

Wilderness Character

Affected Environment

Regulatory Framework

The Wilderness Act of 1964

The Wilderness Act of 1964 directed the Secretary of the Interior to study federal lands within the National Wildlife Refuge and National Park Systems, and recommend to the president those lands suitable for inclusion in a National Wilderness Preservation System. The Secretary of Agriculture was similarly directed to study and recommend such lands within the National Forest System. The Wilderness Act, which grants Congress final decision-making authority regarding designations, defines wilderness as including the following characteristics:

...wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation...

The Wilderness Act prohibits certain uses in designated wilderness including motor vehicles, motorized equipment, landing of aircraft, other forms of mechanized transport, and structures or installations except as necessary to meet the minimum requirements for the administration of the area for the purpose of the Act.

The California Wilderness Act of 1984

With passage of the Wilderness Act of 1984, the majority of Yosemite National Park was designated as wilderness. Certain other lands, some of which involved uses prohibited under the Wilderness Act of 1964, were identified as potential wilderness additions. According to the act, potential wilderness additions would become designated wilderness upon the Secretary of the Interior's publication in the *Federal Register* of a notice that all prohibited uses have ceased.

Management Policies 2006

The National Park Service (NPS) *Management Policies 2006* provide guidance to park managers on several wilderness-related topics. These policies specify that the NPS will manage wilderness areas for the physical protection of wilderness resources, but also the preservation of the area's wilderness character. In carrying out these objectives, the superintendent of each park containing wilderness is tasked with developing and maintaining a wilderness management plan to guide the preservation, management, and use of wilderness resources. The plan identifies desired future conditions and

thresholds beyond which management actions will be taken to reduce human impacts on wilderness resources. In Yosemite, wilderness areas are managed under the 1989 *Yosemite Wilderness Management Plan* (described below).

Director's Order 41: Wilderness Preservation and Management

Director's Order 41 builds on the wilderness-related policies set forth in the *NPS Management Policies 2006*, providing additional detail and instruction regarding the stewardship of NPS lands designated or having the potential to be designated wilderness. To further wilderness preservation and stewardship objectives, Director's Order 41 approved a wilderness guidance manual (*Reference Manual #41*), established a wilderness stewardship steering committee, and set forth a framework for wilderness stewardship responsibility and accountability. Director's Order 41 also identifies and provides guidance on specific wilderness stewardship issues, such as the types of activities that may or may not be authorized under the Wilderness Act's administrative exception to the general use prohibitions (that is, use of motorized equipment, etc.).

Yosemite Wilderness Management Plan (1989)

The Yosemite Wilderness was established by the California Wilderness Act of 1984. The committee report accompanying the 1984 act contains recommendations for managing Yosemite Wilderness regarding operational and environmental impacts. The *Yosemite Wilderness Management Plan* responded to those recommendations in addition to a number of objectives identified through condition reports and other research. In the near future, the NPS anticipates development of *The Yosemite Wilderness Stewardship Plan* and *Yosemite Wilderness Stewardship Plan Environmental Impact Statement* (EIS).

Wilderness Character

In 1964 Congress passed the Wilderness Act, creating the National Wilderness Preservation System, which "secure[d] for the American people an enduring resource of wilderness." In 1984 Congress designated 95% of Yosemite National Park as part of that National Wilderness Preservation System. Many Yosemite visitors travel into the wilderness to seek the beauty, solitude, and challenge that Congress sought to protect with wilderness designation.

The California Wilderness Act of 1984 (Public Law [PL] 98–425) directs the NPS to manage areas designated as wilderness according to provisions of the Wilderness Act of 1964. Although many intangible aspects of wilderness character are important, the NPS (Landres et al. 2008) has identified four qualities that are practical and measurable and rooted in the Wilderness Act. They are:

- **Untrammeled** – Wilderness is essentially unhindered and free from modern human control or manipulation. This quality is diminished by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness.
- **Natural** – Wilderness ecosystems are substantially free from the effects of modern civilization. This quality is diminished by intended or unintended effects of modern people on the ecological systems inside the wilderness since the area was designated.

