing laws was published in the *Federal Register* (Volume 63, Number 6, January 8, 1998, pp. 1496-1498). The groves not requiring precise boundary determinations were Agnew, Burro Creek, Deer Meadow, Maggie Mountain, Middle Tule, and Silver Creek (MSA 1990, p. 20). The Bush proclamation also recommended that groves be managed, protected, and restored to assure the perpetuation of the groves for the benefit and enjoyment of present and future generations.

2000 Presidential Proclamation Establishing the Monument (Clinton proclamation) (Clinton 2000): The Clinton proclamation establishing the Monument provided direction that is quite clear for some management decisions and more open to interpretation for other management decisions. The focus of the Clinton proclamation is the protection of and care for the objects of interest. Through public and agency dialogue, the objects of interest have been determined to be a mix of individual objects or locations (such as specific caverns or named sequoias) and broad ecosystems and their natural processes (such as cave formation through water carving and percolation).

For the purposes of managing the Monument, and based on Forest Service and public interpretation of the Clinton proclamation, the objects of interest include:

- The naturally-occurring giant sequoia groves and their associated ecosystems, individual giant trees, rare and endemic plant species such as the *Springville clarkia*, and other species listed as threatened or endangered by the Endangered Species Act (ESA), or sensitive by the Forest Service.
- The ecosystems and outstanding landscapes that surround the giant sequoia groves.
- The diverse array of rare animal species, including the Pacific fisher, the great gray owl, the American marten, the northern goshawk, the peregrine falcon, the California spotted owl, the California condor, several rare amphibians,

the western pond turtle, and other species listed as threatened or endangered by the ESA, or sensitive by the Forest Service.

- The paleontological resources in meadow sediments and other sources that have recorded ecological changes in such markers as fire regimes, volcanism, vegetation, and climate.
- The limestone caverns and other geological features, including granite domes, spires, geothermally-produced hot springs and soda springs, and glacial and river-carved gorges.
- Cultural resources, both historic and prehistoric, which provide a record of human adaptation to the landscape and land use patterns that have shaped ecosystems.

The naturally-occurring giant sequoia groves are considered first in priority among the objects of interest. Protecting the objects of interest primarily means to encourage or maintain natural processes. This includes restoring natural functions and processes in Monument ecosystems and protecting resources from future harm.

The Clinton proclamation identified the following needs in protecting the objects of interest:

- Provide for the survival of mature giant sequoias and the establishment of young giant sequoias to assure the continued existence of this species. Consider the effects of fire exclusion, climate change, and other environmental changes on the regeneration, range, and distribution of giant sequoias.

  Sequoias and their surrounding ecosystems provide a context for understanding ongoing environmental changes. For example, a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves. Climatic change also has influenced the sequoia groves; their present highly disjunct distribution is at least partly due to generally higher summertime temperatures and prolonged summer droughts in California from about 10,000 to 4,500 years ago. During that period, sequoias were rarer than today. Only following a slight cooling and shortening of summer droughts, about 4,500 years ago, has the sequoia been able to spread and create today's groves (Clinton 2000, pp. 24095-24096).

- Restore ecosystems and ecological processes that may be altered because of a century of fire suppression and large-scale logging, so that forest resiliency to large-scale wildfire and other potentially catastrophic events is improved.

  These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, p. 24096).

- Provide opportunities for scientific study of the objects of interest by biologists, geologists, paleontologists, archaeologists, historians.

  The rich and varied landscape of the Giant Sequoia National Monument holds a diverse array of scientific and historic resources. Magnificent groves of towering giant sequoias, the world's largest trees, are interspersed within a great belt of coniferous forest, jeweled with mountain meadows. Bold granitic domes, spires, and plunging gorges texture the landscape. The area's elevation climbs from about 2,500 to 9,700 feet over a distance of only a few miles, capturing an extraordinary number of habitats within a relatively small area. This spectrum of ecosystems is home to a diverse array of plants and animals, many of which are rare or endemic to the southern Sierra Nevada. The monument embraces limestone caverns

and holds unique paleontological resources documenting tens of thousands of years of ecosystem change. The monument also has many archaeological sites recording Native American occupation and adaptations to this complex landscape, and historic remnants of early Euro-American settlement as well as the commercial exploitation of the giant sequoias. The monument provides exemplary opportunities for biologists, geologist, paleontologists, archaeologists, and historians to study these objects (Clinton 2000, pp. 24094-24095).

The Clinton proclamation states:

- Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national Monument shall be the dominant reservation (Clinton 2000, p. 24098).
- Removal of trees, except for personal use fuel wood, from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety (Clinton 2000, p. 24097).
- All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws including, but not limited to, withdrawal from locating, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument (Clinton 2000, p. 24097).

There are no current valid mining claims in the Monument. All management strategies, objectives, and standards and guidelines in the Forest Plan regarding land uses or minerals management would no longer be applicable in the Monument.

2001 Sierra Nevada Forest Plan Amendment (2001 SNFPA) (USDA Forest Service 2001c): In amending the Forest Plan, the 2001 SNFPA replaced its management areas, based on vegetation type, with land allocations (USDA Forest Service 2001e, pp. 2-3, 18). The 2001 plan amendment removed Management Emphasis 7 (sawtimber), and the portion of Management Emphasis 5 (wildlife and dispersed recreation) that deals with wildlife management, replacing them with management goals, objectives, and standards and guidelines associated with the new land allocations (USDA Forest Service 2001e, pp. 3-12, Appendix A).

2003 Advice for the Secretary of Agriculture about Management of the Giant Sequoia National Monument (2003 Scientific Advisory Board): In compliance with the Clinton proclamation, a Scientific Advisory Board was convened "to provide scientific guidance during the development of the initial management plan" (Clinton 2000, page 24098). The Scientific Advisory Board operated under a Department of Agriculture charter, met six times, and provided 27 advisories to the Forest Service. This formal advice was adopted after public deliberations and is published in the report, Advice for the Secretary of Agriculture about Management of the Giant Sequoia National Monument, in July 2003. After meeting again with members of the Scientific Advisory Board and collecting public comments on the 27 advisories in 2008, it was determined that all but two of the existing scientific advisories are still relevant for the new Monument FEIS and Plan. Those two advisories are specific to the previous Monument DEIS, in how it adhered to the Advisories of 2001 and 2002, and if it could be considered a management plan for the Monument.

2007 Sierra Nevada Forests Management Indicator Species Amendment (2007 SNF MIS) (USDA Forest Service 2007a): In amending the Forest Plan, the 2007 SNF MIS replaced the management indicator species list and associated monitoring.

Sequoia National Forest personnel have been managing the area within the Monument boundary to comply with the MSA and Bush proclamation for almost 20 years and the Clinton proclamation for the past 10 years. Over that time a number of management strategies have evolved to assure compliance with the MSA and presidential proclamations, while awaiting a forest plan amendment to analyze and incorporate the management direction from these documents into a Monument management plan.

Several standards and guidelines were modified to comply with the MSA recommendations and the presidential proclamations. But not all of these informal modifications were adopted through a formal action supported by a NEPA decision. Appendix A contains tables that display the crosswalk of the multiple sources of direction and the standards and guidelines applicable to the Monument for Alternative A that resource managers must consider each time a project level decision is developed. This is a difficult and time-consuming process, and it is not always clear exactly which source of direction takes precedence and how it interacts with the other sources. These decisions were not made in concert with one another; they were made at different times and at different scales (ranging from the 2001 SNFPA for all 10 forests in the Sierra Nevada to the Monument Plan for a portion of the Sequoia National Forest).

Resource Areas

Scientific Study and Adaptive Management

The MSA proposed monitoring and evaluation requirements, including certain types of monitoring and monitoring actions (USDA Forest Service 1990a, Exhibit O). It guided the Sequoia National Forest to conduct a monitoring program and to seek annual budgets sufficient for its full implementation. The MSA also required an annual report on implementation of the plan, including descriptions of required information gathering and monitoring work that could not be accomplished. The monitoring specified in Exhibit O of the MSA has been and continues to be done, and MSA annual reports have been completed.

The 2001 SNFPA (USDA Forest Service 2001c) set out a strategy for scientific study, particularly to foster adaptive management. It established monitoring and evaluation plan requirements for the same resources as the MSA: Air Quality; Old Forests and Associated Species; Soil Productivity; and Aquatic, Riparian, and Meadow Ecosystems.

In accordance with Forest Service guidance, the 2004 interpretive rule regarding planning states, "Projects implementing land management plans and plan amendments…must be developed considering the best available science in accordance with 219.36(a)… and must be consistent with the provisions of the governing plan" (Appendix B to §219.35). This means that plan amendments, and subsequent project-level NEPA, must show consideration of applicable "best available science." The need to use the best science is not new, as agency decisions have always required a sound technical basis (clarification of May 2, 2007, advice on documenting "Best Available Science," June 21, 2007).

The following graphic displays the relationship between adaptive management, scientific study, and monitoring.

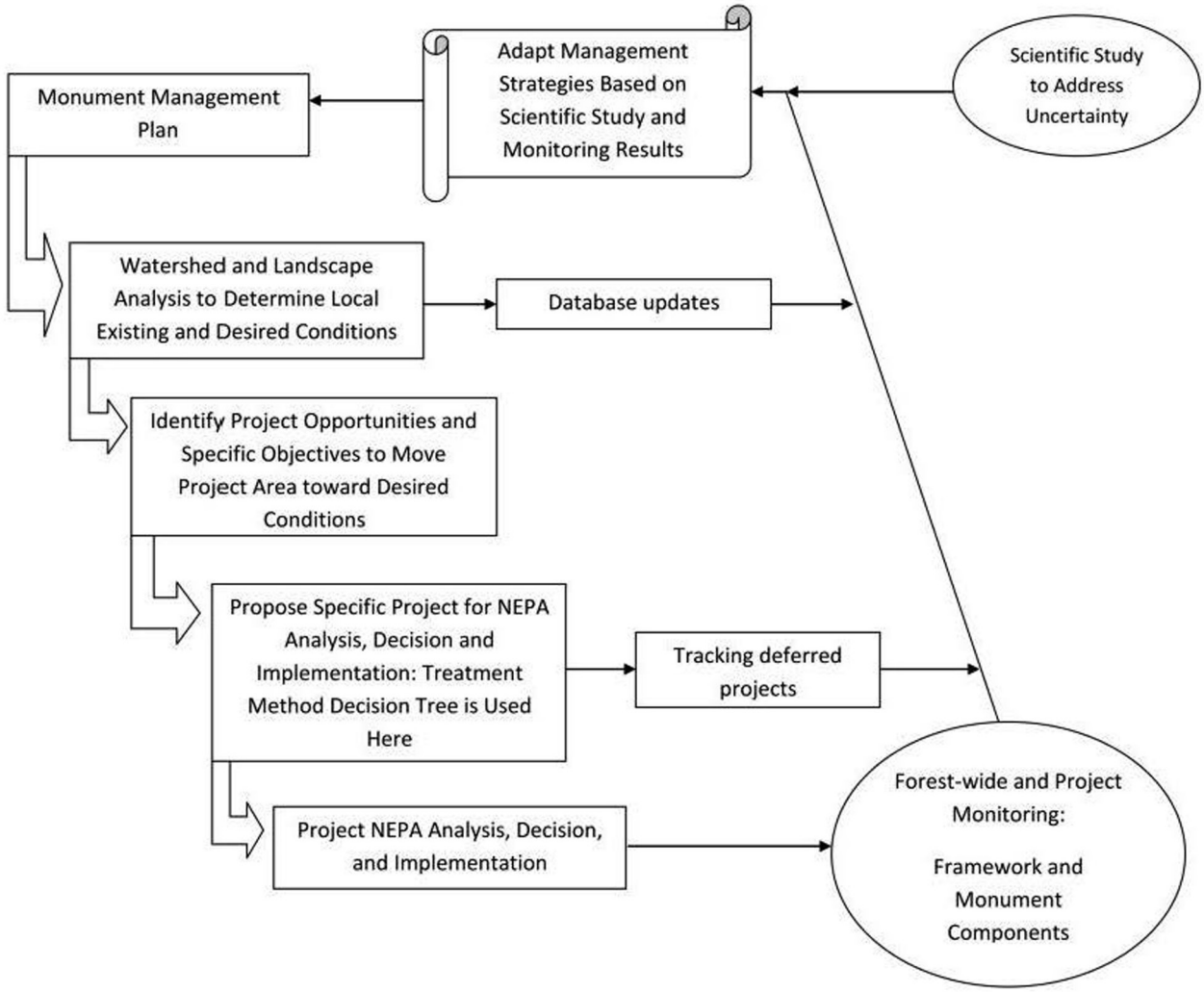
In addition, the Joint Strategic Framework for Science in Support of Management in the Southern Sierra Nevada Ecoregion, developed in June 2009 by an interagency cooperative, will design scientific studies and help guide adaptive management of the resources in the Monument. Research conducted will follow three guiding principles:

- Climatic change cannot be addressed in isolation. The effects of climatic change on resources will be strongly influenced by interactions with other agents of change. Research projects should focus on all agents of change, even though climatic change is the overarching theme.
- Resource management decisions must be based on sound science. Research projects should focus on science relevant to managers. Implementation of research projects would require continuous, iterative collaboration between scientists and managers.
- Humans are both agents of change and the recipients of the outcomes of those changes. These changes affect us in the short and long term: socially, economically, and culturally. Because of this inextricable link, use the strategic framework as a blueprint for collective action.

In accordance with the strategic framework, scientific study in the Monument will focus on answering the following questions as they relate to monument resources, especially the objects of interest:

- Which ecosystem elements are important and time sensitive to track?

Figure 2 Overview of Adaptive Management Based on Scientific Study and Monitoring



- Where on the landscape should actions be taken now?
- How does each agent of change affect important ecosystem elements?
- Which agents of change can be slowed and why?
- What tools and approaches further effective human response to known agents of change?

Vegetation, including Giant Sequoia Groves

The MSA recommended a number of modifications to, additions to, and deletions of standards and guidelines for vegetation management in the Forest Plan (USDA Forest Service 1990a, pp. 78-88, Exhibit N; USDA Forest Service 1988a, pp. 4-31 to 4-33). The Clinton proclamation, in establishing the Monument, removed the Monument area, through force of law, from being considered suitable for timber production. In addition, the 2001 SNFPA removed timber as a goal for the Sequoia National Forest. As a result, between the Clinton proclamation and the 2001 SNFPA, many of the provisions recommended in the MSA were superseded and/or satisfied for the Sequoia National Forest and the Monument. However, some of those recommendations regarding silvicultural systems, diversity, and sugar pine management are still applicable in the Monument, when clearly needed for ecological restoration and maintenance or public safety (see Appendix A for a complete list of standards and guidelines for Alternative A).

The MSA, the Clinton proclamation, and the 2001 SNFPA provide guidance on when a tree may be removed from the Monument, for example:

- Sequoias may be removed if they are under 3 feet in diameter at breast height (dbh) (USDA Forest Service 1990b, pp. 20-21 and 27).
- Removal of trees, except for personal use fuel wood, from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety (Clinton 2000, p. 24097).
- Non-sequoia trees of any size may be removed; retain all live conifer trees with dbh of 30 inches or greater in westside forest types. Retain montane hardwoods with dbh of 12 inches or larger in westside forest types. Occasional mortality of larger trees is expected to occur; however, design prescribed burn prescriptions and techniques to minimize the loss of large trees and large down material (USDA Forest Service 2001d, Appendix A, p. A-28).

Of these three sources of guidance, the Clinton proclamation is the controlling direction. The other direction is followed only to the extent that it is consistent with the Clinton proclamation.

Giant Sequoia Groves

The MSA followed the Forest Plan with guidance to establish grove boundaries and guidelines to prevent or restrict logging in the groves, with the exception of limited and specific fuels reduction pursuant to fuel load reduction plans. The MSA proposed certain silvicultural prescriptions for single tree or small group uneven-aged management within grove influence zone boundaries that were in regulation class II for timber management (MSA, p. 25). Since the Clinton proclamation and the 2001 SNFPA removed timber management as a goal for the Monument, this recommendation is no longer applicable to the Monument.

The MSA, and later the Bush proclamation, provided direction specific to the Converse Basin Grove, the site of multiple timber harvests since the late 1800s:

- With the exception of areas recommended for preservation, this grove would continue to be available for commercial logging (USDA Forest Service 1990b, pp. 26-27).
- Notwithstanding the foregoing, the Converse Basin Grove shall be managed as set forth in the Sequoia National Forest Mediated Settlement Agreement (Bush 1992).

However, since the Clinton proclamation limits tree removal, a component of logging, to only that which is clearly needed for ecological restoration and maintenance or public safety, there is no need to manage the Converse Basin Grove differently than the other giant sequoia groves under Alternative A.

Alternative A would continue management of the Freeman Creek Grove as a proposed botanical area (MSA, pp. 17-18). A more detailed discussion of the proposed Freeman Creek Botanical Area is found later in this chapter, in the special areas section.

The MSA recommended that reforestation data gathered under contract be subject to questions about and challenges to accuracy and procedure (MSA, pp. 67-69). The reforestation was completed in June 1991, and a letter was sent to the MSA signatories.

Fire and Fuels

Existing direction in the 2001 SNFPA locates fuel treatments across broad landscapes and links them to support one another so that the spread of wildland fire is interrupted and its intensity reduced. This strategy is in place to protect Monument resources, including life, property, and sensitive resources such as giant sequoias, wildlife, cultural resources, and riparian areas. The strategy considers the 1990 MSA recommendation to conduct fuels inventories and develop fuel load reduction plans. Other direction in the 2001 SNFPA gives the highest priority to fuel reduction activities in the WUI.

The Forest Plan was designed to manage the majority of the forest for recreation use and timber production and did not include diameter limits for tree removal. The 2001 SNFPA did establish diameter limits for fuel reduction activities, as well as retention guidelines for wildlife habitat characteristics, especially in old growth forest. Fuels treatments that include tree removal must be based on determinations that they are “clearly needed for ecological restoration and maintenance or public safety” (Clinton 2000, p. 24097). Restoring more natural conditions, such as fire return intervals, and protecting the objects of

interest and communities fulfill the needs identified in the Clinton proclamation.

The following table shows the management direction for ecological restoration through fuels reduction and vegetation management by land allocation/ management area for Alternative A.

Table 5 Alternative A Management Direction for Ecological Restoration

Area	Management Focus	Diameter Limit (inches)
General Monument (2001 SNFPA ROD, Appendix A, p. A-49)	Fuels reduction-mechanical	20 (surface/ladder fuels)
Monument-wide (2001 SNFPA ROD, Appendix A, p. A-28); hardwoods are not identified separately in any other section	Vegetation/fuels treatments—large tree retention	30 (conifers) 12 (hardwoods)
Old Forest Emphasis Area (2001 SNFPA ROD, Appendix A, p. A-41)	Fuels reduction—mechanical	12
	Incidental felling for operability (during mechanical fuels reduction)	20
Northern Goshawk and Spotted Owl Habitat Areas (SOHAs) (2001 SNFPA ROD, Appendix A, pp. A-35 and A-37)	Fuels reduction in and out of defense zones	6 (within 1-2 acres of nest) 20 (elsewhere)
Carnivore Den Site Buffers (2001 SNFPA ROD, Appendix A, p. A-39)	Fuels reduction	Avoid when possible
Wildland Urban Intermix: defense zone (2001 SNFPA ROD, Appendix A, p. A-46)	Fuels reduction/fire protection—large tree retention	30 (except in PACs)
Wildland Urban Intermix: threat zone (2001 SNFPA ROD, Appendix A, p. A-47)	Fuels reduction/fire protection—mechanical	20 (surface/ladder fuels)

Prioritizing Tools for Ecological Restoration

The prioritization of management tools used for ecological restoration (fuels reduction and vegetation management) is intended to show a difference in tool preference between the alternatives. It does not direct the order in which these tools will be used in site-specific projects, as consideration of the tools to be used will follow the decision tree for all alternatives, based on availability, level of risk, and feasibility of using each tool. The three tools—mechanical treatment, prescribed fire, and managed wildfire—can be used individually or in combination based on site-specific analysis and existing conditions.

For example, if mechanical treatment is the priority in an alternative, that tool might be applied more often in that alternative, but it also may be used in combination with the other tools or not used at all, based on site-specific conditions and project goals. In addition, whenever naturally-ignited wildfires occur and are available to manage for resource benefits, those managed wildfires will be used first for ecological restoration, no matter their order of priority in an alternative.

The priorities for the management tools used for fuels reduction in Alternative A are:

1. Mechanical means
2. Prescribed fire
3. Managed wildfire (unplanned natural ignitions)

Prioritizing Fuel Load Reduction in Giant Sequoia Groves

The MSA and the Clinton proclamation both recognized the need for fuels reduction treatments in the Monument and, in particular, in the giant sequoia groves. The MSA directed that the groves be inventoried and evaluated for their fuel load build-up. "Based on this inventory and evaluation, Groves, or parts of Groves, with risks of catastrophic fire and/or exclusion of new giant sequoia regeneration because

of unnatural fuel load build-up will be identified and prioritized for fuel load reduction treatment" (MSA, pp. 9-10). The Clinton proclamation discussed the build-up of fuels as a reason for forest restoration.

> …a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves...These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times (Clinton 2000, p. 24095).

The MSA requires a grove inventory for each grove. All fieldwork for these inventories and data analysis have been completed, providing better site-specific information on fuel loading, giant sequoia regeneration, and large tree abundance (see Appendix I in Volume 2 of this FEIS for the Giant Sequoia Inventory). Although the MSA requested an inventory of every giant sequoia tree over three feet in diameter, this was only done in two of the smaller groves, Cunningham and Agnew. The large, complex area covered by groves made a 100 percent inventory prohibitive in terms of both time and money. The rest of the groves were sampled using standard forest inventory procedures, with plots distributed throughout the grove to obtain reliable estimates of species abundance and distribution. Preliminary results from these inventories suggest that fuel loading is generally high or very high in the groves, and giant sequoia regeneration is sparse except in larger openings or plantations.

The MSA requires an approved fuel load reduction plan to use mechanical treatment methods in giant sequoia groves. The Black Mountain Giant Sequoia Grove Fuel Load Reduction Evaluation (2008) was developed to meet this requirement. This evaluation can be used as a template for future sequoia grove fuel reduction plans.

Each fuel load reduction plan will include a description of existing conditions and the need for treatment within the groves'administrative boundaries. As displayed in the Black Mountain Giant Sequoia Grove Fuel Reduction Evaluation, the following condition information and data should be included in each sequoia grove plan.

- Fire history
- Fire return interval departure (FRID)
- Fire behavior
- Fuel loading (current grove inventories)
- Fuel treatment goals

The most recent inventories of fuel load will be used to develop each grove's fuel load reduction plan. However, since most groves have fuel loads that exceed desirable levels, this data will not likely be a deciding factor in prioritizing the groves for treatment. Similarly, the fire return interval departure (FRID) will not likely be used in prioritizing groves for treatment because almost 90 percent of the groves are classified as either high or extreme FRID. In addition, forest health, as determined from the most recent forest aerial detection surveys, does not show a manageable difference in tree mortality between groves that could be attributed to insect or disease.

The identification and prioritization of groves or parts of groves for fuel reduction treatments will be based on the fire susceptibility in each grove and its surrounding watershed(s). Fire susceptibility considers the expected flame length (hazard) of a wildfire burning in the current level of fuels, the risk of fire occurrence, and how severe a wildfire is expected to be in a given location. Fire severity is defined primarily by elevation, because the amount of moisture and the temperature differ by elevation. Fire susceptibility is an appropriate tool for prioritizing the groves for treatment because it often varies between groves, it can be measured on the ground, and it can be estimated in models.

It is important to note that fire susceptibility will vary over time. An insect outbreak that causes extensive mortality to associated trees in a grove may increase the fire susceptibility there. Changes in managed animal species may change treatment priorities in certain groves. Changing conditions may change the

fire susceptibility in any particular grove, but because fire susceptibility is so closely related to the desired conditions for many resources, it is an important decision tool. Fire susceptibility can be used to help evaluate the potential for damage to the objects of interest, residential or recreational facilities, soils, and watersheds. Fire susceptibility can also serve as a measurable factor in projects designed to encourage canopy openings and early seral habitat with hotter, more severe fires. Fire susceptibility is related to the regeneration of giant sequoia and pines within groves. Fuels treatments that reduce fire susceptibility may also produce site conditions that allow the roots of tree seedlings to expand in mineral soil and adequate light to reach the seedlings for height growth.

Other factors that will be considered when prioritizing the groves for treatment include, but are not limited to, slope, aspect, tree canopy cover, forest health, fuel loading, access, cooperative agreements with adjacent landowners or other parties, funding opportunities, political and public pressure, safety concerns, recreation opportunities, and imminent threat from wildfire. Various resource objectives and values may be most appropriate to consider at the site-specific project level of analysis. For example, a line officer may choose to treat a grove with a lower fire susceptibility rating for the purposes of recreation, tree regeneration, or project efficiency. However, for every site-specific project in the Monument, decisions for fuels treatments that include tree removal must be based on determinations that they are "clearly needed for ecological restoration and maintenance or public safety" (Clinton 2000, p. 24097). Restoring more natural conditions and protecting the objects of interest and communities fulfill the needs identified in the Clinton proclamation.

Wildlife and Plant Habitat

The MSA recommended that the Forest Plan "be amended to incorporate management practices, and critical and other habitats, essential to the conservation of [rare and endemic species including California spotted owls, Sierra Nevada red fox, pine marten, fisher, goshawk, California condors, willow flycatchers, and fisheries including the Little Kern Golden Trout] species after the Region finalizes the appropriate guidelines and directions" (MSA p. 56).[11] The 2001 SNFPA amended the Forest Plan to include several land allocations and their associated management direction, including the Southern Sierra Fisher Conservation Area (SSFCA); old forest emphasis area; riparian conservation areas (RCAs); critical aquatic refuges (CARs); protected activity centers for the California spotted owl, the northern goshawk, and the great gray owl; and den site buffers for the American marten and the Pacific fisher. The 2001 SNFPA includes standards and guidelines for conserving the willow flycatcher and its habitat, based on consistent monitoring of known willow flycatcher sites. Management direction in the 2001 SNFPA addresses aquatic, riparian, and meadow ecosystems through use of the aquatic management strategy and riparian conservation objectives (RCOs) to protect aquatic species habitat. This amendment to the Forest Plan met the intent of the MSA with respect to habitat management for rare and endemic species in the Monument (MSA, pp. 5-6, 51-59, and 65-66).

