



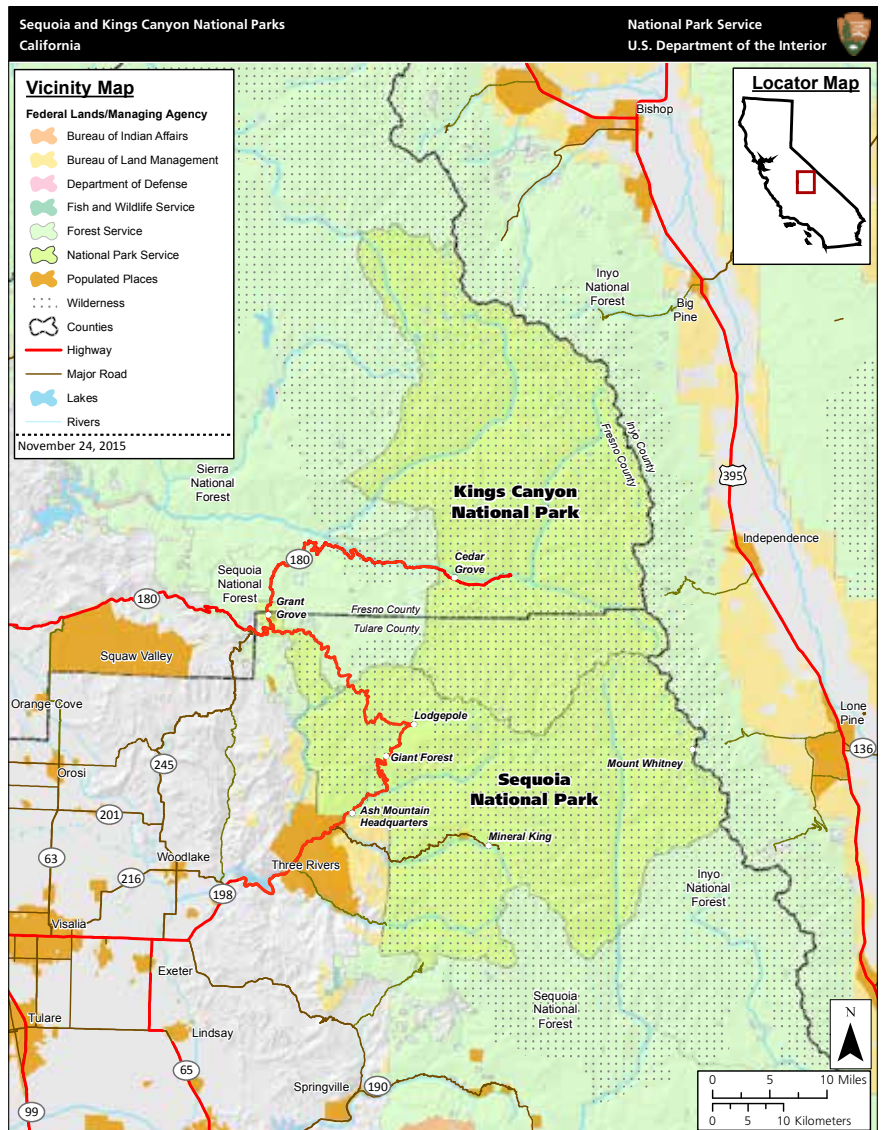
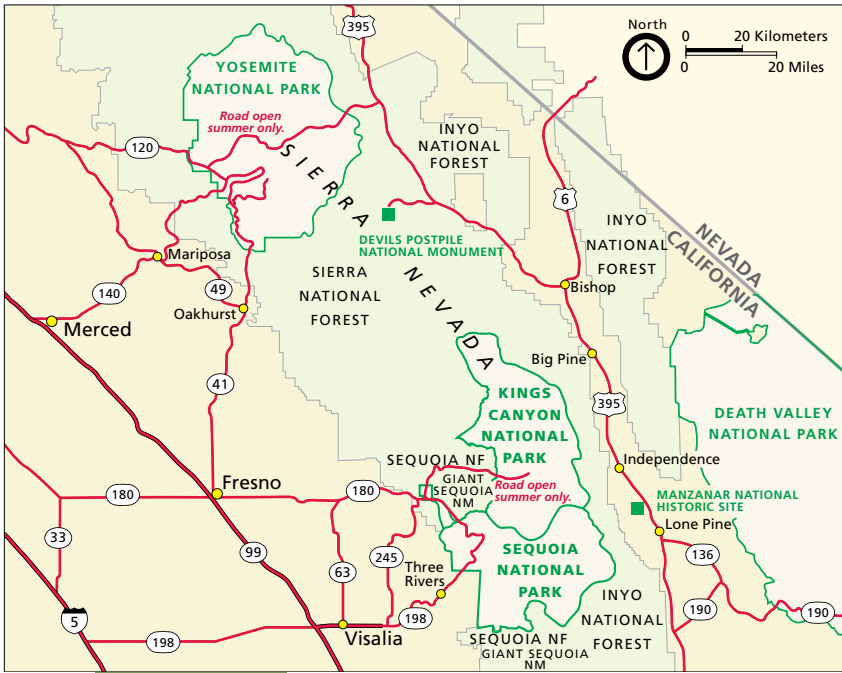
# Foundation Document

## Sequoia and Kings Canyon National Parks

California

April 2016





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## Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship:** We share a commitment to resource stewardship with the global preservation community.
- **Excellence:** We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity:** We deal honestly and fairly with the public and one another.
- **Tradition:** We are proud of it; we learn from it; we are not bound by it.
- **Respect:** We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises more than 400 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.



*The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological values.*

## Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park’s purpose, significance, fundamental resources and values, and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine what the most important attributes of the park are. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a public facing web map and as geospatial data for use in a web mapping environment. The park atlas for Sequoia and Kings Canyon National Parks can be accessed online at: <http://insideparkatlas.nps.gov/>.



## Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

### Brief Description of the Parks

Sequoia and Kings Canyon National Parks preserve and protect the largest and most pristine portion of the southern Sierra Nevada range. Founded in 1890, Sequoia is the second-oldest park in the system, joined in 1940 by Kings Canyon, created expressly as a “wilderness park.” Since 1943, the two parks have been administered jointly with one superintendent overseeing the management of both parks.

The parks protect more than 865,964 acres of land (404,063 acres in Sequoia and 461,901 acres in Kings Canyon) and also showcase a remarkable range of elevations from 1,370 feet in the Sierra foothills to the 14,494 foot peak of Mount Whitney. A majority of the lands within the parks are designated as wilderness, which is defined under the Wilderness Act. As of 2015, approximately 808,078 acres were designated wilderness (93.3% of the parks), and 29,516 acres are proposed wilderness, and 212 additional acres are potential wilderness (totaling approximately 96.75% of the park acreage).

As Sequoia and Kings Canyon National Parks protect the largest elevation gradient in the lower 48 states, these parks contain a great diversity of wildlife and plant species. At the time of this publication, there are 12 amphibian species (11 native), 201 bird species (192 native), 11 fish species (5 native), 72 mammal species (68 native), 21 reptile species (all native), and 1,551 plant species (1,355 native), excluding species of unknown status that potentially may occur in the parks. Among the documented species are the Sierra Nevada bighorn sheep, the Sierra Nevada yellow-legged frog, the northern distinct population segment of the mountain yellow-legged frog (which are currently listed as federally endangered), and the Little Kern golden trout and Yosemite toad (which are currently listed as federally threatened). Two species are candidates for federal listing—the Pacific fisher and the whitebark pine.

The most notable organisms found in Sequoia and Kings Canyon National Parks are the giant sequoia (*Sequoiadendron giganteum*) which are the largest living trees in the world. There are a total of 39 giant sequoia groves in Sequoia and Kings Canyon National Parks, which account for roughly 40% of the area of native sequoia groves in the world.

Sequoia and Kings Canyon National Parks contain three main watersheds (Kings, Kaweah, and Kern) and two lesser watersheds (South Fork of the San Joaquin and North Fork of the Tule). Among these, there are several waterways designated as wild or scenic under the Wild and Scenic Rivers Act (PL 90-542, as amended; 16 USC 1271–1287) and several determined to be eligible and suitable for designation, and therefore, protected to preserve their values in accordance with NPS policies. These waters are highly valuable to the central valley of California for drinking water, power generation, and agriculture.

To date, approximately 275 caves have been found in Sequoia and Kings Canyon National Parks. The number continues to rise, making the parks home to one of the most extensive cave-rich landscapes in the western United States. Caves within the parks include: Lilburn, California’s longest cave; caves with endemic cave-adapted species, such as Clough and Kaweah; caves with rare and fragile mineral resources, such as Hurricane Crawl and Ursa Minor; and Crystal Cave, the most popular commercial tour cave in the state.



The parks offer a diversity of recreational activities. These include frontcountry activities, such as horseback riding, camping, cave tours, and walks in giant sequoia groves; wilderness activities such as hiking, fishing, horse packing and riding, and mountaineering; and educational and interpretive opportunities, such as visitor centers, museums and interpretive programs. Visitor amenities, such as restaurants and lodging, are also available in the parks, and range from rustic to elegant. As a result, the parks are able to provide high quality experiences that match the diverse recreational preferences of more than 1.48 million visitors annually.

Sequoia and Kings Canyon National Parks are located in central California midway between the greater Los Angeles area and San Francisco. Several communities are near the parks, including Three Rivers, west of Sequoia National Park, and Squaw Valley and Dunlap, located west of Kings Canyon National Park. Visalia and Fresno are also nearby and to the west of the parks. Lone Pine, Independence, Big Pine, and Bishop, California, are gateway communities on the east side of the park, providing a variety of park-oriented recreational opportunities and services, from stock guides, backpacking guides, and other visitor services. The primary access to the park's eastern wilderness is by foot or stock travel through US Forest Service lands. There are no roads crossing the parks east to west.

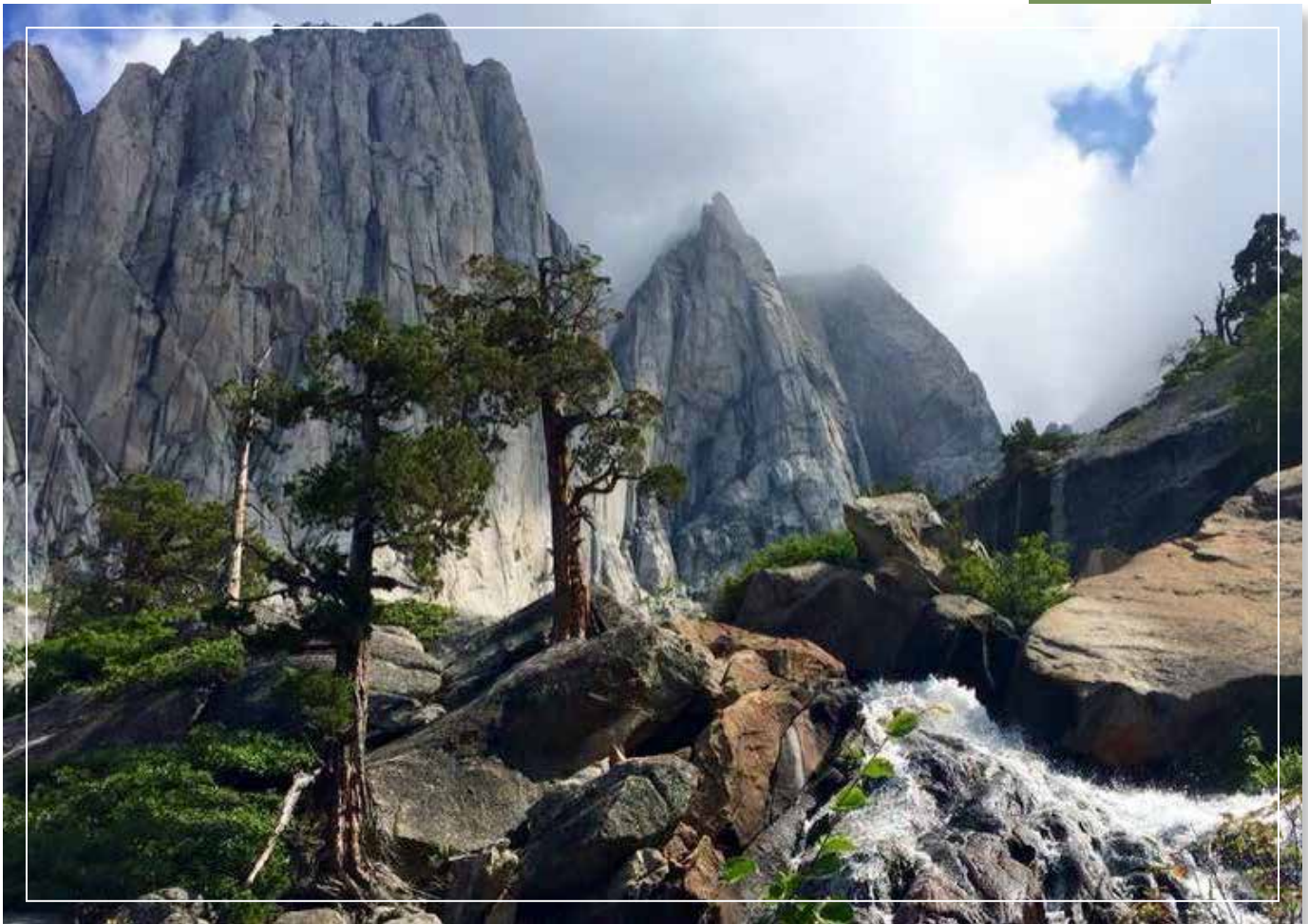
Sequoia and Kings Canyon National Parks are nearly surrounded by three national forests: Sierra National Forest, northwest of the parks; Inyo National Forest, east of the parks; and Sequoia National Forest / Giant Sequoia National Monument, south and west of the parks. Within these national forests are four designated wilderness areas: Golden Trout Wilderness to the southeast, John Muir Wilderness to the north, Monarch Wilderness to the west, and Jennie Lakes Wilderness to the west. Not only do these undeveloped surrounding lands provide ecological connectivity with the parks, they also help protect the surrounding natural viewsheds and high quality dark night skies as experienced in the parks.



## Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Sequoia and Kings Canyon National Parks was drafted through a careful analysis of the enabling legislation and the legislative histories of the respective parks that influenced their development. The parks were established when the enabling legislation adopted by Congress was signed into law (see appendix A for enabling legislation and subsequent amendments). The purpose statement lays the foundation for understanding what is most important about the park.

*SEQUOIA AND KINGS CANYON NATIONAL PARKS preserve and provide for the enjoyment of present and future generations the wonders, curiosities, and evolving ecological processes of the southern Sierra Nevada—including the largest giant sequoia trees in the world, free-flowing wild and scenic rivers, and the heart of the vast High Sierra wilderness.*



## Park Significance

Significance statements express why a park’s resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Sequoia and Kings Canyon National Parks, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the parks and why an area is important within a global, national, regional, and systemwide context. They focus on the most important resources and values that will guide park planning and management.

The following significance statements have been identified for Sequoia and Kings Canyon National Parks. (Please note that the sequence of the statements does not reflect the level of significance.)

1. Sequoia and Kings Canyon National Parks contain more than 40% of the world’s giant sequoia grove area, including the four largest living trees on earth.
2. Sequoia and Kings Canyon National Parks contain an extraordinary continuum of diverse ecosystems, from foothill woodlands and shrublands to alpine tundra. Intact ecosystems range from 1,370 to 14,494 feet (418 to 4,418 meters) in elevation, the greatest vertical relief of any protected area in the lower 48 states.
3. Sequoia and Kings Canyon National Parks contain a remarkable concentration of diverse and scenic geologic features, such as deep glacially carved canyons, an extensive cave-rich landscape, and towering alpine peaks, including 9 of the 12 highest summits in California; and Mount Whitney, the highest peak in the United States outside of Alaska.
4. The water resources of Sequoia and Kings Canyon National Parks, which include free-flowing wild and scenic rivers and the highest elevation headwaters in California, have profound and far-reaching ecological, recreational, and societal value.
5. More than 800,000 acres of Sequoia and Kings Canyon National Parks are designated wilderness, forming the core of the largest expanse of contiguous wilderness in California, which is visited and valued by people from around the world.
6. Sequoia National Park was created by a conservation movement that continues to influence the protection of irreplaceable scenic landscapes and places. Today, the parks protect the record of this history, of park management, and of earlier human uses extending back 8,000 years.
7. Sequoia and Kings Canyon National Parks attract visitors from around the world by providing some of the most personally challenging and transformative recreational opportunities in the Sierra Nevada, while also providing a wide array of inspirational, educational, and sensory experiences accessible to visitors of all ages and abilities.
8. Among our nation’s earliest protected areas, the history of Sequoia and Kings Canyon National Parks is rooted in pioneering stewardship. This legacy inspires a culture of leadership, continuous learning, and innovation.



## Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Fundamental resources and values are closely related to a park’s legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Sequoia and Kings Canyon National Parks:

- **Giant Sequoia Trees.** Giant sequoia trees are endemic to the western slope of the Sierra Nevada and are among the largest and oldest trees on Earth. The protection of giant sequoia trees from logging was one of the primary forces for the creation of Sequoia National Park. The groves, and the magnificent trees contained therein, have inspired generations of visitors from around the world with a sense of awe. The parks contain 39 giant sequoia groves, which account for roughly 40% of all giant sequoia grove areas in the world, including the largest unlogged giant sequoia grove (Redwood Canyon grove). The four largest giant sequoia trees—by trunk volume—are in these parks (including the General Grant Tree, the nation’s only living war memorial). Giant sequoias are also unique due to their evolutionary adaptations that make them resilient to many stressors. Research into giant sequoias influenced the field of fire ecology and provided the impetus for prescribed fires in the parks.
- **Ecological Diversity.** The physical characteristics of the parks, including the park’s large size, location, relatively intact natural processes, and steep elevation gradient, support remarkable biodiversity. The parks possess four of the world’s five biomes (grassland, tundra, forest, and aquatic) and intact, self-regulating ecosystems that include: foothill woodlands, mixed conifer forest, subalpine forest, alpine tundra, wetlands, and aquatic ecosystems. This collection of ecosystems is valued because of their extensive area, relatively minimal alteration by humans, remarkable species richness, and charismatic species. The minimally fragmented landscape in the parks (e.g., from roads) provides for intact processes and a high continuity of ecosystems. Because of the richness of the ecological diversity in the parks, they have been designated as an international biosphere reserve, a program under the United Nations Educational, Scientific and Cultural Organization (UNESCO) that recognizes resources with worldwide importance. As a designated site in the UNESCO World Network of Man and the Biosphere Reserves, the parks are, “*landscapes . . . of particular importance for developing and testing approaches to protect biodiversity while improving human livelihoods.*”

- **Scenic Landscapes.** In the parks, scenic features intertwine with the remarkable ecological diversity to provide visitors with a range of outstanding views, from the foothill’s rocky river corridors and picturesque oak woodlands, to the montane forest’s palette of greens contrasted by the red and black of fire-scarred sequoia bark, to the high country’s wildflower-studded meadows merging into the blue alpine lakes and rugged granite peaks. The geologic underpinnings of this scenery serve as textbook examples of mountain building processes, tectonics, and metamorphism.

The parks are designated class I areas by the Clean Air Act. Clean air is fundamental to preserving the full extent of these scenic views and the health of species, including humans, and ecosystems.

The parks demonstrate a commitment to providing opportunities to view the night sky and providing quality nighttime recreation. The parks’ natural features take on a unique and compelling glow under the powerful light of a full moon or the faint glimmering of starlight. Those who experience the parks at night are often treated to a dramatic scene that provides opportunities to enhance the richness of their overall park experience. Additionally, there are many nighttime recreation activities, such as stargazing, camping, fishing, or wildlife observing, that benefit from a natural pattern and intensity of light.

- **Caves and Karst Systems.** The parks contain extensive karst aquifers that have resulted in the formation of more than 275 caves, making Sequoia and Kings Canyon National Parks one of the most cave-rich landscapes in the western United States. These include California’s longest cave, caves with endemic cave-adapted species, and caves with rare and fragile mineral resources. The caves in the parks have contributed to the advancements of speleological knowledge of international significance.
- **Water Resources.** The parks protect high elevation, snow-dominated watersheds that include three designated Wild and Scenic Rivers (North Fork of the Kern River, Middle Fork of the Kings River, and South Fork of the Kings River), two eligible and suitable Wild and Scenic River (South Fork of the San Joaquin River and Kaweah River), along with hundreds of streams, lakes, springs, and wetlands. This system of water resources, and the natural hydrological processes that support them, provides for diverse aquatic and riparian ecosystems, which provide habitat for federally threatened and endangered species (two species of mountain yellow-legged frogs, Yosemite toad, and Little Kern golden trout); offer recreational opportunities such as wildlife watching, fishing, hiking, and boating; and play a critical role in downstream water quality and quantity. The parks watersheds provide clean water to the Tulare Basin and the southern portion of California’s Central Valley.



- **Wilderness Character.** Nearly 97% of the lands in these parks' are designated or managed as wilderness, protecting one of America's most superlative scenic landscapes and forming the core of the second largest contiguous wilderness area in the lower 48 states. The wilderness welcomes thousands of people each year, taking part in a diversity of activities including day hiking, backpacking, horseback riding and packing, mountaineering, fishing, and boating. With more than 690 miles of trails (including portions of the John Muir and Pacific Crest National Scenic trails), the open nature of the Sierran high country provides unrivalled opportunities for exploration. The five qualities of wilderness character: natural, undeveloped, untrammeled, opportunities for solitude or primitive and unconfined recreation, and other features of value such as unconfined recreation, and historic, cultural, and notable features of , including features of scientific, educational, scenic, or historical values are preserved. Naturally dark night skies are integral to the natural and solitude qualities of wilderness character.

Also, for many visitors, the opportunity to hear the delicate sounds of nature, experience interludes of extreme quiet, and spend extended periods of time in the absence of human sounds are important aspects of the parks' wilderness character. Natural quiet/soundscapes are essential for many ecological processes, such as wildlife communication and behavior. Also, for many visitors, the ability to hear clearly the delicate and quieter intermittent sounds of nature, the ability to experience interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time are important aspects of the parks' wilderness character.

- **Protecting and Sharing of Human History.** The parks preserve the traces of more than 8,000 years of human occupation and use, including patterns of prehistoric trade and travel, early European American exploration, mountaineering, the impacts of early modern extractive economies, the record of military-era administration, early NPS development, and the continuing evolution of NPS stewardship approaches. The establishment of the parks was a part of an early American conservation ethic. The parks preserve sites, photographs, historic structures, documentation, written history (plans, administrative records), oral histories, artifacts, named trees, cultural landscapes, personal collections (photos, journals, videos, and the like) that demonstrate and interpret these historic themes. These include the history of scientific process, investigation, and collections in the parks. The parks share these resources and stories with the public through interpretation, museums, and visitor centers.
- **Promoting Continuous Learning and Innovation.** The parks have been leaders in land management for 125 years and continue to build on a history of pioneering stewardship in seeking new ways to improve resource conditions and visitor experience. Past examples of pioneering activities include: military-era resource protection efforts, forward-thinking road and trail construction , the first campgrounds designed specifically for resource protection, one of the oldest ranger-naturalist programs, early wilderness stewardship, the reintroduction of fire to montane ecosystems, and the large scale removal of facilities and structures to restore sensitive resources in the Giant Forest. Ongoing activities include efforts to protect wetlands and alpine meadows through restoration and stock use monitoring and management, youth engagement initiatives, and implementing innovative approaches to study and respond to climate change.
- **Opportunities for a Range of Experiences.** Sequoia and Kings Canyon National Parks offer a diverse range of outstanding visitor experiences and opportunities, from the challenge of exploring the passes and peaks in the vast wilderness to the experience of being dwarfed by giant sequoia trees on a family drive, to the engaging discovery of human history and nature at the visitor centers. People come to the parks for active recreation and fitness, emotional rejuvenation in nature, education, scientific research, and awe-inspiring enjoyment of the scenery to name a few. This wide range of opportunities makes the parks accessible to a diverse group of visitors and opens the parks to people with differing skills, desires, and expectations.

## Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, park purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for park staff to develop opportunities for visitors to explore and relate to all park significance statements and fundamental resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by park resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the park and its resources. These themes help explain why a park story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the park.

The following interpretive themes have been identified for Sequoia and Kings Canyon National Parks:

- Sequoia and Kings Canyon National Parks protect clean air, scenic landscapes, ecosystems, and natural processes that are of immeasurable recreational, educational, scientific, and philosophical value.
- These parks contain an extraordinary range of environments and habitats, resulting in a high level of biodiversity, due to the extensive topographic relief and unique geology of the southern Sierra Nevada.
- Giant sequoias grow naturally only on the western slopes of the Sierra Nevada and are the largest, and some of the oldest trees in the world.
- The southern Sierra Nevada was created by, and continues to be shaped by, powerful geologic and hydrologic forces that have generated unique, impressive landscapes.
- Sequoia and Kings Canyon National Parks protect the heart of California’s largest wilderness, an area valued for its naturalness, untrammeled and undeveloped characteristics, and for its outstanding opportunities for solitude or primitive and unconfined types of recreation.
- The southern Sierra Nevada is being subjected to unprecedented anthropogenic pressures, such as air pollution and climate change, which are altering ecosystems and may affect many of the significant features and resources of the parks.
- Different people have used, valued, and influenced the landscape and resources of the parks in changing ways over time.



## Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental resources and values change over time, the analysis of planning and data needs should be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

### Special Mandates and Administrative Commitments

Many management decisions for a park unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a park that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the park, or through a judicial process. They may expand on park purpose or introduce elements unrelated to the purpose of the park. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, arrangements for emergency service responses, etc. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the park and facilitate working relationships with other organizations. They are an essential component of managing and planning for Sequoia and Kings Canyon National Parks.