- **Undeveloped** – The Wilderness Act states that wilderness is “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation,” “where man himself is a visitor who does not remain” and “with the imprint of man’s work substantially unnoticeable.” This quality is diminished by the presence of structures, installations, and habitations and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people’s ability to occupy or modify the environment. Development in the wilderness such as trails, designated camping areas, composting toilets and bear boxes is intended, not for the convenience of visitors, but to protect the wilderness character.
- **Solitude or Primitive and Unconfined Recreation** – The Wilderness Act states that wilderness has “outstanding opportunities for solitude or a primitive and unconfined type of recreation.” This quality is about the *opportunity* for people to experience wilderness; it is not directly about visitor experiences in itself. This quality is diminished by settings that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management restrictions on visitor behavior.

Yosemite Wilderness

Bounded by the Emigrant Wilderness to the north, the Hoover Wilderness to the east, and the Ansel Adams Wilderness to the south, the Yosemite Wilderness encompasses an area totaling 706,624 acres, which is approximately 95% of the total park area. Another 927 acres of the park are identified as potential additions to the Yosemite Wilderness.

In comparison to the non-wilderness areas, there is generally less visitor use in wilderness areas. Wilderness visitation in Yosemite is generally concentrated within a few popular locations, campsites, and trails. The majority of wilderness visitor use occurs within less than 30% of the park’s wilderness areas, with most use distributed along approximately 70 miles of the park’s 800-mile wilderness trail system (Newman 2001). The majority of Yosemite’s trails evolved from travel routes created and used by American Indians, cattle and sheep men, the U. S. Cavalry, and the NPS. As the number of people traveling the trails increased, the NPS responded with increased trail maintenance. In contrast, a small number of trails in Yosemite were created specifically for tourism. These include many of the trails that lead out of Yosemite Valley, as well as the trails that lead up the rocky canyons of both the Merced and Tuolumne Rivers. These routes are in steep, rugged terrain and required prodigious efforts to construct. They contain an immense amount of rock work, and some involved significant blasting of bedrock. These trails provide access to areas that would otherwise be very difficult for most hikers to reach without technical rock climbing or canyoneering skills. It is unlikely that such trail construction would have been allowable had the wilderness designation been in place at the time of trail construction.

In Yosemite, overnight access to the wilderness is controlled by a system of permits and the wilderness trailhead quota system based upon wilderness zones. The wilderness is divided into 53 wilderness travel zones. Zone boundaries are generally based on watershed boundaries. In order to limit use and preserve resource integrity, each zone has a designated carrying capacity based on its physical and ecological factors. Based on the capacity of the zones through which the trail travels, each wilderness trailhead is assigned a numeric quota that equals the number of overnight visitors who can depart from

that trailhead each day. Day users are not included in this quota and are not required to have a permit except to climb Half Dome.

A wilderness permit is required for all groups planning an overnight stay in the wilderness. Permits are given to groups of hikers, with a maximum of 15 hikers in a group. Therefore, a trailhead with a 30 people per day quota could be made up of 2 permits for two groups of 15, 6 permits for six groups of 5, or 15 permits for 15 groups of two. **Table 9-146** indicates overnight visitation in the wilderness from 2006 through 2010. In 2010, the average group size in the wilderness, based upon the data in table 9-146, was 2.9 and the average visit duration was 2.7 nights.

TABLE 9-146: YOSEMITE WILDERNESS OVERNIGHT VISITOR USE

	2006	2007	2008	2009	2010
Total Overnight Visitors	40,804	43,401	45,907	52,610	53,139
Total Permits Issued (*)	14,141	15,125	15,156	18,777	18,632
Total Overnight Stays	82,484	112,049	124,817	142,623	142,864
(SOURCE: NPS 2012D)					

In addition, to minimize resource impacts, park wilderness and resource management staff identify and restore areas exhibiting visitor use impacts. Restoration measures include removing illegal and/or excessive campsites, reducing in size certain fire rings and removing associated trash and charcoal, obliterating obsolete or informal trails, and using control measures for non-native vegetation growth.

Study Area Wilderness

Approximately 70% of the Merced River in Yosemite flows through designated wilderness. Within the study area, which extends 1.25 miles on either side of the Merced River, there is a total of approximately 95,980 acres of designated wilderness, approximately 14% of the entire Yosemite Wilderness. There are 141 miles of wilderness trails within the study area.