The Southern Sierra Fisher Conservation Area (SSFCA) is a static land allocation encompassing the known occupied range of the Pacific fisher in the Sierra Nevada. Lands in the Monument account for nearly one-quarter of the SSFCA designated by the 2001 SNFPA. Current scientific research and modeling (from the Conservation Biology Institute and other sources) for the Pacific fisher may update or add to the management standards and guidelines.

Range

The Forest Plan established Management Emphasis 6 for grazing and determined which land was suitable for grazing. The MSA made several recommendations regarding range management, specifically in oak woodlands and blue oak savanna (hardwoods) and chaparral (brush)-dominated areas. The 2001 SNFPA provided additional direction for vegetation management in hardwood and brush-dominated areas, including specific direction regarding range management and grazing. Several of the items the MSA recommended were included in the 2001 SNFPA amendment language (for example, retaining 700 pounds of dry residual matter in annual grasslands). The current and proposed standards and guidelines can be found in Appendix A of this FEIS.

11. The habitat of the species in brackets encompasses the habitats of all the species addressed in the MSA.

Hydrological Resources

The MSA recommended a number of tasks for watershed management, including several administrative tasks that are not subject to NEPA analysis (MSA, pp. 117-127). Information on these items can be found in the Sequoia National Forest record center for watershed information located at the Sequoia National Forest Supervisor's Office in Porterville, California.

The MSA recommended that several standards and guidelines be added to the Forest Plan for riparian areas and wetlands (MSA Exhibit D), as well as for Cumulative Watershed Effects (CWE) methodology (MSA, pp. 110-111). Some of these proposed standards and guidelines were developed to document public law and Forest Service Manual (FSM) direction at the time. However, the aquatic management strategy (AMS) and riparian conservation objectives (RCOs) and their related standards and guidelines in the 2001 SNFPA were designed to follow current law, regulation, and policy (including FSM direction). The AMS and RCOs satisfy the MSA requirements to consider amendments related to riparian and wetlands and cumulative watershed effects methodology. The standards and guidelines for hydrological resources are included by alternative in Appendix A.

The MSA also included guidance for watershed management, including the establishment of streamside management zones (SMZs) and the 1990 riparian and wetland standards and guidelines (MSA, Exhibit D). Exhibit D of the MSA included pre-existing direction to designate SMZs for protecting and enhancing riparian and wetland ecosystems (MSA, Exhibit D, p .6). SMZs are prescribed in addition to riparian conservation area designations. Under Alternative A, SMZs would continue to be designated as shown in the following table.

SMZs are nested inside riparian conservation areas (RCAs) and most often define an equipment exclusion zone immediately adjacent to the streamside for the purpose of creating a filter strip to trap potential sediment. The 2001 SNFPA direction encompasses these legal requirements and adds direction in the riparian conservation strategy. This strategy provides RCAs, which are considered zones of closely managed activity for riparian-dependent resources.

RCAs have been designated along streams and around water bodies, and CARs have been designated in small subwatersheds that contain known locations of threatened, endangered, or sensitive species; highly vulnerable populations of native plant or animal species; or localized populations of rare native aquatic or riparian-dependent plant or animal species. There are two CARs in the Monument.

The 2001 SNFPA also provided direction to use the regional Stream Condition Inventory (SCI) protocol to assess and document aquatic conditions. The SCI protocol responds to the requirements in the Clean Water Act of 1948 to monitor the effectiveness of the best management practices (BMPs) within a

Table 6 SMZ Width for Stream Classes by Percent Slope

Stream Class [1]	<30 Feet	>30 Feet	>40 Feet	>50 Feet	>70 Feet	Stream Order
Meadows	100	N/A	N/A	N/A	N/A	-
Seeps, springs, bogs	100	N/A	N/A	N/A	N/A	-
I	100	150	200	250	1.5 times distance to slope break	4+
II	100	100	150	200		3-4
III	50	100	100	150		2-3
IV	<50	<50	75	100		1-2
IV	<50	<50	<50	<50		0-1

1. Streamside management zone (SMZ) widths would be determined for the first 100+ feet perpendicular to class I and II perennial streams; class III intermittent streams with side slopes greater than 30 percent; and <50 percent to 75 feet of a class IV ephemeral stream, depending on slope. SMZ direction provides the following widths in feet.

watershed and to evaluate the effectiveness of project BMPs in protecting downstream water quality, as well as to meet in-channel monitoring requirements under the Region 5 Best Management Practices Effectiveness Evaluation Program (BMPEP).

Geological Resources

The Clinton proclamation identified the need to protect geological resources as objects of interest. Current management direction for caves and other geologic features allows for some open access to these sites by the public, with the exception of Boyden Cave and Church Cave, both of which are managed under special use permits.

Soils

The MSA recommended several activity-related standards and guidelines to protect soil quality (MSA, pp. 128-130). Regional soil quality standards have been finalized since the MSA was written, and the Forest Plan was amended to include them under the 2001 SNFPA. This amendment met the intent of the MSA recommendations; therefore, the MSA recommendations have been satisfied with respect to soils management.

Human Use

The Forest Plan provides for public use[12] and a mix of developed and dispersed recreation opportunities, managed according to different management area prescriptions. The Forest Plan assigned recreation opportunity spectrum (ROS) classes (semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural) to all forest lands.

The MSA recommended changes to visual quality management, specifically close to timber management activities (MSA, pp. 75-78). Because of the direction in the Clinton proclamation, and as confirmed by the 2001 SNFPA, these provisions in the MSA are no longer applicable to the Monument.

The MSA also recommended adding a standard and guideline regarding recreation opportunity spectrum (ROS): minor adjustments may be made to the ROS class boundaries based on analysis in various plans and projects (MSA, p. 107). Minor adjustments to ROS can be made through "spot" plan amendments in site specific environmental analysis without establishing a standard and guideline for the Monument.

Current recreation management direction is to define recreation niche settings. A recreation management assessment was conducted in accordance with this direction and assigned the following recreation niche settings in the Monument: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV (USDA Forest Service 2008c). These niche settings are somewhat similar to some of the management emphasis areas assigned by the Forest Plan, of which only the recreation emphasis areas still remain in force after the 2001 SNFPA amendment (see recreation niche map in the recreation affected environment section in Chapter 3).

Existing direction from the Forest Plan and 2001 SNFPA encourages diverse types of public access and use of the area in a safe manner that protects communities (including those within the Monument) from wildfires and encourages economic opportunities for the gateway communities and communities in the Monument.

Cultural Resources

The 1988 Forest Plan stated that "objectives for the Cultural Resource Management (CRM) Program are contained in Forest Service Manuals. The focus of these objectives is development and implementation of a long-term program to inventory, evaluate, protect, and enhance cultural resources on National Forest System lands" (Forest Plan, p. 3-10). It goes on to state that the CRM program is "not a comprehensive program which would also involve protection, interpretation, ethnography and history objectives" and is driven by the Section 106 of the NHPA (36 CFR 800) process for site-specific project planning.

Transportation

The MSA allowed off-highway vehicle use on trails in sequoia groves and elsewhere (MSA, pp.

12. Public use in the Monument is defined as scientific research, interpretation, and conservation education regarding natural and cultural resources, activities authorized under special use permits, recreation activities, and current commodity uses (e.g., grazing, fuelwood cutting, etc.), under applicable laws, regulations, and policies regarding their administration.

7-8). However, in accordance with the Clinton proclamation, motorized vehicle use is limited to designated roads, with the exception of Forest Trails 27E04 and 27E05 in KRSMA.

Special Areas, including Special Interest Areas

In accordance with the Forest Plan, Slate Mountain is classified and being managed as a botanical area, and South Mountaineer Creek, though establishment is still pending, is being managed as a research natural area (Forest Plan, p. 4-26). Moses Mountain was established as an RNA in 1994 and is managed for the study of sequoias in a natural setting (Forest Plan, p. 4-33). In accordance with the MSA, Freeman Creek Grove and a portion of the surrounding watershed is being managed as a botanical area (MSA, pp. 17-18, Exhibit E).

There are no new management strategies or objectives for general management of the special areas identified in the MSA. The MSA recommends changing areas from regulated to unregulated for timber production (MSA, pp. 75-78). The MSA also includes provisions regarding roads and logging in several inventoried roadless areas (backcountry), including Agnew, Moses, Slate Mountain, Lion Ridge, Black Mountain, and Dennison Peak (MSA, pp. 69-72). However, the Clinton proclamation, in establishing the Monument, removed the Monument area from consideration as suitable for timber production. The 2001 SNFPA removed timber management as a management goal for the Sequoia National Forest. As a result, these provisions recommended in the MSA have been superseded by the Clinton proclamation and/or were addressed by the 2001 SNFPA.

The following existing special areas are being carried forward in alternatives without modification: Monarch Wilderness; Golden Trout Wilderness; Kings Wild and Scenic River; South Fork Kings Wild and Scenic River; North Fork Kern Wild and Scenic River; Kings River Special Management Area; Agnew, Jennie Lakes, Black Mountain, Slate Mountain, Dennison Peak, Lion Ridge, and portions of Chico and Rincon Roadless Areas; Kings Canyon Scenic Byway; Slate Mountain Botanical Area; and Moses and South Mountaineer Creek Research Natural Areas.

Desired Conditions, Strategies, and Objectives

The desired conditions, strategies, and objectives for the no action alternative are the current management direction

Standards and Guidelines

A complete list of standards and guidelines for Alternative A can be found in Appendix A of this FEIS.

Alternative B

Alternative Theme

Alternative B is the proposed action, as developed to identify the changes to current management direction needed to comply with the Clinton proclamation. This alternative was designed to achieve the desired conditions for vegetation and other resources that are the same for all of the action alternatives. Alternative B includes strategies that are responsive to the issues of recreation and public use, fuels management/ community protection, and fires spreading to tribal lands. This alternative includes restoration strategies that are expected to result in settings appropriate for a full range of recreation opportunities, such as dispersed camping, developed camping, trail related activities, and the use of off-highway vehicles on designated roads.

Protection of Objects of Interest

Alternative B would retain all of the land allocations and standards and guidelines from the 2001 SNFPA, except where noted in order to ensure the protection of the objects of interest. For this alternative, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17). The Windy Gulch Geological Area would be designated to protect the unique geological features identified as objects of interest in the Clinton proclamation. Alternative B includes the use of multiple tools (prescribed fire, mechanical treatment, and managed wildfire) that are designed to decrease fuel buildups, to reduce the risk of uncharacteristically large-scale wildfire, to restore fire to a more natural role, and to reduce the potential threat to the objects of interest.

Promotion of Resiliency

Alternative B is expected to promote resilient vegetation communities through the use of tools that include, in order of priority:

1. Prescribed fire
2. Mechanical treatment
3. Managed wildfire (when available)

For example, Alternative B focuses vegetation management activities in the wildland urban intermix (WUI) defense and threat zones, and would consider using prescribed fire first. All projects would be designed using diameter limits throughout the Monument (see the management direction for ecological restoration table in the fire and fuels section).

Promotion of Heterogeneity

Alternative B was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. Prescribed fire, mechanical treatment, and managed wildfire would be used to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

Alternative B would replace the management emphasis areas for recreation in the Forest Plan with the recreation niche settings. This alternative continues to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities as visitor use increases.

Management Direction

Alternative B includes new strategies, objectives, and standards and guidelines from the 2004 Sierra Nevada Forest Plan Amendment Supplemental EIS and ROD (2004 SNFPA). This alternative proposes changes to Forest Plan standards and guidelines by adding improved standards, modifying existing standards, and eliminating standards that are no longer needed.

Resource Areas

Vegetation, Including Giant Sequoias

Alternative B would replace the grove influence zones (GIZs) prescribed in the 1990 MSA with grove zones of influence (ZOIs). The ZOIs define a zone, based on the best available science, within which key ecological processes, structures, and functions should be evaluated to ensure that the giant sequoia groves are preserved, protected, and restored. They include area outside the tree-line boundary of the groves as determined by terrestrial considerations, surface water drainage (watersheds), and the nearest stable stream channel.

For Alternative B, vegetation management direction would not include the timber emphasis portion of any management emphasis areas from the Forest Plan.

The 2001 SNFPA amended the Forest Plan to remove Management Emphasis 7 (sawtimber).

In Alternative B, vegetation management focuses on reducing fuels by removing smaller trees in the Wildland Urban Intermix (WUI) zones. Ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, trees would be planted. Resiliency would be improved by using prescribed fire, mechanical treatment, and managed wildfire (when available).

Fire and Fuels

Alternative B uses a WUI defense zone that extends approximately ¼ mile from developed private land, and a WUI threat zone that extends another 1¼ mile from the defense zone. The actual boundaries of the WUI are determined locally, based on the distribution of structures and communities adjacent to or intermixed with national forest lands. Strategic landscape features such as roads, changes in fuel types, and topography are used in delineating the physical boundary of the WUI (2001 SNFPA ROD, p. A-10).

Alternative B includes the Tribal Fuels Emphasis Treatment Area (TFETA). The TFETA was developed in response to discussions with the Tule River Indian Tribe and their concern over fires spreading to the Tule River Indian Reservation (see the following map). The Tule River Indian Tribe of California is a federally recognized tribe, and as such it is the policy of the USDA to consult and coordinate with them on a government-to-government basis in compliance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments) prior to making a decision. This land allocation was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

The following table shows the management direction for ecological restoration through fuels reduction and vegetation management by land allocation/species for Alternative B.

The priorities for the management tools used for ecological restoration[13] (fuels reduction and vegetation management) in Alternative B are:

1. Prescribed fire
2. Mechanical treatments
3. Managed wildfire (unplanned natural ignitions)

Wildlife and Plant Habitat

Alternative B replaces the 2001 SNFPA standards and guidelines for the great gray owl and the willow flycatcher with standards based on the 2004 SNFPA. The 2004 SNFPA includes management direction for these species that is adaptable to local site conditions, while carrying forward the protection measures set in place by the 2001 SNFPA.

Range

For Alternative B, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001SNFPA direction (see the Wildlife and Plant Habitat section). Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative B would replace the strategies, objectives, and standards and guidelines for the riparian conservation objectives (RCOs) from the 2001 SNFPA with management direction based on the 2004 SNFPA (USDA Forest Service 2004e). The 2004 SNFPA reduces redundancy and describes more consistent direction for hydrological resources, while maintaining the intent of the Aquatic Management Strategy.

Geological Resources

Alternative B includes the protection and preservation of the geological objects of interest, while enhancing interpretation and education, and allowing appropriate recreational use of these sites. This alternative includes the designation of the Windy Gulch Geological Area (see the Special Areas section of this chapter). A cave management plan would be developed for significant caves in this geological area.

13. The prioritization of management tools used for ecological restoration (fuels reduction and vegetation management) is intended to show differences in the likely application of each management tool between the alternatives. It does not direct the order in which these tools will be used in site-specific projects.

Map 2 Tribal Fuels Emphasis Treatment Area

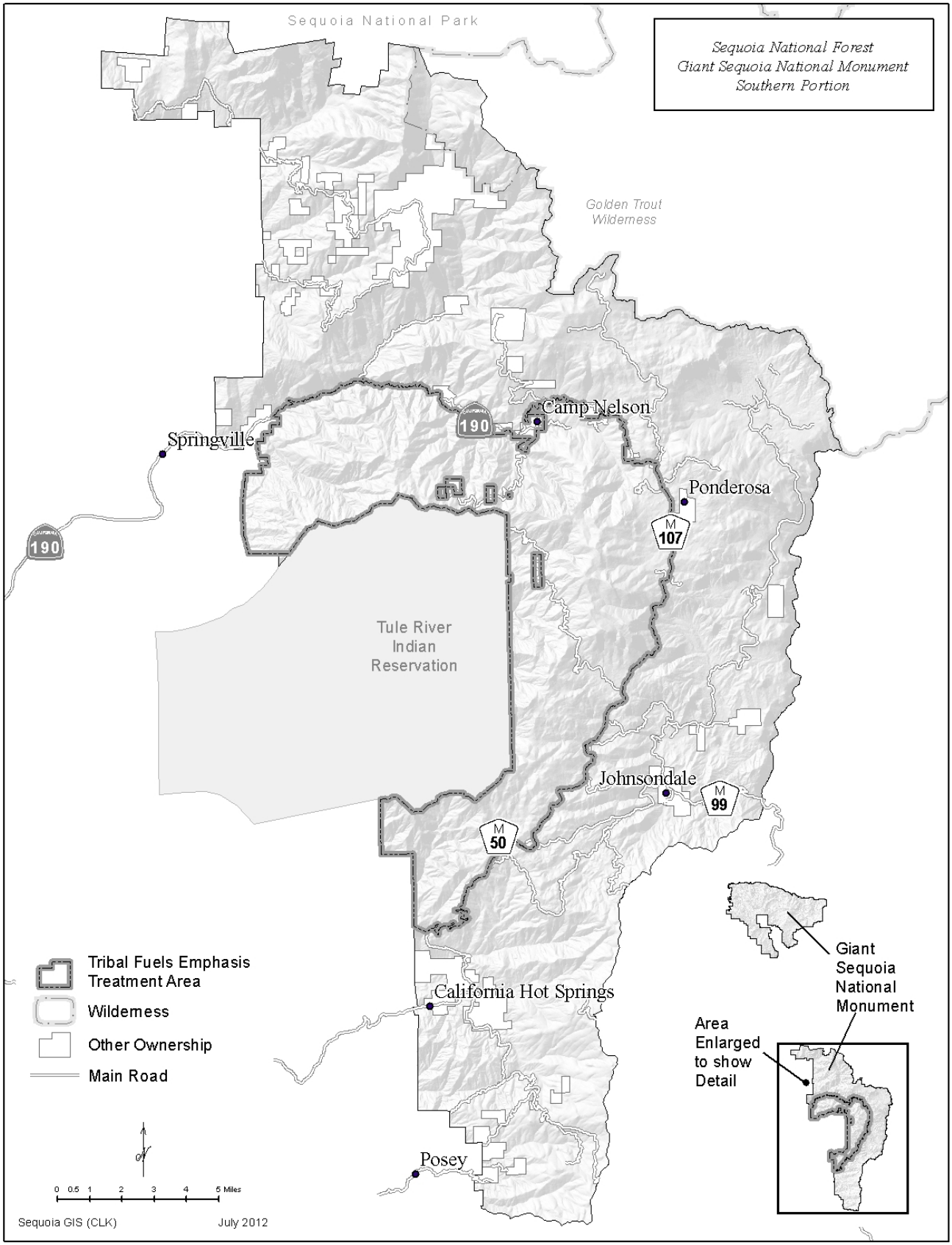


Table 7 Alternative B Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
General Monument[1]	Protection[2] Resiliency[3] Heterogeneity[4]	20 (conifers) 12 (hardwoods)
Old forest emphasis	Protection Resiliency Heterogeneity	20
Northern goshawk and California spotted owl PACs: inside defense zones	Protection Resiliency	6 (within 1-2 acres of nest tree) 20 (elsewhere)[5]
Northern goshawk and California spotted owl PACs: outside defense zones, inside threat zones or TFETA	Protection Resiliency	6 (within 1-2 acres of nest tree)[6]
Carnivore den sites: inside defense zones	Protection	20[7]
Carnivore den sites: outside defense zones	Protection	Avoid[8]
Wildland urban intermix (WUI): defense zone	Protection Public safety Resiliency	20
Giant sequoias outside WUI	Protection Resiliency	12
Giant sequoias inside WUI defense zone	Protection Resiliency Giant sequoia regeneration	12
Giant sequoias inside WUI threat zone	Protection Resiliency Giant sequoia regeneration	12
Tribal Fuels Emphasis Treatment Area (TFETA) (shown in the previous map)	Protection Public safety Resiliency	20

1. Outside of other allocations.
2. Protection of objects of interest (see this section in Alternative Theme above).
3. Promotion of resiliency (see this section in Alternative Theme above).
4. Promotion of heterogeneity (see this section in Alternative Theme above).
5. For northern goshawk and California spotted owl PACs within defense zones, mechanical treatments would be prohibited within 500 feet of nest trees. Prescribed burning would be allowed within the 500-foot buffer. Prior to burning, hand treatments could be conducted, including the felling of small trees, within the 1-2 acre area surrounding nest trees. The rest of the PAC could be mechanically treated, with a 20-inch diameter limit, to achieve fuels reduction goals.
6. In northern goshawk and California spotted owl PACs outside of defense zones, fuel treatments would be limited to prescribed fire. Prior to burning, hand thinning of trees less than 6 inches in diameter would be permitted within the 1-2 acre area surrounding nest trees. These restrictions would also apply where a goshawk or spotted owl PAC overlaps with WUI threat zone or the TFETA.
7. Inside defense zones, if necessary to achieve fuels objectives, mechanical treatments of ladder and surface fuels over 85 percent of the treatment area would be permitted, with a 20-inch diameter limit. Prescribed fire could be used if there is no other reasonable treatment method.
8. Fuel treatments within carnivore dens site buffers that are outside of defense zones would be avoided.

Soils

For Alternative B, in addition to using the regional soil standards from the 2001 SNFPA, standards and guidelines were developed specific to the Monument for soil productivity, hydrologic function, and buffering capacity.

Human Use

Alternative B would replace the management emphasis areas of general dispersed recreation, water-oriented recreation, developed recreation, and dispersed recreation with strategies, objectives, and standards and guidelines for the following recreation niche settings: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.

For Alternative B, areas currently categorized as semi-primitive motorized (SPM) in the Recreation Opportunity Spectrum (ROS) would be changed to roaded natural (RN) or semi-primitive non-motorized (SPNM), except in the Kings River Special Management Area.

This alternative incorporates the recommendations from the Sequoia Monument Recreation Council for future recreation opportunities (topics include tourism, day use, camping, roads, etc.) (see Chapter 3, Human Use, Recreation, Public Involvement). New recreational development could occur. Decommissioned roads could be converted to trails.

Cultural Resources

For Alternative B, a complete cultural resource program would be developed to not only comply with Section 106 of the NHPA (36 CFR 800), but also comply with other sections of the NHPA (especially Section 110) and other laws and regulations. An evaluation context would be developed consistent with protecting, caring for, and studying the objects of historic interest identified in the proclamation:

> Archaeological sites such as lithic scatters, foodprocessing sites, rock shelters, village sites, petroglyphs, and pictographs are found in the monument. These sites have the potential to shed light on the roles of prehistoric peoples, including the role they played in shaping the ecosystems on which they depended... Today our understanding of the history of the Hume Lake and onverse Basin areas of the monument is supported by a treasure trove of historical photographs and other documentation. These records provide a unique and unusually clear picture of more than half a century of logging that resulted in the virtual removal of most forest in some areas of the monument. Outstanding opportunities exist for studying forest resilience to large-scale logging and the consequences of different approaches to forest restoration (Clinton 2000, pp. 24096-24097).

A Monument Cultural Resource Management Plan would be developed that emphasizes site identification and evaluation, recognition through national register nominations and landmark recommendations, education and outreach programs, continued traditional use by Native American people, and partnerships to develop cultural education programs. For Alternative B, this plan would also emphasize:

- scientific research of past human cultures and environments
- using cultural resource data to understand the evolution of ecosystems
- preserving and adaptively using historic structures in place wherever possible
- preserving the integrity and character-defining features of historic districts

Transportation

For Alternative B, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time. Off-highway vehicles (OHVs) would be allowed on designated roads. Over-snow vehicles (OSVs) would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. This alternative emphasizes opportunities for creating loop trails and roads, with the potential for the construction of new roads for developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

Special Areas, including Special Interest Areas

- The Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17).
- The Windy Gulch Geological Area would be designated to protect the unique geological features identified as objects of interest in the Clinton proclamation. The area would be managed for public use and enjoyment, and would provide opportunities for scientific study of cave ecosystems (see the Special Areas section of this chapter).

Desired Conditions, Strategies, and Objectives

Desired conditions, strategies, and objectives by resource area can be found in that section later in this chapter. Strategies and objectives may vary by alternative.

Standards and Guidelines

A complete list of standards and guidelines by alternative can be found in Appendix A of this FEIS.

Alternative C

Alternative Theme

Alternative C is designed to manage the Monument similar to Sequoia and Kings Canyon National Parks (SEKI) in a manner that is consistent with Forest Service regulations and the direction of the Clinton proclamation. Some management policies or direction from SEKI would not be applicable to the Monument because of differences in law, regulation, and policy for the two federal agencies. This alternative includes strategies that are responsive to the issue of managing the Monument like SEKI. For this alternative, restoration activities focus on areas that have been affected by human use and occupation. This is expected to result in settings appropriate for a range of recreation opportunities similar to those available in the national parks.

Protection of Objects of Interest

Alternative C does not make use of many of the land allocations associated with the 2001 SNFPA, nor the standards and guidelines associated with them, such as those for wildlife and plant habitat. New standards and guidelines would be used throughout the Monument, rather than in specific land allocations. No new special areas are proposed, because the entire Monument would be considered one special area. Alternative C limits vegetation and fuels management to areas of human use and influence. To address fuels buildup, this alternative relies primarily on prescribed fire and managed wildfire, and limits the use of mechanical treatments.

Promotion of Resiliency

Alternative C allow naturals processes to prevail, focusing on the resumption of natural processes in areas altered by human use. It is expected to promote resilient vegetation communities through the use of tools that include, in order of priority:

1. Prescribed fire and managed wildfire (when available)
2. Limited mechanical treatment

Alternative C limits the tools used for ecological restoration and maintenance. For example, it focuses necessary treatments in the WUI defense zones, and would consider using prescribed fire and managed wildfire (when available) first. All projects would be designed using smaller diameter limits throughout the Monument (see the Management Direction for Ecological Restoration table in the Fire and Fuels section). As in SEKI, this would generally be 8 inches, with exceptions for public safety.

Promotion of Heterogeneity

Alternative C was designed to improve heterogeneity primarily through the use of prescribed burns and managed wildfire (when available). It focuses on the use of natural processes to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age, limiting treatments to areas of human use.

