Chapter 1: Purpose and Need

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INTRODUCTION

The United States (U.S.) Department of the Interior, National Park Service (NPS) has prepared this Draft Environmental Impact Statement (EIS) to present and analyze project alternatives for the restoration of the Mariposa Grove of Giant Sequoias in Yosemite National Park, California. This document has been prepared and distributed to interested members of the public, agencies, tribes, and associated groups for review in accordance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA), NPS Director's Order 12, and the NPS 2006 *Management Policies* (NPS 2006). This draft EIS also meets the substantive requirements of the California Environmental Quality Act, in accordance with an agreement with the State of California. This draft EIS presents the "no-action" alternative and three comprehensive design alternatives for restoring natural conditions and protecting natural and cultural resources, to the extent practicable, in the Mariposa Grove of Giant Sequoias (also referred to herein as Mariposa Grove, or the Grove), and for improving visitor access and experience within the Grove, including Wawona Point, and the South Entrance to Yosemite National Park. The action alternatives are consistent with goals established in the *General Management Plan* (NPS 1980a) for Yosemite National Park.

BACKGROUND

In 1864, the U.S. Congress passed, and President Lincoln signed, landmark legislation granting the Yosemite Valley and the Mariposa Grove of Big Trees to the State of California. The statute required that the state manage this new park for "public use, resort, and recreation" (Act of June 30, 1864, 13 Stat., 325) (figure 1-1). This was the first time Congress set aside public lands for the express purpose of preserving scenic and natural values. Protection of the Grove was crucial in this time period, as logging of other giant sequoia groves was ongoing.

Giant sequoia (*Sequoiadendron giganteum*) groves occur sporadically on the western slope of the Sierra Nevada in California as relicts of more extensive forests that existed thousands of years ago (figure 1-2). These impressive trees are known for their massive size and longevity, with life spans that may reach 3,200 years (York 2011).

The Mariposa Grove of Giant Sequoias currently supports about 500 mature giant sequoia trees. Mariposa Grove is the largest of three giant sequoia groves within Yosemite National Park, containing 86 percent of the park's mapped adult giant sequoias, and is estimated to receive approximately 25 percent of the park's visitors during peak-use periods (figure 1-3).

Figure 1-1 – *The Great Trees Mariposa Grove California*, by Albert Bierstadt, 1876

Source: Albert Bierstadt, 1876

Figure 1-2 – Distribution of Giant Sequoia Groves in California

Distribution of the trees is influenced by several factors, including surface and ground water (typically supplied by melting snow), topography, elevation, aspect, soil type, relative humidity, and temperature. Giant sequoias have laterally extensive root systems that can radiate up to 200 feet from the base of the tree. Although not well understood, typical root systems are shallow in depth.

Fire plays an important role in giant sequoia ecology, creating canopy openings and releasing soil nutrients needed for seedling establishment. Fire scars on the trees within Mariposa Grove indicate that fires occurred at intervals of approximately 3 to 15 years within the Grove until the late 19th century (NPS 2011b).

The ecosystem within the Mariposa Grove of Giant Sequoias provides important habitat for wildlife and plants, including such special status species as the Pacific fisher (*Martes pennanti*), a federal candidate for listing under the Endangered Species Act; California spotted owl (*Strix occidentalis occidentalis*); and numerous rare herbaceous plants, including Bolander's woodreed (*Cinna bolanderi*), and Coleman's piperia (*Piperia colemanii*).