River Corridor Wilderness

Within the river corridor, there are 18,677 acres of wilderness. Along the river's main stem, the wilderness boundary begins approximately 100 feet upstream of Nevada Fall (in Segment 1). Portions of the South Fork Merced River within the park also flow through wilderness beginning below the Wawona impoundment and extending to the park boundary (Segment 5). The entirety of Segment 1 (12,000 acres) and Segment 5 (5,500 acres) are designated wilderness with the exception of the eight-acre area around Merced Lake High Sierra Camp which is a potential wilderness addition because of its current developed state.

Table 9-147 indicates the number of acres and percentage of wilderness within those segments containing wilderness and indicates the miles of wilderness trails in each segment. Segment 4 does not contain any designated wilderness. Segment 6 contains the Wawona Impoundment which itself is not located in designated wilderness. However, the lands adjacent to the impoundment within the River

TABLE 9-147: ACRES OF WILDERNESS IN RIVER CORRIDOR BY SEGMENT

Segment Number	Total Acres in Segment	Acres of Wilderness in Segment	Percent of Segment in Wilderness	Miles of Trails in Wilderness Portion of Segment
1	12,104	12,104	100%	26.0
2	3,648	667	18%	0.8
3	2,240	61	3%	0.1
5	5,507	5,507	100%	4.1
6	17	15	88%	0.8
7	1,446	323	22%	0
River Corridor Total	24,961	18,677		31.8

Corridor are designated wilderness. This accounts for the wilderness acres in this segment. Segment 8 is not located within designated wilderness and is therefore not subject to the requirements of the Wilderness Act. Although not designated wilderness, Segment 8 is a wild segment of the Merced Wild and Scenic River. Wild segments are "...sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted."

Trails. Within the Merced River corridor, wilderness areas above Nevada Fall (Segment 1) have approximately 26 miles of trail, some of which are heavily used. Primary access to this area is provided by the Mist Trail and John Muir Trail, which originate in Yosemite Valley. Wilderness access along the South Fork Merced River (Segment 5), which includes approximately 4 miles of trail, is more limited and is accessed from U.S. Forest Service trailheads that enter the park at Chiquito Pass and Fernandez Pass.

Wilderness Zones. The River Corridor contains portions of 15 wilderness zones as indicated in **table 9-148**. Overnight access to the wilderness is controlled by daily visitor quotas established for each wilderness zone.

Segment 1 includes portions of eight different wilderness zones as indicated in **table 9-149** below. The Mist Trail and John Muir Trail, originating within Yosemite Valley, are most commonly used to access the Merced River corridor. The following trailheads originate in Yosemite Valley and provide access to Segment 1. These trailheads are used by 67% of visitors to access Little Yosemite Valley and by 26% of visitors to access Merced Lake. Other trailheads providing access to these areas include those outside the park on Forest Service land and those upstream such as trailheads in Tuolumne Meadows. Yosemite Valley trailheads and their respective overnight quotas are:

- Happy Isles to Sunrise/Merced Lake Pass Thru (no camping in Little Yosemite Valley) – 10
- Happy Isles to Little Yosemite Valley (first night at Little Yosemite Valley camping area) – 30
- Happy Isles to Illilouette – 10
- Glacier Point to Little Yosemite Valley (first night at Little Yosemite Valley camping area) – 10

TABLE 9-148: WILDERNESS ZONES WITHIN THE RIVER CORRIDOR

Wilderness Zone #	Wilderness Zone	Acres within the River Corridor
61	Washburn Lake	5,060
50	South Fork Merced River	3,379
58	Clark Range	2,418
60	Merced Lake	2,026
62	Mount Lyell	1,965
52	Chilnualna Creek	1,169
59	Little Yosemite Valley	1,145
51	Johnson Creek	758
47	Half Dome	282
68	Yosemite Creek	187
55	Bridalveil Creek	121
57	Illilouette Creek	70
56	Buena Vista Creek	69
66	Sunrise Creek	16
67	Snow Creek	14
Total Acres Wilderness		18,679