Recreation Opportunities

Alternative C replaces the management emphasis areas for recreation in the Forest Plan with the recreation niche settings. Alternative C meets the intent of the Clinton proclamation to "provide for and encourage continued public and recreational access and use consistent with the purposes of the monument (Clinton 2000, p. 24097)" by:

- Continuing to provide current recreation opportunities, except for roadside/end of the road dispersed camping
- Focusing on developed recreation sites, with new development located in recreation opportunity areas

The recreation demand analysis indicates a preference by overnight visitors to the Monument for camping in developed sites over primitive camping. More developed campgrounds may be proposed in this alternative than what currently exist, in order to better satisfy public demand and attract use. New campgrounds are expected to be at the higher end of the development scale (including amenities such as flush toilets and RV hookups). Lodges, cabins, or other overnight accommodations could also be developed. As new campgrounds or facilities are proposed, site-specific project analysis, including public comment, will be conducted. This type of development complies with the direction in the Clinton proclamation (Clinton 2000) to "encourage continued public and recreational

access and use consistent with the purposes of the monument," by not only responding to public demand, but also protecting the objects of interest through minimizing the effect of new recreation development on the surrounding ecosystem.

Management Direction

In order to manage the Monument similar to a national park, some land allocations identified in the Forest Plan and the 2001 SNFPA are not used in Alternative C. The SEKI use very little vegetation management outside of those areas with concentrated human use, managing the majority of the parks as a single ecosystem. Land allocations and management areas including grove influence zones, protected activity centers, den sites, old forest emphasis area, and riparian conservation areas or critical aquatic refuges are not be included in this alternative. Alternative C does retain grove administrative boundaries, as prescribed by the MSA (MSA, pp. 11-16).

Resource Areas

Vegetation, including Giant Sequoias

Alternative C relies on grove administrative boundaries alone for giant sequoia grove protection and management. No official buffers or influence zones are identified and used by SEKI managers, and mapping of the groves is based solely on the location of giant sequoias.

For Alternative C, ecological restoration of forested ecosystems is expected to be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, trees would be planted. Resiliency would be promoted by using prescribed fire and managed wildfire (when available) first, and mechanical treatment only as necessary.

Fire and Fuels

Alternative C uses a WUI defense zone that extends approximately 300 feet out from developed private land. Developed recreation sites and administrative sites would also have 300-foot buffers for fuels management. No WUI threat zone or TFETA is included in this alternative.

The following table shows the management direction for ecological restoration through fuels reduction and vegetation management by land allocation/species for Alternative C.

The priorities for the management tools used for ecological restoration[14] (fuels reduction and vegetation management) in Alternative C are:

1. Prescribed fire and managed wildfire (unplanned natural ignitions)
2. Mechanical treatments

Wildlife and Plant Habitat

Alternative C would not use any of the land allocations or management areas specific to wildlife and plant habitat from the 2001 SNFPA and the Forest Plan.

Alternative C includes new standards and guidelines for the great gray owl and the willow flycatcher from the 2004 SNFPA. Some of the standards and guidelines for wildlife and plant habitat (such as those for limited operating periods) would be used throughout the Monument, rather than being tied to a specific land allocation.

Range

For Alternative C, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction (see the Wildlife and Plant Habitat section). Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative C would make use of the strategies, objectives, and standards and guidelines for the riparian conservation objectives (RCOs) from the 2001 SNFPA. Streamside management zones (SMZs) would be used to protect riparian areas, rather than the critical aquatic refuges (CARs) and riparian conservation areas (RCAs).

14. The prioritization of management tools used for ecological restoration (fuels reduction and vegetation management) is intended to show differences in the likely application of each management tool between the alternatives. It does not direct the order in which these tools will be used in site-specific projects.

Table 8 Alternative C Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
General Monument[1]	Protection[2] Resiliency[3] Public safety	Generally 8 (except for public safety)
Wildland urban intermix (WUI): defense zone[4]	Protection Public safety Resiliency	8
Giant sequoias inside WUI defense zone	Protection Resiliency Giant sequoia regeneration	8
Giant sequoias outside WUI	Protection Resiliency Giant sequoia regeneration	8

1. Outside of other allocations.
2. Protection of objects of interest (see this section in Alternative Theme above).
3. Promotion of resiliency (see this section in Alternative Theme above).
4. Defense zone width is approximately 300 feet.

Geological Resources

Alternative C includes the development of a cave management plan for the entire Monument, with standards similar to the cave management guidelines in the SEKI's General Management Plan. These standards include restoring, protecting, and maintaining geological resources, including natural caves and karstic processes, which are of scientific, scenic, and recreational value.

Soils

For Alternative C, in addition to using the regional soil standards from the 2001 SNFPA, standards and guidelines were developed specific to the Monument for soil productivity, hydrologic function, and buffering capacity.

Human Use

Alternative C would replace the management emphasis areas of general dispersed recreation, water-oriented recreation, developed recreation, and dispersed recreation with strategies, objectives, and standards and guidelines for the following recreation niche settings: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.

For Alternative C, areas currently categorized as semi-primitive motorized (SPM) in the Recreation Opportunity Spectrum (ROS) would be changed to roaded natural (RN) or semi-primitive non-motorized (SPNM), except in the Kings River Special Management Area. New recreation development would be limited to identified Recreation Opportunity Areas.

In Alternative C, dispersed camping would no longer be allowed at the end of roads or along roadsides. Dispersed camping would be allowed only by permit in the Wildlands niche setting, in inventoried roadless areas, and portions of KRSMA. Target shooting would not be allowed. Other forms of dispersed recreation (e.g., hiking, birdwatching, fishing, picnicking) would be allowed.

Cultural Resources

For Alternative C, a complete cultural resource program would be developed to not only comply with Section 106 of the NHPA (36 CFR 800), but to also comply with other sections of the NHPA (especially Section 110) and other laws and regulations. An evaluation context would be developed consistent with protecting, caring for, and studying the objects of historic interest identified in the proclamation.

A Monument Cultural Resource Management Plan would be developed with the following different emphases to mirror SEKI management:

- The systematic identifying, protecting, and sharing of cultural resource information throughout the Monument, including an archaeological overview and assessment, archaeological identification and evaluation studies, a cultural affiliation study, an historic resource study, and a scope of collection statement similar to National Park Service documentation; and
- The investigation and documentation of cultural landscapes, and historic buildings and structures.

While cultural resource management is mainly based on the National Historic Preservation Act and other laws which cover all federal agencies, these laws allow a great deal of latitude in the direction and preservation of cultural resources in place or preservation through documentation. Alternative C addresses the differences in emphasis between current Forest Service and National Park Service (NPS) management of cultural resources. Forest Service direction is found in the Forest Service Manual (FSM 2360), and NPS policy is found in NPS-28.

Transportation

For Alternative C, the majority of the currently designated roads maintained for passenger vehicle use would remain open to the public. Most of the roads for high-clearance vehicles would be closed over time due to a reduction in dispersed recreation, and would only be open for administrative use. Roads not needed for public access or management activities could be decommissioned, resulting in a substantial reduction in roads over time. Decommissioned roads could be converted to pedestrian trails. OHVs would not be allowed on roads, and OSVs would only be allowed on snow-covered roads to access private property, or for administrative and emergency use. Non-motorized mechanized vehicles (mountain bikes) would be allowed only on designated roads, not trails. This alternative could include the construction of new roads for developed recreation facilities and loop driving opportunities.

Special Areas, including Special Interest Areas

Alternative C does not amend the Forest Plan to designate the area around and including the Freeman Creek Grove as a botanical area (MSA, pp. 17-18). Instead, this area would be managed as general Monument land, and the Freeman Creek Grove boundary would be remapped to follow the tree line instead of larger watershed boundaries (see the Special Areas section of this chapter).

Desired Conditions, Strategies, and Objectives

Desired conditions, strategies, and objectives by resource area can be found in that section later in this chapter. Strategies and objectives may vary by alternative.

Standards and Guidelines

A complete list of standards and guidelines by alternative can be found in Appendix A of this FEIS.

Alternative D

Alternative Theme

Alternative D focuses on managing through natural processes with little to no human manipulation. It relies on naturally-occurring fire to reduce fuels, to protect the objects of interest, and to promote giant sequoia regeneration. This alternative includes strategies that are responsive to the issues of tree removal, fuels management/community protection, and methods for sequoia regeneration. Dispersed and developed camping would still be available, although creation of new sites would be limited.

Protection of Objects of Interest

Alternative D includes most of the land allocations or management areas specific to wildlife and plant habitat from the 2001 SNFPA and Forest Plan, but not the old forest emphasis area and SSFCA allocations, nor the standards and guidelines associated with them that provide protection. No new special areas are proposed. Alternative D focuses on allowing natural processes to restore and maintain ecosystems. To address fuels buildup, this alternative relies primarily on managed wildfire and prescribed fire, allowing mechanical treatments only under limited circumstances in the WUI defense zone.

Promotion of Resiliency

Alternative D allows natural processes to prevail, focusing on the resumption of natural processes in areas altered by human use. It is expected to promote resilient vegetation communities through the use of tools that include, in order of priority:

1. Managed wildfire (when available)
2. Prescribed fire
3. Limited mechanical treatment

Alternative D limits the tools used for ecological restoration and maintenance. For example, it focuses necessary treatments in the WUI defense zones, and would consider using managed wildfire first, when it is available. All projects would be designed using diameter limits for giant sequoias and in the WUI defense zone (see the Management Direction for Ecological Restoration table in the Fire and Fuels section).

Promotion of Heterogeneity

Alternative D was designed to promote heterogeneity primarily through the use of managed wildfire (when available) and prescribed burns. It focuses on the use of natural processes to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age, limiting treatments to areas of human use.

Recreation Opportunities

Alternative D would replace management emphasis areas for recreation in the Forest Plan with the recreation niche settings. This alternative limits the development of new recreation sites to walk-in campgrounds and picnic areas near existing roads, and encourages developed recreation outside of the Monument.

Management Direction

Alternative D includes most of the land allocations identified in the Forest Plan and the 2001 SNFPA, but does not make use of those for old forest emphasis area, Southern Sierra Fisher Conservation Area (SSFCA), general forest, or the WUI threat zone. Instead, this alternative makes wildlife habitat a key management focus throughout the Monument.

Resource Areas

Vegetation, including Giant Sequoias

Alternative D relies on grove administrative boundaries alone for giant sequoia grove protection and management. For Alternative D, ecological restoration of forested ecosystems is expected to be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and relying on natural regeneration of giant sequoias and other species. Resiliency would be promoted by using managed wildfire first when available, then prescribed fire, and limited mechanical treatment only as necessary.

Fire and Fuels

Alternative D uses a WUI defense zone that extends approximately 200 feet out from developed private land. No WUI threat zone or TFETA is included in this alternative. The following table shows the management direction for ecological restoration through fuels reduction and vegetation management in WUI defense zones for Alternative D.

Table 9 Alternative D Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
Wildland urban intermix (WUI): defense zone[1]	Protection[2] Public safety	12
Giant sequoias inside WUI defense zones	Protection Resiliency[3] Giant sequoia regeneration	12

1. The defense zone is approximately 200 feet wide in Alternative D.
2. Protection of objects of interest (see this section in Alternative Theme above).
3. Promotion of resiliency (see this section in Alternative Theme above).

The priorities for the management tools used for ecological restoration[15] (fuels reduction and vegetation management) in Alternative D are:

1. Managed wildfire (unplanned natural ignitions)
2. Prescribed fire
3. Mechanical treatments (only under limited circumstances in WUI defense zone)

Wildlife and Plant Habitat

Alternative D includes most of the land allocations or management areas specific to wildlife and plant habitat from the 2001 SNFPA and Forest Plan, but not the old forest emphasis area and SSFCA allocations.

Alternative D includes new standards and guidelines for the great gray owl and the willow flycatcher from the 2004 SNFPA.

Range

For Alternative D, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction (see the Wildlife and Plant Habitat section). Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative D would replace the strategies, objectives, and standards and guidelines for the riparian conservation objectives (RCOs) from the 2001 SNFPA with management direction based on the 2004 SNFPA (USDA Forest Service 2004e).

15. The prioritization of management tools used for ecological restoration (fuels reduction and vegetation management) is intended to show differences in the likely application of each management tool between the alternatives. It does not direct the order in which these tools will be used in site-specific projects.

Geological Resources

Alternative D includes the protection and preservation of the geological objects of interest, while enhancing interpretation and education, and allowing appropriate recreational use of these sites. Individual cave management plans would be developed for significant caves in the Monument.

Soils

For Alternative D, in addition to using the regional soil standards from the 2001 SNFPA, standards and guidelines were developed specific to the Monument for soil productivity, hydrologic function, and buffering capacity.

Human Use

Alternative D would replace the management emphasis areas of general dispersed recreation, water-oriented recreation, developed recreation, and dispersed recreation with strategies, objectives, and standards and guidelines for the following recreation niche settings: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.

For Alternative D, areas currently categorized as semi-primitive motorized (SPM) in the Recreation Opportunity Spectrum (ROS) would be changed to roaded natural (RN) or semi-primitive non-motorized (SPNM), except in the Kings River Special Management Area.

In Alternative D, dispersed camping would be allowed, but new development would be limited to walk-in campgrounds and picnic areas. No new non-recreation special uses would be permitted,

except for scientific research, administrative needs, or nondiscretionary uses.

Cultural Resources

For Alternative D, a complete cultural resource program would be developed to not only comply with Section 106 of the NHPA (36 CFR 800), but also comply with other sections of the NHPA (especially Section 110) and other laws and regulations. An evaluation context would be developed consistent with protecting, caring for, and studying the objects of historic interest identified in the proclamation.

A Monument Cultural Resource Management Plan would be developed that emphasizes site identification and evaluation, recognition through national register nominations and landmark recommendations, education and outreach programs, continued traditional use by Native American people, and partnerships to develop cultural education programs. For Alternative D, this plan would also emphasize the protection and management of cultural resources during wildfires and fuels reduction management activities.

Transportation

For Alternative D, the majority of the currently designated roads maintained for passenger vehicle use would remain open to the public. Many of the roads for high-clearance vehicles and closed roads would be decommissioned over time due to a reduced need for access. Decommissioned roads could be converted to pedestrian trails. Roads would continue to be managed for dispersed recreation access. No new roads would be constructed. OHVs would not be allowed on roads, and OSVs would only be allowed on paved roads. Not all roads and trails are expected to be designated for bicycles, including mountain bikes. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails.

Special Areas, including Special Interest Areas

Alternative D would not amend the Forest Plan to designate the area around and including the Freeman Creek Grove as a botanical area (MSA, pp. 17-18). Instead, this area would be managed as general Monument land, and the Freeman Creek Grove boundary remapped to follow the tree line instead of larger watershed boundaries (see the Special Areas, including Special Interest Areas section of this chapter).

Desired Conditions, Strategies, and Objectives

Desired conditions, strategies, and objectives by resource area can be found in that section later in this chapter. Strategies and objectives may vary by alternative.

Standards and Guidelines

A complete list of standards and guidelines by alternative can be found in Appendix A of this FEIS.

Alternative E

Alternative Theme

Alternative E is designed to manage the Monument as guided by the Mediated Settlement Agreement (MSA). The MSA "remains in effect to the extent it has not been amended by other NEPA-compliant amendments" (*People of the State of California, ex rel. Lockyer v. United States Department of Agriculture, et al., No. C-05-00898 CRB*). Alternative Eincorporates all appropriate MSA provisions. It includes current management direction from the Forest Plan and the MSA that was modified to comply with the Bush and Clinton proclamations. This alternative includes strategies that are responsive to the issue of the obligation to analyze the MSA under NEPA, and is designed to meet that obligation to consider and analyze the actions, standards, and guidelines contained in the MSA.

Alternative E is not the only alternative that incorporates appropriate MSA guidance. Each of the other alternatives includes applicable MSA provisions as well, but Alternative E most closely mirrors the specific guidance found in the MSA.

Protection of Objects of Interest

Alternative E would not make use of many of the land allocations from the 2001 SNFPA, but would use those Forest Plan management areas and associated management emphases, and their related standards and guidelines, that comply with the Clinton proclamation. All provisions of the MSA that are appropriate for the Monument are incorporated. For this alternative, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17). In addition, a portion of the Moses Inventoried Roadless Area is recommended for inclusion in the Wilderness System (MSA 1990, p. 70). Alternative E includes the use of multiple tools (mechanical treatment, prescribed fire, and managed wildfire) that are designed to decrease fuel buildups, to reduce the risk of uncharacteristically large-scale wildfire, to restore fire to a more natural role, and to reduce the potential threat to the objects of interest.

Promotion of Resiliency

Alternative E is expected to promote resilient vegetation communities through the use of tools that include, in order of priority:

1. Mechanical treatment
2. Prescribed fire
3. Managed wildfire (when available)

In Alternative E, vegetation management for ecological restoration and maintenance considers the use of mechanical treatment first, to prepare for the use of fire, and focuses necessary treatments in the wildland urban intermix (WUI) defense and threat zones first. All projects would be designed using diameter limits in the WUI zones and for giant sequoias throughout the Monument (see the Management Direction for Ecological Restoration table in the Fire and Fuels section).

Promotion of Heterogeneity

Alternative E was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. Mechanical treatments, prescribed fire, and managed wildfire would be used to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

In Alternative E, although the recreation niche settings apply, they would not replace the management emphasis areas for recreation in the Forest Plan. This alternative would continue to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities. Alternative E includes vegetation management for old growth values in spotted owl habitat areas, riparian zones, wilderness, giant sequoia groves, and other areas for wildlife and visual values (MSA, p. 51).

Management Direction

Alternative E uses all of the management direction from the Forest Plan and MSA. This alternative includes only the WUI defense and threat zone land allocations from the 2001 SNFPA. Alternative E

includes grove administrative boundaries and grove influence zones (GIZs), riparian areas (including meadows), and spotted owl habitat areas as designated by the MSA, as well as the management areas and their associated emphases from the Forest Plan.

Resource Areas

Vegetation, including Giant Sequoias

Alternative E includes the grove influence zones (GIZs) prescribed in the 1990 MSA. The GIZs add a 300 or 500-foot buffer outside of the grove administrative boundaries to protect the groves (MSA 1990, pp. 8, 14, 16-21, 25-26).

The 1988 Forest Plan was designed to manage the conifer forest for timber production (no longer applicable per the Clinton proclamation and 2001 SNFPA) and recreation use. Vegetation management direction in the 1988 Forest Plan was CF7 which covers much of the Monument, and is described as Management Area "Conifer Forest (CF)" with the associated Management Emphasis of "7 (emphasizes production of sawtimber volume in conifer)." Prescription CF7 focuses on commercial forestry based on an allowable sale quantity. Since the Clinton proclamation prohibits this type of commercial forestry in the Monument, the timber portion of Prescription CF7 is no longer applicable. The Forest Plan and subsequent MSA contained no diameter limits for tree cutting or removal, except for giant sequoias.

For Alternative E, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, trees would be planted. Resiliency would be improved by using mechanical treatment, prescribed fire, and managed wildfire (when available).

Fire and Fuels

For Alternative E, the WUI defense and threat zones are the only land allocations included from the 2001 SNFPA. The MSA did not address the need to protect the objects of interest and the urban interface from wildfire. Alternative E uses a WUI defense zone that extends approximately ¼ mile out from developed private land, and a WUI threat zone that extends another 1¼ mile out from the defense zone. The actual boundaries of the WUI are determined locally, based on the distribution of structures and communities adjacent to or intermixed with National Forest System lands. Strategic landscape features such as roads, changes in fuel types, and topography are used in delineating the physical boundary of the WUI (2001 SNFPA ROD, p. A-10). No TFETA is included in this alternative.

The following table shows the management direction for ecological restoration through fuels reduction and vegetation management by land allocation/species for Alternative E.

Table 10 Alternative E Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
General Monument[1]	Protection[2] Resiliency[3] Heterogeneity[4]	No limit
Wildland urban intermix (WUI): defense zone	Protection Public safety Heterogeneity	30
WUI: threat zone	Protection Public safety Heterogeneity	20
Spotted owl habitat areas (SOHAs)	Protection Resiliency	Avoid

1. Outside of other allocations.
2. Protection of objects of interest (see this section in Alternative Theme above).
3. (See this section in Alternative Theme above).
4. (See this section in Alternative Theme above).

Land Allocation/Species	Focus	Diameter Limit (inches)
Giant sequoias outside WUI[5]	Protection Resiliency Giant sequoia regeneration	36[6]
Giant sequoias inside WUI defense zone	Fuels reduction/fire protection	36[7]
Giant sequoias inside WUI threat zone	Fuels reduction/fire protection	36[8]

5. This diameter limit is for giant sequoias only, not for other species in the same area.
6. MSA, pp. 20-21, 27.
7. MSA, pp. 20-21, 27.
8. MSA, pp. 20-21, 27.

The priorities for the management tools used for ecological restoration[16] (fuels reduction and vegetation management) in Alternative E are:

1. Mechanical treatments
2. Prescribed fire
3. Managed wildfire (unplanned natural ignitions)

Wildlife and Plant Habitat

The MSA recommends that the Forest Plan, via standards and guidelines:

> ...be amended to incorporate management practices, and critical and other habitats, essential to the conservation of these [rare and endemic species including California spotted owls, Sierra Nevada red fox, pine marten, fisher, goshawk, California condors, willow flycatchers, and fisheries including the Little Kern Golden Trout] species after the Region finalizes the appropriate guidelines and directions (MSA 1990, p. 56).

Alternative E does not make use of the land allocations from the 2001 SNFPA for the Southern Sierra Fisher Conservation Area (SSFCA); riparian conservation areas (RCAs); critical aquatic refuges (CARs); protected activity centers (PACs) for the California spotted owl, northern goshawk, and great gray owl; or den site buffers for American marten and Pacific fisher. This alternative uses the direction from the MSA to protect wildlife and plant habitat, including the Spotted Owl Habitat Areas (SOHAs).

Range

For Alternative E, grazing management is directed by the 1988 Forest Plan and the 1990 MSA. Standards and guidelines from these documents do not contain specific guidelines for grazing within occupied willow flycatcher or great gray owl habitat. Range management practices would not include the Aquatic Management Strategy or the allowable use factors from the 2001 SNFPA. The allowable use factors would be determined at the local level as described in the Forest Service Range Analysis Handbook, as amended (USDA 1997).

Hydrological Resources

Alternative E includes the Riparian and Wetland standards and guidelines from the 1988 Forest Plan and the MSA. Standards and guidelines from the 2001 and 2004 SNFPAs, such as those for the Aquatic Management Strategy, Riparian Conservation Areas, Critical Aquatic Refuges, and Riparian Conservation Objectives, are not included.

Geological Resources

Alternative E includes the protection, preservation, and restoration of geological features (caves, domes, hot spring, etc.), while allowing appropriate recreation use of these sites.

Soils

For Alternative E, in addition to using the regional soil standards from the 2001 SNFPA, standards and guidelines were developed specific to the Monument for soil productivity, hydrologic function, and buffering capacity.

16. The prioritization of management tools used for ecological restoration (fuels reduction and vegetation management) is intended to show differences in the likely application of each management tool between the alternatives. It does not direct the order in which these tools will be used in site-specific projects.

Human Use

Alternative E retains the Forest Plan management emphasis areas of general dispersed recreation, water-oriented recreation, developed recreation, and dispersed recreation. This alternative amends the management emphasis areas with strategies, objectives, and standards and guidelines for the following recreation niche settings: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.

For Alternative E, there no changes are made to ROS classes. Forest Plan management emphasis areas and the recreation niche settings guide where certain activities are emphasized and new recreation development could occur. Decommissioned roads could be converted to trails.

Cultural Resources

For Alternative E, a complete cultural resource program would be developed to not only comply with Section 106 of the NHPA (36 CFR 800), but also to comply with other sections of the NHPA (especially Section 110) and other laws and regulations. An evaluation context would be developed consistent with protecting, caring for, and studying the objects of historic interest identified in the proclamation.

A Monument Cultural Resource Management Plan would be developed that emphasizes site identification and evaluation, recognition through national register nominations and landmark recommendations, education and outreach programs, continued traditional use by Native American people, and partnerships to develop cultural education programs. Under Alternative E, this plan would also emphasize:

- The study and protection of cultural resources within Converse Basin, to include archaeological survey, site recording, and interpretation of the historic logging in the basin;
- Research on Native American land use and the use of fire and their interactions with the development of the giant sequoia groves; and
- Cultural resource survey, site evaluation for the National Register of Historic Places, and Historic American Buildings survey/Historic Engineering.
- Record survey and documentation within the proposed Moses Wilderness.

Transportation

For Alternative E, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time. Off-highway vehicles (OHVs) would be allowed on designated roads. Over-snow vehicles (OSVs) would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. This alternative emphasizes opportunities for creating loop trails and roads, with the potential for the construction of new roads for developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

Special Areas, including Special Interest Areas

- The Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17).
- A portion of the Moses Inventoried Roadless Area would be recommended for inclusion in the National Wilderness Preservation System, as the Moses Wilderness (see the Special Areas section of this chapter).

Desired Conditions, Strategies, and Objectives

Desired conditions, strategies, and objectives by resource area can be found in that section later in this chapter. Strategies and objectives may vary by alternative.

Standards and Guidelines

A complete list of standards and guidelines by alternative can be found in Appendix A of this FEIS.

Alternative F

Alternative Theme

Alternative F is designed to allow more flexibility in treatment methods to promote ecological restoration and maintenance, and forest health, and to achieve these desired conditions in less time. This alternative includes strategies that are responsive to the issues of recreation and public use, tree removal, fuels management/community protection, fires spreading to tribal lands, and methods for giant sequoia regeneration. It is similar to Alternative B, but proposes upper diameter limits for only giant sequoias, and near nest trees in northern goshawk and California spotted owl PACs. Alternative F includes restoration strategies that are expected to result in settings appropriate for a full range of recreation opportunities, such as dispersed camping, developed camping, trail related activities, and the use of off-highway vehicles on designated roads.

Protection of Objects of Interest

Alternative F would retain all of the land allocations and standards and guidelines from the 2001 SNFPA, except where noted in order to ensure the protection of the objects of interest. For this alternative, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17. The Windy Gulch Geological Area would be designated to protect the unique geological features identified as objects of interest in the Clinton proclamation. Alternative F includes the use of multiple tools (prescribed fire, mechanical treatment, and managed wildfire) that are designed to decrease fuel buildups, to reduce the risk of uncharacteristically large-scale wildfire, to restore fire to a more natural role, and to reduce the potential threat to the objects of interest.

Promotion of Resiliency

Alternative F is expected to promote resilient vegetation communities through the use of tools that include:

1. Prescribed fire
2. Mechanical treatment
3. Managed wildfire (when available)

The prioritization and combination of these tools would be determined by site-specific analysis of existing conditions, allowing more flexibility in the use of all available tools. For example, Alternative F focuses vegetation management activities in the WUI defense and threat zones first, but then looks outside the WUI zones for ecological restoration needs. All projects would be designed using diameter limits for giant sequoias throughout the Monument, as well as in close proximity to nest trees in northern goshawk and California spotted owl protected activity centers (PACs) (see the Management Direction for Ecological Restoration table in the Fire and Fuels section).