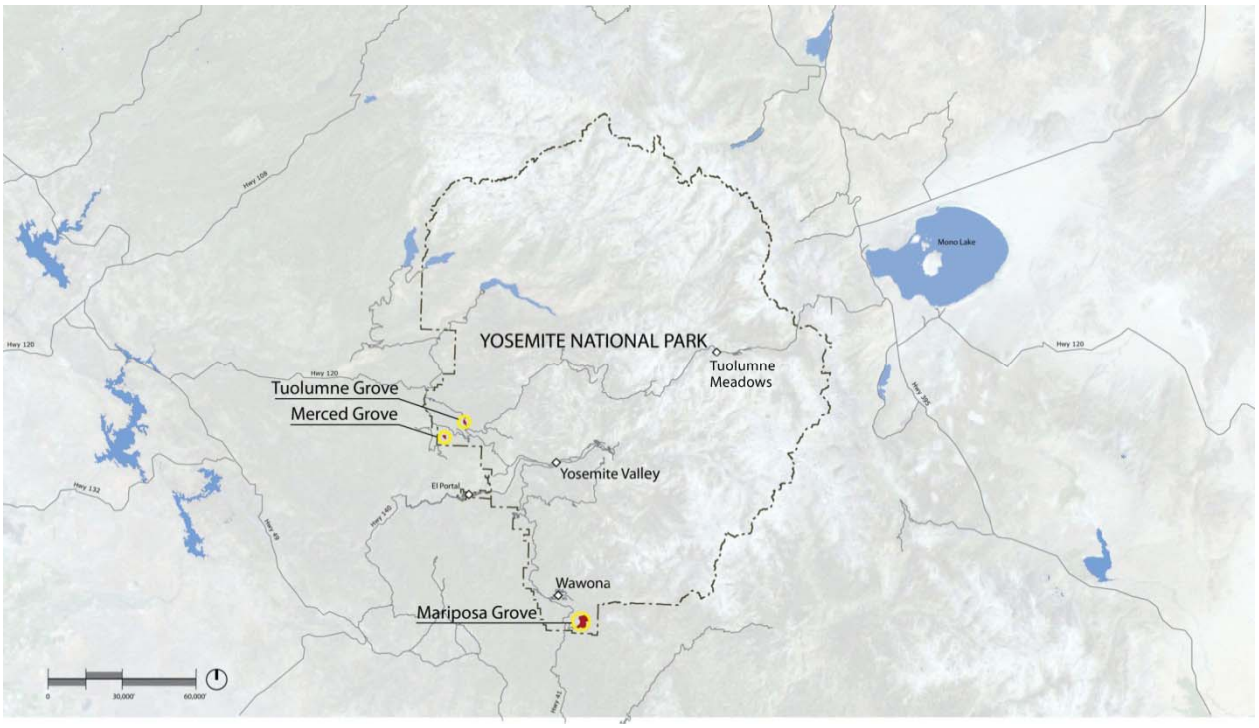

Figure 1-3 – Giant Sequoia Groves in Yosemite National Park

Important cultural resources are numerous in the Mariposa Grove area, including the adult giant sequoia trees. Cultural resources in the area include pre-Contact and historic-era archeological resources, several historic properties either listed or eligible for listing on the National Register of Historic Places, and American Indian traditional cultural resources. The Mariposa Grove Historic District includes the loop road through the Grove, several pedestrian and bridle trails, the Wawona Point overlook, and a comfort station, drinking fountains, and the Mariposa Grove Museum in the upper part of the Grove. The museum building was constructed circa 1930 near the former site of a visitor shelter originally constructed in 1864 by Galen Clark, the first government-appointed guardian of the Mariposa Grove of Big Trees (figure 1-4). The South Entrance Historic District includes a comfort station, the ranger residence/garage, and the park entrance checking station. Mariposa Grove Road, which connects Mariposa Grove with Wawona Road at South Entrance, is being assessed for its eligibility for listing on the National Register as part of this project.

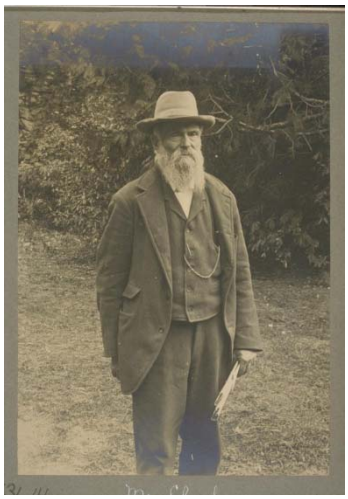

Figure 1-4 – Galen Clark

The Mariposa Grove Archeological District includes several discrete prehistoric and historic sites located within and near Mariposa Grove of Giant Sequoias. Archeological sites are fragile, non-renewable resources with important potential for containing information about past life ways, and represent tangible heritage resources for park-associated American Indian peoples, as well as the visiting public. Other National Register-eligible archeological sites are present in the vicinity of South Entrance. The Mariposa Grove of Giant Sequoia and its varied flora and fauna and natural topographic prominences (e.g., Wawona Point), along with certain of the archeological sites, also represent traditional cultural resources of importance to American Indian tribes and associated groups.

Figure 1-5 displays the project area, which encompasses the Mariposa Grove, South Entrance, and the surrounding area.