#### Special Mandates

- Act of July 3, 1926 – Prohibits granting of permits or licenses for dams, conduits, powerhouse, transmission lines, etc. within Sequoia National Park without specific authority of Congress.
- Act of March 4, 1940 – Permits the movement without charge, under regulations prescribed by the Secretary of the Interior, of stock and vehicular traffic to and from national forest lands on either side of the boundary of the Grant Grove boundary extension.
- Act of July 1, 1946 – Prohibits use of National Park Service appropriations for road construction in Kings Canyon National Park, except on the floor of the canyon of the South Fork of the Kings River and Grant Grove section.
- Joint Resolution March 29, 1956 – Declares the General Grant Tree a national shrine in memory of the men and women of the armed forces, and directs the Secretary of the Interior to make appropriate provisions for its perpetual care and maintenance.
- National Trail System Act of 1968 (PL90-543, 82 Stat. 919) – Established the Pacific Crest National Scenic Trail through Sequoia and Kings Canyon National Parks.
- Sequoia and Kings Canyon National Parks is designated a class I area under the Clean Air Act (US Public Law 88-206; PL chapter 360; 69 Stat. 322; 42 USC 7401 et seq.) providing an additional measure of protection from the adverse effects of air pollution. This designation bestows an “affirmative responsibility” on the National Park Service to actively protect the air quality and resources sensitive to air pollution within the park.
- California Wilderness Act – Public Law 98-425 (September 28, 1984) – The California Wilderness Act of 1984 (PL 98-425) authorized the addition of more than three million acres of land within the state of California to the National Wilderness Preservation System established by the Wilderness Act of 1964 and designated approximately 736,980 acres as Sequoia and Kings Canyon Wilderness.

- The historic Pear Lake Ski Hut is used as a ranger station during the summer and is operated as a ski hut in the winter months by the cooperating association of the parks. The California Wilderness Act of 1984, and its accompanying House of Representatives Committee Report 98-40 (1983), provided for continued winter operation of the Pear Lake Ski Hut unless this nonconforming use is deemed to have unacceptable wilderness impacts. The 5-acre area is categorized as a designated potential wilderness addition based on the nonconforming use of a commercial enterprise (winter ski-hut operation) in wilderness.
- The Bearpaw Meadow High Sierra Camp, operated during the summer months, is a commercial lodging enterprise. A contracted concessioner operates the camp within a 32-acre designated potential wilderness addition, per the California Wilderness Act of 1984 and its accompanying House of Representatives Committee Report 98-40 (1983). Additionally, in 2015, with support from the California State Historic Preservation Office, the National Park Service is completing work to nominate the Bearpaw High Sierra Camp to the National Register of Historic Places.
- Access to and maintenance of hydrologic, meteorological, and climatological devices, facilities, and associated equipment (e.g., snow pillows and storage sheds) throughout the wilderness of the parks is allowed (House of Representatives Committee Report 98-40; PL 111-11; section 1903, “Administration of Wilderness Areas”). These devices and facilities are used by the California Department of Water Resources to determine water content of snow for downstream agricultural and domestic uses and to predict flood potential.
- Rights-of-way for two utility powerline corridors are authorized in potential wilderness per the California Wilderness Act of 1984 (section 101. (24)). The two rights-of-way are a 60-foot-wide corridor running from Moro Rock summit benchmark to near the Middle Fork Road and a 60-foot-wide corridor on the west side of Kings Canyon National Park from near Lookout Peak to the Cedar Grove vicinity (approximately 12 and 22 acres, respectively).
- Section 314 of Public Law 95-625 – As amended November 2004 (related to the permitted cabins at Mineral King) provides the ability for the permittee to reassign their permits to their heirs, successors, or others, except in the case of a lease or permit which the Secretary determines to be incompatible with the administration of the park.
- Omnibus Public Land Management Act of 2009 – Public Law 111-11 (March 30, 2009) – On March 30, 2009, the Omnibus Public Land Management Act of 2009 (PL 111-11) designated 52 new wilderness areas and added acreage to 26 existing areas in the United States, adding a total of more than 2 million acres to the National Wilderness Preservation System. In Sequoia and Kings Canyon National Parks, this act established the John Krebs Wilderness and expanded the Sequoia-Kings Canyon Wilderness.





- Public Law 108-447 – The operation and maintenance of four constructed dams to hold and regulate water runoff for electrical power generation (a total of 112 acres of lands and impounded surface water in the Mineral King area) is authorized per Public Law 108-447 (118 Stat. 3068, December 8, 2005, amending Public Law 99-338, 100 Stat. 641, June 19, 1986). In the early 1900s, Congress authorized the development of hydroelectric facilities on forks of the Kaweah River adjacent to and within Sequoia National Forest (in what is now wilderness). These facilities are owned and operated by the Southern California Edison Company. In 2006, the National Park Service issued a 10-year special use permit that allows the continued maintenance and operation of these hydroelectric facilities. The National Park Service is authorized to issue one additional 10-year permit for these facilities after the current special use permit expires on September 8, 2016.
- Presidential Proclamation—Charles Young Buffalo Soldiers National Monument March 25, 2013 – Directs Sequoia and Kings Canyon National Parks, among other parks, to coordinate with the Charles Young Buffalo Soldiers National Monument to commemorate the historical ties between Colonel Charles Young and his military assignments at the parks, and the role of the Buffalo Soldiers as pioneering stewards.

### Administrative Commitments

Sequoia and Kings Canyon National Parks have agreements with a variety of partners. These include cooperating agreements with area communities to operate transit systems, agreements with educational institutions, and agreements with partners and associations. The parks also have interagency, multiagency, and general agreements for special support and services, such as snow surveys, search and rescue, issuance of wilderness permits, law enforcement, and emergency assistance. There are a number of long-term rights-of-way permits in the parks for electricity lines, phones, and telecommunication facilities.



## Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the parks' fundamental resources and values, and develop a full assessment of the parks' planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

There are three sections in the assessment of planning and data needs:

1. analysis of fundamental resources and values (see appendix B)
2. identification of key issues and associated planning and data needs
3. identification of planning and data needs (including spatial mapping activities or GIS maps)

The analysis of fundamental resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.

### Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value. Please see appendix B for the analysis of fundamental resources and values.

### Identification of Key Issues and Associated Planning and Data Needs

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for a park. Key issues often raise questions regarding park purpose and significance and fundamental resources and values. For example, a key issue may pertain to the potential for a fundamental resource or value in a park to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions that are not directly related to purpose and significance, but which still affect them indirectly. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Sequoia and Kings Canyon National Parks and the associated planning and data needs to address them:

#### Frontcountry Facility Management and Visitor Capacity.

The vast majority of visitors experience Sequoia and Kings Canyon National Parks by visiting the frontcountry areas. Many frontcountry facilities, such as campgrounds, comfort stations, entrance stations, parking areas, and roads, are at capacity during peak visitation. There is considerable deferred maintenance on both historic and nonhistoric buildings in the frontcountry. Some facilities could be removed while others could be improved to accommodate peak visitation. For example, current facilities do not match current visitor demands in places like the Foothills, Lodgepole, and Wuksachi areas of the parks.

At Lodgepole and Wuksachi, there is a shortage of overnight accommodations (both lodging and camping opportunities) during peak seasons. Opportunities exist to increase the types of lodging offered at Wuksachi, and to improve the Lodgepole campground. Opportunities for visitors could also be increased in the shoulder and winter seasons. Increasing capacity during shoulder and winter seasons would require additional staffing for these periods and facility improvements as many staff housing and visitor serving facilities were not constructed for winter use.

In the Foothills area, formal river access points are lacking which results in visitor accidents, and in some cases, damage to natural resources as a result of trampling and creation of social trails. Visitor use management is needed in this area of the frontcountry to ensure visitor safety and sustainability of both facilities and park resources. Examples of visitor use management strategies could include: educational programs designed to disperse use and minimize visitor impacts, signage, improved facilities, or alternative transportation strategies.

*Associated high priority plans and/or data needs include:* Grant Grove site planning for transportation and circulation; wayfinding and signage plan; visitor use / social science data, studies, and surveys; visitor use impacts and monitoring study; cultural resource documentation; and updated geospatial data.

### **Improving Operational Efficiency, Sustainability, and Resiliency.**

In recent years, fluctuating operational funding, combined with increasing costs and mandates, has caused the parks to reduce staffing and other costs in nearly every functional area. Evaluation of park management through a transition management assistance plan (2013) found that greater interdivisional cooperation, information sharing, and streamlined or strategic planning processes that set priorities could greatly improve the parks' operational capacity. Challenges include data management and sharing, communication, and lack of internet/network connections and capacity. Operational capacity could also be greatly improved through additional philanthropic support.

*Associated high priority plans and/or data needs include:* Digital data and records management plan; position management plan; strategic plan.



### **Increasing Relevancy and Fostering Regional Partnerships.**

Sequoia and Kings Canyon National Parks are experiencing greater diversity of visitors. However, many communities in the Central Valley and other proximate California locations continue to be under represented in park visitation.

Maintaining the relevance of national parks to diverse visitors is important for retaining public support for Sequoia and Kings Canyon National Parks in the 21st century. The National Park Service needs to consider looking for new ways to be more consistently present in communities. Many 21st-century visitors, especially younger visitors, prefer attractions and activities beside hiking or camping. Local and international visitors may have different customs and interests. The parks could explore developing new frontcountry opportunities and adding multicultural perspectives into interpretive staff training to more effectively engage a greater diversity of visitors.

The parks coordinate extensively with researchers and partners across the broader Sierra Nevada ecosystem, including with Yosemite National Park, neighboring national forests, the Bureau of Land Management, US Geological Survey, and the Sierra Nevada Inventory and Monitoring program. The parks work with groups such as the Sierra Nevada Conservancy and the Cave Research Foundation, and several universities are actively involved in research for the parks. The parks need to continue to enhance and expand on partnerships with area agencies, cooperators, and researchers, and build a stronger constituency with local communities both internal and external to the parks. Increasing cooperation and partnerships with our surrounding communities, agencies, and park partners could help the parks more effectively address park issues and management objectives. Greater communication and education about resource issues and stressors, such as climate change, among park staff, with partners, and with the public in particular is warranted.

*Associated high priority plans and/or data needs include:* Strategic plan; visitor use / social science data, studies, and surveys; wayfinding and signage plan.



### Stressors on Park Resources.

Park resources have been impacted or have the potential to be impacted by a variety of factors. Park managers need to make some difficult decisions regarding what management actions are appropriate and feasible to pursue and which should be prioritized. Resources are affected by stressors such as air pollution, climate change, altered fire regime, invasive species, increased visitation in concentrated areas, and water scarcity as described below.

- **Air pollution:** Air quality in Sequoia and Kings Canyon National Parks is highly impaired, warranting significant concern for ground-level ozone, particulate matter, and nitrogen and mercury deposition. Air pollution affects not only visibility and scenic views, but also ecological health, night skies, wilderness character, and human health (visitors and staff).
- **Climate change:** Rapidly changing environmental conditions as a result of climate change may result in large migrations of plants and animals and affect other phenomena such as disease rates. Mean annual temperature is projected to increase in the region due to climate change, causing increases in drought events and storm frequency/intensity. Continued evaluation of observed and projected climate change, along with the associated responses to natural and cultural resources, visitor use, and park operations is needed to inform appropriate planning and management decisions.
- **Fire regime:** Restoring fire to the Sierra landscape will help make resources more resilient, sustain fire-dependent ecosystems and species, decrease fire hazards, and reduce overall particulate matter emissions over time. However, due to inadequate capacity (staff, funds, and sheer magnitude of the problem), concerns about risk, and public intolerance for smoke, the parks are not adequately restoring natural fire regimes.
- **Invasive species:** Invasive plants, animals, and pathogens are a significant problem in the parks. Prominent examples include velvet grass, nonnative trout, amphibian chytrid fungus, and white pine blister rust. Currently, the parks lack adequate resources to control even the highest priority invasive species, and may need to make some decisions on the highest priority areas of the parks to focus invasive species control work.
- **Increased visitation:** Visitor use impacts the parks' roads, trails, bathrooms, and campgrounds, while increased use may require the park to expand visitor facilities. Likewise, heavy and concentrated visitor use results in the trampling of plant communities, compaction of soils, and habituation of wildlife. The parks are continually challenged with balancing resource protection with visitor use and the recreational value of the parks.
- **Water scarcity:** Decreasing water supply could affect the preservation of resources as well as visitor and administrative services. Multiple years of drought and the changing climate could mean that the parks may soon be facing a future where there is not enough water to sustain visitation throughout the parks.

*Associated high priority plans and/or data needs include:* Giant sequoia management plan; strategic plan; visitor use impacts and monitoring study; updated geospatial data.

## Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, park significance, and park purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, monitoring, studies, research activities, and analyses may be required to provide adequate knowledge of park resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform park management efforts to secure funding and support for planning projects.

### Criteria and Considerations for Prioritization.

The following criteria were used to evaluate the priority of each planning or data need:

- Ability of the plan to address multiple, or interrelated, issues. For example, many visitor capacity issues are interrelated with resource protection issues.
- Emergency/urgency of the issue.
- Prevention of resource degradation. Consideration of protection of the fundamental resources or values.
- Ability to impact visitor use and experience.
- Funding availability for the planning effort, study, or data collection.
- Feasibility of completing plan or study.
- Opportunities, including interagency partnership or assistance.

### High Priority Planning Needs

(Note the high priority planning needs are alphabetized and not in order of priority, they could be modified through follow-up strategic planning.)

### Digital Data and Records Management Plan.

*Rationale* — Sequoia and Kings Canyon National Parks collect and manage a significant amount of data and information. However, the information is stored in many locations with many different organizational schemes, and is not readily accessible for use in park management, negatively affecting staff productivity and the ability to make informed management decisions. A digital data and records management plan would resolve these issues by identifying opportunities to make data more organized, transparent, and accessible. The completion of this plan would help to address multiple key issues including improving operational efficiency and resiliency.

*Scope* — The digital data and records management plan would outline a structure for the organization of park data. The plan would address park records, digital imagery, and archiving digital data. The plan would also determine appropriately accessible storage locations for the data, such that park staff can reasonably find and retrieve data when needed.

### Giant Sequoia Management Plan.

*Rationale* — Giant sequoias (*Sequoiadendron giganteum*) are the iconic species of the parks, as identified in the park purpose and significance statements. Climate change, drought, air pollution, and changes in fire regime all have the potential to impact giant sequoias. The parks currently do not monitor giant sequoia, which limits the ability of resource managers to identify and respond to threats. Changes in precipitation, fire regime, and temperature as a result of climate change may require a variety of management actions and strategies to ensure survival of this species.

*Scope* — The giant sequoia management plan would develop a monitoring program and decision-making framework for the management of giant sequoias. As part of the decision-making framework, the plan would consider ecological as well as social factors. The status of giant sequoias is being analyzed as part of the resource stewardship strategy. The management plan would evaluate implementation measures and therefore be developed after the completion of the resource stewardship strategy.

### Grant Grove Site Planning for Transportation and Circulation.

*Rationale* — With the recent introduction of a shuttle stop at Grant Grove, circulation patterns at the site need further analysis and planning. Improved site circulation will help to address congestion that occurs during peak visitation.

*Scope* — The plan would evaluate options for improved site circulation to accommodate the shuttle and other modes of transportation. The outcome would provide decision makers guidance on capital improvements and development needs at Grant Grove. Site planning for transportation and circulation will also take into account the historic significance of Grant Grove and its potential eligibility for listing as a historic district in the National Register of Historic Places. A draft determination of eligibility for listing in the National Register of Historic Place has been prepared but due to lack of capacity has not yet been finalized for transmittal to the California State Historic Preservation Office.



### Position Management Plan.

*Rationale* — The parks have reduced staffing in nearly every functional area as a cost-cutting measure, with noticeable impacts on visitor experience and ability to protect resources. As many park staff would be eligible to retire in the near future, there is an opportunity to evaluate the operational structure of the parks in a comprehensive way. There is an urgent need to complete this plan while this opportunity exists.

*Scope* — The position management plan would consider the positions that currently exist and determine staffing needed to achieve the parks' mission while considering what positions could be consolidated or eliminated. This plan would outline a desired staffing structure that the parks can work toward over time as opportunities arise through retirements and transfers.

### Strategic Plan.

*Rationale* — A strategic planning process would help the parks to define goals for areas/ programs where changes are needed to improve resource protection and/or provide improved visitor services. This plan would address the key issue of improving operational efficiency and resiliency by setting the framework for an interdivisional and collaborative approach to park management.

*Scope* — The overall intent of strategic planning is to focus employee attention and energy on effectively addressing major operational, organizational, administrative, and resource issues in a timely manner. Specific components of the process include identifying the most significant challenges and opportunities, identifying a clear vision and/or goals for the future, and setting priorities and a timeline for effective implementation.

### Visitor Use Management Plan(s).

*Rationale* — As previously stated in the key park issue, frontcountry facilities management and visitor capacity, many frontcountry areas such as trailheads, campgrounds, and comfort stations are at capacity during peak visitation times. For some park areas, facilities are lacking and visitors have created unsanctioned use trails that pose safety and resource management issues. Overall desired conditions for visitors experiences at frontcountry sites is also needed to meet current visitor capacity issues and to explore opportunities to enhance relevancy and engage new audiences.

*Scope* — A visitor use management plan would evaluate current visitor use patterns and characteristics, identify visitor use management goals, objectives, strategies, and tools to sustain desired resources conditions and visitor experiences. Visitor use data and research, broad-based and site-specific, would be necessary to understand and guide visitor behavior in high-use areas. Depending on issues and needs, separate visitor use management plans could be completed for various high use areas, many of which have different management challenges and visitor needs. A broader visitor use management plan could also be completed to address park frontcountry areas in a comprehensive manner.

### Wayfinding and Signage Plan.

*Rationale* — A wayfinding and signage plan is needed to help improve the experience of visitors traveling to and in the parks. Visitors are often confused where park facilities are located, particularly in the Giant Forest area. This plan would help to address the key issue of frontcountry facility management and visitor capacity through identifying ways to get visitors to their destinations with less confusion. The plan would also address the issue of increasing relevancy and fostering regional partnerships by raising the park's visibility in surrounding communities and helping potential visitors to access the parks.

*Scope* — This plan would go beyond current signage operations to consider wayfinding consistently and holistically, including in surrounding communities and neighboring agencies. It would consider wayfinding issues and needs in and around the parks. Recommendations would include traditional and modern methods of providing information on-and off-site.



## High Priority Data Needs

### Cultural Resource Documentation.

*Rationale and Scope* — Baseline documentation is essential and necessary for parkwide planning efforts in developing maintenance projects, community outreach, designing interpretive programs, and maintaining partnerships with local tribes and organizations. This information is also used at the national and regional levels to inform planning efforts and budget decisions. The most urgent baseline documentation needed for planning and decision making is updating existing determinations of eligibility for the National Register of Historic Places. The next most urgent need is preparing new determinations of eligibility and National Register of Historic Places nominations, as funding becomes available. Priority would be established based on need associated with proposed development and rehabilitation projects. Survey of areas with potentially significant cultural resources is also needed.

### Updated Geospatial Data.

*Rationale and Scope* — Many park operations, resource management, and planning efforts depend on accurate geospatial data. While much of the parks' data is in good shape, some data layers have inaccuracies or outdated information. Particular priority data update needs include:

- Geocorrection of the giant sequoia tree inventory. Between 1964 and 1976, the first parkwide inventory was conducted of nearly all giant sequoia trees across 34 groves, that were contained in the park at that time. Since 1976, the park acquired additional lands that contained approximately 5 more giant sequoia groves. When the historic paper maps were converted to digital data within the parks' geographic information system (GIS), a flawed methodology resulted in horizontal errors of several hundred meters rendering the digital data useless for any kind of analysis. Geocorrection of the data will result in a spatially corrected layer that can be used with confidence in existing and future studies and would allow managers to quickly assess threats to these national treasures.
- Vegetation map update. The park vegetation map data is approaching 20 years old. An update is needed that addresses known inaccuracies and changes in the distribution of plant communities. Vegetation maps repeated every 10 to 20 years can help land managers to understand trends over time, including the effects of climate change.
- High resolution digital elevation model. The parks currently use a digital elevation model that was derived from 1970s era USGS topographic quadrangles. Today's methodologies (such as LiDAR) are higher resolution, more accurate, and also capture characteristics of vegetation and built objects on the landscape. High resolution data of the parks will assist with the analysis of microclimates, hydrology, moisture regimes, fire and fuels management, and lead to a better understanding of the role landforms play in the parks.
- Infrastructure information workflow to GIS. Up-to-date infrastructure data is required to generate valid spatial analysis and information for management decisions, including compliance issues, fire planning and management, analysis of resource issues, and information on visitor facilities and use. However, the current infrastructure data in the parks' GIS is outdated and there is not a method or workflow in place to update, maintain, or add new infrastructure data.

**Visitor Use / Social Science Data, Studies and Surveys.**

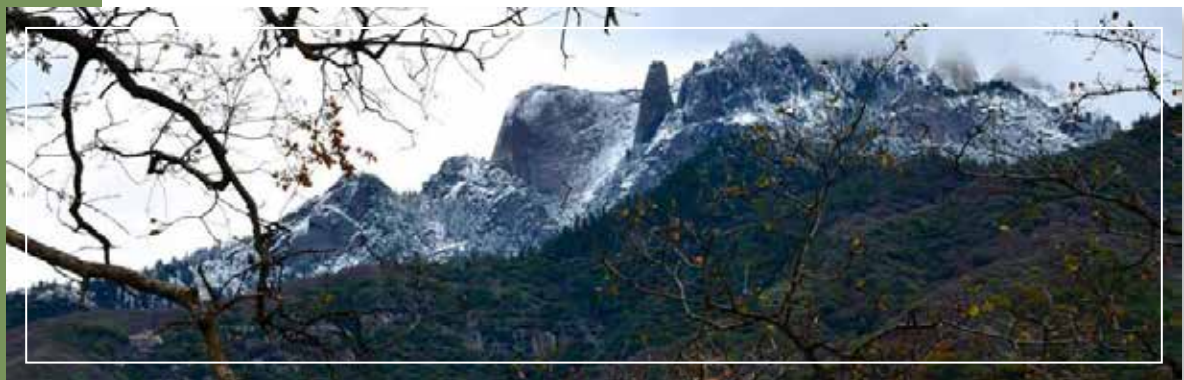
*Rationale and Scope* — Greater understanding of park visitation patterns and the visitor use needs of surrounding communities is needed for planning decisions, visitor use management, and interpretive and educational programming. Visitor use data would feed into other planning efforts including carrying capacity / visitor use studies, and site-specific planning. The visitor use study would incorporate existing data, such as wilderness permits, encounter monitoring, and dispersal survey results for frontcountry areas. Visitor use data and research, broad-based and site-specific, would be necessary to understand and guide visitor behavior in high-use areas.

**Visitor Use Impacts and Monitoring Study.**

*Rationale and Scope* — Greater understanding of visitor impacts on park resources is needed to make informed resource and visitor use management decisions. The parks have previously completed some research into ecological thresholds relative to visitor use, which could be incorporated into this study. This study would look at ecological impacts from visitors parkwide. An additional study of visitor use and impacts would occur for public tours of Crystal Cave to determine when, where, and how to mitigate adverse impacts to the cave.

**Table 1: Summary of High Priority Planning and Data Needs**

Planning and Data Needs
<b>Plans</b>
Strategic plan
Digital data and records management plan
Giant sequoia management plan
Grant Grove site planning for transportation and circulation
Position management plan
Visitor Use Management Plan(s)
Wayfinding and signage plan
<b>Data Needs and Studies</b>
Cultural resource documentation (determinations of eligibility, new surveys, and vulnerability assessments)
Updated geospatial data
Visitor use / social science data, studies and surveys
Visitor use impacts and monitoring study



**Table 2: Summary of other Planning and Data Needs**

Planning or Data Needs	Priority (M, L)	Notes
<b>Resource Management</b>		
<b>Plans</b>		
Archives and collections access management plan	M	To improve access with limited resources.
Cave management plan (update)	M	
Fire and fuels management plan (update)	M	<p>Implement climate-smart conservation objectives and strategies outlined in the resource stewardship strategy.</p> <p>Convert to new GIS-based spatial format.</p> <p>5-year fuels management plan, including for giant sequoia groves, would be completed during implementation.</p> <p>Complete the alternative fire management future decision support tool and validate at a local and regional scale.</p>
Tree hazard management plan (update)	M	
Human wildlife interaction plan	M	Includes bear management.
Invasive plant management plan	M	
Parkwide disturbed lands assessment and restoration strategy	M	
Science learning center feasibility analysis and plan	M	
Scenery conservation plan	M	
White pine blister rust management strategy	M	
<b>Data Needs and Studies</b>		
Cave and karst systems – improved documentation and mapping	M	
Continued evaluation of observed and projected climate change	M	Continued evaluation of climate-related responses (e.g., fire frequency, visitation, snowmelt, shifting biomes, etc.) and climate change projections (models) as new data is introduced and bringing that understanding into the range of park planning, management, and decision making.
Continue monitoring air quality parameters – visibility, ozone	M	
Continued monitoring of toxic contaminants in biota, including understanding and measuring the mechanistic effects of the most harmful contaminants	M	

**Table 2: Summary of other Planning and Data Needs**

Planning or Data Needs	Priority (M, L)	Notes
<b>Data Needs and Studies (continued)</b>		
Resource vulnerability assessments for select resources	M	Includes climate change and hydrological vulnerability assessments and depends on outcomes of the resource stewardship strategy.
Improved understanding of giant sequoia sensitivity and adaptive capacity to climate change and related stressors	M	
Resurvey natural resource inventory plots (separate from existing inventory and monitoring and vital signs programs)	M	This network of permanently marked 0.1 hectare plots spans the primary gradients underlying the distribution of vascular plants in the two parks and provides a baseline against which changes in the distribution of individual species and communities can be detected.
Scenic resource inventory	M	
Locations of bat colonies	M	Preparation for potential of white-nose syndrome.
Research prospectus for the parks	M	
Feral animals management plan	L	
<b>Visitor Use and Engagement</b>		
<b>Plans</b>		
Foothills area visitor use and development concept plan	M	The plan would identify opportunities to formalize trailheads and river access to improve visitor safety and prevent resource damage, consider an update of the visitor center, and explore opportunities to address the overcrowding of campgrounds and day use areas. This plan would be strategically focused and smaller in scale than a traditional development concept plan or integrated park improvements process in order to more quickly address urgent needs. Major infrastructure or facility modifications may not be necessary to address the issues in this area of the parks.
Climbing management plan	M	
Long-range interpretive plan (update)	M	Update to include information from the resource stewardship strategy.
Media and marketing strategy	M	
River access plan for the South Fork of the Kings River	L	River management plan for the frontcountry; would include Cedar Grove and Roads End.
<b>Data Needs and Studies</b>		
Dispersal study in wilderness	M	Where do people go when entering from various trailheads or park entry points?