TABLE 9-149: SEGMENT 1 – WILDERNESS ZONES WITHIN SEGMENT 1

Wilderness Zone	Acres of Zone in River Corridor	Miles of Trails in Wilderness Zone in River Corridor
Washburn Lake	5,060	11.70
Merced Lake	2,026	7.12
Mount Lyell	1,965	
Clark Range	1,878	2.53
Little Yosemite Valley	1,145	4.50
Sunrise Creek	16	
Half Dome	10	
Illilouette Creek	4	0.14
Wilderness Total	12,104	25.99

In the mid- to late 1990s, the park reduced the number of overnight wilderness visitors from 125 to 75 per day from the four trailheads that provide access to Segment 1 from Yosemite Valley due to an increase in visitors traveling to Little Yosemite Valley from trailheads outside of Yosemite Valley. This reduction kept the overall use of the area within capacity. Table 9-150 shows average 2010 inbound trail use along the Merced River corridor (i.e., hikers traveling from Little Yosemite Valley toward Merced Lake and the wilderness) and indicates that during the 2010 season, an estimated average of 30 trail users per day departed from Little Yosemite Valley toward Merced Lake, for a total of 2,864 hikers.

**TABLE 9-150: TRAIL USE ABOVE LITTLE YOSEMITE VALLEY TO MERCED LAKE (2010)
(WILDERNESS-BOUND HIKER TRAFFIC)**

Month	Average Daily Use	Total
July	31	952
August	34	1,063
September	23	677
October ^a	10	117
Total Season (July to September)	30	2,864
NOTE: ^a Use counts were taken from October 1 through October 12. SOURCE: NPS 2011h		

Segment 5 includes portions of eight different wilderness zones as indicated in **table 9-151** below. Wilderness trailhead quotas in Segment 5 are Chilnualna Falls trailhead (40), Alder Creek trailhead (15), and Deer Camp trailhead (25) with the majority of access originating on Forest Service land outside of the park. Wilderness trips originating from Wawona in 2010 constituted just 9% of the park's total for that year. With only limited access along the upper reach (Segment 5) it is expected that only a small fraction of these trips occurred within the river corridor.

TABLE 9-151: SEGMENT 5 – WILDERNESS ZONES WITHIN SEGMENT 5

Wilderness Zone	Acres of Zone in River Corridor	Miles of Trails in Wilderness Zone in River Corridor
South Fork Merced River	3,379	3.99
Chilnualna Creek	831	
Johnson Creek	758	0.15
Clark Range	539	
Wilderness Total	5,507	4.14

Segment 1: Merced River Above Nevada Fall

Untrammled. Human activities and actions that control or manipulate the components or processes of ecological systems in Segment 1 include the following:

- hazard tree removal at the designated camping areas, ranger stations, and High Sierra Camp
- restoration projects of all types
- diversion of water for the High Sierra Camp, and
- management of lightning-caused fire.

Natural Condition. Effects of modern civilization on the ecosystem in Segment 1 include the following:

- climate change
- airborne contaminants
- vegetation changes due to fire suppression
- vegetation damage and soil loss along trails, in designated camping areas and dispersed campsites due to off-trail use and concentrated use
- unburied human waste
- wildlife accustomed to human use
- vegetation damage from meadow grazing by livestock
- trail and meadow damage from stock use
- livestock manure
- litter
- spread of invasive plant, animal, and fungal species

Undeveloped. Permanent/semi-permanent improvements or human habitation in Segment 1 include the following:

- Trail signage at various locations.
- Little Yosemite Valley Ranger Station has three canvas-wall tents, an outdoor roofed cooking area, corral, and storage sheds. At any point in time there are two to four rangers, and two or fewer researchers. There are also occasional trail crews ranging in size from five to 15 people.
- Merced Lake Ranger Station - The three—room cabin, constructed in 1927 was originally constructed for winter service in connection with the acquisition of hydrologic data. At this time, cabins are utilized primarily as staging areas and collection points for park backcountry patrol and maintenance projects.
- Three wilderness camping areas located in:
 - Little Yosemite Valley (can accommodate approximately 150 backpackers and has two fire rings, a composting toilet, and bear-proof boxes).
 - Merced Lake (can accommodate approximately 90 backpackers and has a drinking water fountain, two flush toilets, a septic system, and bear-proof boxes).
 - Moraine Dome (can accommodate approximately 50 backpackers and has bear-proof boxes).
- The Merced Lake High Sierra Camp, which accommodates 60 overnight guests and has 22 tents, a kitchen and dining hall, barn, ice house (used for perishable food storage), toilet building with eight water closets, and separate men's and women's shower houses with eight total shower