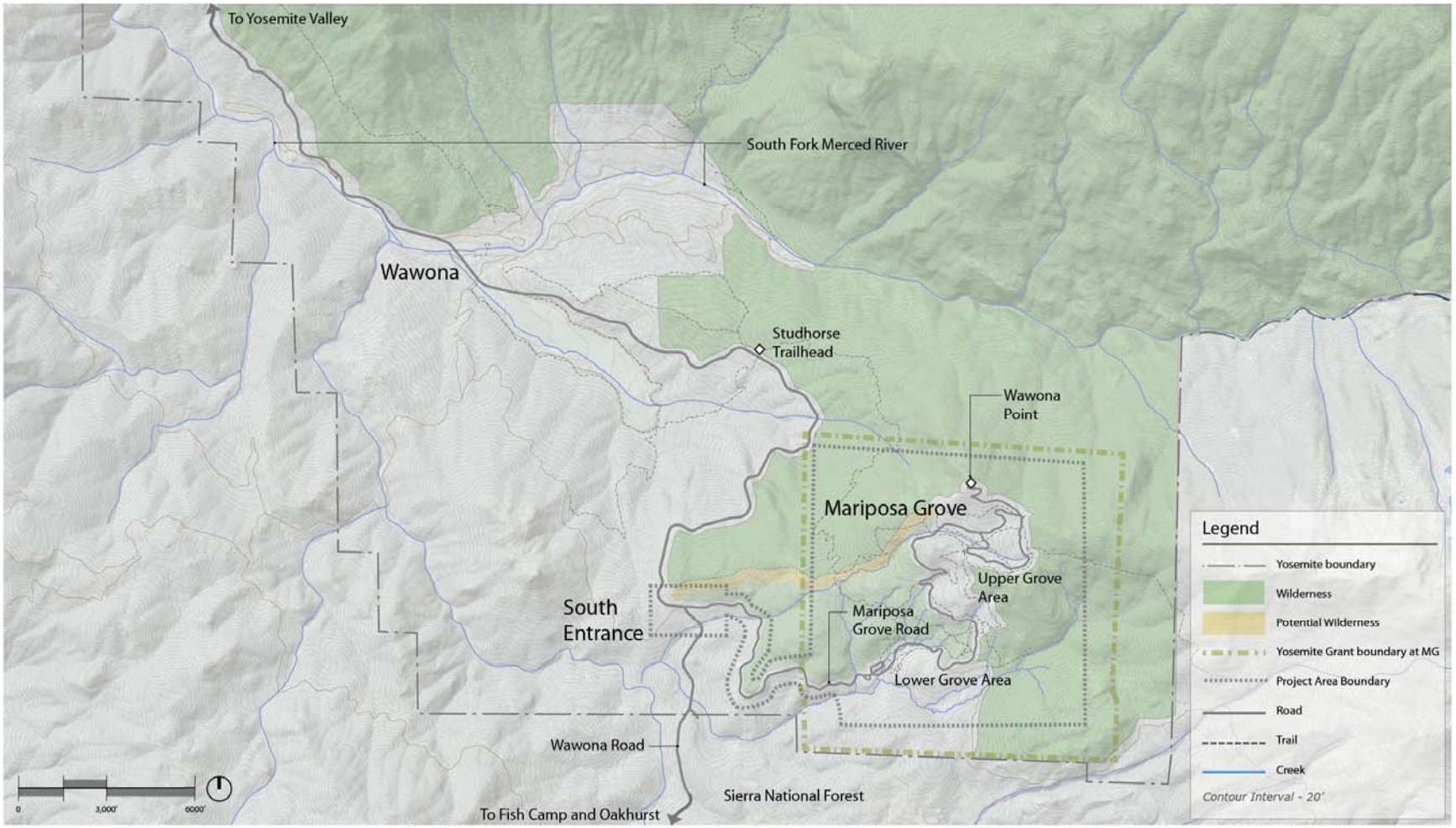

Figure 1-5 – Mariposa Grove Restoration Project Area and Vicinity

The State of California and private entrepreneurs built trails and facilities in and near the Mariposa Grove to accommodate the public in as early as the 1860s. In the early to mid-20th century, the NPS developed visitor facilities and constructed access roads and utilities in and around the Mariposa Grove for the visiting public, including parking lots, comfort stations, a lodge, and a campground. During this time, park managers also attempted to protect the Grove from fire in various ways, including installing fire hydrants in the 1930s; removing surface fuels, including downed trees and dense understories near giant sequoias; and extinguishing wildfires in the vicinity of the Grove. Following this development period, which extended into the 1970s, management practices evolved as understanding of the biology and ecology of giant sequoias improved. Subsequently in 1971, after nearly a century of fire suppression, prescribed fire was reintroduced to the Grove as resource managers recognized that species composition and forest structure had changed, and that heavy fuel accumulation could threaten the long-term survival of giant sequoias.