**Table 2: Summary of other Planning and Data Needs**

Planning or Data Needs	Priority (M, L)	Notes
<b>Facilities and Operations</b>		
<b>Plans</b>		
Comprehensive records management plan	M	
Lost Grove preservation and facility plan	M	To address visitor impacts and outdated facilities at Lost Grove.
Mineral King area management plan	M	To address visitor use and park facilities at Mineral King (the preservation plan is complete).
Cedar Grove administrative site plan	L	To determine location of administrative facilities outside of floodplain.
Traffic management and transportation plan	L	Parkwide plan.
<b>Data Needs and Studies</b>		
Traffic trend data	M	



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## Photo and Art Credits

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# Appendixes

## Appendix A: Enabling Legislation and Legislative Acts for the Parks

### Establishment of Sequoia National Park

478 FIFTY-FIRST CONGRESS. SESS. I. CHS. 925, 926, 938. 1890.

to the town of Pelican, in the county and State aforesaid, to be used by said town towards paying for the erection of a public school building or for the support of the public schools of said town, as the proper town authorities may direct.

Approved, September 25, 1890.

September 25, 1890. **CHAP. 926.**—An act to set apart a certain tract of land in the State of California as a public park.

**Preamble.** Whereas, the rapid destruction of timber and ornamental trees in various parts of the United States, some of which trees are the wonders of the world on account of their size and the limited number growing, makes it a matter of importance that at least some of said forests should be preserved: Therefore

**Big trees.** *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the tract of land in the State of California known and described as township numbered eighteen south, of range numbered thirty east, also township eighteen south range thirty-one east; and sections thirty-one, thirty-two, thirty-three, and thirty-four, township seventeen, south range thirty east, all east of Mount Diablo meridian, is hereby reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park, or pleasure ground, for the benefit and enjoyment of the people; and all persons who shall locate or settle upon, or occupy the same or any part thereof, except as hereinafter provided, shall be considered trespassers and removed therefrom.

**Public land in California reserved, etc., for a public park, etc.** **Location, etc.** **Post, p. 651.** **Reservation, etc.** **Trespassers.** **Secretary of Interior to control.** **Care, etc.** **Regulations.** **Leases for buildings.** **Expenditure of revenues.** **Destruction of fish and game.** **Removal of trespassers, etc.**

**SEC. 2.** That said public park shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be, as soon as practicable, to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the same. Such regulations shall provide for the preservation from injury of all timber, mineral deposits, natural curiosities or wonders within said park, and their retention in their natural condition. The Secretary may, in his discretion, grant leases for building purposes for terms not exceeding ten years of small parcels of ground not exceeding five acres, at such places in said park as shall require the erection of buildings for the accommodation of visitors; all of the proceeds of said leases and other revenues that may be derived from any source connected with said park to be expended under his direction in the management of the same and the construction of roads and paths therein. He shall provide against the wanton destruction of the fish and game found within said park, and against their capture or destruction, for the purposes of merchandise or profit. He shall also cause all persons trespassing upon the same after the passage of this act to be removed therefrom, and, generally, shall be authorized to take all such measures as shall be necessary or proper to fully carry out the objects and purposes of this act.

Approved, September 25, 1890.

September 26, 1890. **CHAP. 938.**—An act granting right of way across United States lands in Saint Augustine, Florida.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there be, and hereby is, granted to the Saint Augustine Street Railroad Company, a corporation duly organized under and by virtue of the laws of the State of Florida, a right of way for a street railway, along and across

Saint Augustine Street Railroad Company granted right of way across Government lands, Saint Augustine, Fla.



Report for establishment

**Calendar No. 1157**76TH CONGRESS }  
1st Session }

SENATE

} REPORT  
} No 1134**CREATION OF THE KINGS CANYON NATIONAL PARK**

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**AUGUST 3** (legislative day, **AUGUST 2**). 1939.—Ordered to be printed

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Mr. ADAMS, from the Committee on Public Lands and Surveys,  
submitted the following

**R E P O R T****[To accompany H. R. 3794]**

The Senate Committee on Public Lands and Surveys, to whom was referred the bill (H. R. 3794), to establish the Kings Canyon National Park, California, to transfer thereto the lands now included in the General Grant National Park, and for other purposes, having considered the same, report favorably thereon with the recommendation that the bill do pass.

Extensive hearings on this bill were had in the House which were available to the committee. Senator Sheridan Downey appeared before the committee in support of the bill, as did Congressman Gearhart, the author of the bill, in whose district a portion of the proposed park lies. Congressman Elliott, whose district embraces a portion of the proposed park, and Congressman Englebright, of California, appeared before the committee in opposition to the bill.

The committee was also in receipt of many communications from citizens of California and other States favoring and opposing the bill. The measure was referred to a subcommittee whose report was as follows:

**JULY 28, 1939.**

Hon. ALVA B. ADAMS,  
*Chairman, Committee on Public Lands and Surveys,*  
*Washington, D. C.*

MY DEAR MR. CHAIRMAN: The subcommittee appointed by the Committee on Public Lands and Surveys to study an act (H. R. 3794) to establish the Kings Canyon National Park, Calif., to transfer thereto the lands now included in the General Grant National Park, and for other purposes, having considered the same, report favorably thereon with the recommendation that the bill do pass.

The purpose of the act (H. R. 3794) is to conserve permanently in its natural condition, as a national park for the benefit and enjoyment of the people, one of the most famous scenic areas in the United States. The bill would abolish the General Grant National Park and would add it, to be known as the General Grant Grove Section, to the new national park, which would be known as the Kings Canyon

## 2 CREATION OF THE KINGS CANYON NATIONAL PARK

National Park. All of the public lands to comprise the new park, with exception of the General Grant National Park, would be transferred from the Sierra and Sequoia National Forests. The total area of the proposed park is 454,600 acres, of which 5,763 acres, are privately owned. The major portion of the privately owned lands comprise the Redwood Mountain Grove of giant sequoias, the finest large grove remaining in private ownership, which the bill would authorize for addition to the park. This proposed legislation has been approved by the Department of Agriculture and the Department of the Interior.

Timber, mineral, and grazing resources of the Kings Canyon wilderness are negligible. The average annual number of livestock grazing within the proposed park during the last 5 years is only 985 cattle and horses and 300 sheep, allotted to 12 permittees. The act protects these privileges and provides for the continuation of these permits during the lives of the present permittees. The Commissioner of the United States Bureau of Reclamation and the Chief of Army Engineers have both issued written statements giving assurance that the most feasible water-storage and power-development sites along the Kings River are outside of the proposed park and that they have no plans for developments within the proposed park area.

The Chief Forester of the United States Forest Service, now administering these public lands, has testified that their primary value is for recreation and that they are of national-park caliber. The State of California, at a cost of millions of dollars, has built a highway into the canyon of the South Fork of Kings River, converting what has been an inaccessible wilderness into a resort for tens of thousands of visitors. It is urgent that Congress establish a permanent policy for administration of this region before the new highway is opened to traffic this summer.

The creation of the park is supported by almost every newspaper of California, by almost every organization and group that has considered it, and by almost all the voters.

Very truly yours,

PAT McCARRAN, *Chairman.*

The reports of the Department of the Interior and the Department of Agriculture to the chairman of the Committee on the Public Lands of the House of Representatives are hereinbelow set forth in full and made a part of this report.

DEPARTMENT OF THE INTERIOR,  
*Washington, April 6, 1939.*

Hon. RENÉ L. DEROUEN,  
*Chairman, Committee on the Public Lands,  
House of Representatives.*

MY DEAR MR. CHAIRMAN: I have received your letter of February 28, enclosing a copy of H. R. 3794, entitled, "A bill to establish the John Muir-Kings Canyon National Park, Calif., to transfer thereto the lands now included in the General Grant National Park, and for other purposes," and requesting a report thereon.

I am in complete agreement with H. R. 3794, and recommend it to your committee for favorable consideration. The Kings River country is world famous as a high-mountain wilderness. The purpose of the bill is to guarantee the permanent protection of that wilderness and to provide for its recreational use. For the convenience of the committee, there is enclosed a copy of a map showing the boundaries of the proposed park.

John Muir first visited the Kings River Canyon in 1875, and thereafter, until the time of his death in 1914, he was a constant advocate of national-park status for the Kings River Basin. Although he did not succeed in securing the protection he sought for the Kings Canyon area, his efforts were largely responsible for the establishment of Yosemite, Sequoia, and General Grant National Parks in 1890. Because of his unique and lasting service to the country as a leader of conservation thought and action, it now seems fitting to commemorate him by completing his efforts to establish the Kings Canyon Basin as a national park, and to call it the John Muir-Kings Canyon National Park.

As early as 1881 Senator Miller of California introduced a bill into the Congress to establish a national park, which would have included the whole west flank of the Sierra, from Tehipite Valley to a point southeast of the town of Porterville, and from the higher foothills eastward to the summit of the range. This bill was not reported out of committee.

## CREATION OF THE KINGS CANYON NATIONAL PARK

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When Sequoia National Park was established in 1890, the boundaries omitted Mount Whitney and the Kern and Kings Canyons. In the same year, General Grant National Park, only about 2,500 acres in extent, was established to preserve the General Grant grove of sequoia trees. By that time private ownership of some of the sequoia forest lands of importance for park purposes already had been established.

From 1916 to 1926 there was a bill pending before each session of Congress to enlarge Sequoia National Park to include the Kings and Kern Canyons and the Mount Whitney area. In 1926 the Kern country and Mount Whitney were added to Sequoia National Park, but there still remained many thousands of the California big trees (*Sequoia gigantea*) in private ownership, subject to destruction by commercial cutting operations. Also, the splendid scenery of the Kings River Basin was still without national park protection, subject to multiple uses, such as grazing, hunting, timber cutting and hydroelectric power development.

From this brief statement of facts it is evident that since Senator Miller introduced his bill in 1881, almost constant effort has been made to bring the Kings River Basin into national-park status. Today there is a greater public demand than ever before to accomplish this objective. Some 50 civic organizations and many hundreds of conservation-minded individuals already have endorsed the park proposal.

In a letter written January 17, 1924, to the chairman of the Committee on Public Lands of the House of Representatives, the Secretary of Agriculture stated:

"The proposed park and the specific boundaries relating thereto are endorsed by this Department. While the measure contemplates a transfer to the national park of a large area now comprising parts of the Sequoia and Sierra National Forests, the utilities present in this area are chiefly parklike in character and may properly be given a national-park status."

On February 8, 1939, the Secretary of Agriculture addressed a letter to the Secretary of the Interior, in which he stated:

"In one form or another this matter has, as you know, been under discussion for many years. This Department is clearly of record that in its opinion much of the Kings River country is of national-park caliber \* \* \*. The Department of Agriculture will approve creation of a national park within the general territory under discussion and will join with you in consideration of the specific boundaries described by proposed legislation in an effort to expedite the situation."

In accordance with the provisions of the bill, General Grant National Park shall be abolished and, with certain other desirable lands, shall be added to the proposed John Muir-Kings Canyon National Park and shall be known as the General Grant Grove Section.

The proposed park contains 454,600 acres in two units. The larger unit contains 439,985 acres, of which 1,334 acres are privately owned. The General Grant Grove Section, which is the smaller unit, contains 4,614 acres, of which 132 acres are privately owned. The bill provides that the President may, by proclamation, add to the General Grant Grove Section the Redwood Mountain tract of sequoias, an area of 10,000 acres, of which 4,297 acres are privately owned.

The small addition on the east side of General Grant National Park would include scenic lookout points that are used primarily by park visitors and are actually a part of the park's recreational unit. It also would include a fire detection station. The small addition on the south side of General Grant National Park would permit the maintenance of the approach roads constructed by the National Park Service, the development of camping facilities, and the protection of a watershed to supply water for the south entrance. The bill provides that such extension of the park shall not interfere with the movement of stock and vehicular traffic to and from national forest lands.

The Redwood Mountain tract of sequoias is considered to be the finest stand of big trees remaining in private ownership. It is plainly visible from the Generals Highway connecting Sequoia and General Grant National Parks. Owners of the tract do not wish to log it but they will be forced to do so because of economic reasons unless it is purchased and given public protection.

Information supplied by the United States Forest Service indicates that the annual average number of livestock grazing within the proposed park during the last 5 years is 985 cattle and horses and 300 sheep, allotted to 12 permittees. The bill provides for the renewal of these permits during the life of the present permittees. Establishment of the park, therefore, should cause no unreasonable adjustment by the owners of livestock who use this range.

## Establishment of Kings Canyon National Park

[CHAPTER 40]

## AN ACT

To establish the Kings Canyon National Park, California, to transfer thereto the lands now included in the General Grant National Park, and for other purposes.

March 4, 1940  
[H. R. 3794]

[Public, No. 424]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the tract of land in the State of California particularly described as follows, to wit: Beginning at the summit of Junction Peak, being a point on the present north boundary of Sequoia National Park, also a point on the Tulare and Inyo County line; thence westerly along said north boundary of said park to the crest of the hydrographic divide between Boulder Creek and Sugarloaf Creek; thence in a northerly direction along the crest of the hydrographic divide between Boulder Creek and Sugarloaf Creek to the intersection of said divide with the section line between sections 3 and 4 of township 14 south, range 30 east, Mount Diablo base and meridian; thence northerly along the section line between said sections 3 and 4 and between sections 33 and 34, and sections 27 and 28 of township 13 south, range 30 east, to the northwest corner of southwest quarter of section 27; thence northwesterly along the ridge immediately adjacent to and lying northeast from the headwaters of the east fork of Lightning Creek to the intersection of said ridge with the section line between sections 21 and 28, township 13 south, range 30 east, which point lies on the said section line three quarters of a mile more or less westerly from the northeast corner of said section 28; thence in a northerly direction across the easterly branch of the east fork of Lightning Creek at Summit Meadow to the ridge north of said creek branch; thence northeasterly along said ridge to Lookout Peak; thence in a northeasterly direction along the ridge from said peak, being also the crest of the hydrographic divide between Sheep Creek and Lightning Creek to the intersection of said ridge, with the line between section 15 and 22, township 13 south, range 30 east, which point lies one quarter of a mile more or less westerly of the northeast corner of said section 22; thence easterly along said section line to the corner of sections 14, 15, 22, and 23; thence north along the line between sections 14 and 15 to the southwest corner of the northwest quarter of the northwest quarter of section 14; thence east to the southeast corner of the northeast quarter of the northwest quarter of the said section; thence south to the southwest corner of the northeast quarter of the said section; thence east to the southeast corner of the southwest quarter of the northeast quarter of the said section; thence south to the southwest corner of the northeast quarter of the southeast quarter of the said section; thence east to the northeast corner of the southeast quarter of the southeast quarter of the said section; thence south to the southwest corner of section 13; thence east on the line between sections 13 and 24 to the southeast corner of section 13; thence south to southwest corner of the northwest quarter of the northwest quarter of section 19, township 13 south, range 31 east; thence east along the north latitudinal one-sixteenth section line of sections 19, 20, and 21 to the southeast corner of the northeast quarter of the northwest quarter of said section 21; thence north to the quarter section corner of sections 16 and 21; thence east along the line between sections 16 and 21 to the southeast corner of said section 16; thence north along the section line to the quarter section corner of sections 15 and 16; thence west along the latitudinal quarter section line of sections 16, 17, and 18 to the northwest corner of the southeast quarter of section 18; thence north to the northeast corner of the southeast quarter of the northwest quarter of said section 18; thence west to the northwest corner of the southwest quarter of the northwest quarter of said

Kings Canyon National Park, Calif., establishment.  
Description of tract.

following described lands, to wit: Section 9, south half, section 10, southwest quarter, and that part of the east half south of Generals Highway; section 11, that part south of Generals Highway; section 13, that part south of Generals Highway; section 14, that part south of Generals Highway, section 15, east half, northwest quarter, and the southeast quarter of the southwest quarter, section 21, southeast quarter of the northeast quarter, and the east half of the southeast quarter; section 22, east half, east half of the northwest quarter, southwest quarter of the northwest quarter and southwest quarter; section 23; section 24, that part south of Generals Highway; sections 25 and 26; section 27, east half, northwest quarter, and that part of the southwest quarter north and east of the crest of Redwood Mountain; section 34, that part east of the crest of Redwood Mountain; sections 35 and 36, township 14 south, range 28 east; all of sections 1 and 2; section 3, that part east of the crest of Redwood Mountain; section 11, that part east and north of the crest of Redwood Mountain; all of section 12; section 13, that part north of the Sequoia National Park boundary, township 15 south, range 28 east, Mount Diablo meridian, which shall be subject to all laws, rules, and regulations applicable to the said park. Such extension of the General Grant grove section of the said park shall not interfere with the movement of stock and vehicular traffic without charge, under general regulations to be prescribed by the Secretary of the Interior, to and from national forest lands on either side of the said park extension. The Kings Canyon National Park shall receive and use all moneys heretofore or hereafter appropriated for General Grant National Park.

Sec. 3. That the National Park Service shall, under the rules and regulations to be prescribed by the Secretary of the Interior, administer for public recreational purposes the lands withdrawn.

Sec. 4. That any motor-vehicle license issued for Sequoia National Park shall be applicable to Kings Canyon National Park, and vice versa: *Provided*, That in order to insure the permanent preservation of the wilderness character of the Kings Canyon National Park the Secretary of the Interior may, in his discretion, limit the character and number of privileges that he may grant within the Kings Canyon National Park. No privileges shall be granted for a period in excess of five years.

Sec. 5. That the administration, protection, and development of the Kings Canyon National Park shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916 (39 Stat. 535), entitled "An Act to establish a National Park Service, and for other purposes", as amended.

Approved, March 4, 1940.

[CHAPTER 41]

AN ACT

March 4, 1940  
[H. R. 6505]  
[Public, No. 425]

To amend an Act entitled "An Act to establish a uniform system of bankruptcy throughout the United States", approved July 1, 1898, and Acts amendatory thereof and supplementary thereto.

Bankruptcy Act of 1898, amendments.

50 Stat. 655,  
11 U. S. C., Supp. V,  
§ 403 (a).

Petition for composition of obligations.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That section 83a of chapter IX of an Act entitled "An Act to establish a uniform system of bankruptcy throughout the United States", approved July 1, 1898, as amended, be, and it is hereby, amended by inserting immediately after the first paragraph of said section 83a the following: "Wherever the petition seeks to effect a plan for the composition of obligations represented by securities, or evidences in any form of rights

AREA: KINGS CANYON NATIONAL PARK, CALIFORNIA

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AUTHORIZATION

Act of September 25, 1890 (P.L. 51-926, 26 Stat. 478), established General Grant National Park.

Act of March 4, 1940 (P.L. 76-424, 54 Stat. 41), established Kings Canyon National Park and incorporated therein lands formerly a part of General Grant National Park that was abolished by this act.

ACQUISITION AUTHORITY

Land acquisition with appropriated funds not prohibited.

ESTABLISHED

General Grant National Park established October 1, 1890.

Kings Canyon National Park established March 4, 1940.

BOUNDARY REVISIONS

Act of March 4, 1940, abolished General Grant National Park and established boundary of Kings Canyon National Park as described.

Proclamation No. 2411 of June 21, 1940 (54 Stat. 2710), enlarged the boundary as described.

Act of June 5, 1942 (P.L. 77-573, 56 Stat. 310), authorized adjustment of land-ownership lines within the General Grant grove section of the park, as described.

Act of August 14, 1958 (P.L.85-666, 72 Stat. 616), revised boundary as described.

Act of August 6, 1965 (P.L. 89-111, 79 Stat. 446), revised boundary to include additional lands as described.

Act of September 28, 1984 (P.L. 98-425, 98 Stat. 1626), authorized addition of approximately 1,500 acres from Sequoia National Forest, as depicted on map entitled "Jennie Lakes Additions, Kings Canyon National Park - Proposed", dated March 1983.

ACREAGE LIMITATIONS

None

STATUTORY CEILING FOR LAND ACQUISITION

None

AREA NUMBER

MIS -8580

\*REMARKS

Act of November 3, 1987 (P.L. 100-150, 101 Stat. 881), designated as a component of the National Wild and Scenic Rivers System segments of the Kings River, some of which lie within the boundary of Kings Canyon National Park.

Act of March 30, 2009 (P.L. 111-11), in Sequoia and Kings Canyon National Parks, (1) designated as John Krebs Wilderness approximately 39,740 acres, and (2) added approximately 45,186 acres to Sequoia-Kings Canyon Wilderness.

\*Denotes section revised.

Revised April 9, 2009

## AREA: SEQUOIA NATIONAL PARK, CALIFORNIA

AUTHORIZATION

Act of September 25, 1890 (P.L. 51-926, 26 Stat. 478)

ACQUISITION AUTHORITY

Act of December 21, 1943 (P.L. 78-209, 57 Stat. 606), authorized exchange of lands described.

Act of November 10, 1978 (P.L. 95-625, 92 Stat. 3479), authorizes acquisition of lands added by the act by donation, purchase with donated or appropriated funds, exchange, or transfer. If a tract is partly outside the boundary, the Secretary may acquire the entire tract to minimize severance damages.

Act of December 28, 2000 (P.L. 106-574, 114 Stat. 3062), authorized the acquisition by donation, purchase with donated or appropriated funds, or exchange, all interest in and to the 1,540-acre Dillonwood Grove. Upon acquisition, the Secretary shall revise the boundary of the park to include the additional land.

Act of December 8, 2004 (P.L. 108-447, 118 Stat. 3068), in amending the Act of November 10, 1978, (1) removed the term limit for reservations of use and occupancy in the Mineral King Valley section of the park, and (2) provides that renewals or extensions of leases or permits in the Mineral King Valley section of the park may be granted to the heirs, successors, and assigns of the lease or permit holders of record on November 10, 1978.

ESTABLISHED

September 25, 1890

BOUNDARY REVISIONS

Act of October 1, 1890 (P.L. 51-1263, 26 Stat. 650), revised the boundary to include additional lands as described.

Act of July 3, 1926 (P.L. 69-465, 44 Stat. 818), revised boundary to include additional lands as described (Section 6 of this was repealed by the Act of November 10, 1978).

Act of December 21, 1943, revised boundary as described.

Act of August 14, 1958 (P.L. 85-648, 72 Stat. 604), authorized exclusion of lands described. This Act was repealed by the Act of November 10, 1978, that added Mineral King Valley to the park.

Act of November 10, 1978 (P.L. 95-625, 92 Stat. 3479), revised boundary to include Mineral King Valley, as depicted on map entitled "Boundary Map, Sequoia-Kings Canyon National Park", numbered 102-90,000 and dated April 1975.

Act of December 28, 2000, authorized the Secretary to revise the boundary of the park to include the 1,540-acre Dillonwood Grove, when acquired.

ACREAGE LIMITATIONS

None

STATUTORY CEILING FOR LAND ACQUISITION

Act of November 10, 1978, authorized appropriation of necessary funds for acquisition in Mineral King Valley.

AREA NUMBERS

MIS - 8550

\*REMARKS

Act of November 24, 1987 (P.L. 100-174, 101 Stat. 924), designated as a component of the National Wild and Scenic Rivers System two segments of the Kern River, one of which lies within the boundary of Sequoia National Park.

Act of March 30, 2009 (P.L. 111-11), in Sequoia and Kings Canyon National Parks, (1) designated as John Krebs Wilderness approximately 39,740 acres, and (2) added approximately 45,186 acres to Sequoia-Kings Canyon Wilderness.

\*Denotes section revised.