stalls and eight sinks. The kitchen, ice house, and toilet building are permanent wooden structures built on concrete slabs. The barn is a wooden structure with wood flooring. Canvas tents are used for the guest quarters, shower houses, and dining hall. These tents are erected with steel poles on concrete slabs at the beginning of each season and dismantled at the end of the season. The guest cabins do not have woodstoves, but there is a woodstove in the dining hall. The sewer system consists of a septic tank, lift station (powered by solar panels), dosing tank, leach field, and associated piping. The water system consists of a chlorinator shed, water pump (powered by solar panels), sand filter, three 1,500-gallon tanks, and associated piping. Worth noting is the designation of this site as a potential wilderness addition; however, its presence is noticeable from adjacent designated wilderness areas. Similarly, maintenance and upkeep of the camp, including frequent stock trips and periodic helicopter deliveries and waste removal, have impacts on the character of adjacent wilderness areas.

Solitude. Factors that reduce visitors' ability to experience solitude include:

- Number of visitors
- Length of stay
- Group size
- **Visitor Encounters.** The frequency of encounters with other people or groups along trails is commonly used as a proxy to evaluate opportunities for solitude in wilderness settings. Park staff measure encounter rates through actual trail counts or through surveys that ask visitors to estimate the number of other people/groups encountered during hikes. Increased encounters with other parties in the wilderness can diminish the feeling of solitude. Newman and Manning (2001) found that visitors will tolerate higher numbers of encounters while hiking than while in camp. A 2009 NPS study examined the frequency of wilderness encounters with other hikers at three points in the upper Merced River corridor. The encounter rate findings are shown in table 9-152.

TABLE 9-152: WILDERNESS ENCOUNTERS OBSERVED IN UPPER MERCED RIVER CORRIDOR (2010)

Location	Number of Encounters with Other Groups	Number of Encounters with Individuals	Number of Encounters with Stock
Little Yosemite Valley	1.73 parties/hour	4.06 people/hour	1.47 stock/hour
Echo Valley	2.13 parties/hour	5.57 people/hour	unknown
Washburn Lake	0.68 parties/hour	1.58 people/hour	0.09 stock/hour
SOURCE: NPS, 2012d			

The designated wilderness camping areas within Little Yosemite Valley and Merced Lake wilderness zones typically experience heavy use, especially throughout the peak visitation season, between Memorial Day and Labor Day weekends. (Fincher 2010).

Primitive Recreation. Factors that reduce the visitors' ability to experience self-reliance and the use traditional skills include:

- Presence of structures and installations
- Use of helicopters and other motorized equipment
- **Recreation Activities.** The majority of types of recreation activities in Segment 1 (hiking, backpacking, fishing and camping) have the dimensions of simplicity, lack of technology, and self-reliance. Photography, swimming, wildlife viewing, and contemplation are also activities that enable wilderness visitors to experience the sense of solitude, self-reliance, exploration, and adventure that contribute to a fulfilling wilderness experience. Guided pack trips and commercial-guided and NPS-guided hiking trips are less primitive (because they are less self-reliant) and less solitary (due to generally larger group sizes) forms of recreation that occur in Segment 1.

Unconfined Recreation. Factors influencing unconfined recreation in Segment 1 include:

- Management restrictions on visitor behavior once inside the wilderness including requirements to camp in designated camping areas, requirements where camping is prohibited, regulations prohibiting fires or pets and requiring the use of existing fire rings.

Segment 5: South Fork Merced River Above Wawona

Untrammelled. Human activities and actions that control or manipulate the components or processes of ecological systems are limited in Segment 5 but include restoration activities and suppression of fires caused by lightning.

Natural Condition. There are few effects of modern people on the ecosystem in Segment 5. Few studies exist regarding the natural condition of wilderness areas within the South Fork Merced River corridor, and it is generally thought to be in excellent condition. This is due, in part, to its lack of permanent improvements and limited accessibility to wilderness travelers.

Within the overall study area, which includes 1.25 miles on either side of the river corridor, manmade features include a network of small roads in the Sierra National Forest south of the study area, including Iron Creek, Grizzly Creek, and Quartz Mountain Roads.