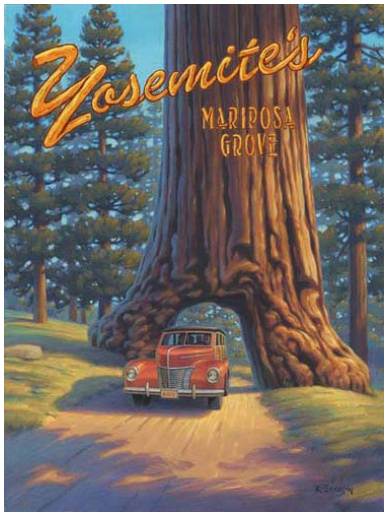

Figure 1-6 – Vintage promotional poster of Wawona Tunnel Tree

Growing concerns about traffic congestion and visitation impacts also eventually led to the decision in 1970 to prohibit private vehicles in the upper Grove area and at Wawona Point. By 1980, when the Yosemite *General Management Plan* (NPS 1980a) was issued, the NPS recognized the need to mitigate traffic congestion at South Entrance, reduce infrastructure and traffic within the Grove, control the intensity of visitor use, and reestablish a more natural fire regime in this rare ecosystem. Buildings and infrastructure present in Mariposa Grove today include tour bus and visitor parking areas; a shuttle stop; a concessioner-operated, diesel-generator-powered gift shop; a staging area and ticket booth for the seasonal, concessioner-operated commercial tram; the Mariposa Grove Museum; comfort stations and an associated septic system/leach field in the upper Grove area; several pedestrian/hiking trails; paved roadways; drainage control structures such as road-side ditches and culverts; a water storage, treatment, and distribution system that serves both Mariposa Grove and South Entrance; and communications equipment at Wawona Point.

The *General Management Plan* (NPS 1980a) for Yosemite National Park outlines goals and actions to protect and restore Mariposa Grove and to improve the nearby South Entrance. A few of these actions have been implemented, such as removal of the campground and lodge from the Grove, and more recently, removal of the commercial tram fueling station. However, several major actions have yet to be undertaken, including removing the parking lot and gift shop from the lower part of the Grove, improving visitor facilities, upgrading utilities, and improving access to the park and to Mariposa Grove through the South Entrance.

PURPOSE OF AND NEED FOR THE PROJECT

PROJECT PURPOSE

The Mariposa Grove of Giant Sequoias is one of the most important natural and cultural resources in Yosemite National Park. Giant sequoia groves are sites of exceptional ecological importance, and are priorities for ecological restoration. While the area of the park occupied by Mariposa Grove is relatively small (approximately 550 acres), more than 20 percent of the types of wildlife and plant

species occurring in Yosemite National Park occur in or utilize the Grove. Important cultural resources are numerous in the Mariposa Grove area, including the adult giant sequoias themselves.

The primary purpose of the proposed project is to implement actions and resource management policies to address conditions at the Mariposa Grove of Giant Sequoias that are contributing to:

- Alteration of the natural systems that support the giant sequoias, wetlands, and associated wildlife and plant communities
- Degradation of cultural resources
- A diminished visitor experience

This project would conserve and protect natural and cultural resources at the Mariposa Grove of Giant Sequoias for the enjoyment of current and future visitors, and support the goals established specifically for the Mariposa Grove of Giant Sequoias and South Entrance area in the *General Management Plan* (NPS 1980a) for Yosemite National Park.