Revised April 9, 2009





## Appendix B: Analysis of Fundamental Resources and Values

Fundamental Resource or Value	Giant Sequoia Trees
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>Sequoia and Kings Canyon National Parks contain more than 40% of the world's giant sequoia grove area, including the four largest living trees on earth.</li> <li>Sequoia National Park was created by a conservation movement that continues to influence the protection of irreplaceable scenic landscapes and places. Today, the parks protect the record of this history, of park management, and of earlier human uses extending back 8,000 years.</li> </ul>
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>The parks protect 39 of the approximately 75 native groves in the Sierra Nevada.</li> <li>Giant sequoia is a fire adapted species that combines pioneer traits including light seeds, rapid post-disturbance colonization, and rapid growth with late-seral traits, such as longevity and large size. Fire promotes the regeneration of seedlings. Individual trees can live 3,200 years and possibly longer.</li> <li>In some ways giant sequoias are very resilient to coping with a wide range of stressors, while other considerations suggest vulnerability in the future as a result of accelerated climate change.</li> <li>Suppression of fire has left the majority of groves more susceptible to damage or destruction from high severity fires.</li> <li>Grove condition is assessed relative to a reference of pre-European American historical fire frequency. The groves in the northern and southern watershed units of the Kaweah River basin are in relatively worse condition, while the rest of the Kaweah River basin is in intermediate condition.</li> <li>A sustainable age distribution for giant sequoia includes a very large number of young seedlings compared to older trees. Unburned groves lack the large seedling number, demonstrating the importance of fire in giant sequoia persistence.</li> <li>Giant sequoia are able to resist and cope with many known diseases and insect pests, but they are not immune to all diseases and pests.</li> <li>Facility improvements in some of the more popular groves have helped restore natural conditions. The largest project removed the former Giant Forest Village and Lodge and constructed new facilities outside of the grove.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>Very limited information is available on the rates of production, mortality, and growth specific to giant sequoia. Therefore, trends for reproduction, mortality, and growth are not known.</li> <li>The majority of the groves have had a large and continuing departure from the historic fire regime. Fire frequency is below that experienced before European American settlement.</li> <li>Reduction of fuels from the reintroduction of fire to the groves promotes regeneration of giant sequoia seedlings and increases resiliency of giant sequoia trees to damage from future fires.</li> <li>Increased visitation may be introducing increasing visitor impacts (e.g., increasing visitor contact with the tree bases).</li> </ul>

Fundamental Resource or Value	Giant Sequoia Trees
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Altered fire regimes, ground-level ozone injury during seedling stage (possibly affecting long-term success), land fragmentation, climate change (particularly its impact on the water cycle), and pests and pathogens (specifically annosus root rot) pose challenges to giant sequoias.</li> <li>• Local high-severity fires are necessary but not sufficient; they must be coupled with adequate soil moisture for regeneration. Local high-severity fires that create canopy gaps are necessary but currently not sufficient in groves where fire has not been restored; they must be coupled with adequate soil moisture for regeneration.</li> <li>• High-severity wildfires may cause direct and indirect mortality of large giant sequoias.</li> <li>• Individuals are susceptible to severe drought, which could increase as mean annual temperature and drought events are projected to increase due to climate change.</li> <li>• Past contractions of the giant sequoia population due to climate change may have decreased genetic variability to a relatively low point.</li> <li>• Visitor impacts around the base of the trees continue to pose a threat to tree health (e.g., jumping fences, climbing trees, etc.).</li> <li>• Lack of tree regeneration where fire has not been restored.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Foster additional funding for science and conservation due to giant sequoia’s iconic nature and the interest and support of the public.</li> <li>• Provide additional opportunities for innovative visitor use management (as proven by past restoration of Giant Forest).</li> <li>• Seek opportunities for climate change study that have both scientific value and public benefit.</li> <li>• Improve and build upon air quality and watershed partnerships to garner support for forest restoration.</li> <li>• Maximize persistence of large, living giant sequoias.</li> <li>• Maximize persistence of structurally and compositionally complex giant sequoia groves that are sustainable, resilient, and support native biodiversity.</li> <li>• Manage for ecological functions essential to giant sequoia groves.</li> <li>• Facilitate persistence of giant sequoia in the broader Sierra Nevada landscape.</li> <li>• Maximize the persistence of giant sequoia groves in areas of high social value.</li> </ul>
<p><b>Related Resources and Values</b></p>	<ul style="list-style-type: none"> <li>• The Giant Sequoia National Monument – USDA Forest Service.</li> </ul>
<p><b>Existing Data and Plans Related to the FRV</b></p>	<ul style="list-style-type: none"> <li>• “Sequoia and Kings Canyon National Parks Fire and Fuels Management Plan 2011 Annual Update.”</li> <li>• Natural resource condition assessment.</li> <li>• General management plan.</li> <li>• 1996 interim management plan for Giant Forest.</li> <li>• Giant sequoia tree inventories data.</li> <li>• Fire affects monitoring plots (50) in eight groves within the parks. Some have now been monitored for more than 30 years.</li> <li>• Draft giant sequoia resource stewardship strategy (including a vulnerability assessment).</li> <li>• Wilderness stewardship plan.</li> <li>• In-park air quality monitoring including ozone, deposition, and visibility.</li> </ul>

Fundamental Resource or Value	Giant Sequoia Trees
Data and/or GIS Needs	<ul style="list-style-type: none"> <li>• Correct errors in giant sequoia GIS data.</li> <li>• Improved understanding of giant sequoia sensitivity and adaptive capacity to climate change and related stressors.</li> <li>• Continued understanding of observed and projected climate change through monitoring of ecological responses, weather parameters (precipitation, temperature), and assessment of projected climate futures (models) for the region.</li> </ul>
Planning Needs	<ul style="list-style-type: none"> <li>• Resource stewardship strategy (in progress).</li> <li>• Giant sequoia management plan and monitoring strategy (to address visitor use, vulnerability, assisted migration, watering, identified trigger points for actions, etc.).</li> <li>• Climate change vulnerability assessment for giant sequoia trees.</li> <li>• Lost Grove preservation and facility plan.</li> <li>• Fire and fuels management plan (update).</li> <li>• Integrated park improvements/development concept plan for Wolverton/Wuksachi/Lodgepole (in progress).</li> <li>• Grant Grove site planning for transportation and circulation.</li> </ul>
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Joint resolution of 1956 regarding Grant Tree (PL 84-44170 Stat. 57)</li> <li>• State of California Forest Reservations (1890 PL 51-1263 26 Stat. 650)</li> <li>• Creation of park to protect giant sequoias (1890 PL 51-926 26 Stat. 478)</li> <li>• National Environmental Policy Act of 1969; 42 USC 4321</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources"</li> <li>• The Wilderness Act of 1964</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS <i>Management Policies 2006</i> (§1.6) "Cooperative Conservation Beyond Park Boundaries"</li> <li>• NPS <i>Management Policies 2006</i> (§4.1) "General Management Concepts"</li> <li>• NPS <i>Management Policies 2006</i> (§4.1.4) "Partnerships"</li> <li>• NPS <i>Management Policies 2006</i> (§4.4.1) "General Principles for Managing Biological Resources"</li> <li>• NPS <i>Management Policies 2006</i> (§4.4.2) "Management of Native Plants and Animals"</li> <li>• NPS <i>Management Policies 2006</i> (§4.4.4) "Management of Exotic Species"</li> <li>• NPS <i>Management Policies 2006</i> (§4.4.4.2) "Removal of Exotic Species Already Present"</li> <li>• NPS <i>Management Policies 2006</i> (§4.7.2) "Weather and Climate"</li> </ul>



Fundamental Resource or Value	Ecological Diversity
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>• Sequoia and Kings Canyon National Parks contain an extraordinary continuum of diverse ecosystems, from foothill woodlands and shrublands to alpine tundra. Intact ecosystems range from 1,370 to 14,494 feet (418 to 4,418 meters) in elevation, the greatest vertical relief of any protected area in the lower 48 states.</li> <li>• Sequoia and Kings Canyon National Parks contain a remarkable concentration of diverse and scenic geologic features, such as deep glacially carved canyons, an extensive cave-rich landscape, and towering alpine peaks, including 9 of the 12 highest summits in California; and Mount Whitney, the highest peak in the US outside of Alaska.</li> <li>• Among our nation’s earliest protected areas, the history of Sequoia and Kings Canyon National Parks is rooted in pioneering stewardship. This legacy inspires a culture of leadership, continuous learning, and innovation.</li> </ul>
<p><b>Current Conditions</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>• Sequoia and Kings Canyon National Parks protect large patches of contiguous habitat across elevation gradients likely essential for plants, animals, and other organisms that may disperse in response to changing environmental and habitat conditions.</li> <li>• The parks, an international Biosphere Reserve, are within the California Floristic Province, a recognized hot-spot of global biodiversity. The parks represent less than 1% of the land area of California but are home to more than 15% of its plant diversity.</li> <li>• Low elevation habitats, mid-elevation habitats, and river canyons have the highest biodiversity in these parks. Herbaceous communities have the greatest biodiversity, followed by the hardwood community and then the shrublands.</li> <li>• Montane, conifer-dominated forests currently have high ecological integrity in undeveloped areas throughout the parks. These forests are contiguous, contain large trees and high tree biomass, and have stable tree populations with sufficient dead trees to provide critical wildlife habitat and input to the decaying-nutrient pool.</li> <li>• Of the 150 special-status plants found in Sequoia and Kings Canyon National Parks, 102 are thought to be endemic to the Sierra Nevada, 39 are thought to be restricted to the southern Sierra Nevada, and 12 have ranges that are restricted to within five miles of the parks. A disproportionately high richness of special-status plants is found in meadows, mixed chaparral, perennial grasslands, montane riparian, alpine dwarf shrub, and blue-oak woodlands.</li> <li>• The parks contain an abundance of high-elevation vegetation types, which include a wide diversity of vegetation and habitat types.</li> <li>• Park meadows span a range of elevations from 1,900 feet to almost 13,000 feet, but 99% of all meadows are above 6,500 feet.</li> <li>• 150 of the 1,561 plant taxa are identified as having special status, including one taxon that is state listed as rare, and one that is a candidate for federal listing as endangered.</li> <li>• Most aquatic environments in the parks have been impacted by nonnative fish and/or diseases (e.g., amphibian chytrid fungus).</li> <li>• Available monitoring data do not suggest that current levels of packstock use are adversely impacting vegetation composition or productivity. However, historic cattle and sheep grazing likely altered the alpine communities.</li> <li>• The foothill annual grassland is dominated by nonnative grasses which have naturalized following introduction to California prior to park establishment. The parks have 47 animal species that are listed as threatened, endangered, or sensitive by federal or state agencies (e.g., 4 fish, 1 reptile, 4 amphibians, 23 birds, and 15 mammals). Bird and bat species comprise the majority of this list (32 species).</li> <li>• The low-lying southwestern region of the parks has the highest bird diversity, associated with montane hardwoods, montane riparian habitats, and water.</li> <li>• Among the 145 species assessed, three species of birds are listed as threatened or endangered, 15 are considered “of concern” at the state or federal level, and two species are extirpated or nearly extirpated from Sierra Nevada network parks as breeding species.</li> </ul>

Fundamental Resource or Value	Ecological Diversity
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions (continued)</b></p> <ul style="list-style-type: none"> <li>• There are currently more than 21 nonnative wildlife species found in the parks, with an additional 3 species of fish that are considered nonnative in certain areas of the parks. Of those, 13 are considered invasive.</li> <li>• Except for the lower South Fork Kings River watershed, aquatic ecosystems in the parks are being adversely affected by the presence of nonnative fish.</li> <li>• Some high elevation ecosystems in the parks are particularly sensitive to surplus nitrogen deposition in the park. These systems receive more nitrogen deposition than lower elevation areas, and have short growing seasons and shallow soils that limit the capacity of soils and plants to absorb nitrogen. The parks’ 2010–2012 estimated total nitrogen deposition level suggests that lichens, herbaceous, and forest vegetation are at risk for harmful effects. Replacement of lichen species that are important for wildlife food and habitat at the parks, with weedy, nitrogen-loving species has been documented. Two hotspots of high nitrogen deposition in the western region of the parks exceed levels that could cause nitrogen saturation, which can result in adverse ecosystem effects.</li> <li>• Mercury and toxics is a significant concern based on elevated levels of mercury and pesticides in park biota. Although the park receives moderate levels of mercury deposition relative to other areas of the United States, mercury and historic-use pesticides (e.g., DDT) have been found in fish that exceed safe consumption thresholds for human and wildlife health. Concentrations of current-use pesticides (e.g., endosulfans and dacthal) have been found in fish higher than in other western US national parks.</li> <li>• Historic grazing by cattle, sheep has resulted in hydrologic alteration in overgrazed areas and may have altered montane and alpine vegetation communities.</li> <li>• Vegetation health risk from ground-level ozone warrants significant concern based on NPS Air Resources Division benchmarks. There are more than 20 ozone-sensitive plants in the park including quaking aspen (<i>Populous tremuloides</i>), ponderosa pine (<i>Pinus ponderosa</i>), and Scouler’s willow (<i>Salix scouleriana</i>).</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>• Montane, conifer-dominated forests in the parks are among the largest and most productive in the region, however, they may be deteriorating based on data from 1983-2004. During this time, aboveground live-tree biomass and big-tree density declined. Tree mortality doubled, while tree regeneration remained constant. The increase in mortality rates is most likely due to an increase in temperature-induced drought stress between 1983 and 2004.</li> <li>• Studies throughout California have found the mortality rate in blue-oak woodlands is greater than the regeneration rate, leading to concerns that the long-term persistence of this community may be at risk.</li> <li>• Ozone injury in pines is greatest along the western edge of Sequoia National Park, in the Kaweah River drainage, and along the Middle and South Forks of the Kings River in Kings Canyon National Park.</li> <li>• Nitrogen deposition along the western edge of both parks is cause for caution—and concern in the case of the North Fork Kaweah watershed in Sequoia National Park as these changes have the potential to change species composition, growth patterns, and nutrient cycling, thus altering chemical/physical environments and food sources for forest-dependent plant and animal species.</li> <li>• Blister rust is a nonnative pest common in pine forest types at lower elevations in Sequoia and Kings Canyon National Parks, but less so at high elevations. There was more blister rust in sugar pine trees than western white pines, and the incidence of blister rust is highest in the Kaweah River drainage in Sequoia National Park.</li> <li>• Bird and mammal diversity may be declining at low elevations, but not at elevations above 5,000 feet.</li> <li>• The diversity of herpetofauna does not show strong trends over time.</li> <li>• Higher fire return intervals departure scores are found in the south and west areas of the park.</li> </ul>

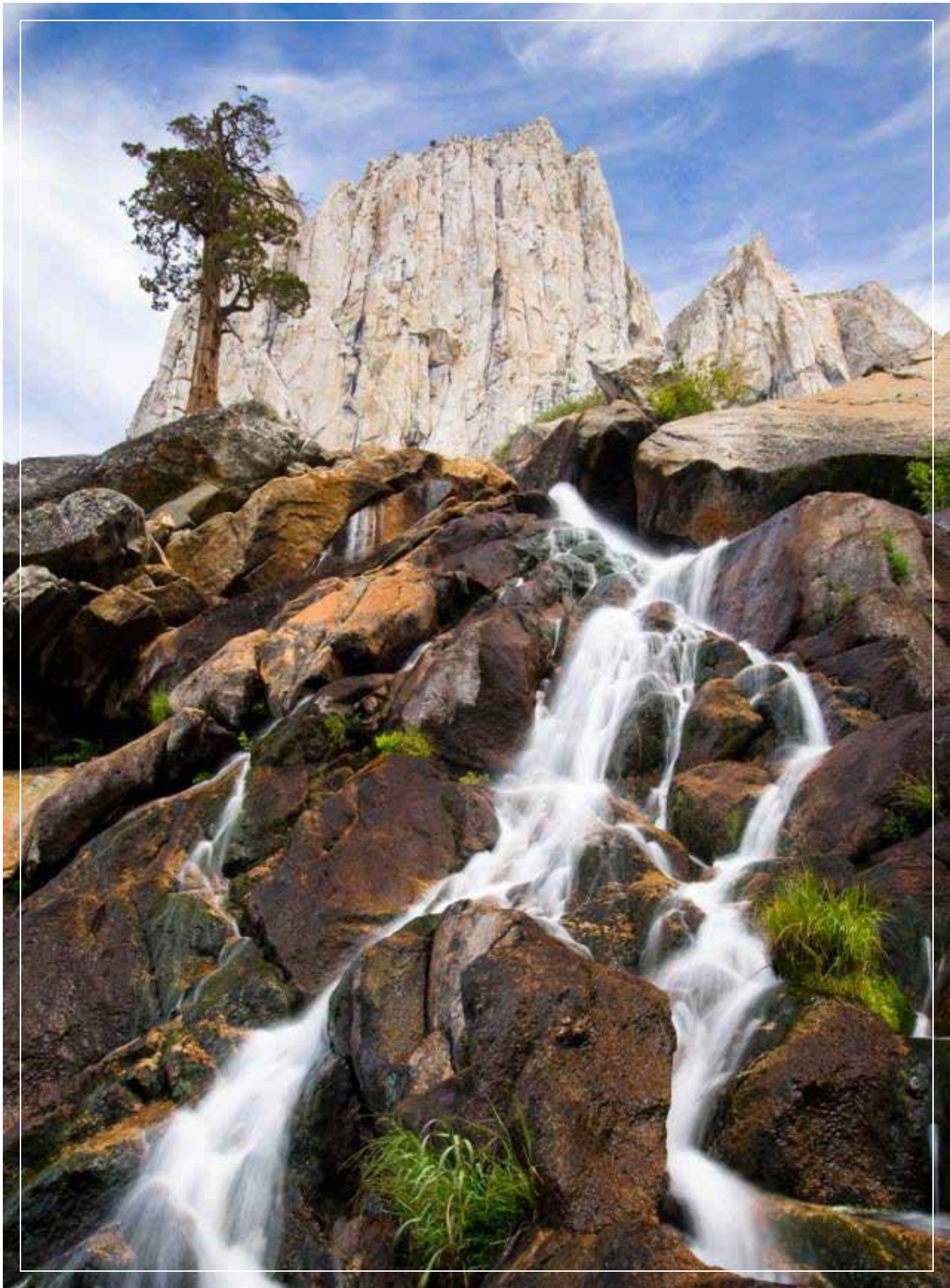
Fundamental Resource or Value	Ecological Diversity
<p><b>Current Conditions and Trends</b></p>	<p><b>Trends (continued)</b></p> <ul style="list-style-type: none"> <li>• Research suggests that pesticides from the adjacent Central Valley contributed to the disappearance of the foothill yellow-legged frog, and in ongoing decline of other regional amphibians, including the endangered mountain yellow-legged frogs. There are also documented abnormalities (e.g., discoloration and thinning) in peregrine falcon eggs that contain high quantities of DDE (a breakdown product of DDT), and likely pesticide-induced neurological effects in western pond turtles from the parks.</li> <li>• California air pollution emissions have declined since 2000. Between 2000 and 2020, mobile source (e.g., vehicles, equipment) emissions are projected to decline. Stationary sources (e.g., power plants, incinerators) are also projected to decline for all precursors. Overall between 2000 and 2020, air pollution emissions are scheduled to decline almost 40% which will also improve air quality conditions in the parks.</li> <li>• Air pollution trends for the 2003–2012 decade indicate that nitrogen deposition improved while vegetation health risk from ground-level ozone and mercury and sulfur deposition remained unchanged (NPS-ARD 2015).</li> </ul>
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Intact forests are vulnerable to stressors, including altered fire regime, air pollution, climate change, and pests/pathogens.</li> <li>• Stressors such as air pollution, noise and artificial light, altered fire regime, nonnative species, pests, and pathogens are likely to have the greatest impact on biodiversity in the parks.</li> <li>• Climate change could increase the potential for catastrophic wildfire due to increased temperatures.</li> <li>• A changing climate is likely to dramatically affect the distribution of plants and animals in the Sierra Nevada, with some organisms moving in response to warming temperatures and changing precipitation regimes.</li> <li>• Climate change and land-use fragmentation have documented impacts on biodiversity throughout the Sierra Nevada and are probably affecting the biodiversity of the parks.</li> <li>• Meadows and alpine species may be particularly sensitive to climate change.</li> <li>• The invasive nonnative plant species of highest concern displace native species and habitats, reduce local diversity, form monotypic stands, or alter ecosystem processes such as hydrologic regimes, biogeochemical cycling, fire regimes, and other disturbance regimes. Nine invasive nonnative plant species in the parks alter ecosystem processes.</li> <li>• Nonnative fish currently pose the greatest threat to the aquatic resources of the parks.</li> <li>• Special-status plants are known to be vulnerable to these stressors: land-use change and fragmentation, climate change, invasive plant species, altered fire regime, and nonnative pests and pathogens. Air quality may impact the special-status plants in the parks, but this is currently unstudied.</li> <li>• Illegal marijuana cultivation results in unregulated use of pesticides, particularly in the foothills and low coniferous forests. Of particular concern is the use of anticoagulant rodenticides, which accumulate up the food chain and threaten predators, particularly the Pacific fisher.</li> <li>• Visitor use, administrative use, and associated infrastructure can affect soils (compaction, erosion), vegetation (trampling, introduction of nonnative species), hydrology (water withdrawals, piping of water through culverts), and wildlife behavior (habituation, food conditioning).</li> <li>• Administrative uses (e.g., grazing by packstock, trail building and maintenance, fire management) can affect individual organisms, population dynamics, and the structure and function of park ecosystems and communities.</li> <li>• Visitor use of caves can affect endemic cave ecosystems.</li> <li>• The disease called white-nose syndrome could potentially impact two bat species in the parks.</li> <li>• Of all stressors, land-use impacts, habitat fragmentation, and habitat loss are the greatest stressors for most bird species that visit or breed in the parks. These stresses mostly occur outside park boundaries.</li> <li>• Climate change is perhaps the most important stressor to the parks.</li> </ul>

Fundamental Resource or Value	Ecological Diversity
<p><b>Threats and Opportunities</b></p>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• The rich ecological diversity in the parks inherently offers a wide array of research opportunities on ecological sciences, including biome shifts, invasive species trends, and changes in hydrological patterns due to a changing climate.</li> <li>• The parks provide important wildlife corridors across elevation gradients, which may provide pathways for species driven upward in elevation as they seek optimal habitat niches in response to climate change.</li> <li>• The parks could implement additional preventive measures to deter illegal uses (poaching, marijuana).</li> <li>• The parks aim to adopt proactive adaptive stock use and meadow management plans to mitigate visitor use and administrative use impacts.</li> <li>• The parks could further implement targeted abatement of invasive and nonnative species.</li> <li>• The park could expand the study and treatment of certain diseases that are adversely affecting native species.</li> <li>• Continue to work cooperatively with other federal and state air quality agencies and local stakeholders to reduce air quality impacts in parks from sources of air pollution.</li> </ul>
<p><b>Existing Data and Plans Related to the FRV</b></p>	<ul style="list-style-type: none"> <li>• Natural resources condition assessment.</li> <li>• “Sequoia and Kings Canyon National Parks Fire and Fuels Management Plan 2011 Annual Update.”</li> <li>• Wilderness stewardship plan.</li> <li>• Natural resource foundation data (vegetation, geology, soil, hydrography, and climate).</li> </ul>
<p><b>Data and/or GIS Needs</b></p>	<ul style="list-style-type: none"> <li>• Assessment of resources and locations most and least vulnerable to the effects of a changing climate (as part of climate change vulnerability assessment).</li> <li>• Updated geospatial data (e.g., updated vegetation map).</li> <li>• Continued ecological threshold research (e.g., visitor use impacts and monitoring study).</li> <li>• Continued understanding of observed and projected climate change through monitoring of ecological responses, weather parameters (precipitation, temperature), and assessment of projected climate futures (models) for the region.</li> <li>• Continued in-park air quality monitoring including ozone, deposition, and visibility.</li> <li>• Continued monitoring of toxic contaminants in biota, including understanding and measuring the mechanistic effects of the most harmful contaminants.</li> </ul>
<p><b>Planning Needs</b></p>	<ul style="list-style-type: none"> <li>• Ecosystem vulnerability assessments from climate change.</li> <li>• Complete resource stewardship strategy (including ecological threat assessment).</li> <li>• Continued ecosystem monitoring program.</li> <li>• White pine blister rust management strategy.</li> <li>• Foothills woodlands management plan.</li> <li>• Cave management plan.</li> <li>• Restoration plan for high elevation aquatic ecosystems (in progress).</li> <li>• Invasive plant management plan.</li> <li>• Parkwide disturbed lands assessment and restoration strategy.</li> </ul>



Fundamental Resource or Value	Ecological Diversity
<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b></p>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• National Invasive Species Act of 1996</li> <li>• National Environmental Policy Act of 1969; 42 USC 4321</li> <li>• Executive Order 13112, "Invasive Species"</li> <li>• Federal Noxious Weed Act of 1974, as amended</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• Clean Water Act; 33 USC 1251-1387, 33 USC 1151</li> <li>• Federal Cave Resources Protection Act of 1988</li> <li>• Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources"</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director's Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS <i>Management Policies 2006</i> (§1.6) "Cooperative Conservation Beyond Park Boundaries"</li> <li>• NPS <i>Management Policies 2006</i> (§4.4.1) "General Principles for Managing Biological Resources"</li> <li>• NPS <i>Management Policies 2006</i> (§4.7.2) "Weather and Climate"</li> <li>• NPS <i>Natural Resource Management Reference Manual 77</i></li> </ul>





Fundamental Resource or Value	Scenic Landscapes
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>• Sequoia and Kings Canyon National Parks contain an extraordinary continuum of diverse ecosystems, from foothill woodlands and shrublands to alpine tundra. Intact ecosystems range from 1,370 to 14,494 feet (418 to 4,418 meters) in elevation, the greatest vertical relief of any protected area in the lower 48 states.</li> <li>• Sequoia and Kings Canyon National Parks contain a remarkable concentration of diverse and scenic geologic features, such as deep glacially carved canyons, an extensive cave-rich landscape, and towering alpine peaks, including 9 of the 12 highest summits in California; including Mount Whitney, the highest peak in the United States outside of Alaska.</li> <li>• The water resources of Sequoia and Kings Canyon National Parks, which include free-flowing wild and scenic rivers and the highest elevation headwaters in California, have profound and far-reaching ecological, recreational, and societal value.</li> <li>• More than 800,000 acres of Sequoia and Kings Canyon National Parks are designated wilderness, forming the core of the largest expanse of contiguous wilderness in California, which is visited and valued by people from around the world.</li> <li>• Sequoia National Park was created by a conservation movement that continues to influence the protection of irreplaceable scenic landscapes and places. Today, the parks protect the record of this history, of park management, and of earlier human uses extending back 8,000 years.</li> <li>• Sequoia and Kings Canyon National Parks attract visitors from around the world by providing some of the most personally challenging and transformative recreational opportunities in the Sierra Nevada while also providing a wide array of inspirational, educational, and sensory experiences accessible to visitors of all ages and abilities.</li> </ul>
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>• Sequoia and Kings Canyon National Parks exhibit a landscape of extraordinary vertical relief and diverse geologic features—from foothill environments to glacially carved canyons and domes, to high alpine peaks.</li> <li>• Visibility is generally worse along the western edge, due mostly to large upwind pollution sources in the nearby San Joaquin Valley Air Basin.</li> <li>• Air pollution has a disproportionately adverse effect to visibility on the low and mid-elevations of the southwestern portion of the parks.</li> <li>• Daytime scenic views are often obscured by pollution-caused haze. At night, air pollution scatters artificial light, increasing the effect of light pollution on the night sky.</li> <li>• High ozone pollution is injuring the vegetation in the parks. Visible ozone injury is evident in sensitive pine species throughout the parks. Injury is greatest where ozone concentration is greatest.</li> <li>• In some locations, visitors can see, on average, half the distance that they could see if the air was clean.</li> <li>• Sequoia and Kings Canyon National Parks offer exceptional opportunities to view dark night skies. However, anthropogenic light is having a moderate impact on dark night skies. At night, air pollution scatters artificial light, increasing the effect of light pollution on the night sky.</li> <li>• Sky brightness ranges from 18%–74% of natural conditions (night sky).</li> <li>• Sequoia and Kings Canyon National Parks was one of the first parks to have air quality and climate change exhibits.</li> <li>• A study of 14 glaciers in the region showed a 55% loss of area in the study time period (1900–2004).</li> <li>• Nonnative plant species can alter the natural scenery. The parks actively manage 219 nonnative plant species. Most invaded are the blue oak woodland, mixed chaparral, montane hardwood, valley foothill riparian, and wet meadow vegetation types.</li> <li>• The Generals Highway provides access to scenery year-round; two seasonally used roads (one to Mineral King and another to Cedar Grove) penetrate the deeper canyons of the western slope; no road crosses the crest of the Sierra Nevada.</li> <li>• A world-class system of frontcountry and wilderness trails affords public access to extraordinary scenery.</li> </ul>