Promotion of Heterogeneity

Alternative F was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. Prescribed fire, mechanical treatment, and managed wildfire would be used to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

Alternative F would replace the management emphasis areas for recreation in the Forest Plan with the recreation niche settings. This alternative would continue to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities as visitor use increases.

Management Direction

Alternative F includes new strategies, objectives, and standards and guidelines from the 2004 Sierra Nevada Forest Plan Amendment Supplemental EIS and ROD (2004 SNFPA). This alternative proposes changes to Forest Plan standards and guidelines, by adding improved standards, modifying existing standards, and eliminating standards that are no longer needed.

Resource Areas

Vegetation, including Giant Sequoias

Alternative F would replace the grove influence zones (GIZs) prescribed in the 1990 MSA with grove zones of influence (ZOIs). The ZOIs define a zone, based on the best available science, within which key ecological processes, structures, and functions should be evaluated to ensure that the giant sequoia groves are preserved, protected, and restored. They include area outside the tree-line boundary of the groves as

determined by terrestrial considerations, surface water drainage (watershed s), and the nearest stable stream channel.

For Alternative F, vegetation management direction would not include the timber emphasis portion of any management emphasis areas from the Forest Plan. The 2001 SNFPA amended the Forest Plan to remove Management Emphasis 7 (sawtimber).

In Alternative F, vegetation management would focus on restoring and maintaining forest health and resiliency by reducing stand density, by increasing the diversity of species composition, and by promoting an heterogeneous stand structure. Ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, trees would be planted. Resiliency would be improved by using a combination of fire and mechanical treatments determined by site-specific analysis.

Fire and Fuels

Alternative F uses a Wildland Urban Intermix (WUI) defense zone that extends approximately ¼ mile from developed private land and a WUI threat zone that extends another 1¼ mile from the defense zone. The actual boundaries of the WUI are determined locally, based on the distribution of structures and communities adjacent to or intermixed with national forest lands. Strategic landscape features such as roads, changes in fuel types, and topography are used in delineating the physical boundary of the WUI (2001 SNFPA ROD, p. A-10).

Alternative F includes the Tribal Fuels Emphasis Treatment Area (TFETA). The TFETA was developed in response to discussions with the Tule River Indian Tribe and their concern over fires spreading to the Tule River Indian Reservation (see map in Alternative B). The Tule River Indian Tribe of California is a federally recognized tribe, and as such it is the policy of the USDA to consult and coordinate with them on a government-to-government basis in compliance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments) prior to making a decision. This land allocation was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

The following table shows the management direction for ecological restoration through fuels reduction and vegetation management by land allocation/species for Alternative F.

Table 11 Alternative F Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
General Monument[1]	Protection[2] Resiliency[3] Heterogeneity[4]	No diameter limit
Old forest emphasis	Protection Resiliency Heterogeneity	No diameter limit
Northern goshawk and California spotted owl PACs	Protection Resiliency	6 (within 1-2 acres of nest tree) No diameter limit elsewhere
Carnivore den sites: inside defense zones	Protection	No diameter limit
Carnivore den sites: outside defense zones	Protection	Avoid[5]

1. Outside of other allocations.
2. Protection of objects of interest (see this section in Alternative Theme above).
3. Promotion of resiliency (see this section in Alternative Theme above).
4. Promotion of heterogeneity (see this section in Alternative Theme above).

Land Allocation/Species	Focus	Diameter Limit (inches)
Wildland Urban Intermix (WUI): defense zone	Protection Public Safety Resiliency	No diameter limit
WUI: threat zone	Protection Public Safety Resiliency	No diameter limit
Giant Sequoias outside WUI[6]	Protection Resiliency Giant Sequoia Regeneration	12
Giant Sequoias inside WUI defense zone	Protection Resiliency Giant Sequoia Regeneration	12
Giant Sequoias inside WUI threat zone	Protection Resiliency Giant Sequoia Regeneration	12
Tribal Fuels Emphasis Treatment Area (TFETA)	Protection Public Safety Resiliency	No diameter limit

5. Fuel treatments within carnivore dens site buffers that are outside of defense zones would be avoided.
6. This diameter limit is for giant sequoias only, not for other species in the same area.

For Alternative F, there are no set priorities for the management tools used for ecological restoration (fuels reduction and vegetation management). The three tools—managed wildfire, mechanical treatments, and prescribed fire—would be used in combination as determined by site-specific analysis of existing conditions.

Wildlife and Plant Habitat

Alternative F would replace the 2001 SNFPA standards and guidelines for the great gray owl and the willow flycatcher with standards based on the 2004 SNFPA. The 2004 SNFPA includes management direction for these species that is adaptable to local site conditions, while carrying forward the protection measures set in place by the 2001 SNFPA.

Range

For Alternative F, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction (see the Wildlife and Plant Habitat section). Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative F would replace the strategies, objectives, and standards and guidelines for the riparian conservation objectives (RCOs) from the 2001 SNFPA with management direction based on the 2004 SNFPA (USDA Forest Service 2004e). The 2004 SNFPA reduces redundancy and describes more consistent direction for hydrological resources, while maintaining the intent of the Aquatic Management Strategy.

Geological Resources

Alternative F includes the protection and preservation of the geological objects of interest, while enhancing interpretation and education, and allowing appropriate recreational use of these sites. This alternative includes the designation of the Windy Gulch Geological Area (see the Special Areas section of this chapter). A cave management plan would be developed for significant caves in this geological area.

Soils

For Alternative F, in addition to using the regional soil standards from the 2001 SNFPA, standards and

guidelines were developed specific to the Monument for soil productivity, hydrologic function, and buffering capacity.

Human Use

Alternative F would replace the management emphasis areas of general dispersed recreation, water-oriented recreation, developed recreation, and dispersed recreation with strategies, objectives, and standards and guidelines for the following recreation niche settings: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.

For Alternative F, areas currently categorized as semi-primitive motorized (SPM) in the Recreation Opportunity Spectrum (ROS) would be changed to roaded natural (RN) or semi-primitive non-motorized (SPNM), except in the Kings River Special Management Area.

This alternative incorporates the recommendations from the Sequoia Monument Recreation Council for future recreation opportunities (topics include tourism, day use, camping, roads, etc.) (see Chapter 3, Human Use, Recreation, Public Involvement). New recreation development could occur. Decommissioned roads could be converted to trails.

Cultural Resources

For Alternative F, a complete cultural resource program would be developed to not only comply with Section 106 of the NHPA (36 CFR 800), but also comply with other sections of the NHPA (especially Section 110) and other laws and regulations. An evaluation context would be developed consistent with protecting, caring for, and studying the objects of historic interest identified in the proclamation.

A Monument Cultural Resource Management Plan would be developed that emphasizes site identification and evaluation, recognition through national register nominations and landmark recommendations, education and outreach programs, continued traditional use by Native American people, and partnerships to develop cultural education programs. Under Alternative F, this plan would also emphasize:

- Scientific research of past human cultures and environments
- Using cultural resource data to understand the evolution of ecosystems
- Preserving and adaptively using historic structures in place wherever possible
- Preserving the integrity and character-defining features of historic districts

Transportation

For Alternative F, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time. Off-highway vehicles (OHVs) would be allowed on designated roads. Over-snow vehicles (OSVs) would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. This alternative emphasizes opportunities for creating loop trails and roads, with the potential for the construction of new roads for developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

Special Areas, including Special Interest Areas

- The Freeman Creek Grove would be designated as a botanical area, as prescribed by the MSA (MSA, p. 17).
- The Windy Gulch Geological Area would be designated to protect the unique geological features identified as objects of interest in the Clinton proclamation. The area would be managed for public use and enjoyment, and would provide opportunities for scientific study of cave ecosystems (see the Special Areas section of this chapter).

Desired Conditions, Strategies, and Objectives

Desired conditions, strategies, and objectives by resource area can be found in that section later in this chapter. Strategies and objectives may vary by alternative.

Standards and Guidelines

A complete list of standards and guidelines by alternative can be found in Appendix A of this FEIS.

Desired Conditions, Strategies, and Objectives

This section is organized by the following resource areas:

- Scientific Study and Adaptive Management
- Vegetation, including Giant Sequoias; Fire and Fuels; and Wildlife and Plant Habitat (including Management Indicator Species; Threatened, Endangered, and Sensitive Species; Invasive Nonnative Species; Rare and Endemic Species; and Botanical Resources)
- Air Quality
- Range
- Hydrological Resources
- Groundwater
- Geological Resources
- Paleontological Resources
- Soils
- Human Use (including Recreation, Scenery, and Socioeconomics)
- Cultural Resources
- Transportation (including the Transportation System and Trails and Motorized Recreation)
- Special Areas, including Special Interest Areas

Desired conditions describe the desired future state of resources in the Monument. Desired conditions are not commitments or final decisions approving projects and activities, and may be achievable only over a long period of time. The desired conditions do not vary by alternative, so they apply to all of the action alternatives (Alternatives B, C, D, E, and F).

Strategies describe the general approach that the responsible official will use to achieve the desired conditions. Strategies establish priorities in management effort and a sense of focus for objectives. Strategies may vary by alternative, depending on the intent of the alternative and what management direction is associated with each alternative.

Objectives exist for some, but not all, resource areas. Objectives are concise projections of measurable, time-specific outcomes that are consistent with the strategies. They provide a way to measure progress toward achieving or maintaining desired conditions. Objectives may vary by alternative. The work toward achieving the objectives in this FEIS will begin upon plan implementation. When a time frame has been provided for meeting an objective, the intent is to meet the objective within that time frame, or as soon as reasonably possible thereafter, and as funding allows.

Scientific Study and Adaptive Management

Desired Conditions

Resource management decisions are based on sound science. Research projects focus on science relevant to the proper care and management of the objects to be protected. This includes continuous, iterative collaboration between scientists and managers in the implementation of research projects.

Table 12 Strategies for Scientific Study and Adaptive Management, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Propose scientific study and management activities that respond to the advice provided in the science advisories, where applicable and practicable. Use the joint strategic framework, "A Strategic Framework for Science in Support of Management in the Southern Sierra Nevada Ecoregion," developed with the National Park Service, to incorporate current and new science.	X	X	X	X	X
2. Encourage research to assist in defining agents of change, such as climate, invasive species, ecological succession, and air pollution.	X	X	X	X	X
3. Foster partnerships dealing with science.	X	X	X	X	X
4. Conduct research regarding objects of interest, including paleontological, cultural, and geological resources, for which there is little current science available.	X	X	X	X	X

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
5. Conduct social science and recreation research to better understand connection to place (including objects of interest), levels of acceptable change, and future use trends.	X	X	X	X	X
6. Conduct research to determine whether species shifts are occurring and whether these are associated with climate change factors, such as shifts in habitat characteristics.	X	X	X	X	X
7. Study the archaeological sites recording Native American occupation and adaptations to this complex landscape, and the roles prehistoric peoples played in shaping the ecosystems on which they depended (Clinton 2000, p. 24095).	X	X	X	X	X
8. Study the archaeological remains of historic logging and giant sequoia regeneration since logging, and study forest resilience to large-scale logging and the consequences of different approaches to forest restoration (Clinton 2000, p. 24097).	X	X	X	X	X
9. Conduct research "to understand the consequences of different approaches to forest restoration..." and "the consequences of different approaches to mitigating these conditions [unprecedented buildup of surface fuels, increased hazard of wildfires] and restoring natural forest resilience" (Clinton 2000, p. 24095-24096).	X	X	X	X	X

Table 13 Objectives for Scientific Study and Adaptive Management, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. During the life of the Monument Plan,[1] encourage and coordinate at least two scientific studies in the giant sequoia groves to research resilience to agents of change such as fire, drought, insects, disease, and climate change. Design experiments to investigate the responses, including regeneration, of giant sequoias to changes in temperature and moisture, and the complex interactions of these two factors. Publish results within 10 years of study initiation.	X	X	X	X	X
2. During the life of the Monument Plan, continue and expand research on the effects of management activities on Pacific fisher and its habitat to better understand how these activities influence individuals, important habitat components, prey resources, and competition with other predators. Evaluate the research findings as available and refine management direction.	X	X	X	X	X
3. Within 5 years, encourage and coordinate scientific studies in giant sequoia regeneration and in the growth of older giant sequoias subjected to disturbance.	X	X	X	X	X
4. During the life of the Monument Plan, use landscape analysis information to identify opportunities for site-specific ecological restoration projects.	X	X	X	X	X

1. The work toward achieving the objectives in this final EIS will begin upon plan implementation. When a time frame has been provided for meeting an objective, the intent is to meet the objective within that time frame, or as soon as reasonably possible thereafter.

Vegetation, including Giant Sequoias; Fire and Fuels; and Wildlife and Plant Habitat

Vegetation management, fuels management, and wildlife habitat management are intricately linked, relying on the structure, function, and composition of vegetation. Because of this, the desired conditions, strategies, and objectives for these three resource areas are covered together in this section.

Vegetation Desired Conditions

Forested stands in the Mediterranean climate of the Monument are subject to frequent weather cycles. Years of cooler, wetter weather may be followed by

years of hotter, drier weather. The desired condition of a forested stand subject to these extremes is diversity in species composition and heterogeneity in structure (size, age class, and spatial distribution) and spatial distribution that are expected to be more resilient to climate changes over time.

Where applicable, the seral stages (stages of succession in the plant community), which indicate the ecological age of ecosystems, are categorized for forested vegetation types using the diameter ranges which define each size class of the California Wildlife Habitat Relationships (CWHR), as displayed in the following table:

Table 14 Seral Stages

Seral Stage	CWHR Size	Size Class	Tree Diameter (at breast height)
Early	1	Seedling	Less than 1 inch
	2	Sapling	1 to 6 inches
Mid	3	Pole	6 to 11 inches
	4	Medium	11 to 24 inches
Late	5	Large	Greater than 24 inches
	6	Large/medium	No diameter(1)

1. Over 60 percent canopy.

The desired condition statements are written as though the desired outcome has already been achieved. They describe what the vegetation types found in the Monument are expected to look like once the desired condition has been reached. They are not meant to describe any particular stand or place on the ground, but rather provide an overview. Vegetation desired conditions are presented for the following vegetation types:

- Giant sequoias
- Mixed conifer
- Blue oak–interior live oak (foothill woodlands)
- Chaparral–live oak (interior and canyon live oaks)
- Montane hardwood–conifer
- Red fir

Giant Sequoias

Giant sequoias thrive in the mixed conifer forest and vary in density and arrangement, along with associated forest species. Being especially long-lived, giant sequoias dominate their surroundings. Smaller and younger giant sequoias are present. Early seral habitat exists and contains plentiful giant sequoia regeneration. The current and desired conditions for giant sequoia groves are shown in the following table.

Table 15 Current and Desired Species Composition in Giant Sequoia Groves

	Current Condition	Desired Condition
Percent basal area of giant sequoias	25	65
Percent basal area of mixed conifers(1)	75	35
Percent of giant sequoias	4	10
Percent of mixed conifers	95	90

1. This includes white fir, which is currently 35 percent, but 15 percent is desired.

Mixed Conifer Forest

The mixed conifer forest varies by both species composition and structure—as influenced by elevation, site productivity, and related environmental factors, including disturbance—and is in a condition that is resilient to changes in climate and other

ecological conditions. The composition is patchy, consisting of a variable mixture of conifer and hardwood trees, as well as a diverse mixture of shrubs, herbaceous vegetation, and grasses. Spatial arrangements vary from pure, or nearly pure, groupings to complex combinations, often within relatively limited areas. Low- to mid-density forests with frequent canopy openings, varying in size, dominate much of the landscape, especially on south-facing slopes, ridge tops, and mid- to upper-slope positions. Higher density forests are often found on portions of north- and east-facing slopes and canyon bottoms.

More frequent canopy openings with early seral structure and composition (10 percent of the vegetation type) exist within the giant sequoia groves. Some mid-seral structure has converted to a later seral stage as tree sizes increase. Approximately 70 percent of the mixed conifer within groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover. See the following table for the acres of mixed conifer types within sequoia groves.

Table 16 Acres of Mixed Conifer Types by Seral Stage Within Groves(1)

Seral stage	Early	Mid	Late	Totals
CWHR sizes	1 and 2	3 and 4	5 and 6	
Current acres	220	11,980	10,690	22,890
Current percent of area	1	52	47	100
Desired percent of area	10	20	70	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Outside of giant sequoia groves, 10 percent of this vegetation type is early seral structure and composition (see following table). Approximately 50 percent of the mixed conifer is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Table 17 Acres of Mixed Conifer Types by Seral Stage Outside Groves(1)

Seral Stage	Early	Mid	Late	Total
CWHR sizes	1 and 2	3 and 4	5 and 6	
Acres	1,080	87,720	28,940	117,740
Current percent of area	1	74	25	100
Desired percent of area	10	40	50	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Blue Oak–Interior Live Oak (Foothill Woodlands)

Blue oak conditions are maintained at their current condition: a fire regime of low intensity fires, with flame lengths less than 3 feet; naturally-occurring vegetation types; and a highly variable and complex landscape pattern. Blue oak dominates, with grass and occasional shrubs as the understory. There are occasional or periodic flushes of regeneration to replace mortality in older trees.

Chaparral–Live Oak (Interior and Canyon Live Oaks)

Interior and canyon live oak vegetation is a mosaic of varying size and age classes. Large expanses of dense or older chaparral are broken up by recent disturbances of 10 acres or more, to help slow the spread of fire and regenerate chaparral species. Fire susceptibility and severity are low, and fire hazards to adjacent human communities and surrounding forest types are reduced.

Montane Hardwood–Conifer

The montane hardwood/mixed conifer forests vary by both species composition and structure--as influenced by elevation, site productivity, and related environmental factors, including disturbance--and are in balance with climate and other ecological conditions. The composition is patchy, with an abundance of large black oaks. More frequent openings with early seral structure and composition (10 percent of the vegetation type) exist within the groves. Most mid-seral structure has converted to a later seral stage as tree sizes increase.

Approximately 70 percent of the montane hardwood-conifers within giant sequoia groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover. See the following table for the acres of montane hardwood types within groves.

Table 18 Acres of Montane Hardwood Types by Seral Stage Within Groves(1)

Seral Stage	Early	Mid	Late	Total
CWHR sizes	1 and 2	3 and 4	5 and 6	
Acres	70	2,340	140	2,550
Current percent of area	3	91	6	100
Desired percent of area	10	20	70	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Outside of giant sequoia groves, 20 percent of this vegetation type is early seral structure and composition (see the following table). Over one-half of the mid-seral structure has converted to later seral as tree sizes increase. Approximately 40 percent of the mixed conifer is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Table 19 Acres of Montane Hardwood Types by Seral Stage Outside Groves(1)

Seral Stage	Early	Mid	Late	Total
CWHR sizes	1 and 2	3 and 4	5 and 6	
Acres	1,620	74,260	4,160	80,030
Current percent of area	2	93	5	100
Desired percent of area	20	40	40	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Red Fir

Red fir consists of a mosaic of varying size and age classes, with structural clumping greater than 10 acres, as necessary for species dependent on this vegetation type.

More frequent openings with early seral structure and composition (10 percent of the vegetation type) exist within the giant sequoia groves. Some mid-seral structure has converted to later seral as tree sizes increase. Approximately 70 percent of the red fir within groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover. See the following table for acres of red fir types within sequoia groves.

Table 20 Acres of Red Fir Types by Seral Stage Within Groves[1]

Seral Stage	Early	Mid	Late	Total
CWHR sizes	1 and 2	3 and 4	5 and 6	
Acres	0	610	400	1,010
Current percent of area	0	60	40	100
Desired percent of area	10	20	70	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Outside of giant sequoia groves, 10 percent of this vegetation type is early seral structure and composition. Most mid-seral structure has converted to a later seral stage as tree sizes increase. Approximately 70 percent of the mixed conifer outside groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover. See the following table for acres of red fir types outside sequoia groves.

Table 21 Acres of Red Fir Types by Seral Stage Outside Groves[1]

Seral Stage	Early	Mid	Late	Total
CWHR sizes	1 and 2	3 and 4	5 and 6	
Acres	130	30,870	7,980	38,970
Current percent of area	0	79	21	100
Desired percent of area	10	20	70	100

1. Based on local knowledge, LANDFIRE simplified models available at www.landfire.gov, USDA Forest Service Vegetation Type Mapping (VTM) available at vtm.berkeley.edu, and Teakettle Experimental Forest presettlement size class distributions (North et al. 2007).

Vegetation Strategies

Table 22 Strategies Specific to Giant Sequoias, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. As part of the fuel load reduction plan for each giant sequoia grove,[1] emphasize the protection of:					
• Large giant sequoia trees	X	X	X	X	X
• Large trees of other species, including pines, red firs, incense cedars, and black oaks.	X	X		X	X
(MSA, pp.9-11, b. Grove Management)					
2. Protect naturally-occurring isolated giant sequoias located outside of grove administrative boundaries and near areas of human use from vegetation management activities, giving special consideration to the root systems. When practical, preserve them within wildlife clumps or within areas reserved to meet seral stage diversity requirements.	X	X	X	X	X
3. Provide additional protection to the named giant sequoias—Boole, President Bush, and Chicago Stump—from fuels reduction activities, wildfires, and from human disturbance that can damage tree health, such as peeling bark and tram-pling on roots. Protect these specific trees by pulling fuels away from the base of the trees or removing ladder fuels that could promote a crown fire in them.	X	X	X	X	X

1. Using the grove administrative boundary.

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
4. Give the designation of "grove" to any detached naturally-occurring group (10 or more giant sequoia trees, with at least 4 trees with a dbh of 3 feet or larger) located outside an existing grove's administrative boundary. If previously unknown giant sequoia trees of any size and number are discovered outside a grove's administrative boundary, modify the boundary according to the standards and guidelines (1990 MSA, pp. 21-22, xii)-xiii)).	X	X	X	X	X
Give this new grove a 300-foot restricted mechanical entry zone within the grove influence zone (GIZ) (1990 MSA, p. 21, xii)).				X	
Develop a zone of influence (ZOI) within which key ecological processes, structures, and functions should be evaluated to ensure that the giant sequoia groves are preserved, protected, and restored (North et al. 2000).	X				X
5. With the exception of areas recommended for preservation, consider Converse Basin Grove to be available for vegetation management (tree cutting and/or removal), where clearly needed for ecological restoration and maintenance or public safety, and to promote regeneration of giant sequoias (MSA, pp. 26-27).				X	

Table 23 Strategies for Climate Change/Carbon Sequestration, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
6. Design forest management techniques to forestall impacts to high value resources, such as retention of named giant sequoia trees.	X	X	X	X	X
7. Improve the potential for forest ecosystems to return to desired conditions following natural disturbances, such as through the use of prescribed fire, managed wildfire, or mechanical treatments to reduce ladder fuels or tree densities.	X	X	X	X	X
8. Restore essential ecological processes and patterns (for example, structural heterogeneity) to reduce impacts of current stressors.	X	X	X	X	X
9. Provide mitigation measures for minimizing short-term greenhouse gas emissions and promoting long-term sequestration of carbon resulting from site-specific project activities.	X	X	X	X	X

Table 24 Strategies for Ecological Restoration, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
10. Accomplish ecological restoration, in part, through the reduction of fuels by decreasing down woody material, ladder fuels, and brush.	X	X	X	X	X
11. Promote heterogeneity in plantations and young stands by encouraging more diversity in species composition and age. Reduce stand density in young stands and encourage shade-intolerant species such as giant sequoia, pine, and oak.	X	X	X	X	X
12. Improve stand resilience and health by varying spacing of trees both inside and outside of giant sequoia groves.	X	X	X	X	X
13. Encourage natural regeneration of tree species, including giant sequoia. In areas where natural regeneration is not likely, use planting as determined in site-specific project analysis.	X	X		X	X

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
14. To regenerate tree species, including giant sequoia, rely only on natural regeneration.			X		
15. Promote resiliency in Monument ecosystems by using the following tools, in order of priority:					
• Prescribed fire, mechanical treatment, managed wildfire (when available)	X				
• Prescribed fire and managed wildfire (when available), mechanical treatment		X			
• Managed wildfire (when available), prescribed fire, mechanical treatment			X		
• Mechanical treatment, prescribed fire, managed wildfire (when available)				X	
• Combination of tools determined by site-specific analysis					X

Table 25 Strategies for Pest Management, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
16. Continue using integrated pest management, allowing carefully controlled, limited use of pesticides to rapidly control pests and encourage a natural environment.	X	X		X	X
17. Continue to use integrated pest management in limited circumstances, without the use of pesticides.			X		

Vegetation Objectives (by Type)

Vegetation and fuels management focus on the first two decades of time for ecological restoration, tree and stand resiliency, and the reduction of surface and ladder fuels.