The management goals identified in the *General Management Plan* (NPS 1980a) for the Mariposa Grove of Giant Sequoias include the following:

- Retain the Grove as the primary park location for visitor enjoyment and interpretation of giant sequoias
- Provide only those visitor facilities consistent with preservation of the giant sequoia ecosystem, and remove all other facilities not necessary for visitor enjoyment of the resource
- Upgrade facilities to eliminate resource impacts and meet current standards

Additional project-specific goals for the protection, restoration, and enjoyment of Mariposa Grove are summarized as follows

Natural Resources

- Protect and restore giant sequoia habitat and associated wetlands
- Protect special status wildlife and plant species
- Protect air and water quality and natural soundscapes

Cultural Resources

- Protect and maintain historic buildings, structures, and cultural landscapes, including the giant sequoia trees
- Protect and stabilize prehistoric and historic archeological sites
- Sustain and interpret traditional cultural resources

Sustainability, Durability, and Efficiency

- Incorporate sustainable practices
- Improve efficiency and maintainability of park infrastructure
- Optimize constructability

Visitor Experience

- Improve visitor education
- Improve orientation and wayfinding within the Grove

- Provide options for quality visitor access to the Grove
- Upgrade visitor facilities

Public and Employee Health, Safety, and Welfare

- Enhance universal access and design
- Improve visitor and park/concessioner staff safety

PROJECT NEED

Comprehensive actions to address the impacts of existing infrastructure, operations, and visitor use on natural and cultural resources are needed to ensure that the Mariposa Grove of Giant Sequoias thrives and continues to provide inspiration and enjoyment for current and future generations. The NPS has undertaken several studies to assess the condition and health of the ecosystem, the condition of cultural resources and existing facilities and infrastructure, visitor access and use patterns, and traffic flow at South Entrance. Based on those studies, current conditions adversely affecting the ecological health and historic context of the Mariposa Grove of Giant Sequoias that would be addressed by the proposed project include the following:

- Water availability is important for giant sequoia survival and regeneration, yet roads, trails, and other infrastructure disrupt the natural hydrologic functioning of the Grove, reducing the infiltration of water into soils, and in some instances diverting water outside the Grove watershed.
- Infrastructure concentrated in the lower portion of the Grove encroaches on individual giant sequoias and their roots, and reduces habitat for giant sequoia propagation. This infrastructure includes paved roadway, a 115-space parking lot, a commercial tram staging area, tram ticket booth, generators, a comfort station, and a gift shop.
- Ongoing pedestrian and vehicle traffic throughout the Grove have damaged giant sequoia bark and trunks, compacted soils, and exposed shallow giant sequoia roots, stressing the trees and potentially making them less resilient and more susceptible to external threats such as disease, wildfire, and climate change.
- While the successful reintroduction of prescribed burning in the Grove in the 1970s brought the fire return interval close to its historic range, the risk of catastrophic fire remains high because of heavy fuel loading (primarily downed trees and heavy duff and litter) and increased tree density in forested areas surrounding the Grove.
- A deteriorated water treatment, storage, and distribution system in the upper part of the Grove is leaking thousands of gallons of chlorinated water per day, and may be affecting shallow hydrology and local vegetation.

Current factors affecting the quality of the visitor experience include the following:

- Wayfinding information is insufficient to properly orient visitors upon arrival at the Grove and while on trails within the Grove.
- Poor road conditions cause seasonal closures, limit vehicle types, and are a safety concern for visitors and park employees.
- The Grove parking lot often fills to capacity early in the day, forcing temporary closures of the lot and Mariposa Grove Road, and causing visitor frustration as they are redirected to

limited overflow parking at South Entrance or to Wawona to await a shuttle to return to the Grove.

- Long lines form at the South Entrance station kiosks and intersection as visitors attempt to get information, find parking, or turn around due to Grove parking lot and road closure.
- Shuttles from Wawona to the Grove are often already full when they arrive at the South Entrance shuttle stop, limiting boarding and increasing visitor wait times.
- Trails and facilities in and around the Grove need improvements to reduce grades and/or increase connectivity to provide better universal accessibility.
- Operation of the commercial tram within the Grove creates vehicle/pedestrian conflicts along the loop road, and intrudes on the experience of pedestrian visitors seeking to enjoy the majestic setting and natural soundscapes, particularly in the upper, more remote areas of the Grove.
- The vault toilets in the lower part of the Grove are inadequate and not fully accessible, and are the source of nuisance odors that detract from the Grove experience.
- The historic comfort station and the associated septic system and leach field in the upper part of the Grove have deteriorated, and need historic rehabilitation and upgrades to meet accessibility, water-use efficiency, and maintainability goals.
- Historic features at Wawona Point, including the masonry overlook wall, steps, and railing, are in disrepair and require rehabilitation and upgrades to meet current standards.