Fundamental Resource or Value	Scenic Landscapes
<p><b>Current Conditions and Trends</b></p>	<p><b>Trends</b></p> <ul style="list-style-type: none"> <li>• For the 2003–2012 decade, the trend in visibility improved.</li> <li>• Artificial light in the region is increasing, thus affecting night sky quality. Remote areas of the park remain far away from light sources.</li> <li>• California air pollution emissions have declined since 2000. Between 2000 and 2020, mobile source (e.g., vehicles, equipment) emissions are projected to be reduced. Stationary sources (e.g., power plants, incinerators) are also projected to decline for all precursors. Overall between 2000 and 2020, air pollution emissions are scheduled to decline almost 40 percent which will also improve air quality and visibility conditions in the parks.</li> <li>• Emissions from park operations are decreasing.</li> <li>• A growing backlog of trail and road system repair may adversely affect public access to scenery.</li> </ul>
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• An increase in mean annual temperature projected for the region due to climate change could lead to increased fire frequency and ozone formation, decreasing air quality.</li> <li>• An increase in mean annual temperature projected for the region due to climate change will likely impact snowpack and glaciers, altering seasonal runoff even and a range of ecological processes that comprise the scenic landscape.</li> <li>• Pollution-caused haze affects scenic vistas.</li> <li>• Increasing sources of anthropogenic light affects dark skies.</li> <li>• Climate change could increase ozone or affect vistas of snowpacked peaks and other natural features.</li> <li>• Climate change is expected to further impact glaciers.</li> <li>• Insufficient funding to address trail and road maintenance requirements.</li> <li>• Nine nonnative plant species, called “transformers,” exist in the parks; these not only displace native plant species and habitats, but also alter ecosystem functions and processes, thus “transforming” the landscape.</li> <li>• Stressors that contribute to the growth and spread of invasive plants include land-use change and habitat fragmentation, air pollution, altered fire regimes, climate change, and pests and pathogens. These stressors mostly occur outside park boundaries.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Fire program continues to build relationships with the local air resources board.</li> <li>• Provide more public education and awareness on air quality and night skies.</li> <li>• Shuttle system could be expanded and is an opportunity to reduce vehicle emissions and artificial light.</li> <li>• Continue improving park sustainability and environmental leadership through the parks’ Climate Friendly Park action plan and the environmental management system.</li> <li>• Dark sky festival providing opportunities for education about air pollution and light pollution.</li> <li>• Participate in air quality partnerships which could result in incentives for voluntary reductions in emissions in California (e.g., Rocky Mountain Park Program).</li> <li>• Better views to the mountains from the valley could create more connections and support for stewardship and visitation and even understanding of park significance.</li> <li>• Sequoia and Kings Canyon National Parks has the opportunity to influence many people (local to international) about the importance of clean air, clear views, and dark night skies which are attributes of scenic landscape of the parks.</li> <li>• Trail and road system improvements can enhance public access to scenery.</li> <li>• Advanced interpretation of the landscape and how it is influenced by the changing climate.</li> <li>• Seek International Dark Sky Park status through the International Dark-Sky Association.</li> <li>• Continue to work cooperatively with other federal and state air quality agencies and local stakeholders to reduce air quality impacts in parks from sources of air pollution.</li> </ul>

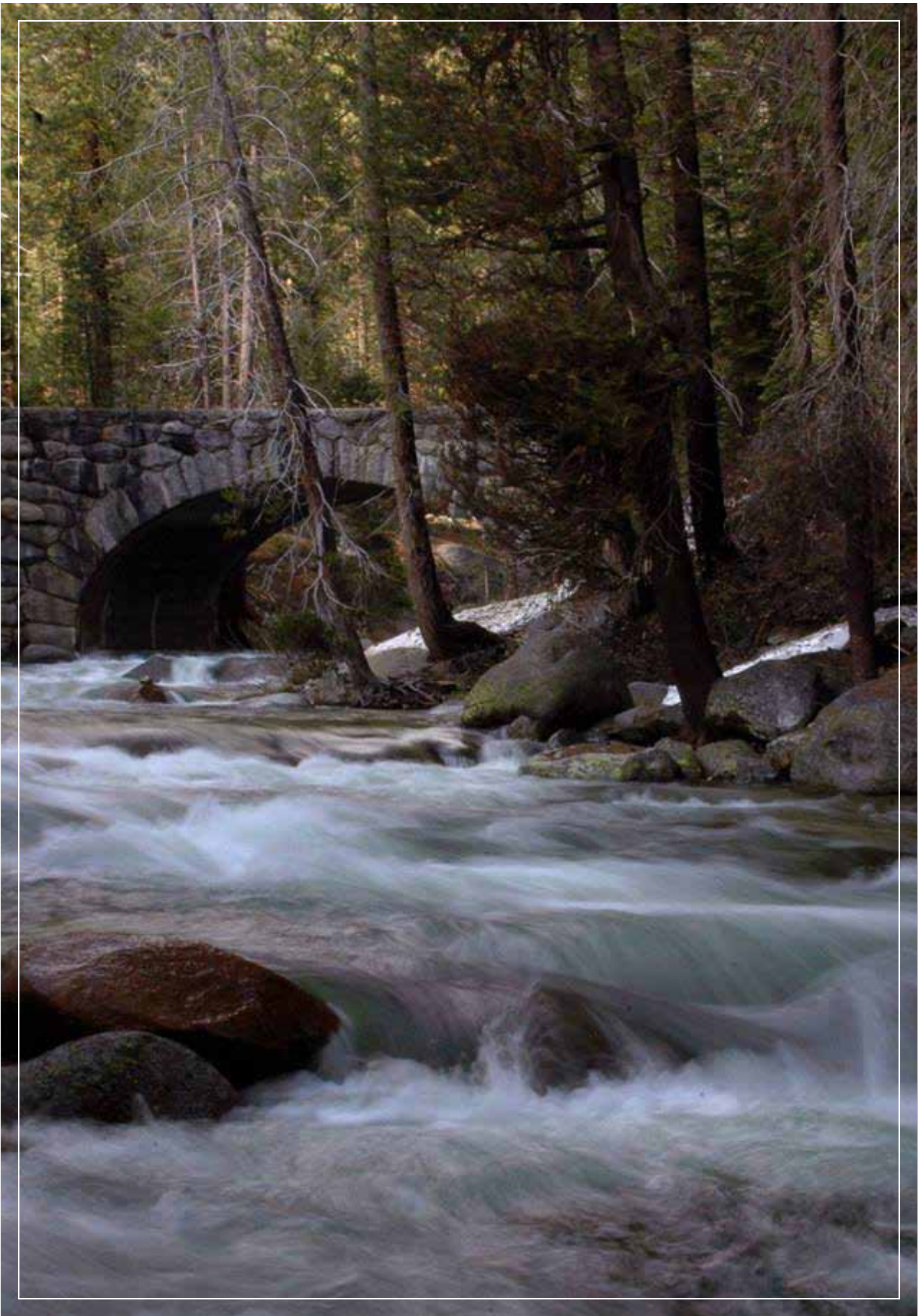
Fundamental Resource or Value	Scenic Landscapes
Existing Data and Plans Related to the FRV	<ul style="list-style-type: none"> <li>• Climate Friendly Parks Program (emissions reduction).</li> <li>• Wilderness stewardship plan.</li> <li>• Sequoia and Kings Canyon National Parks Fire and Fuels Management Plan 2011 Annual Update.</li> </ul>
Data and/or GIS Needs	<ul style="list-style-type: none"> <li>• Continue monitoring air quality parameters—visibility, ozone.</li> <li>• Scenic resource inventory.</li> </ul>
Planning Needs	<ul style="list-style-type: none"> <li>• Resource stewardship strategy (in progress).</li> <li>• Scenery conservation plan.</li> </ul>
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Wilderness Act of 1964</li> <li>• Wild and Scenic Rivers Act of 1968</li> <li>• National Invasive Species Act of 1996</li> <li>• Federal Noxious Weed Act of 1974, as amended</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• Executive Order 13112, “Invasive Species”</li> <li>• Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources”</li> <li>• National Park Service Concessions Management Improvement Act</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS <i>Management Policies 2006</i> (§4.10) “Lightscape Management”</li> <li>• NPS <i>Management Policies 2006</i> (§4.7) “Air Resource Management”</li> <li>• NPS <i>Natural Resource Management Reference Manual 77</i></li> </ul>



Fundamental Resource or Value	Caves and Karst Systems
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>Sequoia and Kings Canyon National Parks contain a remarkable concentration of diverse and scenic geologic features, such as deep glacially carved canyons, an extensive cave-rich landscape, and towering alpine peaks, including 9 of the 12 highest summits in California; and Mount Whitney, the highest peak in the US outside of Alaska.</li> </ul>
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>The parks have 275 caves that host more than 40 species.</li> <li>Some caves have active stream systems, although many are dry with ancient remnants of running water.</li> <li>Cave ecosystems host a diversity of wildlife. At least 40 new invertebrate species have been discovered since 1965, many of which are endemic to the parks or individual watershed or caves.</li> <li>Textbook examples of rare and picturesque cave formations and mineral deposits exist.</li> <li>Cave speleothems capture information on past climates dating back beyond most paleoclimatic indicators.</li> <li>Karst is a major, but poorly understood source of groundwater for the Kaweah River basins.</li> <li>Caves contain archeological and paleontological resources that provide information on past human use.</li> <li>Lilburn Cave is the longest known cave in California and contains more than 21 miles of mapped passages.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>Sequoia and Kings Canyon National Parks and cooperators continue to discover and document more cave systems.</li> <li>Management actions have reduced instances of vandalism in some caves.</li> </ul>
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>Cave invertebrates are vulnerable to several stressors, including trampling from visitors, and air and water pollution.</li> <li>Air and water quality degradation is a threat to cave-dwelling species because they rely on relatively stable conditions.</li> <li>Vandalism can quickly and easily cause significant damage to irreplaceable cave formations.</li> <li>Habitat modification, including trampling and the introduction of unnatural food sources (e.g., hair, skin, and food crumbs) can impact cave invertebrates.</li> <li>Artificial light sources in Crystal Cave promote the growth of invasive algae on delicate cave formations.</li> <li>Increase in mean annual temperature due to climate change could alter temperature and humidity inside the karst system.</li> <li>White-nose syndrome could decimate bat populations.</li> <li>Very few people know about the diversity of karst and cave resources in the parks. Lack of appreciation and awareness of these resources could result in loss of support.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Cave tours provide an opportunity for better understanding of the sensitive nature of cave ecosystems.</li> <li>Many caves remain to be discovered, explored, surveyed, and inventoried.</li> <li>Management actions can protect cave resources.</li> <li>Publications could be used to increase public awareness and concern for karst and cave resources within the parks.</li> </ul>

Fundamental Resource or Value	Caves and Karst Systems
<b>Existing Data and Plans Related to the FRV</b>	<ul style="list-style-type: none"> <li>Natural resources condition assessment.</li> <li>Cave management plan (1997).</li> <li>Crystal Cave management plan (1998).</li> <li>Wilderness stewardship plan.</li> <li><i>Interim White Nose Disease Management Plan: National Park Service, Sequoia and Kings Canyon National Parks – Final</i> (2011).</li> </ul>
<b>Data and/or GIS Needs</b>	<ul style="list-style-type: none"> <li>Improved documentation and mapping of cave and karst systems.</li> <li>Studies on the location of bat roosting locations.</li> <li>Continued understanding of observed and projected climate change through monitoring of ecological responses, weather parameters (precipitation, temperature), and assessment of projected climate futures (models) for the region.</li> </ul>
<b>Planning Needs</b>	<ul style="list-style-type: none"> <li>Resource stewardship strategy (in progress).</li> <li>Cave management plan.</li> <li>Cave-specific management plans including Crystal Cave redevelopment plan.</li> </ul>
<b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>National Environmental Policy Act of 1969; 42 USC 4321</li> <li>Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 USC 4301)</li> <li>“Cave Management” (43 CFR 37A)</li> <li>Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources”</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>NPS <i>Management Policies 2006</i> (§4.6.1) “Protection of Surface Waters and Groundwaters”</li> <li>NPS <i>Natural Resource Management Reference Manual 77</i> §4.8.1.2 Karst</li> <li>NPS <i>Natural Resource Management Reference Manual 77</i> §4.8.2.2 Caves</li> <li>NPS <i>Natural Resource Management Reference Manual 77</i> §6.3.11.2 Caves [in wilderness]</li> </ul>



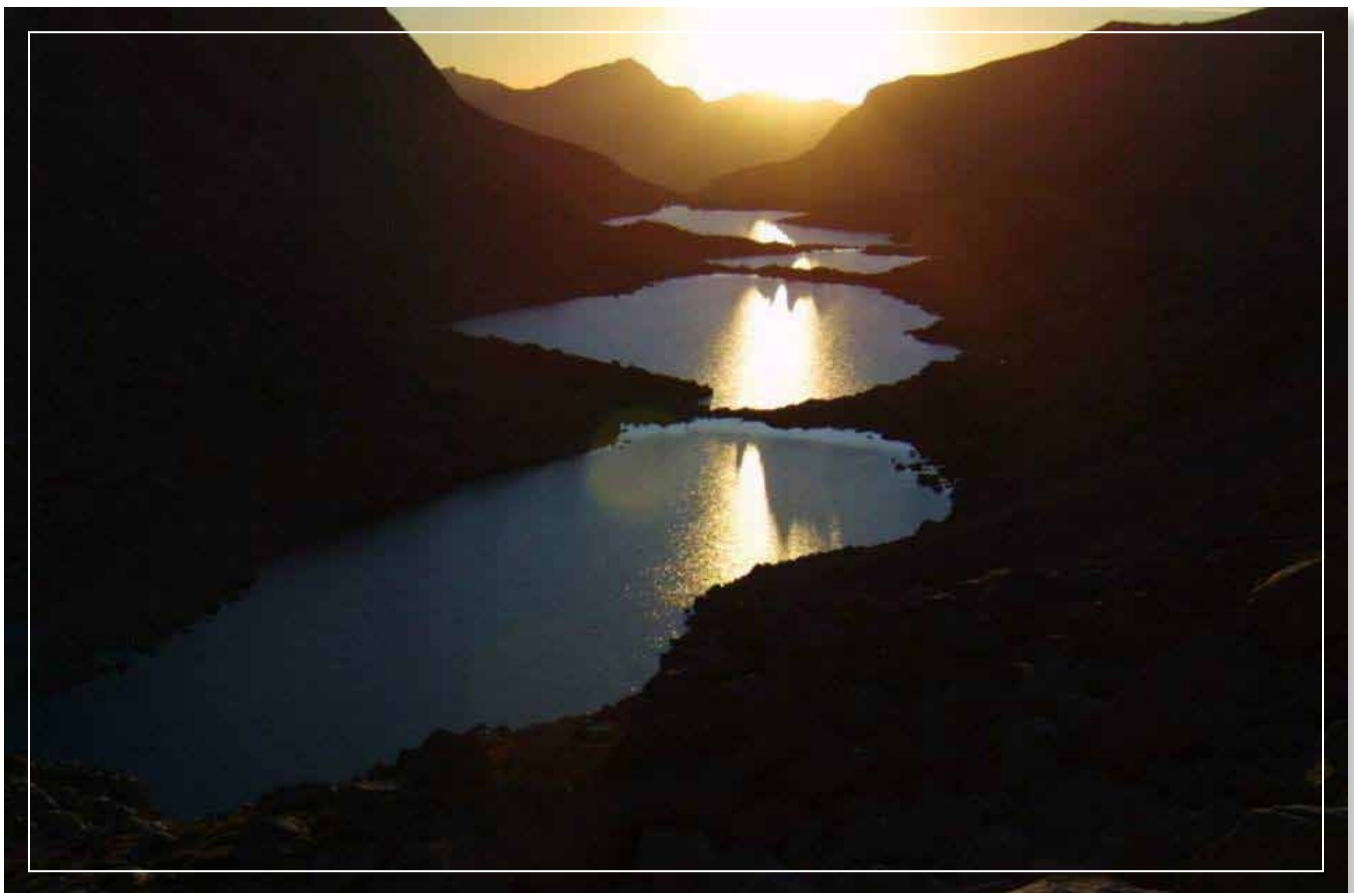




Fundamental Resource or Value	Water Resources
<b>Related Significance Statements</b>	<ul style="list-style-type: none"> <li>Sequoia and Kings Canyon National Parks contain more than 40% of the world's giant sequoia grove area, including the four largest living trees on earth.</li> <li>The water resources of Sequoia and Kings Canyon National Parks, which include free-flowing wild and scenic rivers and the highest elevation headwaters in California, have profound and far-reaching ecological, recreational, and societal value.</li> </ul>
<b>Current Conditions and Trends</b>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>Three rivers within the parks are designated wild and scenic rivers in recognition of their free-flowing conditions and clean water quality.</li> <li>The condition of standard water-quality parameters (pH, acid neutralizing capacity, dissolved oxygen) is generally better than federal standards, but is declining in 3 of 12 watershed units.</li> <li>The nutrient (nitrogen, phosphorous) water quality condition is generally better than federal standards, with improving or declining trends being watershed-dependent. Emerald Lake has experienced eutrophication by both nitrogen and phosphorus during the last 10–15 years.</li> <li>Observed levels of acidity and nitrate are not explained solely by atmospheric deposition. Patterns indicate that geology can also influence acidity and nitrogen.</li> <li>Mercury, lead, and zinc in the surface waters at the parks were found to be at or above threshold toxicity levels for aquatic species. Copper and cadmium were well below.</li> <li>A study of 14 glaciers in the region showed a 55% loss of area between 1900 and 2004.</li> <li>The majority of the snowmelt in the parks comes from elevations above 9,800 feet.</li> <li>Snowpack is increasing in some areas of the parks and decreasing in others. Relative patterns of snowmelt across the large elevational gradients in the parks are similar from basin-to-basin and year-to-year under wet, dry, and average climate years.</li> <li>The parks are extremely important to the “water budget” of the southern Sierra, as they protect watersheds and serve as storage for snowpack. The parks produce more water (4–10 acre-feet per year) than the rest of the region as a whole (0–7 acre-feet per year).</li> <li>The North Fork Kern River (WSR) is home to the Little Kern golden trout, which lives at the highest elevation of any sub-species of native trout.</li> <li>In the East Fork Kaweah watershed, there are four dams in 112 acres of designated potential wilderness additions. The dams regulate water flow for downstream hydroelectric generation.</li> <li>In the Middle and Marble Forks of the Kaweah River, hydroelectric facilities include flumes, dams, and diversions.</li> <li>Toxic metals at or above threshold levels for heavy metals – mercury, lead, and zinc.</li> <li>Five river segments (South Fork, San Joaquin and Marble, and Middle, East, and South Forks of Kaweah) have been determined eligible and suitable for wild and scenic river designation.</li> <li>Domestic water supplies for visitor and administrative uses have recently fallen short of demand and continue to worsen.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>Water quality is mostly stable (per national guidelines).</li> <li>Glaciers are melting and continuing to shrink.</li> <li>Below 8,500 feet, snowpack is generally declining.</li> <li>Water flow is highly variable. However, there is a trend toward earlier peak runoff in lower elevation areas of the parks.</li> <li>Winter low flows are observed to be increasing, indicating that more water is lost to runoff in the winter (rather than stored in the snowpack) than previous years.</li> <li>Atmospheric deposition trends for the 2003–2021 decade indicate that nitrogen deposition improved while sulfur and mercury deposition remained unchanged.</li> </ul>

Fundamental Resource or Value	Water Resources
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Water quality in the parks is impacted by two major stressors: air quality and climate change.</li> <li>• Pesticides and fertilizers used in illegal marijuana grow areas can contaminate streams, rivers, and groundwater.</li> <li>• Lack of natural fire could lead to catastrophic fires, resulting in increased erosion and adverse effects on water quality.</li> <li>• Decreasing snowpack affects visitor use, aquatic habitat, and water supply.</li> <li>• Increases in mean annual temperature, drought events, and storm intensity/frequency projected for the region due to climate change will alter the quality, quantity, and seasonal delivery of both surface water and groundwater.</li> <li>• Four aquatic-based species (Little Kern golden trout is threatened, both species of mountain yellow-legged frog, Yosemite toad) are listed as threatened or endangered species, and can be affected by changes in water quality and quantity.</li> <li>• Damming of rivers alters the natural hydrologic processes.</li> <li>• Reduced snowpack could reduce recreational opportunities.</li> <li>• High visitor use in the foothills affects water quality, including increased fecal matter.</li> <li>• Nitrogen and sulfur compounds deposited from air pollution may harm lakes and streams in the parks. Some high elevation ecosystems in the parks are particularly sensitive to nitrogen deposition. Sulfur deposition is generally very low and unlikely to affect ecosystems, while nitrogen deposition is higher and its effects are more widespread. Effects of nitrogen deposition include increased plan growth in lakes from excess nitrogen (i.e., eutrophication), shifting nutrient limitation and phytoplankton communities.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Installing stream gauges in more park streams.</li> <li>• Meadow and wetland restoration.</li> <li>• Watershed education programs, including curriculum based.</li> <li>• Work with regional water management partners to understand how downstream uses affect the upper watershed. For example, create integrated watershed management group.</li> <li>• Regional water managers could provide funding and public support for protecting watersheds.</li> <li>• Opportunities to better measure the components of the water cycle and forecast into the future with more confidence.</li> <li>• Increase efficiency of how Sequoia and Kings Canyon National Parks uses water to avoid draw downs. Provide appropriate facilities/access for high-use low elevation river corridors (trails, restrooms).</li> <li>• Implement the wilderness stewardship plan including the stock use meadow monitoring and management strategy.</li> </ul>
<p><b>Related Resources and Values</b></p>	<ul style="list-style-type: none"> <li>• Tulare Basin and Watershed – interconnection and use by species.</li> <li>• The Southern California Edison facilities on the Middle and Marble Forks of the Kaweah River are eligible for listing on the National Register of Historic Places.</li> <li>• Advanced interpretation of water resources and how both groundwater and surface water are influenced by the changing climate.</li> </ul>
<p><b>Existing Data and Plans Related to the FRV</b></p>	<ul style="list-style-type: none"> <li>• Stream gauge monitoring on some river systems.</li> <li>• Monitoring of high elevation lakes.</li> <li>• Water conservation plan.</li> <li>• Annual snow surveys and hydrographic measurements conducted by partner agencies.</li> </ul>

Fundamental Resource or Value	Water Resources
Data and/or GIS Needs	<ul style="list-style-type: none"> <li>• Continue monitoring air quality parameters – nitrogen, sulfur, mercury deposition.</li> <li>• Continued understanding of observed and projected climate change through monitoring of ecological responses, weather parameters (precipitation, temperature), and assessment of projected climate futures (models) for the region.</li> </ul>
Planning Needs	<ul style="list-style-type: none"> <li>• Foothills Area visitor use and development concept plan.</li> </ul>
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Wild and Scenic Rivers Act of 1968</li> <li>• Clean Water Act of 1972</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• Executive Order 11514, “Protection and Enhancement of Environmental Quality”</li> <li>• Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources”</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS Management Policies 2006 (§4.3.4) “National Wild and Scenic Rivers System”</li> <li>• NPS Natural Resource Management Reference Manual 77</li> </ul>