Table 26 Objectives for Giant Sequoias, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Within 20 years, complete a grove-specific fuel load reduction plan for each giant sequoia grove in the Monument (MSA, pp.9-11, b. Grove Management).	X	X	X	X	X
2. Within 20 years, accomplish ecological restoration projects in the WUI defense zone in the giant sequoia groves.	X	X	X	X	X
3. Within 20 years, accomplish ecological restoration projects in 25 percent of the giant sequoia groves outside of the WUI defense zone.	X	X		X	X
4. Within 20 years, accomplish ecological restoration projects in 15 percent of the giant sequoia groves outside of the WUI defense zone.			X		
5. For Converse Basin Grove, within 5 years: (a) allocate approximately 600 acres for preservation management with a buffer; and (b) allocate 10 percent of the remaining 2,400 acres (approximately 240 acres) in the grove for preservation and regeneration of giant sequoias to replace trees cut at the turn of the century. This 10 percent should include areas where there has been significant regrowth of giant sequoias (that is, areas where 70- to 100-year-old giant sequoias are abundant). No designated preservation units should be less than 40 acres (USDA Forest Service 2007a, pp. 26-27).				X	

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
6. Manage all major vegetation types in the first two decades to accomplish at least 50 percent of the acres desired for ecological restoration. This would involve changes to accomplish an early seral stage, fuels reduction, and increased growing space inside and outside of groves.		X	X		

Table 27 Objectives for Mixed Conifer, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
7. Manage vegetation to: • Change approximately 2 percent of the mixed conifer types to an early seral phase in giant sequoia groves per decade. • Change approximately 1 percent of the mixed conifer types to an early seral phase outside of groves per decade. • Change approximately 10 percent of the mixed conifer types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 6 percent of the mixed conifer types to reduce fuels and increase tree growing space outside of groves per decade.	X			X	X

Table 28 Objective for Blue Oak–Interior Live Oak, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
8. For the life of the plan, keep the total acreage of the blue oak vegetation type stable.	X	X	X	X	X

Table 29 Objectives for Chaparral–Live Oak, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
9. Manage vegetation to change approximately 6 percent of the chaparral vegetation types to an early seral phase outside of groves per decade.	X			X	X

Table 30 Objectives for Montane Hardwood–Conifer, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
10. Manage vegetation to: • Change approximately 24 percent of the montane hardwood-conifer vegetation types to an early seral phase in giant sequoia groves per decade. • Change approximately 2 percent of the montane hardwood-conifer types to an early seral phase outside of groves per decade. • Change approximately 12 percent of the montane hardwood-conifer types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 9 percent of the montane hardwood-conifer types to reduce fuels and increase tree growing space outside of groves per decade.	X			X	X

Table 31 Objectives for Red Fir, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
11. Manage vegetation to: • Change approximately 3 percent of the red fir vegetation types to an early seral phase in giant sequoia groves per decade. • Change approximately 1 percent of the red fir types to an early seral phase outside of groves per decade. • Change approximately 1 percent of the red fir types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 1 percent of the red fir types to reduce fuels and increase tree growing space outside of groves per decade.	X			X	X

Fire and Fuels Desired Conditions

Fire occurs in its characteristic pattern and resumes its ecological role. Frequent fire maintains lower, manageable levels of flammable materials in most areas, especially in the surface and understory layers. There is a vegetation mosaic of age classes, tree sizes, and species composition, and a low risk for uncharacteristic large fires. The objects of interest are protected; sustainable environmental, social, and economic benefits (such as those associated with tourism) are maintained; and the carbon sequestered in large trees is stabilized.

Fire susceptibility and severity, and fire hazards to adjacent human communities and surrounding forest types, are low. The need to maintain fuel conditions that support fires characteristic of complex ecosystems is emphasized and allows for a natural range of fire effects in the Monument.

Fire and Fuels Strategies

Table 32 Strategies for Fire and Fuels, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Focus fire prevention programs on recreation use and residential areas.	X	X	X	X	X
2. When the use of fire is not appropriate (poor air quality days) or desirable (an abundance of ladder fuels that pose a threat to public safety or adjacent communities), mechanical treatments[1] can be used to accomplish fuel management objectives.[2]	X	X	X	X	X
3. When the use of fire could threaten the named giant sequoias inside WUI zones, use mechanical treatments and/or hand thinning to protect the individual trees.			X		
4. Promote a range of natural fire effects by allowing low, moderate, and high intensity fires to burn in the Monument.	X	X	X	X	X
5. For fires started by natural ignitions (lightning strikes), determine whether to allow them to burn on a case-by-case basis.	X	X	X	X	X
6. Conduct prescribed burning at various times of the year, and with different prescriptions (firing patterns), to maximize biodiversity and to avoid undesirable changes from repeated burning at the same time of year.	X	X	X	X	X

1. Mechanical treatment is the use of self-propelled equipment.
2. In Alternative D, mechanical treatments are restricted to the WUI defense zone.

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
7. Avoid aerial application of retardant or foam within 300 feet of waterways. This does not require the helicopter or air tanker pilot in command to fly in such a way as to endanger his or her aircraft, other aircraft or structures, or compromise ground personnel safety.	X	X	X	X	X

Table 33 Strategies for Ecological Restoration, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
8. Restore fuel conditions to allow fire to burn in its characteristic pattern and allow fire to resume its ecological role.	X	X	X	X	X
9. Manage fire and fuels to produce a vegetation mosaic of age classes, tree sizes, and species composition to protect the objects of interest and help maintain environmental, social, and economic benefits, such as those associated with tourism.	X	X	X	X	X
10. Manage high-intensity fires to create openings, and tolerate relatively high mortality, in fairly extensive areas of the Monument outside of the WUI, to reduce fuels or to improve the diversity of vegetation and habitat characteristics in the Monument.		X	X		
11. Manage some high-intensity fires on a limited basis and tolerate relatively high mortality to reduce fuels or to improve the diversity of vegetation and habitat characteristics in the Monument.	X			X	X
12. Prioritize treatments for fuels reduction and ecological restoration by land allocations/management areas as follows:(1)					
1. WUI defense zones	X	X	X	X	
2. TFETA areas of high and moderate fire susceptibility within 1/4-mile of the reservation boundary (see following map)	X				
3. WUI threat zone	X			X	
4. Giant sequoia groves (not previously treated in 1 through 3)	X	X	X	X	
5. TFETA areas of high fire susceptibility (not previously treated in 2)	X				
6. Old forest emphasis areas (not previously treated in 1 through 5)	X				
13. Prioritize treatments for fuels reduction and ecological restoration by land allocations/management areas as follows:					
1. WUI defense zones					
2. TFETA areas of high and moderate fire susceptibility within 1/4-mile of the reservation boundary (see following map)					
3. Giant sequoia groves (not previously treated in 1 and 2)					X
4. TFETA areas of high fire susceptibility (not previously treated in 2)					
5. WUI threat zones					
6. Old forest emphasis areas (not previously treated in 1 through 5)					

1. This list applies to the land allocations/management areas present in each alternative. For example, the TFETA is only proposed in Alternatives B and F, and the WUI threat zone is not included in Alternatives C and D.

Map 3 Tribal Fuels Emphasis Treatment Area

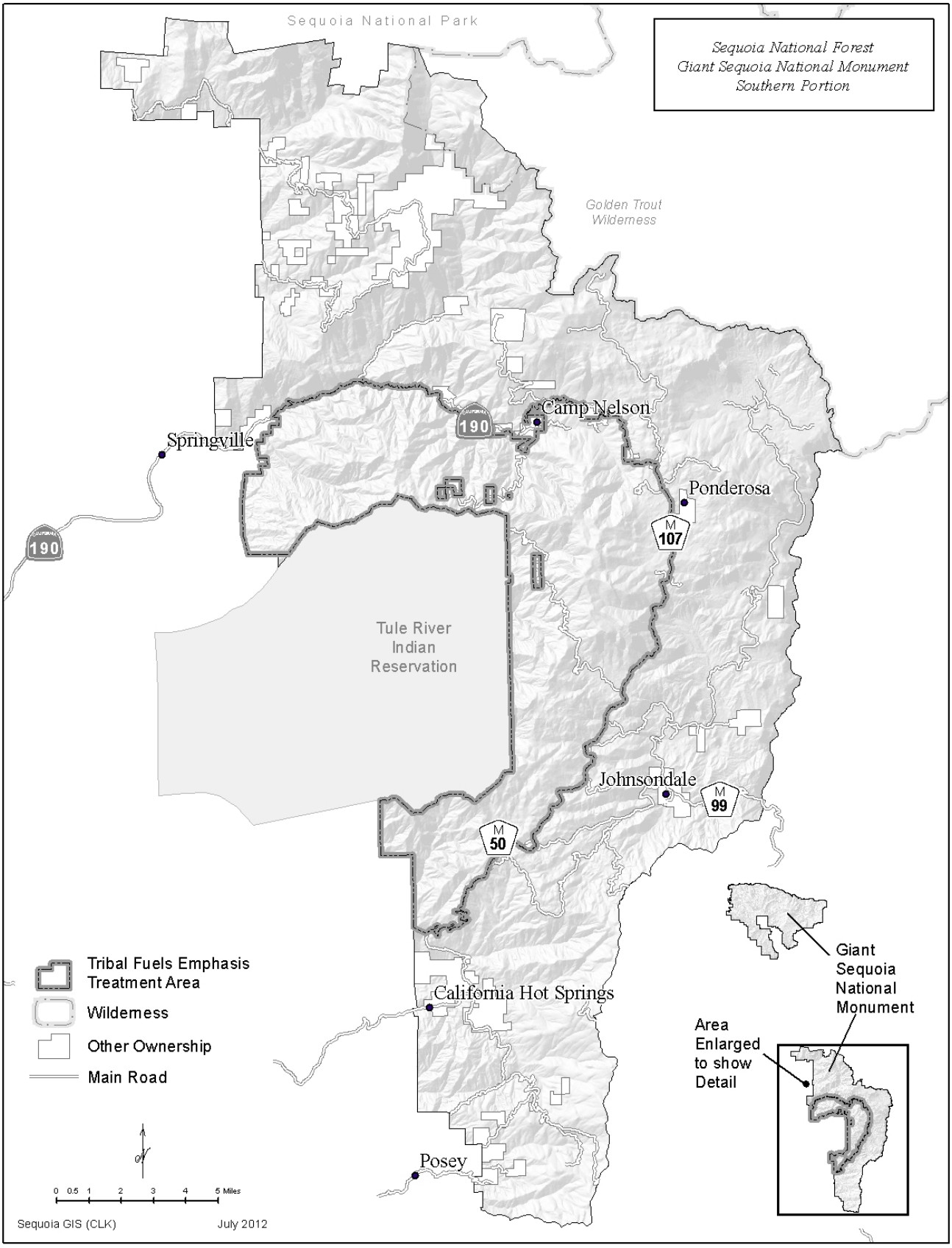


Table 34 Strategies for Fuels Reduction, by Alternative

Strategy	Alt B	Alt C	Alt D	Alt E	Alt F
14. Locate fuel treatments and manage wildfires (when available) across broad landscapes so that the spread and intensity of wildfire is reduced.	X	X	X	X	X
15. Locate the tribal fuels emphasis treatment area (TFETA) along the eastern boundary of the Tule River Indian Reservation (see following map). Focus fuel treatments in the TFETA to slow the spread of fire and to protect the objects of interest in the Monument, the reservation, and their watersheds from severe fire effects. The first priority for fuel reduction treatments in the TFETA is those areas within 1/4 mile of the reservation boundary with high and moderate fire susceptibility, and in the Long Canyon area.	X				X
16. Use the following tools for fuels reduction, in order of priority:					
1. Prescribed fire, mechanical treatment, managed wildfire (when available)	X				
2. Prescribed fire and managed wildfire (when available), mechanical treatment		X			
3. Managed wildfire (when available), prescribed fire, mechanical treatment			X		
4. Mechanical treatment, prescribed fire, managed wildfire (when available)				X	
5. Combination of tools determined by site-specific analysis					X

Table 35 Strategies Specific to WUI Management, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
17. Allow low, moderate, and high intensity fires to burn in the Monument, including within giant sequoia groves.	X	X	X	X	X
18. Provide a minimum 100-foot defensible space (CFR Section 4291) for all structures on administrative sites, structures authorized by permit, and for developments adjacent to National Forest System lands.	X	X	X	X	X
19. Use graduated fuelbreaks as treatments in the WUI defense zone.		X			

Fire and Fuels Objectives

Table 36 Objectives for Fire and Fuels, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Meet at least once annually with cooperating agencies to coordinate prescribed burning plans for projects located on adjacent lands and to coordinate fire protection activities.	X	X	X	X	X
2. Use grove-specific fuel load reduction plans to determine where mechanical treatments are needed prior to the re-introduction of fire (MSA, pp.9-11, b. Grove Management).	X			X	X
3. When wildfires occur, determine if they can be managed to reduce fuels in giant sequoia groves and their ecosystems to promote ecological restoration.		X	X		
4. Re-introduce fire to achieve ecological restoration goals in the giant sequoia groves on an average of 5 percent of grove acres per year, according to their fuel load reduction plans (MSA, pp.9-11, b. Grove Management).	X	X	X	X	X

Wildlife and Plant Habitat Desired Conditions

Lands in the Monument continue to provide a diverse range of habitats that support viable populations of associated vertebrate species, with special emphasis on riparian areas, montane meadows, and late successional forest. Proper hydrologic and ecological functioning conditions in riparian areas and meadows are restored and maintained. Old forest habitat is in suitable quality, quantity, and distribution to support viable populations of late successional dependent species, including Pacific fishers, American martens, California spotted owls, northern goshawks, and great gray owls. The configuration of habitat in the Monument provides connectivity and heterogeneity. Ecological conditions contribute to the recovery of federally threatened and endangered species such as the California condor and Springville clarkia, and help avoid federal listing of Forest Service sensitive species.

Wildlife and Plant Habitat Strategies

Table 37 Strategies for Wildlife and Plant Habitat, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Maintain and improve habitat for endangered and threatened plant and animal species on federal and state lists to meet objectives set forth in their recovery and management plans.	X	X	X	X	X
2. Protect, increase, and perpetuate old forest ecosystems and provide for the diversity of native plant and animal species associated with old forest ecosystems.	X	X	X	X	X
3. Protect high value wildlife habitat from management activities using:					
• Species-specific standards and guidelines based on land allocations such as PACs, HRCAs, den site buffers.	X				X
• Standards and guidelines, such as those for limited operating periods, based on survey results and not tied to land allocations.		X			
• Standards and guidelines for some land allocations (PACs, den site buffers), but not the Old Forest Emphasis Area and the Southern Sierra Fisher Conservation Area.			X		
• Spotted owl habitat areas (SOHAs) (1990 MSA, pp. 51-55) and the protection of all active goshawk nests (1990 MSA, pp. 58-59).				X	
4. Protect high quality fisher habitat from any adverse effects from management activities, evaluating the effects of site-specific projects with models appropriate to the scale of the project.	X	X	X	X	X
5. To protect aquatic, riparian, and meadow ecosystems, use:					
• Streamside management zones (MSA, Exhibit D), the aquatic management strategy, and the riparian conservation objectives for riparian conservation areas (RCAs) and critical aquatic refuges (CARs).	X		X		X
• Streamside management zones (MSA, Exhibit D), the aquatic management strategy, and the riparian conservation objectives.		X			
• Streamside management zones (MSA, Exhibit D).				X	
6. Manage California condor habitat following the most current U.S. Department of the Interior (USDI) Fish and Wildlife Service California Condor Recovery Plan. Contribute to the recovery of the California condor by protecting roosting and potential nesting sites. Include the management of historic use areas, such as the Starvation Grove historic nest site and the Lion Ridge roost area.	X	X	X	X	X

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
7. Manage wetlands and meadow habitat for willow flycatchers and other species: • Following the standards and guidelines from the 1988 Forest Plan, as modified by the 1990 MSA (MSA, pp. 5-6, Exhibit D) and the 2004 SNFPA. • Following the standards and guidelines from the Forest Plan, as modified by the 1990 MSA (MSA, pp. 5-6, Exhibit D).	X	X	X	X	X
8. Cooperate with other agencies and researchers on rare species conservation (e.g., the Southern Sierra Nevada Fisher Working Group, the Pacific Southwest Research Station, and the California Department of Fish and Game).	X	X	X	X	X
9. Minimize effects to TES plant species and their habitat. Restore and enhance suitable habitat.	X	X	X	X	X
10. Minimize the spread of existing infestations and the introduction of invasive non-native species (noxious weeds).	X	X	X	X	X

Wildlife and Plant Habitat Objectives

Table 38 Objectives for Wildlife and Plant Habitat, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Within 3 years, complete a baseline inventory for invasive species within the Monument.	X	X	X	X	X
2. Over the next 10 years, maintain or increase the number of acres of old forest habitat (defined as CWHR vegetation size classes 4, 5, and 6). Maintain structural features important to late forest species including: multiple layers of vegetation, snags, down woody debris and dense canopy cover.	X	X	X	X	X

Air Quality

Desired Conditions

Emissions generated by the Monument are limited and managed, and clean air is provided for the Monument and surrounding communities.

Strategies

Table 39 Strategies for Air Quality, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Avoid prescribed burning on high visitor use days.	X	X	X	X	X
2. Convey condition and trend information of sensitive resources to the U.S. Environmental Protection Agency, California Air Resources Board, and the San Joaquin Valley Air Pollution Control District for regulatory consideration.	X	X	X	X	X
3. Use ambient air quality monitoring, in collaboration with research, to understand broad southern Sierra air pollution trends and the contribution of smoke to the total pollution load.	X	X	X	X	X

Objective

Table 40 Objective for Air Quality, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. As part of managing prescribed fire and wildfire, develop actions with local air pollution control districts that minimize public exposure to atmospheric pollutants.	X	X	X	X	X

Range

Desired Conditions

Livestock grazing opportunities are maintained and managed for sustainable, healthy rangelands that contribute to local economies and improve watershed conditions. Meadows are hydrologically functional and stable, with 80-90 percent vegetative cover, root masses stabilizing stream banks, and any sites of accelerated erosion stabilized or recovering. The ecological status of meadow vegetation is late seral, with a diversity of age classes of hardwood shrubs, and regeneration is occurring. Streams in meadows, lower elevation grasslands, and hardwood ecosystems have vegetation and channel bank conditions that meet proper functioning condition. Special aquatic habitats such as springs, seeps, vernal pools, fens, bogs, and marshes are healthy and diverse.

Strategies

Table 41 Strategies for Range, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Maintain or enhance the productivity of all Monument ranges through adequate protection of the objects of interest and the soil, water, and vegetative resources.	X	X	X	X	X
2. Contribute to the stability of the ranching community by recognizing its value as part of our heritage, its contribution of food and fiber, and its maintenance of open space.	X	X	X	X	X
3. Utilize management systems that ensure cost-effective management of suitable rangelands.	X	X	X	X	X
4. Manage rangeland in meadows: • Following the standards and guidelines from the Forest Plan, as modified by the 1990 MSA (MSA, pp. 5-6, Exhibit D) and the 2004 SNFPA. • Following the standards and guidelines from the Forest Plan, as modified by the 1990 MSA (MSA, pp. 5-6, Exhibit D).	X	X	X 	 X	X

Hydrological Resources

Desired Conditions

Aquatic, riparian, and meadow ecosystems are protected and restored and provide for the viability of species associated with these ecosystems. Hydrological resources, including rivers, streams, meadows, seasonally or perennially wet areas, and their associated riparian vegetation, are able to adjust and recover from natural and human-caused events. Riparian and wetland areas are dynamic systems that change in response to climatic events including climate change. Riparian areas are in dynamic equilibrium with respect to erosion and deposition, sediment supply, discharge, pattern, profile, and dimension. Riparian and wetland areas function

hydrologically according to their riparian ecotype: naturally-stable, stable-sensitive, unstable-sensitive-degraded, and naturally-unstable.[17]

Strategies[18]

Table 42 Strategies for Hydrological Resources, by Alternative

Strategy	Alt B	Alt C	Alt D	Alt E	Alt F
1. Restore streams, meadows, wetlands, and other special aquatic features to their desired conditions whenever possible.	X	X	X	X	X
2. Design hydrologic restoration projects to improve water storage and retention in riparian and wetland areas for longer flow duration (i.e., upgrading an unstable-sensitive-degraded system to a stable-sensitive system).	X	X	X	X	X
3. Maintain sustainable riparian conditions for giant sequoia ecosystems.	X	X	X	X	X
4. Manage stream channels to maintain riparian vegetation, transport sediment, and ensure streambank stability.	X	X	X	X	X
5. Create a network of long-term monitoring sites within watersheds to determine the current state of riparian and wetland resources and habitat conditions.	X	X	X	X	X
6. Determine streambank erosion rates to define baseline conditions and determine if management activities have resulted in change.	X	X	X	X	X
7. Determine channel geometry and discharge relationships to define baseline conditions and determine if management activities have resulted in change.	X	X	X	X	X
8. Provide for a renewable supply of down logs that can reach the stream channel and provide habitat in riparian areas.	X	X		X	X
9. Protect aquatic, riparian, and meadow ecosystems, using: ● The Aquatic Management Strategy, Riparian Conservation Areas (RCAs), Riparian Conservation Objectives (RCOs), and Critical Aquatic Refuges (CARs). ● Streamside management zones and RCOs. ● Streamside management zones and the riparian and wetlands standards and guidelines from the MSA (MSA, Exhibit D).	X	X	X	X	X
10. Manage riparian conservation areas and critical aquatic refuges for species dependent on those areas, while reducing the risks associated with wildfires and allowing for ecological restoration.	X		X		X

17. Definitions and more in-depth discussion of riparian ecotypes can be found in Chapter 4 of this final EIS (FEIS, Volume 1, Chapter 4, Effects on Hydrological Resources, Assumptions and Methodology, Ecological Restoration).

18. Strategies that specifically address stream management zones, riparian conservation areas, and critical aquatic refuges are found in the Wildlife and Plant Habitat section.

Objectives

Table 43 Objectives for Hydrological Resources, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. During the life of the Monument Plan, inventory 10 percent of the perennial streams in 6th-field watersheds to determine existing condition.	X	X	X	X	X
2. During the life of the Monument Plan, assess meadows for hydrologic function and prioritize ecological restoration needs.	X	X	X	X	X
3. During the life of the Monument Plan, based on assessment, restore hydrologic function in priority meadows to enhance riparian habitat.	X	X	X	X	X

Groundwater

Desired Conditions

Groundwater quality and quantity in aquifers across watersheds are sustained.

Strategies

Table 44 Strategies for Groundwater, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Determine patterns of recharge and discharge and minimize disruptions to groundwater levels that are critical for wetland integrity.	X	X	X	X	X
2. Determine the groundwater levels, within a range of natural variability, that provide base flows to maintain and enhance the condition of groundwater-dependent resources and their habitat.	X	X	X	X	X
3. Manage springs and their riparian areas as integrated systems.	X	X	X	X	X
4. Restore those groundwater-dependent ecosystems, such as meadows and giant sequoia groves with campgrounds, damaged by prior land uses.	X			X	X

Objectives

Table 45 Objectives for Groundwater, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. During evaluation of site-specific projects with the potential to affect groundwater (such as recreational development), determine groundwater conditions and evaluate potential effects on groundwater levels and groundwater-dependent ecosystems.	X	X	X	X	X
2. During the life of the Monument Plan, evaluate the effects of groundwater pumping on groundwater-dependent resources in 10 wells near giant sequoia groves, meadows, or springs.	X	X	X	X	X

Geological Resources

Desired Conditions

Geological features, including caves, domes and spires, soda springs, and hot springs, are protected while providing for public use and enjoyment of these resources.

Strategies

Table 46 Strategies for Geological Resources, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Identify areas where caves, domes, spires, soda springs, and hot springs are located and can be used by recreationists, while protecting and preserving these sites.	X	X	X	X	X
2. Enhance opportunities for interpretation and education, including brochures and signs, of geological resources (cave ecosystems, domes, and spires), emphasizing conservation practices and safe cave use.	X	X	X	X	X
3. Keep Church Cave and Boyden Cave open for public use under an appropriate permit system.	X	X	X	X	X
4. Identify and minimize potential geologic hazards including flood hazards, landslide hazards, and naturally-occurring asbestos (NOA) hazards within the Monument.	X	X	X	X	X
5. Establish the Windy Gulch Geological Area as a Special Area.	X				X

Objectives

Table 47 Objectives for Geological Resources, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. In 2 years, use existing inventories to make a determination of significance for the known caves in the Monument.	X	X	X	X	X
2. On an annual basis, evaluate the condition of Church Cave and Boyden Cave, ensuring gates are secured and cave features are protected.	X	X	X	X	X
3. Within 5 years, develop a cave management plan for the significant caves in the Windy Gulch Geological Area.	X				X

Paleontological Resources

Desired Conditions

Paleontological resources retain the components providing the fossil record.

Strategies

Table 48 Strategies for Paleontological Resources, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Retain areas of significant sedimentation and meadow vegetation deposits.	X	X	X	X	X
2. During cave inventories, conduct paleontological evaluations of any fossilized material found.	X	X	X	X	X

Objective

Table 49 Objective for Paleontological Resources, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Initiate surveys to identify the location and type of paleontological resources in the Monument, focusing on areas such as meadows and caves most likely to contain these resources. Use survey data to evaluate risk factors to these resources.	X	X	X	X	X

Soils

Desired Conditions

Productive soil conditions are maintained to promote ecosystem health, diversity, and productivity. Forest Service Handbook 2509.18- Soil Management Handbook, R5 Supplement No. 2509.18-95, defines supplement thresholds and indicator values for desired soil conditions.

Strategies

Table 50 Strategies for Soils, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Protect and improve soils for continuous forest and rangeland productivity and favorable water flows.	X	X	X	X	X
2. Maintain a sufficient level of soil cover in the form of fine organic matter to prevent erosion, conserve nutrients, and permit infiltration of precipitation into the soil.	X	X	X	X	X
3. Minimize the physical movement or displacement of soil during management activities.	X	X	X	X	X
4. Maintain soil porosity for plant growth and hydrologic soil function.	X	X	X	X	X
5. Maintain and restore wetland soil moisture conditions, such as in areas along creeks and rivers, and in wet meadows and fens.	X	X	X	X	X

Human Use

Desired Conditions

The Monument provides wide and varied public use of Monument resources and opportunities while protecting sensitive resources and the objects of interest. Recreation use throughout the year is promoted. Visitors find a rich and varied range of sustainable recreational, educational, and social opportunities enhanced by giant sequoias and the surrounding ecosystems. Consistent and easy-to-read signs and informational materials are provided. Interpretation and conservation education reflect scientifically supported scholarship and research data, conveying clear messages about natural and cultural resources and multiple use. Partnerships are established, providing people with a connection to place and promoting a sense of stewardship. The Monument provides a wide variety of visually appealing landscapes, such as oak woodland, chaparral, a variety of mixed conifer forest, and giant sequoia groves, for the public to enjoy within the places they prefer to visit.