With the exception of Alternative 1, No Action, each of the alternatives was developed to meet the project purpose and need to varying degrees and in different ways. All alternatives would generally retain the existing visitor use levels of a typical day in the Mariposa Grove and South Entrance, though visitor use would concentrate in different parts of the Grove. This visitor use level approximates the visitor use numbers established in the 1980 GMP for the Mariposa Grove (3,850 visitors per day). In addition, Alternatives 2-4 in the Mariposa Grove would accommodate additional visitors that arrive by commercial bus.

POLICY AND PLANNING CONTEXT

Alternatives 2, 3, and 4, the action alternatives, were developed in accordance with applicable federal, state, and local statutes and regulations; NPS policies; and relevant park plans. The governing law and policies are identified in the following summary.

LAWS AND POLICIES

Federal Statutes and Executive Orders

- National Park Service Organic Act (1916)
- National Park Service General Authorities Act (1970)
- National Environmental Policy Act (1969)
- National Historic Preservation Act (1966), as amended
- Clean Water Act (1972)

- Clean Air Act (1970), as amended
- Endangered Species Act (1973)
- Migratory Bird Treaty Act (1918)
- Wild and Scenic Rivers Act (1968), as amended
- Archaeological Resources Protection Act (1979)
- Native American Graves Protection and Repatriation Act (1990)
- American Indian Religious Freedom Act (1978)
- Rehabilitation Act (Section 504) (1973)
- Architectural Barriers Act (1968), as amended
- Executive Order 11593: Protection and Enhancement of the Cultural Environment
- Executive Order 13007: Indian Sacred Sites
- Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance
- *Architectural Barriers Act Accessibility Standards for Federal Facilities* (GSA 2006)
- *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1995)

National Park Service Policies, Guidance, and Directors Orders

- *Management Policies 2006* (NPS 2006)
- *Guiding Principles of Sustainable Design* (NPS 1993)
- Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001)
- Director's Order 28: *Cultural Resource Management* (NPS 1998)
- Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* (NPS 2000a)
- Director's Order 77-1: *Wetland Protection* (NPS 2002)

Yosemite National Park Plans

- *General Management Plan* (NPS 1980a)
- *Fire Management Plan* (NPS 2004a)
- *Scenic Vista Management Plan* (NPS 2011)
- *A Sense of Place: Design Guidelines for Yosemite National Park* (NPS 2012)
- *Cultural Landscapes Inventory, Mariposa Grove* (NPS 2004b)
- *Cultural Landscapes Inventory, South Entrance Station* (NPS 2004c)
- *Self Evaluation and Transition Plan, Yosemite National Park Accessibility Program* (NPS 2010a)

Additional applicable laws, policies, and plans that are specific to resources or impact topics (e.g., vegetation) addressed later in this document are identified in the respective sections in Chapter 3: Affected Environment and Environmental Consequences.

ISSUES AND CONCERNS IDENTIFIED IN SCOPING

The park conducted scoping for this project with the public, other agencies, and tribes to identify issues and concerns to consider in the development of alternatives and in the analysis of potential effects. Public scoping for the Restoration of the Mariposa Grove of Giant Sequoias Draft EIS was conducted from August 31, 2011, on which there was a public open house and presentation, through February 3, 2012. Public open houses were held in Yosemite Valley on September 30, 2011 (with a webinar presentation), October 31, 2011, and January 25, 2012. A public site visit was held on October 14, 2011. Public comment forms and collection boxes were available during the scoping period at the Mariposa Grove and in Wawona. Written public comments were also accepted at the open houses, via mail to the Park Superintendent, and electronically through email and the Planning, Environment, and Public Comment database (http://www.parkplanning.nps.gov/mariposagrove). This document serves to meet the public review requirements of Section 106 of the NHPA and the California Environmental Quality Act.