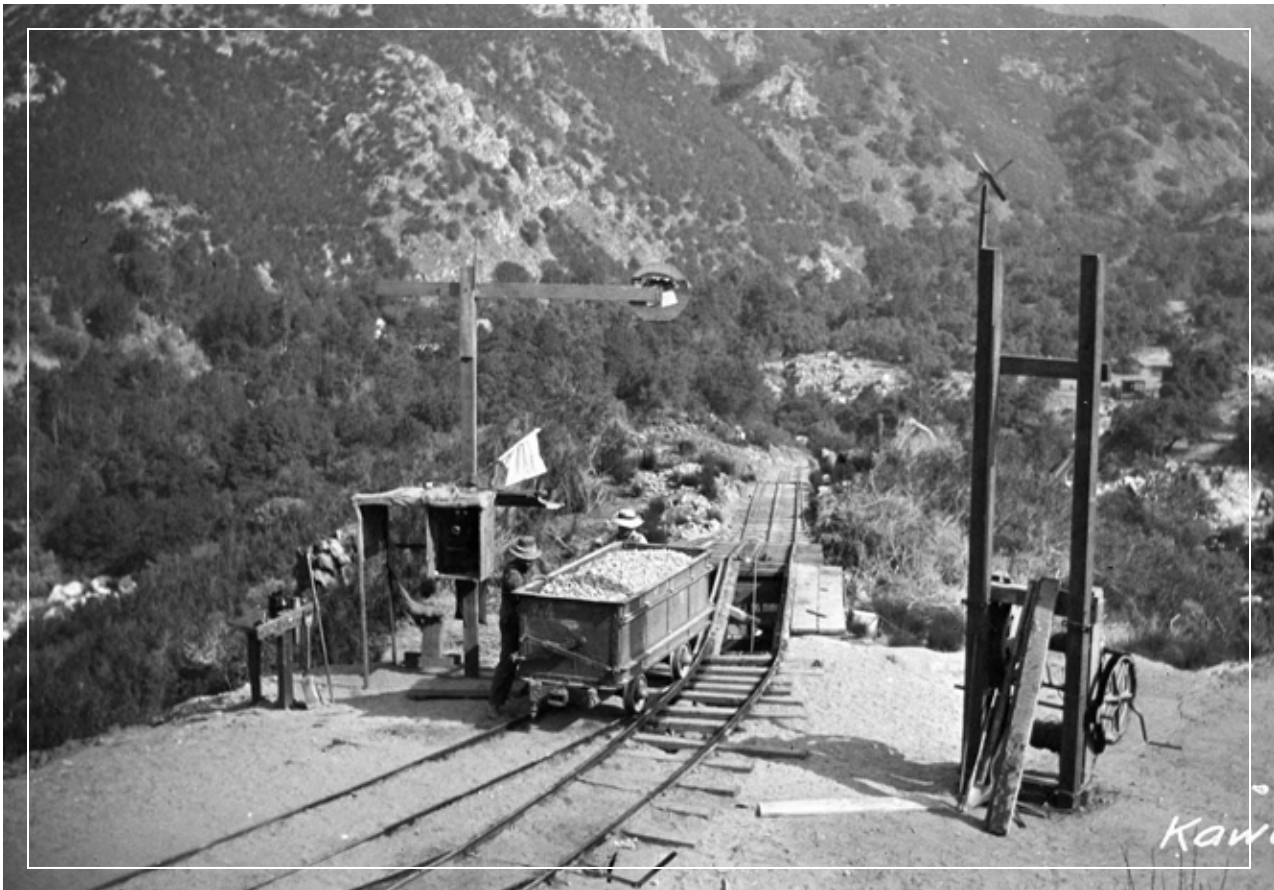


Fundamental Resource or Value	Wilderness Character
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>• More than 800,000 acres of Sequoia and Kings Canyon National Parks are designated wilderness, forming the core of the largest expanse of contiguous wilderness in California, which is visited and valued by people from around the world.</li> <li>• Sequoia and Kings Canyon National Parks contain a remarkable concentration of diverse and scenic geologic features, such as deep glacially carved canyons, an extensive cave-rich landscape, and towering alpine peaks, including 9 of the 12 highest summits in California; including Mount Whitney, the highest peak in the United States outside of Alaska.</li> <li>• Among our nation’s earliest protected areas, the history of Sequoia and Kings Canyon National Parks is rooted in pioneering stewardship. This legacy inspires a culture of leadership, continuous learning, and innovation.</li> </ul>
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>• Wilderness character is preserved in these parks.</li> <li>• Untrammelled: Unbridled natural forces predominate in the wilderness of the parks. While most of the physical features, flora, and fauna within wilderness are unimpeded by human intervention, the National Park Service does authorize manipulation of some natural processes to restore or preserve ecosystems in a natural, resilient, or sustainable state to support native biodiversity. Unauthorized trammeling is almost entirely due to illegal marijuana cultivation.</li> <li>• Natural: The wilderness in the parks is at the heart of a contiguous area of wildlands that provide the highest level of natural resource protection for roughly 25% of the southern Sierra Nevada. The vast area can also provide habitat for species with large home ranges that may be affected by California’s increasing population and the resulting fragmentation of undeveloped lands. Dark night skies and natural acoustic conditions are a key component of natural qualities of wilderness, as it is essential to various ecological processes, such as wildlife communication and behavior.</li> <li>• Undeveloped: The wilderness contains a variety of administrative developments. Motorized transport and mechanized equipment is used regularly by the National Park Service to administer the wilderness of the parks. Helicopters are used each year to bring supplies and tools to ranger stations, trail crews, and resource management crews.</li> <li>• Opportunities for Solitude or Primitive and Unconfined Recreation: The wilderness provides opportunities for visitors to enjoy solitude amidst views of scenic landscapes while engaging in a variety of primitive recreation activities, such as backpacking, hiking, climbing, fishing, rafting, kayaking, skiing, and riding and packing with stock. Backpacking along the more than 690 miles of maintained trails is the most common form of primitive recreation. There is great variability in visitors’ opportunities for solitude, depending on both the time and location of a visitor’s trip. Dark night skies and natural acoustic conditions are also integral to opportunities for solitude. They are essential for the visitor’s ability to clearly hear the quieter intermittent sounds of nature, to experience interludes of extreme quiet, and to experience a place with little to no noise.</li> <li>• Wilderness meadows are monitored to ensure protection adaptively managed to minimize impacts.</li> <li>• Visitor densities are managed through trailhead and destination quotas.</li> <li>• Commercial services in wilderness are regulated through commercial use authorizations.</li> <li>• Wilderness users are provided information on wilderness safety and appropriate uses of wilderness.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>• Condition of the wilderness meadows have greatly improved since park establishment.</li> <li>• Wilderness use is down from its peak in the 1970s, but overall, has been stable to slightly increasing the past 10 years.</li> <li>• Recreational pack stock use in wilderness is decreasing.</li> <li>• Visitation to the Mount Whitney area and along iconic trails is increasing.</li> </ul>

Fundamental Resource or Value	Wilderness Character
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Airborne pollutants and contaminants alter the natural quality of wilderness character. Daytime scenic views are often obscured by pollution-caused haze. At night, air pollution scatters artificial light, increasing the effect of light pollution on the night sky.</li> <li>• Nonnative plants, animals, and pathogens alter the natural quality of wilderness character.</li> <li>• Human-caused changes in fire regime can alter the untrammeled and natural character of wilderness.</li> <li>• Climate change alters the natural quality of wilderness character and may result in additional trammeling actions.</li> <li>• Potential lack of support for wilderness due to: a) the limited personal connection most visitors have with designated wilderness, and b) the lack of diversity in the population using both wilderness and other park areas. Lack of visitor knowledge and practice of leave no trace can affect wilderness character.</li> <li>• Human presence in wilderness, such as human and stock traffic, waste, and habituation by native wildlife, can alter the natural quality of wilderness.</li> <li>• Cattle grazing on adjacent wilderness lands and trespass cattle affect wilderness character.</li> <li>• Illegal marijuana cultivation affects wilderness character.</li> <li>• Noise and artificial light.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Implement the wilderness stewardship plan.</li> <li>• Improve access to wilderness users, regardless of race, ethnicity, age, gender, or ability.</li> <li>• Further education and outreach efforts (internal and external).</li> <li>• Educate commercial service providers and other partners.</li> <li>• Promote the values of wilderness to users and non-users.</li> <li>• Improve the Leave No Trace program.</li> <li>• Remove signs of human presence.</li> <li>• Partner with other agencies.</li> <li>• Survey for cultural resources.</li> <li>• Understand historic and prehistoric access into the wilderness.</li> <li>• Support tribal activities in the wilderness.</li> <li>• Restore Cahoon Meadow.</li> <li>• Allow fires to burn unimpeded and promote the use of prescribed fire when conditions allow.</li> <li>• Detect and control nonnative plants.</li> <li>• Conduct aquatic ecosystem restoration.</li> <li>• Work with San Joaquin Valley Air Pollution Control district.</li> <li>• Promote clean air in the valley.</li> <li>• Study the effects of climate change using the wilderness as a baseline.</li> <li>• Continue to work cooperatively with other federal and state air quality agencies and local stakeholders to reduce air quality impacts in parks from sources of air pollution, for example San Joaquin Valley Air Pollution Control District.</li> </ul>
<p><b>Related Resources and Values</b></p>	<ul style="list-style-type: none"> <li>• The Sequoia and Kings Canyon National Parks wilderness is entirely surrounded by other public lands (mostly Forest Service).</li> </ul>

Fundamental Resource or Value	Wilderness Character
<b>Existing Data and Plans Related to the FRV</b>	<ul style="list-style-type: none"> <li>• Wilderness character assessment.</li> <li>• Wilderness character mapping.</li> <li>• Natural resource condition assessment.</li> <li>• Cultural resource condition assessment.</li> <li>• “Sierra Nevada Bighorn Sheep Environmental Assessment: Research and Recovery Actions.”</li> <li>• Asset management plan.</li> <li>• Wilderness stewardship plan.</li> <li>• Campsites survey report (Cole and Parsons 2013).<sup>1</sup></li> </ul>
<b>Data and/or GIS Needs</b>	<ul style="list-style-type: none"> <li>• Visitor use impacts monitoring (encounters and campsites) and analyses.</li> <li>• Continue monitoring air quality parameters – visibility, ozone, deposition.</li> <li>• Continued understanding of observed and projected climate change through monitoring of ecological responses, weather parameters (precipitation, temperature), and assessment of projected climate futures (models) for the region.</li> </ul>
<b>Planning Needs</b>	<ul style="list-style-type: none"> <li>• Resource stewardship strategy (in progress).</li> <li>• Trails classification system</li> <li>• Permit allocation design and implementation strategy for commercial services in wilderness.</li> <li>• Human wildlife interaction plan.</li> <li>• Tree hazard management plan (update).</li> </ul>
<b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Wilderness Act of 1964</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• California Wilderness Act of 1984</li> <li>• Omnibus Public Land Management Act of 2009</li> <li>• Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources”</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS <i>Management Policies 2006</i> (chapter 6) “Wilderness Preservation and Management”</li> <li>• Director’s Order 41: <i>Wilderness Stewardship</i></li> <li>• Director’s Order 47: <i>Preservation of the Acoustic Environment and Noise Management</i></li> <li>• NPS <i>Reference Manual 41: Wilderness Stewardship</i></li> <li>• <i>Keeping It Wild in the National Park Service: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring (User Guide)</i></li> <li>• NPS <i>Management Policies 2006</i> (chapter 8) “Use of the Parks”</li> <li>• <i>NPS-75 Natural Resources Inventory and Monitoring Guideline</i></li> <li>• NPS <i>Natural Resource Management Reference Manual 77</i></li> </ul>

1. Cole, D.N. and D.J. Parsons (2013). Campsite impact in the wilderness of Sequoia and Kings Canyon National Parks: Thirty years of change. Natural Resource Technical Report NPS/SEKI/NRTR—2013/665. National Park Service, Fort Collins, Colorado.





Fundamental Resource or Value	Protecting and Sharing of Human History
<p><b>Related Significance Statements</b></p>	<ul style="list-style-type: none"> <li>Sequoia National Park was created by a conservation movement that continues to influence the protection of irreplaceable scenic landscapes and places. Today, the parks protect the record of this history, of park management, and of earlier human uses extending back 8,000 years.</li> <li>Among our nation’s earliest protected areas, the history of Sequoia and Kings Canyon National Parks is rooted in pioneering stewardship. This legacy inspires a culture of leadership, continuous learning, and innovation.</li> </ul>
<p><b>Current Conditions and Trends</b></p>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>Overall, the known cultural resources at the parks are in fair to good condition and generally their condition is continuing to improve. There is a high level of knowledge, documentation, and treatment of cultural resources within the parks, although indicator measures associated with needs assessments and maintenance suggest the potential for improvement across all cultural resource disciplines. Generally, archeology, cultural landscapes, historic structures, and museum collections are in good condition.</li> <li>Preservation maintenance occurs on up to five historic buildings per year through the Cultural Cyclic Maintenance funding program.</li> <li>Only 6%–8% of the area of these parks has been archeologically surveyed (generally done in advance of development projects).</li> <li>Archeological survey work is ongoing to comply with the National Historic Preservation Act.</li> <li>Visitor centers provide information about human history.</li> <li>Interpreters have access to library, museum, and archives to better understand history.</li> <li>The parks’ museum collections currently include nearly 830,000 cataloged objects. These include more than 22,000 archeological artifacts, 13,000 historical objects, 12,000 biological specimens, and almost 500 linear feet of park archives.</li> <li>Museum staff is employing the NPS Web Catalog to make museum collections searchable by the general public. To date, about 10% of the catalog is available.</li> <li>In 2015 a cultural resources condition assessment is scheduled to be completed for the parks with the principle goal of understanding the current condition of cultural resources. It includes an assessment of the current “state” of overall health of the parks’ cultural resources program including vulnerabilities and stressors. The cultural resources condition assessment incorporates Climate Smart conservation principles so as to inform short- and long-term stewardship goals of the program.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>Generally, the condition of historic structures at the parks is documented as “good” with an upward trend and a high level of confidence. Indicator topics associated with inventory, knowledge, maintenance practices, and condition are good with an unchanging trend. Remaining indicator topics, which include documentation, needs assessment, and treatment strategy register some measure of concern; however, there is an overall upward trend.</li> <li>Web-based museum catalog continues to grow.</li> <li>In the last three years, approximately 150 linear feet of backlogged archives have been cataloged into park collections.</li> <li>Next year 15,000 historic images will be put online. In subsequent years the parks will be scanning and uploading historic slides back to 1940.</li> </ul>

Fundamental Resource or Value	Protecting and Sharing of Human History
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• The parks’ cultural resources management program currently lacks capacity (funding and staffing) to ensure adequate coverage of all cultural resources categories; archeological and ethnographic resources, cultural landscapes, historic structures, history, and museum collections.</li> <li>• Archives stored in an older facility with HVAC issues.</li> <li>• Museum is only open to the staff and the public six months per year.</li> <li>• In the electronic era, the preservation of records requires commitment, expertise, and infrastructure. Without these, the records of an era are at risk of being lost.</li> <li>• Lack of knowledge about historic or archeological resources in the parks.</li> <li>• Lack of engagement by tribal government and partners.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Continue to secure funding and expertise to strategically update existing or, as appropriate, to create new Determinations of Eligibility and/or National Register of Historic Places nominations for archeological sites, historic structures, districts, and landscapes.</li> <li>• Enhance outreach to and consultation with American Indian tribes based on the findings of the ethnographic overview and assessment that is currently being developed for the parks.</li> <li>• Improve the coordination between the cultural resources/museum staff and interpretation.</li> <li>• Add information on the historic and changing visitor experience to the collections.</li> <li>• Expand web-based sharing of resources.</li> <li>• Add a full-time preservation specialist to the staff.</li> <li>• Develop better ways of dealing with electronic data from an archives perspective – either new staff or training for existing staff.</li> <li>• Provide additional space for museum collections.</li> </ul>
<p><b>Existing Data and Plans Related to the FRV</b></p>	<ul style="list-style-type: none"> <li>• NPS Archeological Sites Management Information System online database.</li> <li>• Completed drafts (as applicable) currently in review at the California State Historic Preservation Office – national register and historic district nominations, determinations of eligibility, and cultural landscape inventories.</li> <li>• Completed historic resource studies.</li> <li>• Various section 110 and 106 documents in archives and administrative records.</li> <li>• GIS data on archeological sites.</li> <li>• Museum management plan (2007).</li> <li>• Facility Management Software System asset management – includes historic buildings and other built features (bridges).</li> <li>• NPS List of Classified Structures (LCS) online database.</li> <li>• Mineral King design standards and Mineral King mapping project (national register historic district) general management plan.</li> <li>• Wilderness stewardship plan.</li> <li>• Fire and fuels management plan.</li> </ul>
<p><b>Data and/or GIS Needs</b></p>	<ul style="list-style-type: none"> <li>• Cultural resource documentation (determinations of eligibility, new surveys, and vulnerability assessments).</li> <li>• Additional National Register of Historic Places determinations of eligibility for structures/resources approaching or older than 50 years.</li> <li>• Oral history development and assessments pertaining to determinations of eligibility and National Register of Historic Places nominations.</li> <li>• Cultural resource condition assessment (in progress).</li> </ul>

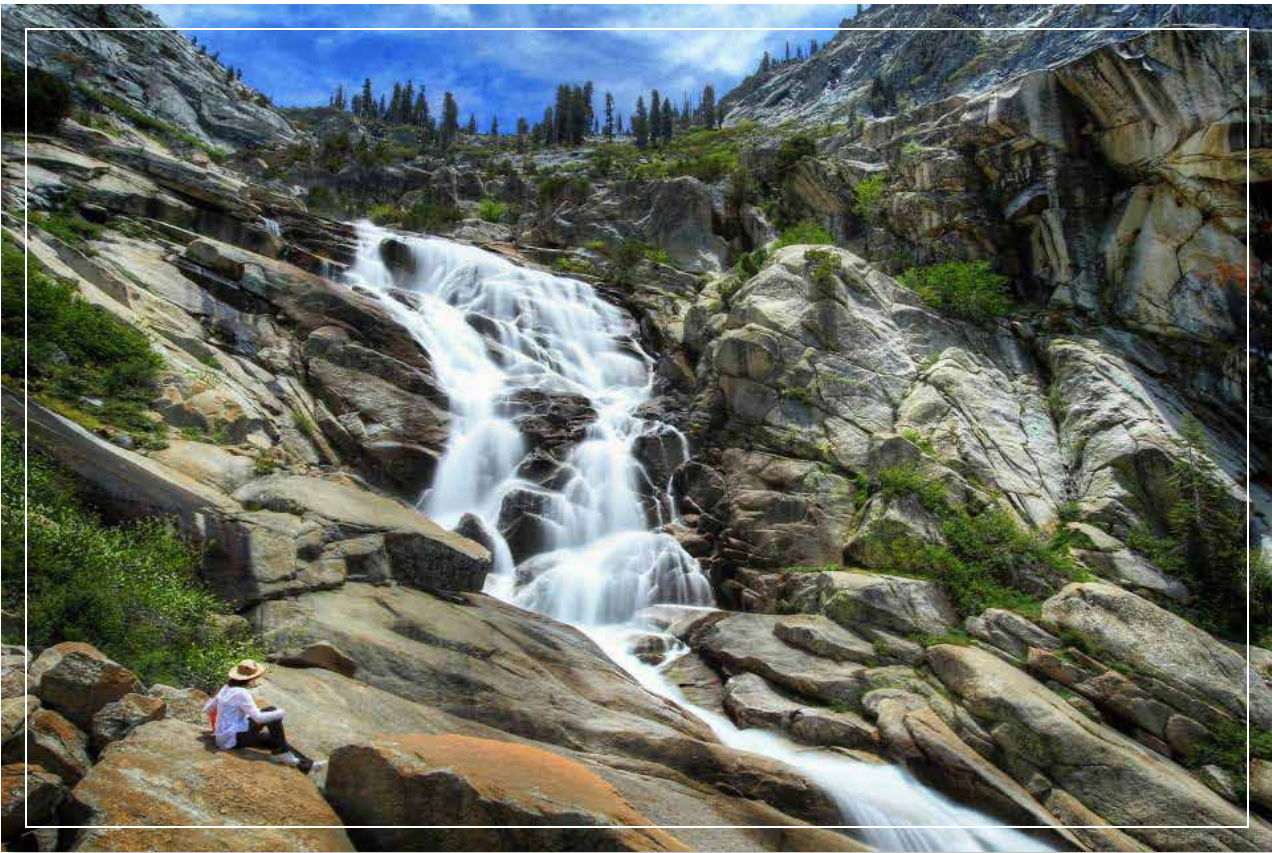
Fundamental Resource or Value	Protecting and Sharing of Human History
<p><b>Planning Needs</b></p>	<ul style="list-style-type: none"> <li>• Resource stewardship strategy (in progress).</li> <li>• Ethnographic overview and assessment (in progress).</li> <li>• Archeological overview and assessment (scheduled to begin in 2015).</li> <li>• Programmatic agreement between the National Park Service and the state historic preservation officer for NPS properties in Wilsonia (in progress).</li> <li>• Programmatic agreement between the National Park Service, state historic preservation officer, and the Advisory Council on Historic Preservation for the wilderness stewardship plan.</li> <li>• Digital data and records management plan.</li> </ul>
<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b></p>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Historic Sites Act of 1935</li> <li>• National Historic Preservation Act of 1966, as amended; 54 USC §300101 et seq.</li> <li>• Archeological and Historic Preservation Act of 1974</li> <li>• Archaeological Resources Protection Act of 1979</li> <li>• Executive Order 11593, “Protection and Enhancement of the Cultural Environment”</li> <li>• “Curation of Federally-Owned and Administered Archaeological Collections” (36 CFR 79)</li> <li>• “Protection of Historic Properties” (36 CFR 800)</li> <li>• Secretarial Order 3289, “Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources”</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>• Director’s Order 24: <i>NPS Museum Collections Management</i></li> <li>• Director’s Order 28: <i>Cultural Resource Management</i> (1998)</li> <li>• <i>NPS Museum Handbook</i>, parts I, II, and III</li> <li>• <i>The Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation</i></li> <li>• Director’s Order 28A: <i>Archeology</i></li> <li>• <i>NPS Management Policies 2006</i> (chapter 5) “Cultural Resource Management”</li> <li>• <i>NPS Management Policies 2006</i> (§8.10) “Natural and Cultural Studies, Research, and Collection Activities”</li> <li>• <i>NPS-75 Natural Resources Inventory and Monitoring Guideline</i></li> <li>• <i>NPS Natural Resource Management Reference Manual 77</i></li> <li>• “2020 Vision”: <i>Interagency Stewardship Priorities for America’s National Wilderness Preservation System</i></li> </ul>



Fundamental Resource or Value	Promoting Continuous Learning and Innovation
<b>Related Significance Statements</b>	<ul style="list-style-type: none"> <li>• Sequoia National Park was created by a conservation movement that continues to influence the protection of irreplaceable scenic landscapes and places. Today, the parks protect the record of this history, of park management, and of earlier human uses extending back 8,000 years.</li> <li>• Among our nation's earliest protected areas, the history of Sequoia and Kings Canyon National Parks is rooted in pioneering stewardship. This legacy inspires a culture of leadership, continuous learning, and innovation.</li> </ul>
<b>Current Conditions and Trends</b>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>• The parks link scientific study and innovative management experiments using a robust adaptive management model.</li> <li>• Parks were first to adopt management plans that recognize and protect wilderness character, predating the Wilderness Act of 1964.</li> <li>• The Giant Forest restoration project was a large-scale, precedent setting, and widely promoted ecological restoration project that eliminated many ongoing negative impacts from park development of the early 20th century.</li> <li>• The parks have the longest-running forest demography plots in the world.</li> <li>• The parks have one of the largest prescribed fire programs in the National Park Service.</li> <li>• The parks have removed nonnative fish from key high elevation lakes and streams to restore native frog habitat.</li> <li>• Methods are being tested to treat and inoculate endangered native frogs against chytrid fungus.</li> <li>• Innovative techniques were tested and lessons learned applied to restore a large meadow, including areas within wilderness.</li> <li>• Sierra Nevada bighorn sheep have been reintroduced into one of the two historically vacant herd units.</li> <li>• The parks have used donor funds to provide approximately 5 1/2 miles of universally accessible trails.</li> <li>• 3D wayside exhibits and bilingual information have been added to visitor centers.</li> <li>• Rangers in the Classroom and other service learning programs have introduced more than 48,000 students to the National Park Service.</li> <li>• An interactive phenology program introduces students and visitors to important plant life and animal lifecycle events, including landscape change and relationship to climate.</li> <li>• Parks exhibit some of the best examples of "NPS Rustic" design for facilities and continue to apply uniform, rustic design quality through use of architectural character guidelines.</li> <li>• Park facilities are using LED lights and other green practices to reduce energy requirements and greenhouse gas emissions.</li> <li>• The parks maintain one of the best collections of administrative records in the National Park Service, dating back to early Department of War administration of the parks.</li> <li>• Many of the campgrounds and lodging facilities in the parks are associated with early NPS tourism, including early auto camping, housekeeping cottages, and rustic lodges.</li> <li>• There is management support within the National Park Service for innovation in management of park resources.</li> <li>• The Sequoia and Kings Canyon National Parks innovation grant program has been developed to fund innovative projects.</li> <li>• The parks are experimenting with climate change scenario planning and geospatial vulnerability assessment while incorporating climate-smart principles in strategic planning exercises.</li> </ul> <p><b>Trends</b></p> <ul style="list-style-type: none"> <li>• There are decreasing appropriations for park operations and increasing reliance on partners.</li> <li>• There is increasing reliance on user fees and revenue to fund projects and operations.</li> <li>• Visitor preferences are changing, with more demand for "instant" outdoor experiences and "bucket list" adventures.</li> <li>• Rapid changing climate results in uncertainty.</li> </ul>