Strategies

Table 51 Strategies for Human Use, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Provide visitors with opportunities to recreate in a variety of settings, from primitive to highly developed areas.	X	X	X	X	X
2. Develop and manage opportunities for public enjoyment.	X	X	X	X	X
3. Provide for wide and varied public use of monument resources and opportunities, while protecting sensitive resources and the objects of interest.	X	X	X	X	X
4. Use the Monument recreation niche settings in accordance with current recreation management direction: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.	X	X	X	X	X
5. Maintain the assigned Recreation Opportunity Spectrum (ROS) classes (semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural) (see ROS maps).	X	X	X	X	X
6. Manage for new developed recreation facilities as visitor use increases.	X	X		X	X
7. Focus new developed recreation sites on walk-in campgrounds and picnic areas near existing roads.			X		
8. Accommodate the increasing demand for more specialized and diverse recreation opportunities, in order to provide flexibility to accommodate new and changing recreation activities as they emerge in the future.	X	X	X	X	X
9. Balance diverse users and a wide variety of uses, accommodate use through all seasons, and minimize conflicts among recreational users.	X	X	X	X	X
10. Maintain or create scenic vistas as necessary to meet the needs of the public and improve scenery in areas of high public concern.	X	X	X	X	X
11. In all vegetation treatment and fuels reduction projects consider improving scenery resources especially in areas that do not meet established scenic integrity objectives (SIOs).	X	X		X	X
12. Provide for the protection of resources, ecological restoration, and the development of stewardship under applicable law and policy, so that people care about the land and its resources.	X	X	X	X	X
13. In accordance with the Sequoia National Forest Interpretive Plan (USDA Forest Service 2008a) and the Forest Service conservation education guidance, provide opportunities for interpretation that reflect scientifically-supported scholarship and research data. a. Convey clear messages regarding natural and cultural resources and multiple use. Use multi-media interpretation and educational programs to develop stewardship of resources, to ensure their present and future protection, and to enhance public enjoyment of this unique place. b. Promote and integrate awareness of Monument history, appreciation for biological processes, education about past and current human use of the Monument, and education about the distinctive yet interrelated disruptive forces involved with the use and protection of resources.	X	X	X	X	X

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
14. Manage for old growth values in spotted owl habitat areas, riparian zones, wildernesses, giant sequoia groves, and other areas as required for wildlife and visual values (1990 MSA, p. 51).				X	
15. Emphasize diverse public access, partnerships, and place-based recreation opportunities, focusing on connection to place and the recreation settings (Monument's recreation niche).	X	X	X	X	X
16. Establish use fees that are compatible with cost, and reduce public competition with the private sector.	X	X	X	X	X
17. Continue to support and participate in employment and training programs for youth, older Americans, and the disadvantaged, in response to national employment and training needs and opportunities existing in forest surroundings.	X	X	X	X	X
18. Develop partnerships to provide a spectrum of recreation experiences through a variety of providers, including the Forest Service, associations, non-government organizations, permit holders, volunteers, and other community groups.	X	X	X	X	X
19. Support the efforts of the Giant Sequoia National Monument Association, a non-profit, public benefit organization promoting conservation, education, and recreational enjoyment of the Monument and the surrounding southern Sierra Nevada region.	X	X	X	X	X
20. Develop partnerships to increase interpretive materials and programs that reach larger segments of the general public and to foster stewardship.	X	X	X	X	X
21. Enhance opportunities to connect people to the land, especially those in urban areas and of diverse cultures (connect people to place).	X	X	X	X	X
22. Work with gateway communities and communities within the Monument to help foster economic opportunities.	X	X	X	X	X
23. Develop bi-lingual[1] communication tools, including publications, information boards, and radio spots.	X	X	X	X	X
24. Encourage communities of color, focusing on youth, to increase involvement in environmental education programs to educate and develop the citizen steward.	X	X	X	X	X
25. Designate and develop a Children's Forest in the Monument to provide a place where youth and families can participate in and explore forest-related projects. The criteria for the location of a Children's Forest include: • In or in close proximity to a giant sequoia grove • Within 1/2 mile of a road • Close to an existing parking lot or a suitable area for one • Close to developed recreation facilities • Away from high use, congested areas • Close to water source • Year-round access • Does not conflict with existing uses (such as grazing)	X	X	X	X	X

1. English–Spanish

Objectives

Table 52 Objectives for Human Use, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. During site-specific project planning, actively engage communities of color in the central valley of California in management planning and conservation education projects.	X	X	X	X	X
2. During site-specific project planning, develop partnerships for project implementation.	X	X	X	X	X
3. During the life of the Monument Plan, explore the designation and development of a Children's Forest in the Monument.	X	X	X	X	X

Cultural Resources[19]

Desired Conditions

A comprehensive cultural resource management program places a greater management emphasis on the rich cultural resources within the Monument as described in the Clinton proclamation. Cultural resources are identified and allocated to appropriate management categories (FSM 2363) (e.g., preservation, enhancement, scientific investigation, interpretation, release) and are protected, maintained, studied, and used by the public.

Strategies

Table 53 Strategies for Cultural Resources, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Manage cultural resources with a process including identification, evaluation, and allocation to appropriate management categories.	X	X	X	X	X
2. Recognize cultural resources through National Register of Historic Places nomination, National Historic Landmark nomination, and other special designations as appropriate.	X	X	X	X	X
3. Provide opportunities for public use and enjoyment of cultural resources through education and outreach programs that promote resource stewardship. Focus on the need to protect cultural resources while simultaneously making them available to the public.	X	X	X	X	X
4. Provide for continued traditional use by Native American people and protect those places that are most important to local Native American people in maintaining their traditional culture. Seek partnerships with tribes to develop cultural education programs.	X	X	X	X	X
5. Protect cultural resources from wildfires and management activities associated with fuels reduction.	X	X	X	X	X

19. There are no proposed changes in management direction for the Tribal and Native American Interests (Tribal Relations) program.

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
6. Develop a cultural resource management plan for the Monument that:					
• Facilitates scientific research of cultural resources to increase understanding of past human cultures and environments.	X	X	X	X	X
• Uses cultural resource data to increase understanding of the evolution of ecosystems and to adapt management practices.	X	X	X	X	X
• Preserves and adaptively uses historic structures in place wherever possible; preserves the integrity and character-defining features of historic districts.	X	X	X	X	X
• Emphasizes partnerships with tribes to develop cultural education programs.	X	X			
• Develops an archaeological overview and assessment, archaeological identification and evaluation studies, a cultural affiliation study, an historic resource study, and a scope of collection statement similar to National Park Service documents.		X			
• Emphasizes the investigation and documentation of cultural landscapes, and historic buildings and structures.		X			
• Emphasizes the protection and management of cultural resources during wildfires and fuels reduction management activities.			X		
• Emphasizes the study and protection of cultural resources within Converse Basin, to include archaeological survey, site recording, and interpretation of the historic logging in the basin.				X	
• Emphasizes research on Native American land use and the use of fire and their interactions with the development of the giant sequoia groves.				X	
• Prioritizes cultural resource survey, site evaluation for the National Register of Historic Places, and Historic American Buildings survey/Historic Engineering Record survey and documentation within the proposed Moses Wilderness.				X	

Objective

Table 54 Objective for Cultural Resources, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Within 3 years, develop a Monument cultural resource management plan that includes identification, evaluation, and criteria for allocation of the resources to appropriate management categories. This plan will protect cultural resource values while allowing for public enjoyment.	X	X	X	X	X

Transportation System

Desired Conditions

Roads are safe and fully-maintained to minimize adverse resource effects, while providing public and administrative access to National Forest System lands and facilities within the Monument. The road system is properly sized to provide needed access to the objects of interest for their proper care, protection, and management, as well as visitor enjoyment of the Monument. Roads that are no longer needed have been decommissioned to restore natural drainage and vegetation or converted to other uses.

Strategies

Table 55 Strategies for Transportation System, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Size and maintain the road and trail system to minimize adverse resource effects, while providing appropriate public and administrative access to National Forest System lands and facilities within the Monument.	X	X	X	X	X
2. Promote aquatic organism passage at road stream crossings where needed.	X	X	X	X	X
3. Maintain roads with effective road drainage and erosion controls to conserve existing soil and reduce effects to adjacent riparian and aquatic systems.	X	X	X	X	X
4. Complete 6th-field watershed analyses and review the transportation system in the Monument using forest-scale travel analysis to inform future opportunities for changes in road status, including changes in maintenance level, decommissioning, or conversion to trails.	X	X	X	X	X
5. Consult with local tribal governments and Native Americans to provide transportation and access needs for culturally important sites and resources.	X	X	X	X	X
6. Coordinate transportation planning, management, and road decommissioning with Sequoia and Kings Canyon National Parks; other federal, state, and county agencies; and the Tule River Indian Tribe, to reduce traffic congestion and safety hazards, especially along major travelways.	X	X	X	X	X
7. Partner with state and local agencies to operate and maintain roads for four-season use where appropriate.	X	X	X	X	X
8. Provide appropriate parking facilities to meet projected use as determined through site-specific project analysis.	X	X	X	X	X
9. Base proposals for new roads on the need to provide access to recreation opportunities, other public use, or management activities, as appropriate to the purposes of the Monument.	X	X		X	X
10. Manage the current road system without adding new roads.			X		
11. Manage public access provided by the road system to only provide access to developed recreation sites, not dispersed recreation.		X			
12. Convert to trails or other uses, or decommission roads not needed to meet management objectives.	X	X	X	X	X
13. Emphasize opportunities for creating loop trails where feasible and appropriate.	X	X	X	X	X
14. Emphasize opportunities for creating loop roads where feasible and appropriate.	X			X	X
15. Provide and maintain regulatory, warning, directional, and information signing on roads for travelers' use.	X	X	X	X	X

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
16. Manage the roads and trails system to allow:					
• Both highway legal use and off-highway vehicle (OHV) use on designated roads.	X			X	X
• Highway-legal vehicle use only.		X	X		
• Over-snow vehicle (OSV) use on designated roads.	X			X	X
• OSV use only on paved designated roads.			X		
• OSV use only to access private property, or for administrative or emergency purposes.		X			
• Non-motorized mechanized vehicles (such as bicycles) on designated roads and trails.	X		X	X	X
• Non-motorized mechanized vehicles (such as bicycles) only on designated roads (not trails).		X			
Facilities Related Strategies					
17. Maintain administrative facilities consistent with wilderness values.	X	X	X	X	X
18. Rehabilitate, replace, or relocate existing buildings to support management of the Monument.	X	X	X	X	X
19. Maintain buildings to at least the minimum level necessary to protect health and prevent building deterioration.	X	X	X	X	X

Objectives

Table 56 Objectives for Transportation System, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Within 2 years, complete travel analysis to determine the minimum necessary transportation system (Subpart A of the Travel Management Rule, 36 CFR 212.5) for the Monument.	X	X	X	X	X
2. Within 2 years, complete a Monument-wide watershed improvement needs inventory (WINI) to identify adverse effects to watersheds from roads and trails.	X	X	X	X	X
3. During the life of the Monument Plan, establish a sustainable and desirable off-highway vehicle (OHV) and over-snow vehicle (OSV) route system (on the existing road system), including loop opportunities where feasible and appropriate.	X			X	X
4. During the life of the Monument Plan, establish a sustainable and desirable route system for street legal vehicles for recreation use.		X	X		
5. During the life of the Monument Plan, establish a sustainable and desirable route system for OSV use on paved roads only.			X		

Suitability

National Forest System lands are generally available for a variety of multiple uses, although not all uses are suitable for all areas. Section 6 (g) of the Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), requires "the identification of the suitability of lands for resource management" (RPA 1974, pp. 4-9).

The definition of suitability is:

> The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses forgone. A unit of land may be suitable for a variety of individual or combined management practices (36 CFR 219.3).

The Forest Service has a duty under NFMA, 16 U.S.C.§§ 1604(k), to review the suitability of forest lands (including roadless areas) for timber production every 10 years, and that review can trigger a plan amendment that affects land allocations. The MSA made several recommendations regarding suitability, specifically areas to consider as unsuitable for timber production (USDA Forest Service 1990b, pp. 66-67 and Exhibit H). The earlier Bush proclamation required that "The designated giant sequoia groves shall not be managed for timber production and shall not be included in the land base used to establish the allowable sale quantities for the affected national forests" (Bush 1992, p. 31627). The Clinton proclamation creating the Monument also removes it from being considered as suitable for timber production, stating "No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber from the Sequoia National Forest" (Clinton 2000, p. 24097). In addition, the 2001 SNFPA removed timber management as a management goal for the Sequoia National Forest.

The Sequoia National Forest, as the administrator of the Monument, has identified generally suitable uses for the Monument as guided by current management direction and the Clinton proclamation. The Clinton proclamation makes specific statements about the suitability of the Monument for certain resource-related activities, such as:

- These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, pp. 24095-24096).
- All federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws including, but not limited to, withdrawal from locating, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument (Clinton 2000, p. 24097).
- No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber from the Sequoia National Forest (Clinton 2000, p. 24097).
- The plan will provide for and encourage continued public and recreational access and use consistent with the purposes of the monument (Clinton 2000, p. 24097).
- For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative

> purposes or to provide access for persons with disabilities (Clinton 2000, p. 24098).

This section describes general land use suitability and provides guidance for making decisions about future proposed projects and activities, but does not constitute a commitment or a decision to approve any particular projects or activities.

The following tables display the suitability of specific land uses or activities in both static and overlapping land allocations and management areas. Suitability is expressed as suitable, not suitable, designated areas (existing uses and areas only), regulated by the state (California Department of Fish and Game), suitable unless otherwise restricted, suitable for authorized use, or by exception. "By exception" means the use or activity is not generally compatible with that land allocation or management area, but it may be appropriate under certain circumstances, such as the collection of culturally important special forest products in the backcountry at a certain time of year. NEPA analyses for site-specific projects may need to be conducted to determine specific instances where exceptions are warranted.

Land allocations and management areas are described in the beginning of this chapter. For the dynamic land allocations (not included in these tables), suitability will be addressed with standards and guidelines developed for those allocations. A complete list of the standards and guidelines is available in Appendix A.

Table 57 Suitable Land Uses and Activities by Static Land Allocation or Management Area

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves[1]	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Resource Management									
Prescribed Fire	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Managed Wildfire	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Hand Treatments for Fuels Reduction[2]	By Exception[3]	By Exception	Suitable	Suitable	Suitable[4]	Suitable	Suitable	Suitable	Suitable
Mechanical Treatments for Fuels Reduction[5]	Not Suitable	By Exception	By Exception	Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
Removal of Felled Trees[6]	Not Suitable	By Exception	By Exception	Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
New Road Construction	Not Suitable	Suitable	By Exception	Not Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
Road Recon-struction	Not Suitable	Suitable	By Exception	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Trail Con-struction or Reconstruc-tion	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Administrative Facilities[7]	By Exception	Suitable	Suitable	By Exception	Suitable	Suitable	Suitable	By Exception	By Exception

1. For implementing site-specific projects, this applies only within the grove administrative boundary, not in the Zone of Influence (ZOI).
2. Includes the use of chainsaws, handsaws, axes, and loppers.
3. By Exception: use or activity is not generally compatible with that land allocation or management area, but may be appropriate, depending on specific site conditions or under certain circumstances, such as the collection of culturally important special forest products in the backcountry at a certain time of year.
4. As allowed in the standards and guidelines.
5. Includes the use of mechanized equipment; only where clearly needed for ecological restoration and maintenance or public safety.
6. Only where clearly needed for ecological restoration and maintenance or public safety.
7. Including trailheads, day use areas, lookouts, district offices.

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves[1]	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Scientific Study and Monitoring	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Human Use									
Recreation Residence Tracts	Not Suitable	Designated Areas[8]	Designated Areas	Designated Areas	Suitable	Designated Areas	Designated Areas	Not Suitable	Designated Areas
Organizational Camps	Not Suitable	Suitable unless otherwise restricted	Designated Areas	Designated Areas	Suitable	Designated Areas	Suitable unless otherwise restricted	Not Suitable	Designated Areas
Lodges and Resorts	Not Suitable	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Designated Areas	Suitable	Suitable	Suitable	Not Suitable	Designated Areas
Developed Recreation Sites	Not Suitable	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable	Suitable	Suitable	Suitable	Not Suitable	Suitable
Dispersed Recreation Sites	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Hunting and Fishing	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable
Motorized Use of Roads	Not Suitable	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only
Motorized Use of Trails[9]	Not Suitable	Designated Only[10]	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

8. Designated Areas: existing uses and areas only.
9. This activity is not suitable as stated in the proclamation.
10. Motorized use is allowed on Forest Trails 27E04 and 27E05 in KRSMA by law (P.L. 100-150).

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves[1]	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Motorized or Mechanized Cross Country Travel[11]	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Non-motorized Mechanized Vehicle Use of Roads and Trails	Not Suitable	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted
Temporary Special Uses[12]	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted
Commodity and Commercial Uses									
Communica-tion Sites	Designated Areas	By Exception	Designated Areas	Designated Areas	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Designat-ed Areas	Designated Areas
Utility Corridors	Designated Areas	By Exception	Designated Areas	Designated Areas	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Designat-ed Areas	Not Suitable
Livestock Grazing	Suitable	Suitable	Suitable	Designated Areas	Suitable	Suitable	Suitable	Not Suitable	Suitable
Wood Products (firewood)	Not Suitable	Suitable for Autho-rized Use	By Exception	By Exception	Suitable for Authorized Use	Suitable for Authorized Use	Suitable for Authorized Use	Not Suitable	By Exception

11. This activity is not suitable as stated in the proclamation.
12. Includes weddings, fishing events, historical reenactments, and other recreation events.

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves[1]	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Special Forest Products	Not Suitable	Suitable for Authorized Use	By Exception	By Exception	Suitable for Authorized Use	Suitable for Authorized Use	Suitable for Authorized Use	Not Suitable	By Exception
Minerals Exploration and Development[13]	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

13. This activity is not suitable as stated in the Clinton proclamation.

Table 58 Suitable Land Uses and Activities by Overlapping Land Allocation or Management Area

Land Use or Activity	Overlapping Land Allocations/Management Areas		
	Wildland Urban Intermix: Defense Zone	Wildland Urban Intermix: Threat Zone	Tribal Fuels Emphasis Treatment Area
Resource Management			
Prescribed Fire	Suitable	Suitable	Suitable
Managed Wildfire	Suitable	Suitable	Suitable
Hand Treatments for Fuels Reduction(1)	Suitable	Suitable	Suitable
Mechanical Treatments for Fuels Reduction(2)	Suitable	Suitable	Suitable
Removal of Felled Trees(3)	Suitable	Suitable	Suitable
New Road Construction	Suitable	Suitable	Suitable
Road Reconstruction	Suitable	Suitable	Suitable
Trail Construction or Reconstruction	Suitable	Suitable	Suitable
Administrative Facilities(4)	Suitable	Suitable	Suitable
Scientific Study and Monitoring	Suitable	Suitable	Suitable
Human Use			
Recreation Residence Tracts	Designated Areas(5)	Designated Areas	Designated Areas
Organization Camps	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Lodges and Resorts	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Developed Recreation Sites	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Dispersed Recreation Sites	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Hunting and Fishing	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable
Motorized Use of Roads	Designated Roads Only	Designated Roads Only	Designated Roads Only
Motorized Use of Trails	Not Suitable	Not Suitable	Not Suitable
Motorized or Mechanized Cross Country Travel	Not Suitable	Not Suitable	Not Suitable
Nonmotorized Mechanical Vehicle Use of Roads and Trails	Suitable	Suitable	Suitable

1. Includes the use chainsaws, handsaws, axes, and loppers.
2. Includes the use of mechanized equipment. Only where clearly needed for ecological restoration and maintenance or public safety.
3. Only where clearly needed for ecological restoration and maintenance or public safety.
4. Including trailheads, day use areas, lookouts, district offices.
5. Designated Areas: existing uses and areas only.

Land Use or Activity	Overlapping Land Allocations/Management Areas		
	Wildland Urban Intermix: Defense Zone	Wildland Urban Intermix: Threat Zone	Tribal Fuels Emphasis Treatment Area
Temporary Special Uses[6]	Suitable	Suitable	Suitable
Commodity and Commercial Uses			
Communication Sites	Suitable	Suitable	Suitable
Utility Corridors	Suitable	Suitable	Suitable
Livestock Grazing	Suitable	Suitable	Suitable
Wood Products (firewood)	Suitable	Suitable	Suitable
Special Forest Products	Suitable	Suitable	Suitable
Minerals Exploration and Development	Not Suitable	Not Suitable	Not Suitable

6. Includes uses such as weddings, fishing events, historical reenactments, other recreation events, or outfitter guides.

Special Areas, including Special Interest Areas

This section describes those special areas that would be added or amended. This is not a list of existing special areas, which include designated wildernesses, wild and scenic rivers, backcountry (inventoried roadless areas), research natural areas, botanical areas, and scenic byways. Consideration of backcountry (inventoried roadless areas) for potential recommendation to the National Wilderness Preservation System (Wilderness System) is outside the scope of this forest plan amendment and will be considered in a subsequent forest plan revision. The exception to this is the proposal that a section of the Moses Inventoried Roadless Area be recommended as wilderness, as proposed in the MSA (USDA Forest Service 2007a, p. 70).

Environmental consequences associated with the adoption of these proposed special areas are addressed by resource area, where applicable, in Chapter 4 of this FEIS.

Moses Wilderness (proposed in Alternative E only)

The MSA stipulated that a portion of the Moses Inventoried Roadless Area, approximately 15,110 acres (shown in the following map), would be recommended for inclusion in the Wilderness System. "Pending final disposition by the executive and/or legislative branches, the mapped portions of the Moses Roadless Area shall be...managed to preserve its wilderness character" (USDA Forest Service 2007a, p. 70). The proposal to recommend the mapped portion of the Moses Inventoried Roadless Area is being considered only in Alternative E and does not apply to the other action alternatives. In the other action alternatives, the Moses Inventoried Roadless Area would be managed in the backcountry land allocation.

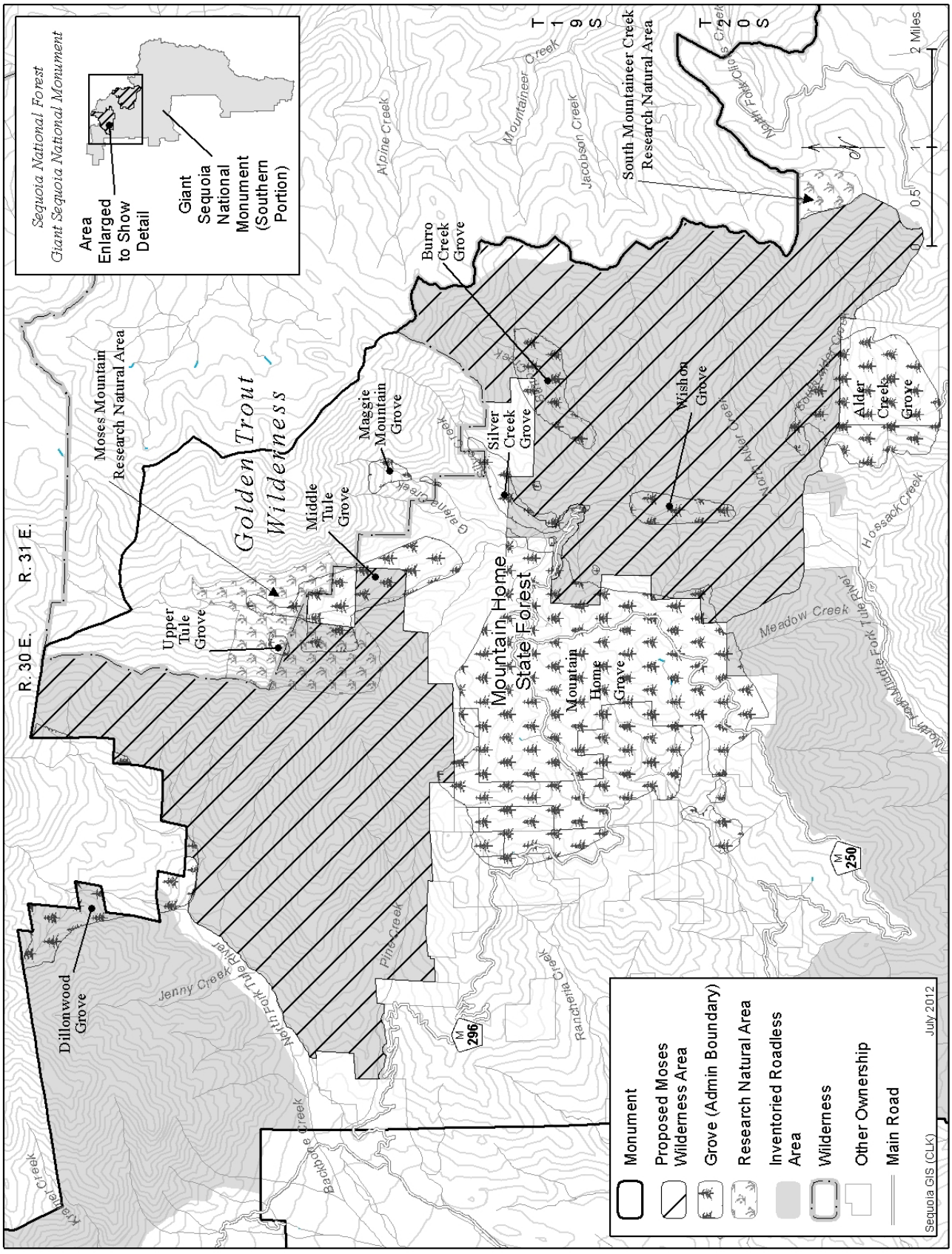
Strategy

1. Manage the Moses Inventoried Roadless Area within the Monument as a proposed wilderness, to preserve the wilderness characteristics until Congress acts.

Objective

1. In accordance with Forest Service Manual direction on wilderness proposals, complete the necessary process.

Map 4 Proposed Moses Wilderness



Freeman Creek Botanical Area (proposed in Alternatives B, E, and F)

Through the signing of the record of decision, the proposed Freeman Creek Botanical Area, as stipulated in the MSA, will be officially designated as a botanical area. The proposed area, shown in the following map, contains the Freeman Creek Grove and covers approximately 4,190 acres. The Freeman Creek Grove, also known as Lloyd Meadow Grove, is the easternmost grove of giant sequoias and is considered to be among the most recently established. Part of the grove covers a three million-year-old volcanic basalt flow. This botanical area is fairly easy to reach by car throughout the summer. There are several noteworthy sequoias to see in this grove, including the President George Bush Tree. This tree was named for President George H.W. Bush, when he signed a proclamation July 14, 1992 to protect all the giant sequoia groves throughout the Sierra Nevada. This proclamation set aside all of the giant sequoia groves in national forests for protection, preservation, and restoration. A reconstructed trail provides an accessible loop for individuals with disabilities around the Bush Tree. The proposal to make this area a botanical area applies only to Alternatives B, E, and F.