During the public scoping period, the park received 43 letters from 41 individuals and 2 organizations. Analysis of these letters identified 126 discrete substantive comments, from which the following 15 general concern statements were generated:

- Concern #1: The current visitor amenities at the Grove are adversely affecting the giant sequoia trees.
- Concern #2: Continue prescribed fire; it is vital to maintaining the health of the Grove.
- Concern #3: Long-term sustainability of the Grove's ecosystem health is important and should be considered in the Grove's management.
- Concern #4: The Grove parking lot often fills to capacity, forcing temporary closures of the parking lot and road.
- Concern #5: The Grove parking lot and its associated noise and traffic diminish the visitor experience.
- Concern #6: Information and signage are inadequate to properly orient visitors when traveling to the Grove, upon arrival at the Grove, and within the Grove.
- Concern #7: Vehicle operation on Grove roads adversely impacts the visitor experience.
- Concern #8: Grove accessibility should be improved for visitors with disabilities.
- Concern #9: Additional recreation opportunities should be provided at the Grove.
- Concern #10: Protect the Grove by limiting/managing visitation.
- Concern #11: Road configuration, pedestrian crossings, and access at South Entrance are unsafe for visitors and staff.
- Concern #12: Inadequate parking at the Grove contributes to long shuttle rides and traffic congestion at South Entrance.
- Concern #13: Noise from vehicle traffic and commercial tram audio presentations is adversely affecting the Grove's soundscape.

- Concern #14: The bathroom facilities are inadequate.
- Concern #15: The Mariposa Grove planning process is not integrated with other park planning efforts.

The NPS reviewed comments received from the public, tribes, and other agencies to identify issues and concerns to consider in developing and refining project alternatives, and in evaluating potential project environmental impacts.

Impact Topics Retained for Further Analysis

The following impact topics were identified for further analysis based on internal and external scoping:

- Vegetation
- Wildlife
- Special status species
- Wetlands
- Hydrology and water quality
- Soils
- Air quality and climate change
- Soundscapes
- Historic structures
- American Indian traditional cultural resources
- Archeological resources
- Visitor experience and recreation (including public safety and transportation)
- Park operations
- Energy use and sustainability

The affected environment (existing conditions) for each of these topics, and the potential environmental consequences of each of the alternatives if implemented, are presented in Chapter 3: Affected Environment and Environmental Consequences.

Impact Topics Considered but Dismissed

Internal and external scoping identified several impact topics that did not warrant further analysis. These topics and their rationale for dismissal are as follows:

Night Sky. This project is not expected to adversely impact night skies. Best Management Practices (BMPs) for design and construction would avoid impacts on night sky. Therefore, this topic was dismissed from further analysis.

Museum Collections. The collections at Yosemite National Park would not be affected by the proposed project. Therefore, this topic was dismissed from further analysis.

Socioeconomics. The proposed project is not expected to result in measurable impacts on regional or gateway community economies, or changes in visitor attendance or visitor spending patterns as a result of the implementation of the actions described herein. Similarly, the project is not expected to result in growth-inducing impacts either regionally or in nearby communities; this is a consideration under the California Environmental Quality Act. Therefore, socioeconomics was dismissed from further analysis.

Prime and Unique Farmlands. No unique agricultural soils would be impacted by this project. Therefore, this topic was dismissed from further analysis.

Land Use. Land use would not change as a result of the implementing the project. Proposed changes at South Entrance and the Grizzly Giant area of the Grove would be consistent with the overall land use pattern: a combination of undeveloped open space, wilderness, and visitor use and recreation. Therefore, this topic was dismissed from further analysis.

Environmental Justice. Low-income and minority populations are not anticipated to be adversely affected by the proposed project. Therefore, this topic was dismissed from further analysis.

DOCUMENT ORGANIZATION

This EIS is organized as follows:

Chapter 1, Purpose and Need – The first chapter includes a discussion of the significance of the Mariposa Grove of Giant Sequoias, the purpose of and need for the proposed action, the relationship to laws and other plans, input from the consultation and public involvement process, the impact topics that were selected for detailed analysis, and the impact topics that were dismissed from further analysis.

Chapter 2, Alternatives – This chapter presents the four alternatives proposed in the Mariposa Grove DEIS, three action alternatives, and one No-Action Alternative. It also discusses alternatives considered but dismissed.

Chapter 3, Affected Environment and Environmental Consequences – This chapter describes the existing environment that could be affected by implementation of the alternatives. It also analyzes the potential impacts that could result from implementation of each alternative.

Chapter 4, Consultation, Coordination, and Preparers – This chapter summarizes the consultations undertaken in the preparation and review of this document, including public involvement, and lists the names and qualifications of the individuals who have contributed to this document.

Chapter 5, Bibliography – This chapter lists the references cited in this document.

Appendices – The appendices are as follows:

Appendix A: Standard Mitigation Measures
Appendix B: Cumulative Impact Projects
Appendix C: Restoration Plan
Appendix D: Draft Statement of Findings for Protection of Wetlands