Fundamental Resource or Value	Promoting Continuous Learning and Innovation
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Lack of financial resources to “seed” innovation.</li> <li>• Bureaucracy and policy limitations.</li> <li>• Closed minds.</li> <li>• Management controls that discourage creative problem solving.</li> <li>• Lack of strategic goals that provide clear vision and direction for stewardship.</li> <li>• Challenges of engaging philanthropic support.</li> <li>• Changes in leadership expectations and clarity of results have served as a barrier to innovation.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Include innovation as part of performance plans/standards.</li> <li>• Encourage supervisors to create time and space for innovation—need to make it okay to try and not succeed—make it part of the employee culture.</li> <li>• Celebrate innovations.</li> <li>• Maintain ongoing communication between management and staff.</li> <li>• Adopt a proactive media strategy to promote innovative work.</li> <li>• Merge natural history association and foundation to leverage strengths and increase philanthropic donations.</li> <li>• Create new partnerships with regional partners to accomplish mutual objectives, especially at landscape scales.</li> <li>• Create and foster formal linkages among park program areas and with partners.</li> <li>• Create new, interactive visitor experiences that allow visitors to tailor activities to meet their interests.</li> <li>• Implement more regularly scheduled science symposia and science management dialogues where scientists, managers, and stakeholders interact.</li> <li>• Provide alternative “bucket list” adventures.</li> </ul>
<p><b>Existing Data and Plans Related to the FRV</b></p>	<ul style="list-style-type: none"> <li>• Park archive and collections.</li> <li>• General management plan and other implementing plans.</li> <li>• Wilderness stewardship plan.</li> <li>• Various resources studies.</li> </ul>
<p><b>Data and/or GIS Needs</b></p>	<ul style="list-style-type: none"> <li>• More video and photography content.</li> </ul>
<p><b>Planning Needs</b></p>	<ul style="list-style-type: none"> <li>• Media and marketing strategy.</li> <li>• Strategic plan.</li> <li>• Resource stewardship strategy (in progress).</li> </ul>
<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b></p>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Wilderness Act of 1964</li> </ul> <p><b>NPS Policy-level Guidance (NPS Management Policies 2006 and Director’s Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS Management Policies 2006 (§1.4) “Park Management”</li> <li>• NPS Management Policies 2006 (§3.1) “General”</li> <li>• NPS Natural Resource Management Reference Manual 77</li> <li>• NPS Management Policies 2006 (§2.3.1.4) “Science and Scholarship”</li> <li>• NPS Management Policies 2006 (§4.1.4) “Partnerships”</li> <li>• NPS Management Policies 2006 (§5.1) “Research”</li> <li>• NPS Management Policies 2006 (§8.10) “Natural and Cultural Studies, Research, and Collection Activities”</li> </ul>







Fundamental Resource or Value	Opportunities for a Range of Experiences
<b>Related Significance Statements</b>	<ul style="list-style-type: none"> <li>Sequoia and Kings Canyon National Parks attract visitors from around the world by providing some of the most personally challenging and transformative recreational opportunities in the Sierra Nevada while also providing a wide array of inspirational, educational, and sensory experiences accessible to visitors of all ages and abilities.</li> </ul>
<b>Current Conditions and Trends</b>	<p><b>Conditions</b></p> <ul style="list-style-type: none"> <li>The 10-year average visitation (2004–2013) is 1,583,385 with average percentage of change at +1% per year.</li> <li>75% of visitation occurs during the months of May through September; 35% in July and August.</li> <li>Sequoia and Kings Canyon National Parks are at maximum physical capacity during summer and holiday weekends.</li> <li>Use is highly concentrated in the frontcountry.</li> <li>Infrastructure is provided for a range of opportunities such as camping, walking/hiking, picnicking, driving/touring, education and programs, shopping, lodging, etc.</li> <li>Certain activities are limited because of the lack of facilities (e.g., bike paths/lanes, limited bathrooms, and outdated campgrounds) and by topography (e.g., too hilly for extensive bike lanes, etc.).</li> <li>Facilities are designed for the traditional nuclear family group.</li> <li>Some of the infrastructure is outdated and does not meet the needs of modern user groups (larger groups for example).</li> <li>The number and length of accessible or nearly accessible trails is approximately 5.5 miles.</li> <li>Interpretive programs are offered by the National Park Service and partners.</li> <li>Personal and nonpersonal interpretive programs exist.</li> <li>Curriculum-based education programs and outreach exist.</li> <li>Visitor satisfaction with services and facilities remains very high.</li> <li>Ground-level ozone and particulate matter reaches levels that can make breathing difficult for sensitive groups and are significant concerns. Both parks fall in the San Joaquin Valley Air Pollution Control District which is an EPA-designated “nonattainment” for both ozone and particulate matters less than 2.5 micrometers in diameter (PM2.5).</li> </ul> <p><b>Trends</b></p> <p>Frontcountry Use</p> <ul style="list-style-type: none"> <li>According to the US Census and other publications, the demographics of the US and NPS visitors are changing, and will continue to change in the next 20 to 50 years. The United States will continue to become more ethnically diverse; with more urban and suburban populations and with fewer traditional “nuclear” families.</li> <li>Larger-sized groups are using the parks, including the campgrounds and picnic grounds.</li> <li>3-D wayside exhibits and bilingual information have been added to visitor centers and some frontcountry trails.</li> <li>There are increasing numbers of recreational vehicle-based visitors.</li> <li>There may be an increased desire for luxury campsite setup and services.</li> <li>More culturally and ethnically diverse visitors are visiting the frontcountry.</li> <li>Shoulder season seems to be getting shorter in Sequoia and Kings Canyon National Parks.</li> <li>Changes in weather patterns are affecting visitor use patterns.</li> <li>There is a continuing demand for winter recreation opportunities.</li> <li>More bus tours are visiting Grant Grove.</li> </ul>

Fundamental Resource or Value	Opportunities for a Range of Experiences
<p><b>Current Conditions and Trends</b></p>	<p><b>Trends (continued)</b></p> <ul style="list-style-type: none"> <li>• Frontcountry river corridor is receiving increasing recreational use, and there is a strong desire for river use.</li> <li>• There is a lot of trash generated on the river corridor.</li> <li>• Frontcountry trail use is increasing with increased numbers of day hikers.</li> <li>• There are increased numbers of day hikers.</li> <li>• There may be increased demand for the use of the Shepherd Saddle Road (trail) for exercise and local family excursions.</li> <li>• Visitor preferences are changing, with more demand for “instant” outdoor experiences and “bucket list” adventures.</li> <li>• For 2003–2012, the trend in ground-level ozone concentration improved (AQS Monitor ID: 061070006, CA).</li> </ul> <p>Wilderness Use</p> <ul style="list-style-type: none"> <li>• There is increasing use on the John Muir Trail, Pacific Crest National Scenic Trail, and Rae Lakes Loop trail.</li> <li>• Visitation is increasing at popular destinations such as Mount Whitney and at close-in day-use wilderness features.</li> <li>• Recreation pack stock use is declining.</li> </ul>
<p><b>Threats and Opportunities</b></p>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Limited parking and facilities in the frontcountry.</li> <li>• Traffic and congestion.</li> <li>• Recreational opportunities becoming irrelevant to a changing demographic.</li> <li>• Competition for leisure time.</li> <li>• Escalating costs of providing services.</li> <li>• Lack of access or perception of lack of access to popular destinations.</li> <li>• Poor air quality can impact the health of visitors, and does impact the quality of their park experience, as well as the health of park vegetation.</li> <li>• Ground-level ozone and particulate matter conditions that make breathing difficult for sensitive groups.</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Learn more about Sequoia and Kings Canyon National Parks user groups.</li> <li>• Continue to engage people to have a transformative visitor experience.</li> <li>• Discuss and better manage visitor capacity.</li> <li>• Better manage traffic throughout the parks.</li> <li>• Create new, interactive visitor experiences that allow visitors to tailor activities to meet their interests.</li> <li>• Provide alternative “bucket list” adventures.</li> <li>• Provide more efficient means for moving and managing traffic—better wayfinding tools and methods.</li> <li>• Provide convenient online portal for obtaining permits, campsites, lodging, transportation, program schedules, and other visitor information and services.</li> <li>• Partner with community groups that provide access to park experiences for under-served populations.</li> <li>• Provide virtual guides for new and repeat visitors that provide a menu of learning and discovery experiences.</li> <li>• Develop a new website that offers more interactive content.</li> <li>• Provide more lodging options in the Lodgepole/Wuksachi area that offers affordable overnight accommodations.</li> <li>• Define a vision for winter experiences in the parks.</li> <li>• Train more partners in interpretive techniques to share park messages.</li> <li>• Climate change could change visitation patterns and interests and invite the need to adaptively accommodate these changes.</li> <li>• Continue parks’ air advisory program to alert staff and public to unhealthy air quality conditions.</li> </ul>

Fundamental Resource or Value	Opportunities for a Range of Experiences
<p><b>Data and/or GIS Needs</b></p>	<ul style="list-style-type: none"> <li>• Understand desired visitor experiences for recreational opportunities.</li> <li>• Traffic trend data.</li> <li>• Research prospectus for the parks.</li> <li>• Visitor use / social science data, studies, and surveys (e.g., understand social values of giant sequoia trees).</li> <li>• Parkwide LiDAR imagery - starting with giant sequoia groves, Kaweah River Basin, Kings River Basin, and lastly the Kern River Basin.</li> <li>• Visitor use monitoring and impacts study (e.g., for public tours of Crystal Cave).</li> </ul>
<p><b>Planning Needs</b></p>	<ul style="list-style-type: none"> <li>• Updated long-range interpretive plan.</li> <li>• Wilderness stewardship plan (in progress).</li> <li>• Resource stewardship strategy.</li> <li>• Integrated park improvements and development concept plan for Wuksachi, Lodgepole, and Wolverton (in progress).</li> <li>• Science learning center feasibility analysis and plan.</li> <li>• Tree hazard management plan (update).</li> <li>• Traffic management and transportation plan.</li> <li>• Human wildlife interaction plan (including bear management).</li> <li>• Grant Grove site planning for transportation and circulation.</li> <li>• Wayfinding and signage plan.</li> <li>• Continue monitoring air quality parameters – visibility, ozone.</li> </ul>
<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance</b></p>	<p><b>Laws, Executive Orders, and Regulations That Apply to the FRV</b></p> <ul style="list-style-type: none"> <li>• Architectural Barriers Act of 1968</li> <li>• Clean Air Act of 1977; 42 USC 7401 et seq.</li> <li>• Architectural Barriers Act Accessibility Standards (2006)</li> <li>• National Park Service Concessions Management Improvement Act</li> </ul> <p><b>NPS Policy-level Guidance (NPS <i>Management Policies 2006</i> and Director's Orders)</b></p> <ul style="list-style-type: none"> <li>• NPS <i>Management Policies 2006</i> (§1.4) "Park Management"</li> <li>• NPS <i>Management Policies 2006</i> (§3.1) "General"</li> <li>• NPS <i>Management Policies 2006</i> (chapter 6) "Wilderness Preservation and Management"</li> <li>• NPS <i>Management Policies 2006</i> (chapter 7) "Interpretation and Education"</li> <li>• NPS <i>Management Policies 2006</i> (chapter 8) "Use of the Parks"</li> <li>• NPS <i>Management Policies 2006</i> (chapter 9) "Park Facilities"</li> <li>• NPS <i>Management Policies 2006</i> (chapter 10) "Commercial Visitor Services"</li> <li>• Director's Order 6: <i>Interpretation and Education</i></li> <li>• Director's Order 41: <i>Wilderness Stewardship</i></li> <li>• Director's Order 42: <i>Accessibility for Visitors with Disabilities in National Park Service Programs and Services</i></li> <li>• NPS <i>Transportation Planning Guidebook</i></li> </ul>

## Appendix C: Basics for Wilderness Stewardship

### Wilderness Background Information

(This includes wilderness legislation and associated congressional subcommittee reports and hearings, wilderness areas, and designation status.)

### History of Wilderness Designation

Preservation of wilderness character in Sequoia and Kings Canyon National Parks (hereafter parks) predates the passage of the Wilderness Act of 1964. The NPS mandate to preserve the natural, cultural, and scenic value of public lands while providing opportunities for their enjoyment is a theme that runs throughout the Wilderness Act as well.

When Congress enlarged General Grant National Park into the renamed Kings Canyon National Park on March 4, 1940, the legislation included a provision that “the Secretary of the Interior may, in his discretion, limit the character and number of privileges that he may grant within the Kings Canyon National Park in order to *insure the permanent preservation of the wilderness character*” (An Act to Establish the Kings Canyon National Park, Public Law 76-424, 1940). This enabling legislation may mark the first time that a land management agency was directed specifically to preserve “wilderness character,” with similar language later included in the Wilderness Act of 1964.

The first and largest of the areas identified for wilderness protection was the Sierra Crest, consisting of most of Kings Canyon National Park and much of Sequoia National Park east of its developed areas. The second was the Hockett Plateau area of Sequoia National Park. The third was the lands of the North Fork of the Kaweah River in Sequoia National Park and parts of the Redwood Canyon area of Kings Canyon National Park. All three of these areas, with some limited exceptions, were found to be suitable for wilderness designation.

In 1984, Congress passed the California Wilderness Act establishing the 723,036-acre Sequoia-Kings Canyon Wilderness, which designated the Sierra Crest section of land. The act did not include the other two sections, but did so “without prejudice,” thereby allowing future reconsideration for wilderness designation. Under NPS policy, management of these lands continued in a manner that would not degrade their suitability for future consideration as wilderness. In 2009, Congress designated the 39,740-acre John Krebs Wilderness, which consists of most of the northern portion of the Hockett Plateau and Mineral King areas (Omnibus Public Land Management Act of 2009). This act also added 45,186 acres to the Sequoia-Kings Canyon Wilderness by designating the North Fork Kaweah and Redwood Canyon areas as wilderness. The legislation directed that the remaining lands that were eligible but undesignated, primarily 30,000 acres of the southern end of the Hockett Plateau, be managed as wilderness by the National Park Service (Omnibus Public Land Management Act of 2009).

The following section (pgs. 73–79) was excerpted from:

*Sequoia and Kings Canyon National Parks Wilderness Character Assessment: An examination of the characteristics and conditions of designated and proposed wilderness in Sequoia and Kings Canyon National Parks* (Frenzel and Fauth, 2014).

## Overview of the Wilderness Area

The lands designated in 1984 as the Sequoia-Kings Canyon Wilderness consists of 722,983 acres; the 2009 addition to the Sequoia-Kings Canyon Wilderness consists of 45,129 acres; and the John Krebs Wilderness designated in 2009 consists of 39,967 acres. Together, these designated wilderness areas total 808,078 acres (93.3%) of Sequoia and Kings Canyon National Parks. An additional 29,516 acres (3.4% of the parks) remain classified as proposed wilderness and another 212 acres are designated potential wilderness, both being managed in the same manner as designated wilderness per NPS policy. This brings the total of park lands managed as wilderness to 837,806 acres, or 96.75% of these parks.

This topographically diverse area contains the most rugged portion of the Sierra Nevada, with twelve peaks over 14,000 feet. Included within this area is Mount Whitney (14,494 feet), the highest point in the contiguous 48 states. The Sequoia-Kings Canyon Wilderness also includes oak woodland and chaparral communities as low as 1,700 feet. During the winter months when snow closes mountain passes to the north, the Sequoia-Kings Canyon Wilderness becomes part of the largest contiguous wilderness in the lower 48 states.

Sequoia and Kings Canyon National Parks protect a premier, popular, and extensive wilderness area. These wildlands have multiple distinguishing qualities and values that make them special and valuable to wilderness enthusiasts and for large-scale wildland and ecosystem preservation. These include vast tracts of undeveloped lands that are amplified by adjacent large wildernesses; great diversity of scenery and habitat ranging from foothill oak woodlands to the stark alpine environments of the highest peaks in the nation outside of Alaska; exceptional species including the world's largest, and some of its longest-lived, trees; spectacular examples of glacially shaped landforms; a premier recreation area where users can roam freely for scores of miles or days; and a landscape that was seminal and inspirational in the establishment of wildland preservation methods in the United States and the world.

The wilderness of these parks protects iconic scenery with waterfalls, rivers, glacier-carved canyons, and characteristic treescapes of giant sequoias, foxtail pines, and junipers. John Muir dubbed the High Sierra the "Range of Light" and the light of alpenglow or the sun's rays following a summer thundershower continues to inspire.

The wilderness character of the parks faces a number of threats. The most challenging to deal with, and potentially the most damaging, are those that are outside of National Park Service control, such as air pollution (atmospheric contaminant deposition, ground-level ozone, visibility), and climate change. As the National Park Service seeks to protect the *natural* quality of wilderness character, it will face difficult tradeoffs with other qualities. This will require thorough and extensive analysis of values that take into account the degree and length of management impacts to the *untrammelled* and *undeveloped* qualities and to provide *opportunities for solitude*. Future development of a thoughtful wilderness character monitoring strategy will also need to identify and evaluate which developments were present and what the conditions of natural resources were (departure from fire regimes, abundance of nonnative species, etc.) at the time of wilderness designation. This will allow for more accurate descriptions of trends in wilderness character over time, allowing stewards to make informed and conscientious decisions.

The fact that millions of people have devoted their time and effort to come and experience these parks is a strong indication that this place offers much significance and value to humankind. The high percentage of repeat visitors signifies that they are having experiences that they value and wish to repeat or expand upon. In these parks, the guidance and wisdom of the Wilderness Act has come to fruition as these parks have secured "for the American people of present and future generations the benefits of an enduring resource of wilderness."

## Wilderness Character Narrative

This wilderness character narrative describes what is unique and special about Sequoia and Kings Canyon Wilderness areas organized under the framework of the five qualities:

**Natural:** Wilderness is determined by the effects of modern civilization or human intervention on ecological systems and their biological and physical components.

**Untrammeled:** Wilderness is one in which ecological systems and their biological and physical components are autonomous and free from human intervention.

**Undeveloped:** Wilderness retains its primeval character and influence and is essentially without permanent improvements or modern human occupation.

**Solitude or Unconfined Recreation:** Wilderness provides outstanding opportunities for solitude or a primitive and unconfined type of recreation.

**Other Features of Value:** Wilderness may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

### Natural

The wilderness in Sequoia and Kings Canyon National Parks is composed of distinctive and varied natural landforms. It includes rugged 14,000-foot peaks and steep canyons rivaling the Grand Canyon in depth. The headwaters of four major river systems (South Fork San Joaquin, Kings, Kaweah, and Kern) are protected within the wilderness. The Kern River is the only major river in the Sierra Nevada that runs parallel to the axis of the mountain range; the rain shadow caused by the Great Western Divide results in a distinctive, dry environment in the Kern River drainage in which unique species assemblages occur. Cave and karst formations are another outstanding physical feature of the wilderness of the parks. The parks contain more than 275 known caves, and many of the cave resources in the parks lie within designated or proposed wilderness. The wilderness in the parks contains the longest cave in California (Lilburn), uncommon high-elevation caves (White Chief), and caves with outstanding and pristine mineral formations.

The subalpine and alpine areas are also distinctive natural elements of the parks' wilderness. Relative to the rest of the central and southern Sierra Nevada, the parks contain a disproportionately large portion of high-elevation habitats; more than 50% of the area in the parks is above 9,800 feet, while only 11% of the entire region is above that elevation. These high-elevation lands are a valuable conservation resource. The high elevations of the wilderness contain scenic views less marred by air pollution, less nonnative species, and have had less severe departures from historical fire regimes (as they have experienced less fire suppression than the region's lower elevations and have much lower fire frequencies).

Lying at the southern end of the great Cascade-Sierra cordillera, the parks support not only species found at the southern end of their ranges, but also species from adjacent desert and great basin biogeographic provinces plus a host of local endemics. The combination of location, large size, and diversity of habitats contributes to great numbers of species being found in the parks. Native taxa include 1,365 plants, 9 amphibians, 23 reptiles, 5 fishes, 84 mammals, and 212 birds. Of the vertebrate and plant taxa present in California, 15% have been observed in the parks, although the parks occupy less than 1% of the state's land area. In addition to overall diversity, the wilderness in the parks is also notable in the number of local and regional endemic species it protects. This is especially pronounced in caves, where 35 invertebrate species have been found that exist only within single cave systems or watersheds within the parks. The parks are also home to 11 taxa of plants that occur only within 5 miles of the parks' boundaries, as well as 39 taxa considered endemic to the southern Sierra Nevada.

The regional endemics include two very visible and characteristic tree species—giant sequoias and foxtail pines. Some 65% of the area of giant sequoia groves in the parks lie within designated wilderness, as does roughly 20% of the area of all giant sequoia groves in the world. The subspecies of foxtail pine found in the parks occurs only in the Sierra Nevada; it grows no further north than the Middle Fork of the Kings River in Kings Canyon National Park and reaches its southern limit just south of the Sequoia National Park boundary. These two globally significant tree taxa form distinctive forests in the wilderness of the parks. Subalpine woodlands of whitebark pine in the wilderness of the parks are notable as well, as they have been less affected by the blister rust and beetle outbreaks that have decimated populations in the Rocky Mountains.

In addition, terrestrial food webs are largely intact within the wilderness of the parks. For example, all but two of the historically present vertebrate predators (grizzly bear and wolverine) still exist in the parks.

A particularly valuable aspect of the natural quality of the parks is the presence of large biophysical gradients. Tracts of wilderness crossed only by footpaths stretch from foothills and canyons starting at 1,400 feet in elevation to Mount Whitney, the tallest peak in the contiguous United States at 14,494 feet. This represents the greatest elevation range of any protected area in the lower 48 states. Only one road completely divides the westernmost wilderness segment from the remainder, only two seasonally used roads penetrate the deeper canyons of the western slope, and no road crosses the crest of the Sierra Nevada to interrupt the long north-south axis of the wilderness. The large size and continuity of this wilderness protects important wildlife corridors and migration routes between high-elevation protected areas of the southern Sierra and relatively undeveloped areas to the east of the parks, as well as a major corridor along the Sierra Crest connecting the Tehachapi Mountains and the central Sierra Nevada.

Due to this low level of fragmentation, and because the park's wilderness abuts wilderness on the Inyo, Sierra, and Sequoia National Forests, the park wilderness is at the heart of a contiguous area of wildlands that provide the highest level of natural-resource protection for roughly 25% of the Southern Sierra Nevada. This large size and great diversity of habitats is likely to be important over time as species ranges shift in response to climate change. The vast area can also provide habitat for species with large home ranges that may be impacted by California's increasing population and the resulting fragmentation of undeveloped lands.



## Untrammelled

The wilderness within Sequoia and Kings Canyon National Parks has clearly been “affected primarily by the forces of nature.” Unbridled natural forces and the interaction of native species predominate.

Other than four relatively small dams in the East Fork Kaweah River drainage, no dams impede the natural flow of water within the wilderness of the parks. Rivers are dynamic, as bars and pools migrate and logjams form and break up. Landforms are affected largely by natural forces such as hydrologic processes and glaciation.

Lightning ignited fires are common in the forested middle elevations (from 4,500 feet to 9,000 feet) of the wilderness. From 1980–2008, 57% of the 791 lightning ignitions recorded in wilderness were not suppressed or controlled; they burned nearly 53,000 acres. Vegetation dynamics such as succession and disease occur unimpeded. Human interventions following disturbances in wilderness, such as floods, fires, or avalanches, occur only rarely as necessary for maintenance of trails and administrative structures.

It is believed that most animals in the wilderness behave naturally: some wary, some curious, but generally showing little to no behavioral disruption as the result of human presence, except in rare cases. Bighorn sheep have shown they adapt to human and recreational stock presence with few to no avoidance or flee behaviors exhibited. Fish-stocking programs were discontinued in the parks in 1988 and there are no programs of population control on native predators. Populations of native plants and all but a few native animals proceed according to their lifecycles without direct manipulation by humans.

## Undeveloped

The wilderness of Sequoia and Kings Canyon National Parks remains largely primeval with few permanent developments devoted to administering wilderness. Many of the developments predate wilderness designation. Several have scientific or historic and cultural value.

Roads and trails that ease access to otherwise difficult-to-access areas allow humans to dominate the wilderness. With the exception of the historic Colony Mill and Hidden Springs Roads in the North Fork Kaweah River drainage (both now closed to vehicles) and the access road to Oriole Lake inholdings, there have been few roads of any consequence in what is now the wilderness of the parks. The maintained trail network in the parks wilderness is relatively extensive, with approximately 690 miles of maintained trails in the 1,309 square miles of wilderness. Almost all trails were present in some form prior to wilderness designation, with some routes having been established by American Indians centuries ago. Importantly, no roads or trails in wilderness exist for administrative, nonrecreational purposes.

Administrative buildings, such as patrol cabins and ranger stations, tend to be located near primary trails: the High Sierra Trail, the John Muir Trail, and the Pacific Crest National Scenic Trail. Most of these structures predate wilderness designation. Six of the hard-sided ranger stations and all three patrol cabins are historic structures built before wilderness designation and may contribute to wilderness character as cultural resources. All of these historic structures are either listed in, or have been determined eligible for listing in, the National Register of Historic Places with the concurrence of the California Office of Historic Preservation. Far from being permanent habitations, these ranger stations are usually staffed only for three to four months during the peak-use summer season.