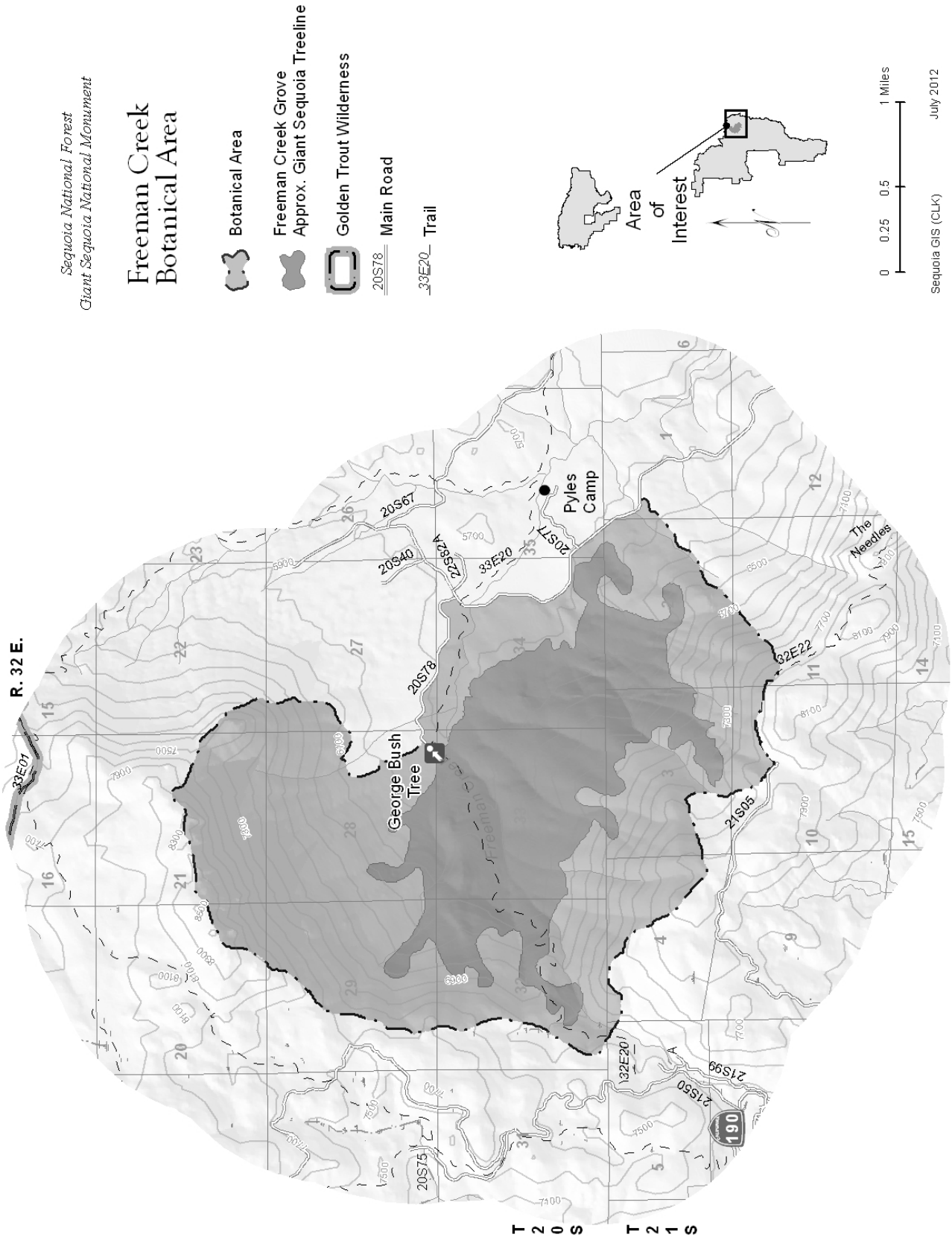
Strategies

1. Protect and manage this area for public use and enjoyment.
2. Limit vehicle use in the botanical area to existing roads, Forest Roads 20S78 and 22S82, in accordance with FSM 2372.4 (4).
3. Manage existing plantations within the botanical area, as needed for ecological restoration, provided that no management prescription outside and up slope of giant sequoias will adversely affect the hydrology of the giant sequoias.
4. Develop partnership agreements with entities interested in promoting the botanical area.
5. Manage the Freeman Creek Trail within the Freeman Creek Botanical Area as Scenery Management System Concern Level 1.

Objective

1. Within 5 years, develop a management plan for the Freeman Creek Botanical Area, including inventories and possible research opportunities.

Map 5 Proposed Freeman Creek Botanical Area



Windy Gulch Geological Area (proposed in Alternatives B and F)

Through the signing of the record of decision, the proposed Windy Gulch Geological Area will be designated as a geological area. This area, shown in the following map, covers 3,500 acres and contains a number of outstanding formations, including caves and marble roof pendants. Mesozoic granitic rocks are the dominant rock type and consist of several plutons approximately 100 million years old. The metamorphic rocks are known as the Kings terrain, and the most extensive of these are the Lower Kings River, Kaweah River, and Tule River roof pendants. The Lower Kings River roof pendant includes the Boyden Cave roof pendant, whose marble contain several caves such as Boyden Cave and Church Cave. The proposal to make this area a geological area applies only to Alternatives B and F.

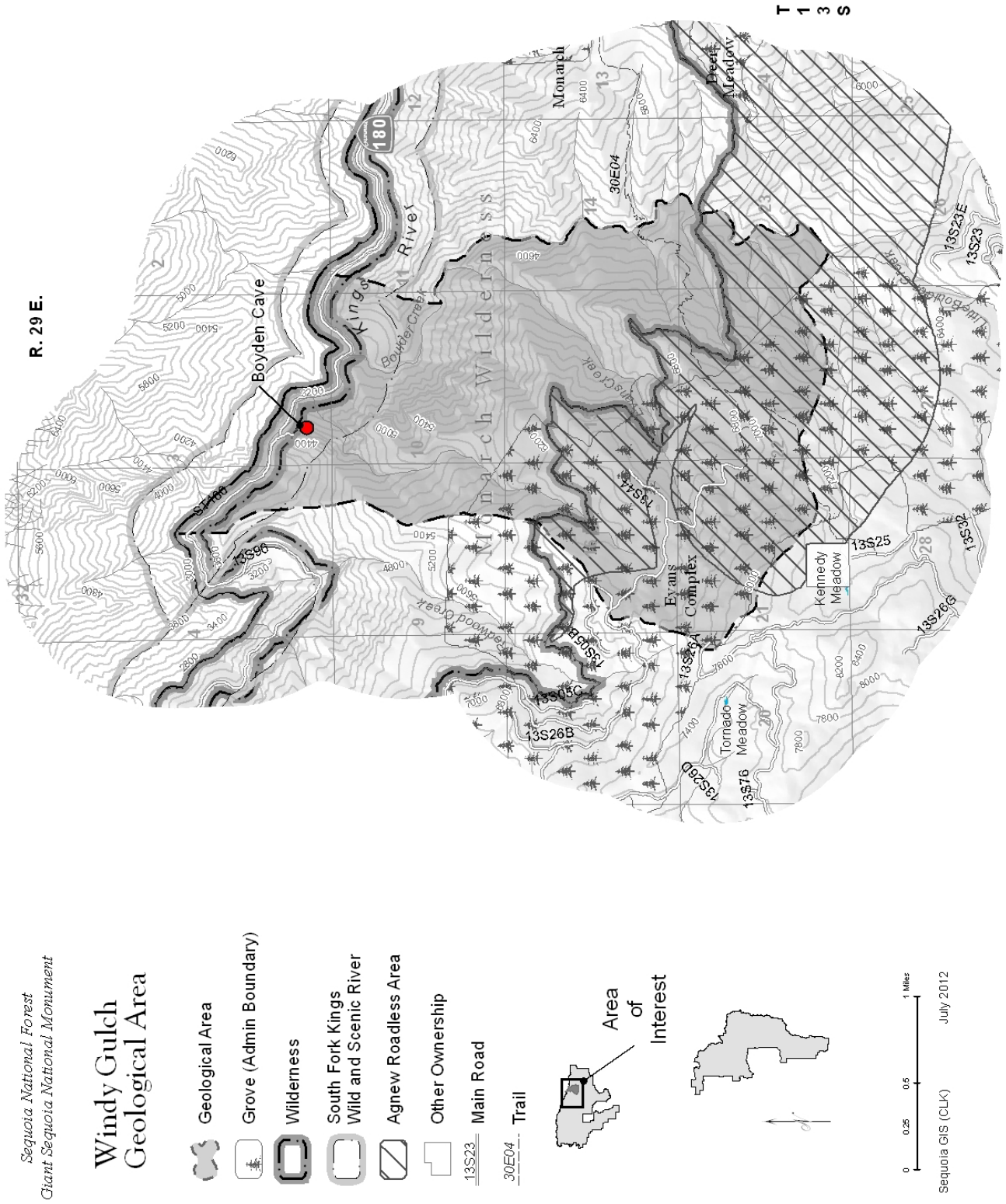
Strategies

1. Protect the unique geologic features, including the limestone caverns, rare or endemic cave fauna and flora, and marble roof pendants.
2. Protect and manage this area for public use and enjoyment.
3. Provide opportunities to conduct research in the area for scientific study and understanding of cave ecosystems.
4. Conduct management activities, such as fuel and vegetation treatments, in the area to focus on the protection of the special and unique features within the area.
5. Continue to allow limited access to Church Cave, by permit, to approved cave trip leaders, until the management plan for the area is completed.

Objective

1. Within 5 years, develop a management plan for the Windy Gulch Geological Area, including inventories and possible research opportunities.

Map 6 Proposed Windy Gulch Geological Area



Additional Special Areas, including Special Interest Areas (From the MSA)

Strategies

Table 59 Strategies for Special Areas, including Special Interest Areas, by Alternative

Strategy	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Continue coordination with the National Park Service in on-site landmark evaluation studies for Moses Mountain. Protect and manage this candidate area as a national landmark until final resolution.	X	X	X	X	X

Objectives

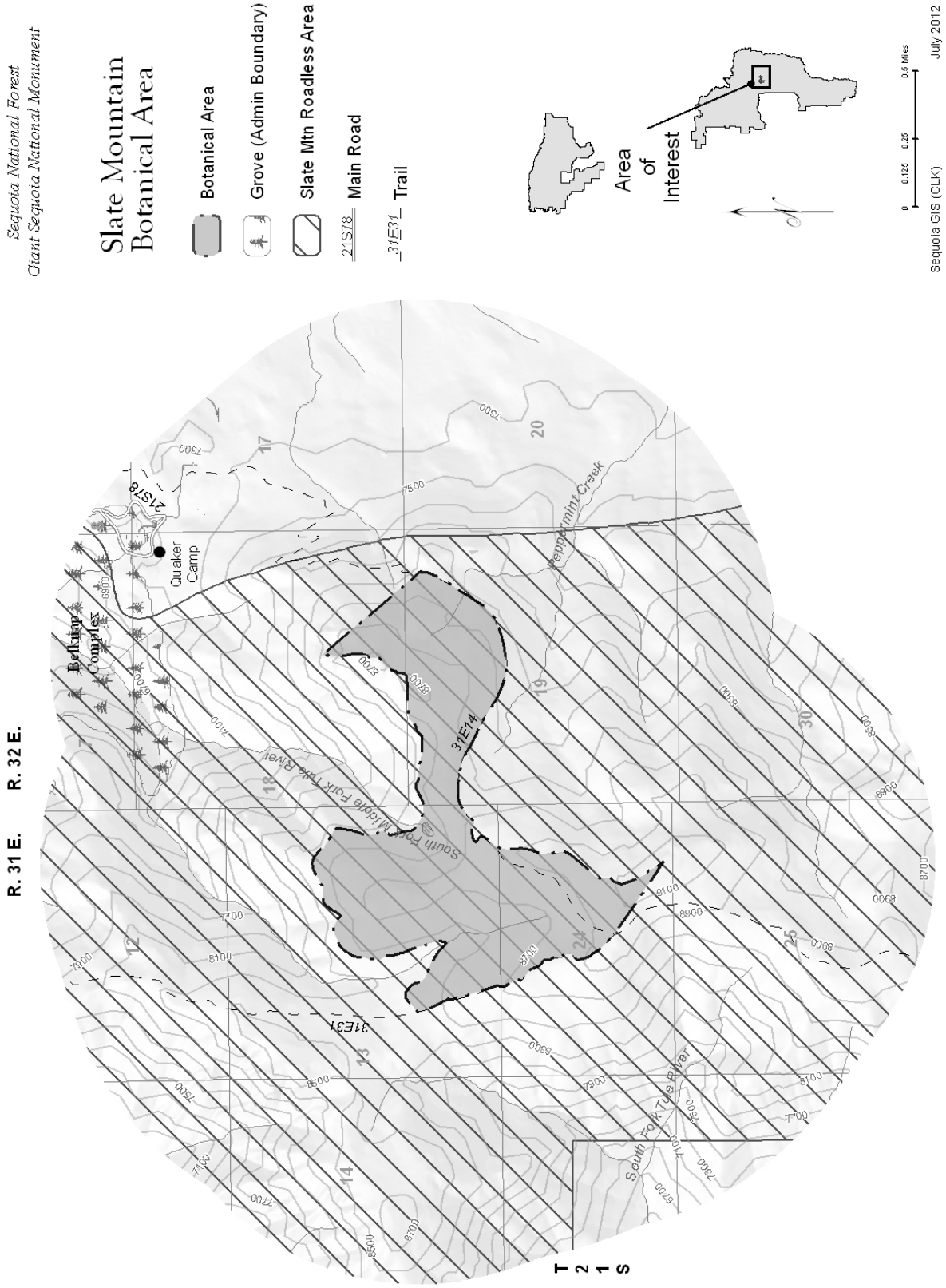
Table 60 Objectives for Special Areas, including Special Interest Areas, by Alternative

Objective	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
1. Within five years, develop a management plan for the Moses Mountain Research Natural Area.	X	X	X	X	X
2. Within five years, prepare the establishment report for the South Mountaineer Creek area for submission to the Chief, as recommended by the Regional Research Natural Areas Committee for establishment.	X	X	X	X	X

Slate Mountain Botanical Area

In accordance with the Forest Plan, Slate Mountain is classified and being managed as a botanical area (see the following map).

Map 7 Slate Mountain Botanical Area



Alternatives Considered and Eliminated from Detailed Study

Federal agencies are required to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Comments received on the proposed action during public scoping suggested alternatives to manage the Monument. Some of these either failed to meet the purpose and need, were duplicates of alternatives already being considered in detail, or had components that would cause unnecessary environmental harm. Most of the suggestions covered only specific resource areas and not the full range of resource areas an alternative contains. Where feasible, the suggested alternative components were brought into one or more of the alternatives considered in detail, as described in the following paragraphs. Therefore, a number of proposed alternatives were considered, but were not considered in detail in their entirety. The reasons for not considering these proposals in detailed alternatives are discussed in the following paragraphs.

One suggested alternative, the Citizens' Park Alternative (#5 on the following page), was submitted after public scoping, during the comment period on the DEIS. The Citizens' Park Alternative covers the full range of resource areas contained in the existing action alternatives. It is discussed in this section and in Appendix L (Response to Comments) to show how it has been incorporated into the FEIS.

1. **Develop at least two vegetation management alternatives that limit tree felling and removal to eight-ten (8-10) and twelve (12) inches:** Both alternatives can be consistent with the Monument proclamation's limitation on tree removal that can occur only if needed for ecological restoration and maintenance or public safety. If any larger trees are proposed for felling because they pose safety hazards along roads, trails, or in recreation areas, retain them as down woody debris in areas where they are needed for ecological restoration and maintenance.

   Rationale for elimination from detailed study: Part of this suggestion, the diameter limits for tree felling, was included in Alternatives C and D for ecological restoration activities. However, an alternative that retained all felled trees larger than 8 to 12 inches in diameter as down woody debris would not meet the purpose and need in terms of protecting the objects of interest and restoring ecosystems. The Clinton proclamation addresses the need to reduce fuels buildup. Leaving all downed trees greater than 12 inches in diameter, regardless of the circumstance, would have the effect of increasing fuels buildup on the forest floor, instead of reducing it. The alternatives considered in detail in this FEIS provide balanced approaches to address fuels reduction while still maintaining most felled trees as down logs where feasible.

2. **Non-logging alternatives as practical, feasible ways to achieve goals of fuels reduction:** Consider chipping and scattering brush and lower branches of ladder fuel trees so they remain in the 200 to 300 feet immediately surrounding structures for their nutrient and habitat values, or use of goat herds to eat brush and lower branches of ladder fuel trees and leave recycled nutrients in the forest for growing future trees.

   Rationale for elimination from detailed study: These suggestions are generally given for site-specific project analysis and are not precluded by the proposed strategies and objectives in any alternative. Chipping and scattering brush are already used in projects when there is a need to improve soil quality to meet soil quality standards and when it helps reduce fuels to a manageable level. Using goat herds to reduce fuels, while not previously used in project implementation, is not precluded by any of the alternatives. Neither suggestion merits consideration at the programmatic plan level.

3. **Remove little or no canopy cover alternative:** Analyze a fuels treatment method that would remove little or no canopy cover of green trees larger than 3 or 4 inches in diameter, but would only remove sufficient ladder fuel branches and brush.

   Rationale for elimination from detailed study: Part of this suggestion—removing only sufficient

ladder fuel branches and brush—was included in Alternatives C and D for fuels reduction activities. However, an alternative that retained all green trees larger than 4 inches in diameter so little to no canopy cover would be removed, regardless of the circumstance, would not meet the purpose and need in terms of protecting the objects of interest and restoring ecosystems by reducing fuels buildup and restoring the forest's natural resilience to fire. The Clinton proclamation addresses the need to reduce fuels buildup and to restore fire resilience. Therefore, this aspect of the suggested alternative has not been incorporated into any action alternative.

4. **Include a public transportation alternative for the most heavily used areas of the Monument:** The plan should take into account substantial increases in visitor use and exploit opportunities for collaboration with nearby communities and businesses plus the national parks.

   Rationale for elimination from detailed study: The suggestion to include a public transportation alternative for the most heavily used areas of the Monument is not supported by current and expected visitor use and nearby community infrastructures on a broad scale. With the exception of the seasonal shuttle service between Visalia and the Giant Forest portion of Sequoia National Park, attempts to develop and provide public transportation have proven economically infeasible for businesses and public agencies associated with nearby communities to date. However, all the action alternatives consider opportunities to develop public transportation options as applicable and practicable, and no alternatives preclude the development of a public transportation system benefitting the Monument.

5. **The Citizens' Park Alternative:** This alternative proposes to:

   a. Protect the giant sequoia ecosystem for which the Monument was designated,

   b. Not eliminate all dispersed recreation,

   c. Manage the Monument's groves and forest ecosystems in the same manner as the adjacent Sequoia and Kings Canyon National Parks (SEKI),

   d. Include criteria to scientifically justify tree removal from the Monument for ecosystem restoration and maintenance or public safety, that would result in few trees removed from the Monument,

   e. Manage all inventoried roadless areas to maintain their Wilderness potential, and

   f. Cancel four remaining commercial timber sales still under contract within and adjacent to the Monument.

The Citizens' Park Alternative as submitted includes recommended desired conditions and management direction in the form of strategies, objectives, and standards and guidelines, matching the basic format of each action alternative described in the DEIS (Chapter 2; Alternatives Considered in Detail; Desired Conditions, Strategies, and Objectives; Appendix A, All Action Alternatives).

Rationale for elimination from detailed study: Each of the suggestions in the Citizens' Park Alternative has been considered and included in an existing action alternative. The proposed desired conditions and management direction in the Citizens' Park Alternative have been reviewed by resource area and used to modify the desired conditions for all existing alternatives, as well as the strategies, objectives, and standards and guidelines for individual alternatives. Every recommendation in this alternative has been considered; however, the suggested alternative is not considered in detail, in its entirety, as a separate action alternative in this document. The only suggested direction in the Citizens' Park Alternative that has not been incorporated in any of the existing alternatives is the recommendations for treatment of hazard trees. Instead, the established procedures for hazard tree abatement for the Sequoia National Forest and the Monument are included to comply with current management direction. These procedures are not proposed for modification in any alternative.

In general, the suggested management direction for vegetation in the Citizens' Park Alternative has been included in Alternative C, whereas the suggested management direction for recreation is found in Alternative D. For example, the recreation strategy in the Citizens' Park Alternative was used as a basis for the strategies emphasized in Alternative D. Dispersed camping would continue to be allowed,

and new development would be limited to walk-in picnic areas and walk-in campgrounds, since no new roads are included. This strategy was not included in Alternative C because that alternative's theme is:

> Alternative C is designed to manage the Monument similar to Sequoia and Kings Canyon National Parks (SEKI) in a manner that is consistent with Forest Service regulations and the direction of the Clinton proclamation. Some management policies or direction from SEKI would not be applicable to the Monument because of differences in law, regulation, and policy for the two federal agencies. This alternative includes strategies that are responsive to the issue of managing the Monument like SEKI. For this alternative, restoration activities focus on areas that have been affected by human use and occupation. This is expected to result in settings appropriate for a range of recreation opportunities similar to those available in the national parks. (Chapter 2, Alternatives Considered in Detail, Alternative C, Alternative Theme).

The major proposed elements of the Citizens' Park Alternative have been fully analyzed in detail in the alternatives considered in this FEIS, and analysis of these elements together in a single alternative would not present a seriously different picture of the environmental impacts of these elements from what has already been presented in the FEIS. Therefore, it was not necessary to examine the Citizens' Park Alternative in detail as a separate alternative. The ultimate decision to be made by the Regional Forester can include a combination of fully analyzed elements of the studied alternatives, and therefore implementation of a plan resembling the Citizens' Park Alternative is still possible even without the creation of a new alternative in the FEIS.

A more detailed response to each of the recommendations in the Citizens' Park Alternative is included in Appendix L, Response to Comment, both in the various resource areas and as a whole in the Planning section of that appendix (FEIS, Volume 2, Appendix L, Planning, Citizens' Park Alternative).

Comparison of Alternatives

This section compares the alternatives by summarizing key differences between them. They are compared here by what land allocations and management areas they include, by how they respond to the issues, and by their environmental effects. The environmental consequences of each alternative are analyzed in detail by resource area in Chapter 4.

Comparison of Alternatives by Land Allocations and Management Areas

The alternatives vary in the number and extent of the land allocations and management areas they propose. As shown in the following table, there are a number of land allocations that are common to all the alternatives, but they may differ in size. None of the alternatives change the existing designated wildernesses, wild and scenic rivers, or the Kings River Special Management Area. These land allocations and management areas are described and discussed in greater length in the Reader's Guide to Alternative Descriptions, Land Allocations and Management Areas section, earlier in Chapter 2. They overlap with one another to varying degrees and are displayed on the land allocations map for each alternative.

Maps showing the static land allocations and management areas for each alternative are displayed on the alternative maps in the accompanying final EIS Map Packet. This packet includes:

1. Alternative A
2. Alternatives B and F
3. Alternatives C and D
4. Alternative E
5. Giant Sequoia Groves
6. Wildland Urban Intermix (Alternatives A, B, E, and F)
7. Wildland Urban Intermix (Alternative C)
8. Wildland Urban Intermix (Alternative D)
9. Fire Return Interval Departure
10. Motor Vehicle Use Maps (MVUMs)

Table 61 Comparison of Alternatives by Acres of Land Allocations and Management Areas

Land Allocations/Management Areas	Alt. A	Alt. B	Alt. C[1]	Alt. D[1]	Alt. E	Alt. F
Static						
Giant Sequoia Groves[2]	34,530	72,300	27,830	27,830	34,530	72,300
Wilderness/Wild & Scenic Rivers	17,960	17,960	17,960	17,960	33,070	17,960
Kings River Special Management Area (KRSMA)	24,290	24,290	24,290	24,290	24,290	24,290
Backcountry (Inventoried Roadless Areas)	80,300	80,300	80,300	80,300	80,300	80,300
Old Forest Emphasis Area	153,760	153,760	0	0	0	153,760
Southern Sierra Fisher Conservation Area (SSFCA)	311,150	311,150	0	0	0	311,150
General Monument	5,710	5,710	5,710	0	0	5,710
Research Natural Areas, Botanical Areas, Geological Areas	5,830	9,340	1,640	1,640	5,830	9,340
Overlapping						
WUI Defense Zone	45,340	45,340	8,300	4,600	45,340	45,340
WUI Threat zone	145,520	145,520	0	0	145,520	145,520
Tribal Fuels Emphasis Treatment Area (TFETA)	0	56,640	0	0	0	56,640
Dynamic						
RCAs and CARs	178,000	178,000	0	178,000	0	178,000
CA Spotted Owl Protected Activity Centers (PACs)	22,620	22,620	0	22,620	0	22,620
Goshawk PACs	3,240	3,240	0	3,240	0	3,240
Great Gray Owl PACs	60	60	0	60	0	60
Furbearer (Pacific fisher and American marten) Den Sites	3,070	3,070	0	3,070	0	3,070
CA Spotted Owl Home Range Core Areas (HRCAs)	44,410	44,410	0	44,410	0	44,410
California Spotted Owl Habitat Areas (SOHAs)	0	0	0	0	24,710	0

1. Most of the Monument is managed as an ecosystem rather than by land allocations.
2. Using the grove allocation boundary defined for each alternative: Alternatives A and E—GIZ; Alternatives C and D—administrative boundary; Alternatives B and F—ZOI.

Comparison of Alternatives by Issues

In this section, the alternatives are compared by the following issues:

Issue 1—Recreation and public use

Issue 2—Road and trail access

Issue 3—Diverse array of wildlife and their habitats

Issue 4—Fuels management/community protection

Issue 5—Tree removal

Issue 6—Methods for giant sequoia regeneration

Issue 7—Fire spreading to tribal lands

The units of measure for each issue are used to compare how each alternative responds to that issue. The following table displays this comparison. Several alternatives respond to the issues in the same or a similar manner; this is because law, regulation, and Forest Service policy direct management of resources at the forest plan level.

Table 62 Comparison of Alternatives by Issues and Their Units of Measure

Units of Measure	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Issue 1—Recreation and Public Use						
Recreation demand analysis	**Somewhat limited** in flexibility to respond to future recreation demand and new activities; the activities emphasized are listed in Forest Plan management emphasis area direction.	**Most flexibility** to respond to future recreation demand and new or changing activities.	Emphasizes developed recreation opportunities; **has flexibility** to respond to future demand and new or changing activities, but with **some limitations** on allowed activities; activities such as dispersed (roadside or end of the road) camping and biking on trails would not be possible.	Limits the development of new recreation facilities; **most limited** in ability to respond to future recreation demand and new or changing activities; no new roads allowed, so new picnic areas or campgrounds would be walk-in only, limiting the ability to accommodate groups.	**Somewhat limited** in flexibility to respond to future recreation demand and new activities; the activities emphasized are listed in Forest Plan management emphasis area direction.	**Most flexibility** to respond to future recreation demand and new or changing activities.
Issue 2—Road and Trail Access						
1) Roads open to public (current system is 822 miles, with 751 miles open to the public)						
Estimated miles of open roads as changes are made to transportation system over time (% of total miles)	751 (91)	597 (73)	313 (38)	494 (60)	597 (73)	597 (73)
Estimated percent maintenance level 2 roads closed over time	0	30	85	50	30	30
2) Potential to change trail system	**Potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (mountain biking,	**Potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (mountain biking,	**Most potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (hiking, stock) and	**More potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (mountain biking,	**Potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (mountain biking,	**Potential for increase** as decommissioned roads are converted to trails or new trails are developed. Trails for specific uses (mountain biking,

Comparison of Alternatives by Issues and Their Units of Measure, cont'd.

Units of Measure	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
	hiking, stock) and loop trails could be provided.	hiking, stock) and loop trails could be provided.	loop trails could be provided, but not for mountain bikes.	hiking, stock) and loop trails could be provided, but opportunities for mountain bikes could be limited.	hiking, stock) and loop trails could be provided.	hiking, stock) and loop trails could be provided.
Issue 3—Diverse Array of Wildlife and Their Habitats						
1) Percentage of Monument with land allocations designed to protect key wildlife habitat	98	98	0[1]	35	7[2]	98[3]
Acres of spotted owl PACs	22,620	22,620	0	22,620	0 SOHAs only	22,620
Acres of goshawk PACs	3,240	3,240	0	3,240	0	3,240
Acres of gray owl PACs	60	60	0	60	0	60
Acres of fisher den site buffer	2,970	2,970	0	2,970	0	2,970
Acres of marten den site buffer	110	110	0	110	0	110
Acres of CARs	27,100	27,100	0	27,100	0	27,100
Acres of RCAs	150,900	150,900	0	150,900	0	150,900
Acres of old forest emphasis[4]	160,610	160,610	0	0	0	160,610
Acres of SSFCA[4]	333,540	333,540	0	0	0	333,540
2) Acres of wildlife habitat in WUI and TFETA (percent of Monument)						
Acres in WUI defense	45,340 (13)	45,340 (13)	8,300 (2)	4,600 (1)	45,340 (13)	45,340 (13)

1. Does not include land allocations for habitat protection, but relies on large areas with very little or no human intervention.
2. Standards and guideline from MSA generally provide weaker protections than 2001 SNFPA.
3. Standards and guidelines for some allocations provide reduced protection due to lack of diameter limits.
4. Gross acres inside the Monument, including FS, private, and other jurisdictions.

Comparison of Alternatives by Issues and Their Units of Measure, cont'd.

Units of Measure	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Acres in WUI threat	145,520 (41)	145,520 (41)	0	0	145,520 (41)	145,520 (41)
Acres in TFETA	0	56,640	0	0	0	56,640
3) Recreation use						
Approximate miles of road (all jurisdictions)	1,100	1,100	1,100	1,100	1,100	1,100
Miles of trail for recreation	196	196	196	196	196	196
Acres developed recreation sites	660	660	660	660	660	660
Dispersed camping	Allowed	Allowed	Not allowed except by permit in certain areas	Allowed	Allowed	Allowed
Off-highway vehicle use	Allowed on designated roads only	Allowed on designated roads only	Limited to highway-legal vehicles	Limited to highway-legal vehicles	Allowed on designated roads only	Allowed on designated roads only
New recreation development	Allowed	Allowed	Allowed	Limited	Allowed	Allowed
Motorized vehicle traffic	Allowed on designated roads only	Allowed on designated roads only	Limited to highway-legal vehicles	Limited to highway-legal vehicles	Allowed on designated roads only	Allowed on designated roads only
Over-snow vehicles	Allowed on designated roads only	Allowed on designated roads only	Not allowed, except to access private property, for administrative reasons, or in emergency situations.	Limited to certain paved roads	Allowed on designated roads only	Allowed on designated roads only
Issue 4—Fuels Management/Community Protection						
1) Width of WUI zones						
Defense:	1/4 mile	1/4 mile	300 feet	200 feet	1/4 mile	1/4 mile
Threat:	1¼ mile	1¼ mile	N/A	N/A	1¼ mile	1¼ mile
2) Percent of Monument treated by prescribed fire and mechanical treatments per decade (as projected by the SPECTRUM Model)						
Decade 1:	6.1	7.1	3.8	1.1	6.2	7.7

Comparison of Alternatives by Issues and Their Units of Measure, cont'd.

Units of Measure	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Decade 2:	7.9	8.1	3.2	0.1	7.1	9.7
Decade 3:	10.3	9.3	4.7	0.1	8.2	12.1
Decade 4:	7.3	7.9	2.8	0.0	7.3	9.7
Decade 5:	9.4	9.1	3.8	0.1	7.2	10.3
Decade 6:	6.8	5.8	2.1	0.0	6.4	9.2
Decade 7:	8.6	8.6	3.0	0.1	6.7	9.1
3) Estimated acres of moderate and high fire susceptibility (in WUI zones and TFETA)						
Moderate:	140,440 ac	182,630 ac	5,240 ac	2,980 ac	140,440 ac	182,630 ac.
High:	33,240 ac	38,390 ac	2,900 ac	1,560 ac	33,240 ac	38,390 ac.
Issue 5—Tree Removal						
Percent of Monument treated by mechanical or hand treatments per decade (as projected by the SPECTRUM Model)						
Decade 1:	4.0	3.3	1.7	0.7	3.4	4.7
Decade 2:	4.9	3.6	1.0	0.0	3.9	6.1
Decade 3:	3.7	2.2	2.4	0.3	2.8	6.2
Decade 4:	2.1	2.6	0.8	0.0	2.6	4.4
Decade 5:	2.2	1.9	1.9	0.2	2.0	4.5
Decade 6:	1.8	1.9	0.6	0.0	2.2	3.8
Decade 7:	1.6	1.6	1.5	0.2	1.3	3.5
Issue 6—Methods for Giant Sequoia Regeneration						
Estimated acres of sequoia regeneration (based on openings likely to be created by proposed activities and the amount of defense zone treatments within giant sequoia groves)	300	200	100	0	400	500
Issue 7—Fire Affecting Adjacent Tribal Lands						
Presence of TFETA	TFETA not present	TFETA present	TFETA not present	TFETA not present	TFETA not present	TFETA present

Comparison of Alternatives by Environmental Effects

The following table compares the alternatives by summarizing their environmental effects on resource areas. A more detailed and complete discussion of the environmental consequences by resource area can be found in Chapter 4 of this final EIS.

Table 63 Comparison of Alternatives by Environmental Effects on Resources

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Vegetation, including Giant Sequoias					
Promotes forest resilience with a combination of management tools that allow moderate stand density reduction and protection from severe wildfire.	Promotes forest resilience with a combination of management tools that allow moderate stand density reduction and protection from severe wildfire.	Promotes forest resilience to a lesser degree by relying mainly on fire. Less potential for stand density reduction for forest health and protection from severe wildfire.	Promotes forest resilience to a lesser degree by relying mainly on fire. Less potential for stand density reduction for forest health and protection from severe wildfire.	Promotes forest resilience with a combination of management tools that allow moderate stand density reduction and protection from severe wildfire.	Promotes forest resilience to the greatest degree with the most flexibility in treatment methods that allow more control of stand density and better protection from drought, insects, and severe wildfire.
Promotes heterogeneity/ vegetative diversity with a combination of management tools.	Promotes heterogeneity/ vegetative diversity with a combination of management tools.	Promotes heterogeneity/vegetative diversity the least by maintaining current seral stages.	Could result in more early seral habitat as a result of more uncharacteristically severe wildfires.	Promotes more heterogeneity/vegetative diversity due to greater management flexibility.	Promotes the most heterogeneity/vegetative diversity due to greater management flexibility.
Moderate area potentially treated by mechanical or hand treatments.	Most area potentially treated by mechanical or hand treatments, but no more than 10 percent of Monument.	Less area potentially treated by mechanical or hand treatments.	Least area potentially treated by mechanical or hand treatments.	Moderate area potentially treated by mechanical or hand treatments.	Most area potentially treated by mechanical or hand treatments, but no more than 10 percent of Monument.
Moderate acres of giant sequoia regeneration.	Some acres of giant sequoia regeneration.	Few acres of giant sequoia regeneration, greater potential dependent upon wildfire.	Least acres of giant sequoia regeneration, greater potential dependent upon wildfire.	Moderate acres of giant sequoia regeneration.	Most acres of giant sequoia regeneration.
Fire and Fuels					
Adheres to 2001 SNFPA priorities and direction for fire and fuels management. Includes WUI defense zone of ¼ mile (45,340 acres) and threat zone of 1¼ mile (145,520 acres).	Includes WUI defense zone of ¼ mile (45,340 acres) and threat zone of 1¼ mile (145,520 acres). Diameter limit for tree cutting of 20 inches in WUI defense zone. Adds 56,640-acre tribal fuels emphasis treatment area (TFETA).	Includes WUI defense zone of 300 feet (8,300 acres). Tree removal only allowed as by-product of fuels reduction or public safety activities.	Includes WUI defense zone of 200 feet (4,600 acres). Diameter limit for tree cutting of 12 inches in WUI defense zone. Trees cut in WUI would remain on site, chipped or masticated and turned into mulch.	Includes WUI defense zone of ¼ mile (45,340 acres) and threat zone of 1¼ mile (145,520 acres).	Includes WUI defense zone of ¼ mile (45,340 acres) and threat zone of 1¼ mile (145,520 acres). No diameter limit for tree cutting. Adds 56,640-acre TFETA.

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Prioritizes management tools for fuels reduction as follows: (1) mechanical treatments, (2) prescribed fire, (3) managed wildfire.	Prioritizes management tools for fuels reduction as follows: (1) prescribed fire, (2) mechanical treatments, (3) managed wildfire.	Prioritizes management tools for fuels reduction as follows: (1) prescribed fire and managed wildfire, (2) mechanical treatments.	Prioritizes management tools for fuels reduction as follows: (1) managed wildfire, (2) prescribed fire, (3) mechanical treatments (only under limited circumstances in WUI defense zone).	Prioritizes management tools for fuels reduction as follows: (1) mechanical treatments, (2) prescribed fire, (3) managed wildfire.	No priorities for management tools for fuels reduction. The three tools—managed wildfire, mechanical means, and prescribed fire—would be used in combination based on site-specific analysis and existing conditions.
Fuel reduction activities on 12,000 acres with high fire susceptibility and 32,300 acres with moderate fire susceptibility (as projected by SPECTRUM Model).	Fuel reduction activities on 12,000 acres with high fire susceptibility and 32,300 acres with moderate fire susceptibility. Trend in prescribed fire shows increase from current program (as projected by SPECTRUM Model).	Fuel reduction activities on 2,900 acres with high fire susceptibility and 5,200 acres with moderate fire susceptibility. Greater emphasis on prescribed fire and managed wildfire as fuel treatment tools (as projected by SPECTRUM Model).	Fuel reduction activities on 1,600 acres with high fire susceptibility and 3,000 acres with moderate fire susceptibility. Greatest opportunity for natural fire processes and managed wildfire (as projected by SPECTRUM Model).	Fuel reduction activities on 12,000 acres with high fire susceptibility and 32,300 acres with moderate fire susceptibility. Trend in fuel treatments similar to the current program (as projected by SPECTRUM Model).	Fuel reduction activities on 12,000 acres with high fire susceptibility and 32,300 acres with moderate fire susceptibility. Increase in mechanical and hand treatments from current program. Increase in prescribed fire up to second decade, then a decline (based on SPECTRUM Model).
Air Quality					
Moderate level of emissions from wildfires. Priority of management tools for fuels reduction allows for some control of emissions effects on air quality.	Low level of emissions from wildfires. Priority of management tools for fuels reduction allows for greater control over timing of emissions, minimizing effects on air quality.	Moderately high level of emissions from wildfires due to more limited use of mechanical treatments and additional use of prescribed fire. Restoring the natural process of wildfire without changes to stand structure	High level of emissions from wildfire due to more limited use of prescribed fire and mechanical treatments. Reduces overall control over timing of emissions; maximizes total emissions released by uncontrolled fires.	Low level of emissions from wildfires due to additional use of mechanical treatments and prescribed fire. Allows for maximum control over timing of emissions from fire; minimizes total emissions from fire.	Low level of emissions from wildfire. More flexible use of management tools allows for greater control over timing of emissions.

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
		results in increased emissions for the short term (3 decades).			
Wildlife and Plant Habitat (including Threatened, Endangered, and Sensitive Species; Management Indicator Species; Botanical Resources; and Invasive Nonnative Species)					
Moderate amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover 13 percent and threat zones cover 41 percent.	Larger amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover 13 percent and threat zones cover 41 percent. Tribal fuels emphasis area (TFETA) of 56,640 acres established.	Smaller amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover only 2 percent. No TFETA established.	Smallest amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover only 1 percent. No TFETA established.	Moderate amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover 13 percent and threat zones cover 41 percent. Larger diameter limits allow loss of larger trees. No TFETA established.	Largest amount of habitat likely to be affected by fuels treatment activities. WUI defense zones cover 13 percent and threat zones cover 41 percent. TFETA of 56,640 acres established. Lack of diameter limits allows loss of larger trees.
Largest amount of special management areas for wildlife.	Largest amount of special management areas for wildlife.	No special management areas for wildlife, but low level of fuels treatment to affect them.	Large amount of special management areas for wildlife, but no Southern Sierra Fisher Conservation Area (SSFCA) or old forest emphasis area.	Lowest amount of special management areas for wildlife. Only spotted owl habitat areas (SOHAs), which provide little protection.	Largest amount of special management areas for wildlife.
Large number of recreation sites, roads, trails, and dispersed camping sites which may affect the quality of habitat through disturbance, introduction of noxious weeds, fragmentation, or the loss of key habitat features.	Large number of recreation sites, roads, trails, and dispersed camping sites which may affect the quality of habitat through disturbance, introduction of noxious weeds, fragmentation, or the loss of key habitat features.	Lowest level of recreation effects on habitat due to the elimination of dispersed camping, restrictions on types of vehicles, and likely fewer miles of roads.	Lower level of recreation effects on habitat due to the restrictions on types of vehicles and no new roads allowed.	Large number of recreation sites, roads, trails, and dispersed camping sites which may affect the quality of habitat through disturbance, introduction of noxious weeds, fragmentation, or the loss of key habitat features.	Large number of recreation sites, roads, trails, and dispersed camping sites which may affect the quality of habitat through disturbance, introduction of noxious weeds, fragmentation, or the loss of key habitat features.
Likely fewer acres of stand-replacing	Likely fewer acres of stand-replacing	Likely more acres of stand-replacing fire;	Likely most acres of stand-replacing fire;	Likely moderate acres of stand-	Likely fewer acres of stand-replacing

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
fire; fewer snags in burned forest.	fire; fewer snags in burned forest.	more snags in burned forest.	most snags in burned forest.	replacing fire; fewest snags in burned forest.	fire; fewer snags in burned forest.
Range					
Continue current livestock management practices in 1988 Forest Plan, 1990 MSA, 2001 SNFPA..	Use 2004 SNFPA S&Gs and portions of 1990 MSA for livestock grazing. May require additional fencing due to TFETA.	Use 2004 SNFPA S&Gs and portions of 1990 MSA for livestock grazing.	Use 2004 SNFPA S&Gs and portions of 1990 MSA for livestock grazing.	Use grazing management direction from 1988 Forest Plan, 1990 MSA. No specific S&Gs for great gray owls, willow flycatcher. Allowable use factors determined locally.	Use 2004 SNFPA S&Gs and portions of 1990 MSA for livestock grazing. May require additional fencing due to TFETA.
Hydrological Resources					
Adopts standards and guidelines (S&Gs) from 2001 SNFPA. Does not include refined S&Gs appropriate to the Monument: detailed streamside management zone (SMZ) direction, local conditions, ranges in natural variability for riparian conditions, water quality, and the meadow restoration strategy.	Follows riparian conservation objectives (RCOs) and S&Gs in the 2004 SNFPA. Provides more refined S&Gs consistent with SMZ direction, local conditions, ranges in natural variability for riparian conditions, water quality, and a meadow restoration strategy.	Follows riparian conservation objectives (RCOs) and S&Gs in the 2004 SNFPA. Provides moderate protection to hydrological resources (more than Alternatives E and D and less than Alternative A).	Follows riparian conservation objectives (RCOs) and S&Gs in the 2004 SNFPA. Provides the least protection to hydrological resources. Would not control wildfires in riparian and wetland areas with vegetative conditions outside the natural range of variability for fire return intervals. Inability to control fire in watersheds could lead to increases in sedimentation and effects on riparian dependent species, water quality, large woody material, shade and water temperatures, and	Provides moderate protection to hydrological resources (more than Alternative D and less than Alternatives A, B, C, and F). Adopts S&Gs of the Forest Plan and MSA. While these were scientifically valid in their time, they do not benefit from data from the SNFPA and more recent monitoring.	Follows riparian conservation objectives (RCOs) and S&Gs in the 2004 SNFPA. Provides the same protection to hydrological resources as Alternative B. Opportunity in CARs and RCAs to develop prescriptions for the management of riparian dependent species, including adjusted diameter limits.

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
			watersheds that already exceed the threshold of concern.		
Groundwater					
Potential for new wells	Potential for new wells	Potential for new wells	Potential for new wells	Potential for new wells	Potential for new wells
Geological Resources					
Highest potential for effects on caves due to open cave access.	Provides protection for caves, especially those caves in the Windy Gulch Geological Area, through development of a management plan and standards and guidelines for cave access and closure.	Protects caves similar to SEKI with development of cave management plan.	Highest potential for effects on caves due to open cave access.	Highest potential for effects on caves due to open cave access.	Provides protection for caves, especially those caves in the Windy Gulch Geological Area, through development of a management plan and standards and guidelines for cave access and closure.
Paleontological Resources					
Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.	Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.	Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.	Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.	Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.	Effects on paleontological resources within meadow sediments unlikely with proposed standards and guidelines for hydrological resources.
Soils					
Intermediate number of acres of mechanical treatments increase the potential for direct soil disturbance. Some beneficial effects on soils from prescribed fire, by reducing surface fuel loads and future wildfire intensity.	Intermediate number of acres of mechanical treatments increase the potential for direct soil disturbance. Some beneficial effects on soils from prescribed fire, by reducing surface fuel loads and future wildfire intensity.	Fewest acres of mechanical treatments decrease the potential for direct soil disturbance. Some beneficial effects on soils from prescribed fire, by reducing surface fuel loads and future wildfire intensity.	Fewest acres of mechanical treatments decrease the potential for direct soil disturbance. Least beneficial effects on soils from prescribed fire.	Most acres of mechanical treatments increase the potential for direct soil disturbance. Some beneficial effects on soils from prescribed fire, by reducing surface fuel loads and future wildfire intensity.	Most acres of mechanical treatments increase the potential for direct soil disturbance. Most beneficial effects on soils from prescribed fire, by reducing surface fuel loads and future wildfire intensity.

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Least risk for large, severe wildfires that could lead to increases in soil erosion.	Least risk for large, severe wildfires that could lead to increases in soil erosion.	Greatest risk for large, severe wildfires that could lead to increases in soil erosion.	Greatest risk for large, severe wildfires that could lead to increases in soil erosion.	Least risk for large, severe wildfires that could lead to increases in soil erosion.	Least risk for large, severe wildfires that could lead to increases in soil erosion.
Human Use (including Recreation, Scenery, and Socioeconomic)					
Somewhat limited in flexibility to respond to future recreation demand and new activities; the activities emphasized are listed in Forest Plan management emphasis area direction.	Most flexibility to respond to future recreation demand and new or changing activities.	Emphasizes developed recreation opportunities; has flexibility to respond to future demand and new or changing activities, but with some limitations on allowed activities; activities such as dispersed (roadside or end of the road) camping and biking on trails would not be possible.	Limits the development of new recreation facilities; most limited in ability to respond to future recreation demand and new or changing activities; no new roads allowed, so new picnic areas or campgrounds would be walk-in only, limiting the ability to accommodate groups and people with disabilities.	Somewhat limited in flexibility to respond to future recreation demand and new activities; the activities emphasized are listed in Forest Plan management emphasis area direction.	Most flexibility to respond to future recreation demand and new or changing activities.
Moderately improves and maintains scenic integrity through managing recreation effects; allows moderate amount of vegetation management; fuels management expected to reduce some risks of severe fire that would affect scenic integrity over the long term.	Moderately improves and maintains scenic integrity through managing recreation effects; allows moderate amount of vegetation management; fuels management expected to reduce more risks of severe fire that would affect scenic integrity over the long term.	Best minimizes effects to scenery from recreation. Little opportunity to pre-treat areas before prescribed burns to minimize effects to scenic integrity, reduced opportunities for vegetation management in overstocked areas, and minimal reduction in risk of severe fire that would have long-term effects on scenic integrity.	Least supportive of maintaining and improving scenic integrity because of restrictions placed on vegetation management. High risk of severe wildfire in areas valued for scenic beauty. Limited opportunities to manage increases in visitation, especially those associated with developed camping.	Moderately improves and maintains scenic integrity through managing recreation effects; allows moderate amount of vegetation management; fuels management expected to reduce some risks of severe fire that would affect scenic integrity over the long term.	Greatest potential to maintain and improve scenic integrity. Allows most vegetation management for maintenance and improvement of scenic resources. Moderate opportunity to manage recreation effects on scenery. Fuels management expected to provide the greatest amount of protection from uncharacteristically severe wildfire.

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Least likely to change Forest Service contribution to the economy.	Less likely to change Forest Service contribution to the economy. More emphasis on promoting tourism. Encourages gateway community development.	Most likely to decrease Forest Service contribution to the economy. More emphasis on promoting tourism.	Most likely to decrease Forest Service contribution to the economy. Likely attract different type of tourism, with most services outside of the Monument.	Less likely to change Forest Service contribution to the economy.	Less likely to change Forest Service contribution to the economy. More emphasis on promoting tourism. Encourages gateway community development.
Cultural Resources					
No change from current level of effects.	Least potential to affect cultural resources due to larger WUI, TFETA, stable transportation system, and most balanced cultural resource management program.	Less potential to affect cultural resources due to reduction in dispersed camping, but more potential to affect cultural resources without TFETA.	Greatest potential to affect cultural resources due to reliance on wildfires and lack of ability to pre-plan mitigation measures.	Potential to affect cultural resources due to the proposal of additional designated wilderness and less planned fuels reduction.	Least potential to affect cultural resources due to larger WUI, TFETA, stable transportation, and most balanced cultural resource management program.
Tribal and Native American Interests					
No change from current level.	Greatest potential for positive effects due to TFETA, large WUI, and large transportation system.	Less potential for positive effects due to reduced transportation system, smaller WUI, and lack of TFETA.	Least potential for positive effects due to greatest reduction in transportation system, smallest WUI, and no TFETA.	Less potential for positive effects due to lack of TFETA.	Greatest potential for positive effects due to TFETA, large WUI, and large transportation system.
Transportation System					
Current road system 822 miles. Allows off-highway vehicles (OHV) and over-snow vehicles (OSV) on designated roads. Non-motorized mechanized vehicles (mountain bikes) allowed on	Road system 822 miles. Allows OHV and OSV on designated roads. Non-motorized mechanized vehicles (mountain bikes) allowed on designated roads and trails. Emphasizes	Road system 822 miles. Allows street-legal OHV on designated roads. Allows OSV only to access private property or for administrative or emergency purposes. Non-motorized	Road system 822 miles. Allows street-legal OHV on designated roads. Allows OSV only on paved roads. Non-motorized mechanized vehicles (mountain bikes) allowed on	Road system 822 miles. Allows OHV and OSV on designated roads. Non-motorized mechanized vehicles (mountain bikes) allowed on designated roads and trails. Emphasizes	Road system 822 miles. Allows OHV and OSV on designated roads. Non-motorized mechanized vehicles (mountain bikes) allowed on designated roads and trails. Emphasizes

Comparison of Alternatives by Environmental Effects on Resources, cont'd.

Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
designated roads and trails.	opportunities for creating loop trails and roads.	mechanized vehicles (mountain bikes) allowed only on designated roads, not trails.	designated roads and trails. No new roads proposed.	opportunities for creating loop trails and roads.	opportunities for creating loop trails and roads.
Expect minor reduction in maintenance level (ML) 1 and 2 roads over time as roads not needed for resource management or dispersed recreation are closed or decommissioned. Roads to be decommissioned could be converted to trails. Potential construction of new roads for developed recreation facilities and loop driving opportunities.	Expect minor reduction in ML 1 and 2 roads over time as roads not needed for resource management or dispersed recreation are closed or decommissioned. Roads to be decommissioned could be converted to trails. Emphasizes opportunities for creating loop trails and roads. Potential construction of new roads for developed recreation facilities and loop driving opportunities.	Expect substantial reduction in ML 1 and 2 roads over time (closure or decommissioning) due to reduced dispersed recreation. Roads to be decommissioned could be converted to trails. Potential construction of new roads for developed recreation facilities and loop driving opportunities.	Expect substantial reduction in ML 1 and 2 roads over time (closure or decommissioning) due to reduced vegetation management projects. Roads to be decommissioned could be converted to trails.	Expect minor reduction in ML 1 and 2 roads over time as roads not needed for resource management or dispersed recreation are closed or decommissioned. Roads to be decommissioned could be converted to trails. Emphasizes opportunities for creating loop trails and roads. Potential construction of new roads for developed recreation facilities and loop driving opportunities.	Expect minor reduction in ML 1 and 2 roads over time as roads not needed for resource management or dispersed recreation are closed or decommissioned. Roads to be decommissioned could be converted to trails. Emphasizes opportunities for creating loop trails and roads. Potential construction of new roads for developed recreation facilities and loop driving opportunities.
Special Areas, including Special Interest Areas					
Addition of Freeman Creek Botanical Area.	Addition of Freeman Creek Botanical Area and Windy Gulch Geological Area.	No additional special areas.	No additional special areas.	Addition of Freeman Creek Botanical Area. Recommendation of Moses Wilderness.	Addition of Freeman Creek Botanical Area and Windy Gulch Geological Area.