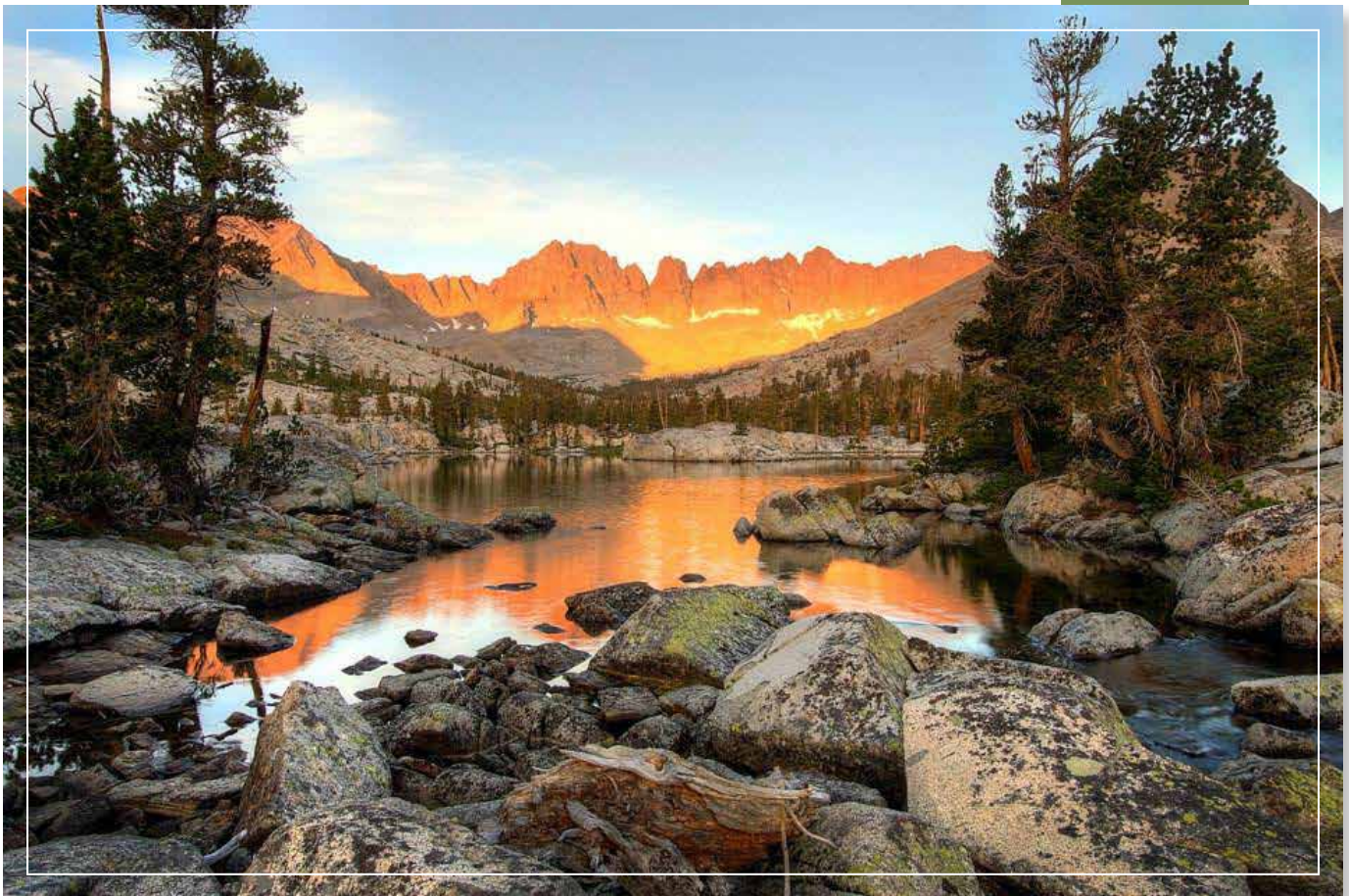
The parks have a long history of using primitive transportation in the administration of wilderness. Rangers patrol on foot or with saddle and pack stock. Packers transport supplies, materials, and staff to and from remote wilderness locations using horses and mules, supporting trail and facility maintenance, ranger activity, resource management and research, and fire management. Primitive tools are also used in the maintenance of trails and buildings. When determined appropriate through a minimum requirements decision guide, the park may use helicopters to transport supplies.



## Solitude or Primitive and Unconfined

Despite being located in the most populous state in the nation and close to an area of rapid population growth, the wilderness in the parks has outstanding opportunities for the public to follow primitive pursuits and find solitude. Activities such as hiking, climbing, fishing, rafting and kayaking, skiing, backpacking, and riding and packing with stock are available. A visitor can experience danger, adventure, and physical and mental challenges in swift and cold rivers and streams, perennial snowfields, remote lake basins, steep canyons, and on high peaks and passes. Many have celebrated the dual nature of conditions in the southern Sierra Nevada: fierce storms followed by clear days, and impressively rugged topography that is readily accessible via trail or cross-country travel. One author calls it “the best place for the practice of mountains.”<sup>2</sup>

Backpacking along the 690 miles of maintained trails is the most common form of primitive recreation, but the wilderness also offers excellent rock climbing and mountaineering. It boasts enormous granite monoliths such as Angel Wings and Tehipite Dome, as well as numerous 13,000- and 14,000-foot peaks with routes ranging in difficulty from class 1 walk-ups to technically demanding class 5 climbs. It contains the summits of 12 of the 15 peaks in California that are 14,000 feet or higher, including Mount Whitney, at 14,494 feet the highest peak in the nation outside of Alaska. In addition, wilderness kayaking on the Kings, Kaweah, and Kern Rivers offers an opportunity to experience challenging whitewater in a location unlike any other. The parks provide excellent opportunities for riding and packing with horses, mules, burros, and llamas; the Roaring River and Hockett Plateau areas, and many others, have a long and rich tradition of recreational pack-stock use extending more than 140 years. This activity preserves traditional primitive skills that have been used for generations to transport people and equipment into the wilderness, enriching experiences and facilitating the public purposes of wilderness.



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2. Secor, R.J. (2009). *The High Sierra: Peaks, Passes, Trails*. The Mounaineers Books. Seattle, WA.

An exceptional characteristic of this wilderness is a sense of vastness that sets it apart from many other wilderness areas. The Sierra Crest portion lies within the second-largest unbroken wilderness tract in the contiguous United States. Furthermore, the wilderness of the parks protects a portion of the Sierra Nevada in which no roads cross the range for more than 175 miles. When the roads over Tioga Pass and Sherman Pass close during the winter, this automobile-free area becomes even bigger, stretching for 280 miles from Carson Pass in the north to Walker Pass in the south. A visitor may feel dwarfed by the immensity of this landscape. Some wilderness users have described it as being “like you’re in the center of the world completely surrounded by mountains,” and noted that in these parks the wilderness “feels bigger.” The large size of the parks and the adjacent wildernesses also makes possible long trips that offer the time and distance to thoroughly disconnect from modern civilization. Hikers on the Pacific Crest National Scenic Trail and the John Muir Trail may travel for days or weeks without crossing a road, greatly heightening the feeling of being removed from the contemporary world. Because of the large size of these adjoining wildernesses and their rugged topography, development outside the wilderness of the parks usually goes unseen. These physical characteristics considerably limit communication with the “outside” world via cell phones and other electronics and may strongly contribute to a feeling of *solitude*.

The wilderness in the parks is also distinctive in offering opportunities for *unconfined recreation*. Travelers, once accommodated within trailhead quotas, are almost always free to change their itineraries mid-trip and select whatever routes or destinations suit their imagination. This ability to freely pick and choose one’s path contributes notably to the sense of solitude and of being unconfined.

Perhaps the most exceptional aspect of the parks’ wilderness—one that both park visitors and employees identify consistently—is the opportunity to travel through truly undeveloped and primitive areas without trails. This is due to the combination of low density of maintained trails (690 miles in 1,309 square miles of wilderness), suitable terrain, and the large size of the parks. Off-trail travel in the higher, open, rocky elevations of the Sierra Nevada is possible in a way that would be difficult in the vegetation of a dense forest or thick chaparral. The trailless areas of the wilderness in particular provide a glimpse into the landscapes of the past. The ability to leave the trail behind contributes greatly to the *unconfined quality* of the park’s wilderness and fosters feelings of discovery, exploration, and the wonder of the unknown.

The opportunity to leave the trail means that *solitude* may easily be found even during the busiest parts of the summer. Solitude also prevails outside of the summer season. While an average of more than 25,000 people visit the wilderness each year, visitation declines sharply as snow blankets the mountains throughout winter and spring. Visitors during these times are unlikely to encounter another person, and skiers look forward each year to the Sierra’s renowned spring corn snow.

On or off trail, on snowy passes or through verdant meadows, via technical or casual travel, the wilderness of the parks provides a great diversity of experiences. These kinds of opportunities for reflection, spiritual renewal, and personal growth and challenge inspired the framers of the Wilderness Act and continue to delight Sierra Nevada novices and aficionados alike.



## Other Features

### *Historic and Cultural Features:*

Exploration of what is now the wilderness of the parks began long before wilderness designation, the national park idea, and the arrival of Europeans in North America. This history has intrinsic wilderness value. The parks are mandated to preserve and protect cultural resources in the wilderness of the parks, including prehistoric and historic habitations.

Ethnographic evidence suggests use by several groups of American Indians. In both prehistoric and historic times, American Indians including the Western Mono, Paiute, and Tübatulabal groups traveled through the southern Sierra Nevada. In more recent centuries, these groups included Eastern Mono (Owens Valley Paiute) groups as well as Western Mono (possibly Wobonuch) bands in addition to Yokuts groups from the floor of the Great Central Valley and the valley's eastern foothills.

These earliest inhabitants navigated the mountain landscape, hunted and harvested, and sought the best camps. Signs of their presence in the wilderness are found in remnant camps and shelters, hunting blinds, and artifacts they left behind including arrow and spear points, bedrock mortars and mills, and lithic and ceramic scatters.

The arrival of Europeans in California brought many new explorers and settlers, including shepherds and ranchers, trappers and hunters, miners and loggers, the US Army, the Civilian Conservation Corps, the Sierra Club, and other recreational travelers. These new arrivals would follow American Indian footpaths into the wilderness. Some came for economic gain, others for duty, and others for the challenge and pleasure of being in the mountains. Some, such as John Muir, also communicated their reverence for the place and were eventually successful in advocating for its preservation in its unaltered condition, which helped energize a worldwide movement to protect large tracts of wildlands. Artifacts and features from the historic period include tree carvings, cabins, trails, camps, fences, summit registers, structures on Mount Whitney and Muir Pass, and a resort on the Kern River.

Historic and cultural resources serve as reminders that humans are a part of the regions' wilderness ecosystem. Wilderness users describe how finding historic objects like an ancient pot or spear point, or traveling the same routes described by historical figures such as John Muir or Norman Clyde, adds to their wilderness experience.

Public comments emphasize the value of preserving primitive skills such as packing with stock and navigation without electronics. Modern visitors to the wilderness are part of a long history of exploration. Preserving connections to American Indians as well as early Californian culture connects people to this heritage.

### *Scientific Activities:*

Protection of "scientific" values is one of the public purposes of wilderness, and NPS policy encourages scientific activities within wilderness, provided they are consistent with the preservation and management of wilderness. Because of its great diversity of habitats and large biophysical gradients, the wilderness of the parks is a sought-after and relevant study area for understanding landscape ecology and species niches, and their probable ecological alteration as a result of climate change and other environmental factors.

## Appendix D: Wild and Scenic River Values for Kings and Kern Rivers

### Wild and Scenic Rivers Act of 1968

In 1968, Congress passed the Wild and Scenic Rivers Act. The act “declared to be the policy of the United States that certain selected rivers of the Nation, which with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

Wild and scenic river resources and outstandingly remarkable values are protected through a number of measures and management tools. Under the Wild and Scenic Rivers Act, designated rivers are classified as wild, scenic, or recreational. The classifications primarily relate to the degree of development along the river. Regardless of the classification, each designated river in the national system is to be managed in a way that protects and enhances the values that prompted its designation. According to the act, the three classifications are defined as follows:

**“Wild” River Areas.** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

**“Scenic” River Areas.** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

**“Recreational” River Areas.** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some shoreline development, and that may have undergone some impoundment or diversion in the past.

### Designation of the Kings and Kern River Segments

The designation for the Kings River covers 88.8 miles of river, consisting of the Middle Fork, South Fork, and main stem. Within Kings Canyon National Park, the Middle Fork of the Kings River extends from its headwaters at Lake Helen downstream to its confluence with the main fork (29.5 miles, all “wild”), and the South Fork of the Kings River extends from its headwaters near Lake 11559, downstream to its confluence with the main fork (31.7 miles; 24.1 is “wild,” 7.6 is “recreational”). The additional 27.6 miles of designated wild and scenic segments of the Kings River are managed by the US Forest Service.

The National Park Service based its determination of outstandingly remarkable values for the Middle Fork of the Kings River on the 1991 Sierra National Forest land and resource management plan and subsequent information.

The North Fork of the Kern River from the Tulare-Kern County line to its headwaters in Sequoia National Park received wild and scenic designation on November 24, 1987. The Kern River offers a broad range of opportunities in all four seasons. It flows through post-pile formations, spiked-granite protrusions, and sharp rock edges. This river may be the longest, linear, glacially sculpted valley in the world. Round to elongate granitic knobs (Kernbutts) and the depressions between them (Kerncols) were first identified in Kern River canyon and are unique to the region. The North Fork Kern headwaters at 12,000 feet south of Harrison Pass Lake and runs 28.9 miles through Sequoia National Park, before entering Sequoia National Forest. All river miles in Sequoia National Park are classified as “wild.”

## Wild and Scenic River Values

Outstandingly remarkable values are defined by the Wild and Scenic Rivers Act as the characteristics that make a river worthy of special protection. In addition, free-flowing condition and water quality are also integral to the protection of wild and scenic rivers. Because free-flowing condition and water quality support the integrity of the outstandingly remarkable values and are key components for future management, they are included as part of this statement. Thus, the foundation for wild and scenic river management is a clearly defined set of outstandingly remarkable values, free-flowing condition, and water quality.

The Interagency Wild and Scenic Rivers Coordinating Council issued criteria for identifying and defining outstandingly remarkable values. The criteria guidance states that:

- An outstandingly remarkable value must be *river related or dependent*. This means that a value must be located in the river or on its immediate shorelands (generally within 0.25 mile on either side of the river), contribute substantially to the functioning of the river ecosystem, and owe its location or existence to the presence of the river.
- An outstandingly remarkable value must be *rare, unique, or exemplary* at a comparative regional or national scale. Such a value would be one that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary.

Based on these criteria, the National Park Service has determined the following outstandingly remarkable values for each segment of river. A description for each of these values is provided, as well as a description of the river's free-flowing condition and water quality.

**The Middle Fork of the Kings River.** The 29.5-mile segment of the Middle Fork of the Kings River is classified as “wild” and is wholly contained within designated wilderness.

**Scenic** – The upper section encompasses continuous vistas of spectacular high mountain peaks. The river either cascades turbulently down canyons or flows smoothly through lakes and alpine meadows.

**Recreation** – The exceptional and remote alpine scenery provides a variety of high-quality wilderness recreational opportunities, including hiking, climbing, photography, and experiencing solitude.

**Geology** – Tehipite Valley is a classic and spectacular “Yosemite,” having been carved out by glaciation and river erosion. It is among the deepest and most scenic in the contiguous 48 states. Glaciation has resulted in a wide variety of picturesque rock formations along and above the canyon, including domes, horns, arête ridges, cirques, nunatacks, as well as classic U-shaped valleys. Tehipite Dome is a premier example of granitic exfoliation.

**Wildlife** – With a 6,000-foot change in elevation, native river-dependent wildlife is extremely diverse.

**Prehistory/History** – Before 1900, American Indians, shepherders, and a few explorers had entered the region. Tehipite Valley contains American Indian village sites that include rock paintings of significance.

**Vegetation** – The area between Tehipite Valley and Simpson Meadow has remarkable stands of sugar pine (some trees are 8 feet in diameter). Where the river slows and broadens, it passes through lush meadows.

**South Fork of the Kings River.** The 24.1-mile upper segment of the South Fork of the Kings River is classified as “wild” and is wholly contained within designated wilderness.

**Scenery** – The headwaters provide exemplary scenery of the classic high Sierra, lake-studded alpine basins.

**Recreation** – The upper reaches (Upper Basin) and middle reaches (Paradise Valley) provide exceptional recreational opportunities and are extremely popular with wilderness users for hiking, photography, and experiencing solitude.

**Geology** – The South Fork flows through spectacular examples of valley glaciation. The Upper Basin contains examples of cirques, arête, and horn development. Deeply glaciated canyons, including the remote Muro Blanco and the picturesque Paradise Valley, present an exceptional and rare string of canyons along the river’s course.

**South Fork of the Kings River.** The 7.6-mile lower segment of the South Fork of the Kings River is classified as “recreational.” Lodging, campgrounds, and other amenities for park visitors are located in or near the river corridor. The river corridor also contains a road that runs parallel to the river, and three road bridges cross the river.

**Scenery** – The spectacular vertical cliffs, with the river alternately meandering and cascading through the flat-bottomed valley, is world-class scenery.

**Recreation** – River-related recreation, such as water play and swimming, are provided in this segment of river.

**Geology** – The Kings Canyon is one of the Sierra Nevada’s rare and best examples of a “Yosemite,” a deep canyon with sheer granite cliff faces on either side of the river valley that rivals the true Yosemite.

**North Fork of the Kern River.** This segment has its entire 28.9 wild and scenic river miles within Sequoia National Park classified as “wild.” This free-flowing river segment is wholly in designated wilderness. It is accessible only by trail and is primitive in nature, qualifying it for wild classification.

**Scenery** – “High contrast to visual elements (headwaters to Junction Meadow); long, linear U-shaped valley; the height and steepness of canyon walls; crystal clear water in rapids and small pools; and numerous waterfalls. Again, the total experience is considered outstandingly remarkable.”<sup>3</sup>

**Recreation** – This segment of river contains outstanding recreational opportunities, such as hiking, camping, climbing, photography, and opportunities to experience solitude.

**Geology** – The North Fork Kern River canyon is the longest, linear glacially sculpted valley in the Sierra Nevada. The canyon is a rare example of a fault structured river corridor.

**Fish** – The North Fork Kern has a rare, and likely the highest, distinct native subspecies of trout in the Sierra Nevada, the Kern River rainbow trout.

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3. *Sequoia National Forest North Fork Kern Wild and Scenic River Study*. USFS 1982.

**Other Information:**

The South Fork of the San Joaquin River and the five forks of the Kaweah River (North, Marble, Middle, East, and South) have been evaluated as to their eligibility and suitability for inclusion in the National Wild and Scenic Rivers System. All of the rivers except the North Fork of the Kaweah were determined to be eligible and suitable. Hydroelectric facilities are present on the Marble and Middle Forks of the Kaweah River, and on tributaries of the East Fork of the Kaweah, within Sequoia National Park. However, it has been determined that these facilities would not preclude the inclusion of these rivers in the national system because “the waterway remains generally natural and riverine in appearance” (Federal Register 47 (no. 173): 39458).

The Roaring River, a tributary of the South Fork of the Kings River, was considered in the wild and scenic rivers study process, but due to it being almost exclusively within designated wilderness, park management determined that it receives adequate protection from this status.

The Kern-Kaweah River, a tributary of the North Fork of the Kern River, was considered in the wild and scenic river study process, but due to it being wholly within designated wilderness, park management determined that it receives adequate protection from this status.



## Appendix E: Priority Ongoing Park Planning and Data Collection Efforts

### Cahoon Meadow Restoration Plan.

*Rationale* — Cahoon Meadow, located within the John Krebs Wilderness of Sequoia National Park, lies within a parcel of land that was acquired by the National Park Service in 1980. While in private ownership, the meadow was heavily damaged by cattle grazing. Erosion of the bare soil created by overgrazing formed a 1,200 foot-long gully that has drained more than 5 acres of wetland and threatens 14 additional acres. The gully, at its deepest point, is incised 17 feet below the adjacent meadow surface. Action is needed to prevent further degradation of the meadow and wetland resources.

*Scope* — This plan will evaluate a range of restoration options and techniques to address the large erosion gully in Cahoon Meadow.

### Crystal Cave Redevelopment Plan.

*Rationale* — Crystal Cave is one of the park’s most popular visitor attractions with more than 60,000 visitors each summer. The management plan is needed to address the cave’s old and deteriorated facilities and to ensure that visitor activities do not impact cave resources. The current restroom facility and septic system are outdated and are not universally accessible. The 0.5-mile asphalt trail to the cave has deteriorated and has a failing exterior wall, broken and unsightly fencing, and damaged handrails. The existing sales kiosk is small and does not meet the needs of the parks’ nonprofit educational partner, the Sequoia Natural History Association, for providing opportunities for education and retail sales.

The Crystal Cave redevelopment plan is an ongoing planning effort that will contribute to the protection of multiple fundamental resources and values, including ecological diversity, scenic landscapes, caves and karst resources, and opportunities for a range of experiences. The plan will also help to address multiple key issues, including frontcountry facility management and visitor capacity, increasing relevancy (due to the large number of visitors this site reaches), and stressors on park resources. The plan will protect cave resources while providing an improved visitor experience. Additionally, since 2012, the National Park Service and the California State Historic Preservation Office have been coordinating with one another to determine if the Crystal Cave area is eligible for listing as a historic district in the National Register of Historic Places.

*Scope* — This plan will provide comprehensive management guidance for the Crystal Cave area. The plan will evaluate alternatives to improve the visitor services in the area and protect natural and cultural resources.





### **Integrated Park Improvements and Development Concept Plan for Wolverton/Wuksachi/Lodgepole.**

*Rationale* — Circulation, facilities, and levels of development in the Wolverton/Wuksachi/Lodgepole areas need to be comprehensively considered in light of visitor needs, resource protection, and financial feasibility. The former Giant Forest concession lodging contained more than 1,230 beds to accommodate visitors. Since the removal of the Giant Forest concession for park resource protection, only 103 beds have been replaced through the construction of the Wuksachi Lodge. The nearby Lodgepole and Wolverton areas were developed in previous eras, and no longer function efficiently given changes in current visitor use and transportation patterns. The integrated park improvements process is needed to identify priorities and sequencing for park improvements, identify ways to reduce deferred maintenance, and estimate ongoing operation and maintenance costs.

*Scope* — The integrated park improvements process leverages funding to create a cost effective, holistic plan that produces tangible asset improvements to particular park districts. This process will identify priority projects that improve the district, reduce deferred maintenance, and streamline ongoing operational costs. Projects in seven discipline areas—natural resources, cultural resources, interpretation, transportation, facilities, infrastructure, and concessions—are identified, mapped, and ranked. Costs are assessed and projects are bundled to maximize economies of scale and savings in construction costs. Funding sources are identified and matched to project costs. The result is an investment strategy that improves the district (for all disciplines), eliminates deferred maintenance, and estimates ongoing operations and maintenance costs required to keep deferred maintenance at zero. Integrated park improvement plans focus on enhancing resource protection and visitor experience, while minimizing new construction. For each site the development concept plan would define appropriate uses and functions and coordinate the interrelationships among uses, site resources, and facilities.

### **Information Technology Infrastructure Needs Assessment and Long-Term Maintenance Plan.**

*Rationale and Scope* — A series of technical and managerial challenges make communications difficult across the parks. Official communications via existing tools such as telephone, SharePoint site, or electronic mail are technically spotty as a result of dated or inadequate communications infrastructure. The information technology needs assessment would identify additional infrastructure needed to improve information sharing and communication throughout the parks. The plan would also include a strategy to maintain the parks' information technology infrastructure.

### **Programmatic Agreement between the National Park Service, the California State Historic Preservation Office, and the Advisory Council on Historic Preservation for the Wilderness Stewardship Plan.**

*Rationale and Scope* — Identification efforts of cultural resources within wilderness areas are currently incomplete. Approximately 7% of the parks have been surveyed. Through the Wilderness Stewardship Plan process, the National Park Service and California State Historic Preservation Office have recommended developing a programmatic agreement through ongoing consultation with the California State Historic Preservation Officer, Advisory Council on Historic Preservation, American Indian tribes, and other interested parties. The programmatic agreement will establish a program for compliance with section 106 of the National Historic Preservation Act.

### **Permit Allocation Design and Implementation Strategy for Commercial Services in Wilderness.**

*Rationale and Scope* — Commercial services in wilderness are allowed to the extent necessary to provide opportunities for visitors of diverse abilities and interests to engage in a variety of wilderness activities that are proper for realizing the public purposes of wilderness (i.e., recreational, scenic, scientific, educational, conservation, and historical use, per section 4(b) of the Wilderness Act). To implement the extent necessary determination for commercial services in wilderness, as identified in the Wilderness Stewardship Plan, the parks will develop a permit allocation design and implementation strategy in close coordination with the nearby US Forest Service areas.

### **Resource Stewardship Strategy.**

*Rationale* — The resource stewardship strategy is needed as a baseline to continue addressing management challenges related to key issues and stressors on park resources. It would also contribute to the protection of nearly every fundamental resource and value for the parks. The strategy will inform plans for wildlife, giant sequoia, protection of cave resources, cultural resources, fire management, and invasive plants management.

*Scope* — A resource stewardship strategy is a long-range planning document for a national park unit to achieve its desired natural and cultural resource conditions, which are derived from relevant laws and NPS policies identified in a park’s foundation document, general management plan (2007), or other park plans. As part of a park’s planning portfolio, the resource stewardship strategy serves as a bridge between the park’s foundation document and everyday management of its natural and cultural resources. The resource stewardship strategy describes climate-smart, measurable desired conditions and possible pathways to achieve desired results for certain fundamental resources and values consistent with the general management plan.

### **Restoration Plan for High Elevation Aquatic Ecosystems.**

*Rationale* — The restoration plan for high elevation aquatic ecosystems is an ongoing planning effort to restore native aquatic species in high elevation ecosystems. This effort is being driven by the severe decline of mountain yellow-legged frogs (*Rana muscosa* and *Rana sierrae*), native species that have disappeared from more than 92% of historic sites in the Sierra Nevada including Sequoia and Kings Canyon National Parks, largely due to long-term impacts from nonnative trout and recent impacts from chytrid fungus disease. Initial results provide strong justification for removal of nonnative trout as a tool to restore additional frog populations. There is an urgency to complete this plan and begin implementation as mountain yellow-legged frog populations continue to decline. The aquatic ecosystems restoration plan will contribute to the protection of multiple fundamental resources and values, including ecological diversity, water resources, and promoting continuous learning and innovation.

*Scope* — The restoration plan will guide management actions by the National Park Service to restore and conserve native species diversity and ecological function to selected high elevation aquatic ecosystems that have been adversely impacted by human activities, particularly the past stocking of nonnative trout. This plan analyzes a range of management alternatives for the restoration and conservation of these ecosystems.

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**Pacific West Region Foundation Document Recommendation**  
**Sequoia and Kings Canyon National Parks**  
April 2016

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This Foundation Document has been prepared as a collaborative effort between park and regional staff and is recommended for approval by the Pacific West Regional Director.

*Woody Smeck*

*3-29-16*

**RECOMMENDED**

Woody Smeck, Superintendent, Sequoia and Kings Canyon National Parks

Date

*Patricia S. Reviracher*

*4/20/16*

**APPROVED**

Laura E. Joss, Regional Director, Pacific West Region

Date

*L. Joss*



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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