Undeveloped. The only permanent/semipermanent improvements or human habitation in Segment 5 are trails and trail signs. There are no designated camping areas within the wilderness areas of the South Fork Merced River corridor. Horse Thief Camp is an established primitive stock camp occasionally visited by guided pack trip parties. It is one of approximately 50 locations within the park that contains a “drift fence” to contain stock when the camp is in use. Between 2004 and 2010, commercially guided pack trips in Segment 5 averaged 13 stock-use nights, with a high of 50 in 2009. All use occurred at Horse Thief Camp (NPS 2011i).

Solitude or Primitive and Unconfined Recreation. Factors that reduce the visitor’s ability to experience the wilderness include visitor encounters and crowding, recreation facilities, and management restrictions. In Segment 5, the following elements affect solitude or primitive and unconfined recreation:

Visitor Encounters. Visitation within Segment 5 is considerably lower than in Segment 1. Encounter rates are expected to be low and opportunities for solitude relatively high within the wilderness areas of the South Fork Merced River corridor.

Recreation. As with Segment 1, the most common wilderness visitor activities along the South Fork Merced River are primitive in nature. These include hiking and backpacking, with a small amount of private and commercial stock use. Access is via both formal trails and cross country travel. Both day use and dispersed overnight camping occur in this segment.

Unconfined Recreation. Management restrictions on visitor behavior once inside the wilderness are limited in Segment 5 as there are no designated camping areas. Wilderness regulations would continue to prohibit pets and camping in certain areas, as well as requiring the use of existing fire rings.

Wilderness Character

Environmental Consequences Methodology

This analysis evaluates how wilderness character in the Merced River corridor might be altered by the actions described in the alternatives. The elements of wilderness character that are examined are untrammeled, undeveloped, natural character, solitude, primitive, and unconfined recreation.

- **Context.** The context of the impact considers whether the impact would be local, segmentwide, parkwide, or regional. For this analysis, local impacts would be those that occur in a specific area within a segment of the river. This analysis further identifies if there are local impacts in multiple segments. Segmentwide impacts would consist of a number of local impacts within a single segment, or larger-scale impacts that would affect the segment as a whole. Parkwide impacts would extend beyond the river corridor and the study area within Yosemite. Regional impacts would be those that extend to the Yosemite gateway region.
- **Intensity.** The intensity of the impact considers whether the impact on the elements of wilderness character would be negligible, minor, moderate, or major.
 - **Negligible:** There would be no effect or effects would not be measurable. Any effects to wilderness would be slight, short term, and localized to the study area.
 - **Minor:** Effects on wilderness character, including changes in encounter rates, agency imposed restrictions, or natural character, would be detectable.
 - **Moderate:** Effects on wilderness character would be readily apparent, affect the river segment, and possibly extend beyond the river corridor. Mitigation would probably be necessary to offset adverse impacts.
 - **Major:** Effects would be readily apparent and would substantially change wilderness character locally as well as parkwide. Extensive mitigation would likely be necessary to offset adverse impacts and success could not be guaranteed. Major impacts could include adding or removing permanent installations.
- **Duration.** The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration, such as impacts associated with construction or restoration activities. A long-term impact would have a

permanent effect on wilderness character, at least within the planning horizon for the Merced River Plan.

- **Type of Impact.** Impacts were evaluated in terms of whether they would be beneficial or adverse to wilderness character. Identification of beneficial and adverse impacts on each of the elements of wilderness character follows:
 - ***Untrammeled.*** The quality of wilderness character protects wilderness areas from modern human control or manipulation of the biophysical environment. An action is considered adverse when there is manipulation of the biophysical environment (such as restoration or controlling fires caused by lightening) and beneficial if it reduces the effects of such manipulation. Generally, an action would only benefit the untrammeled quality if it was a policy change such as no longer suppressing fires in the wilderness.
 - ***Natural.*** This factor considers whether wilderness ecological systems are substantially free from the effects of modern civilization. The effects of an action are considered to be adverse when it increases the effects of modern humans on ecological systems. Effects are considered beneficial when they decrease such effects, through either natural recovery or intentional restoration.
 - ***Undeveloped.*** The Wilderness Act states that wilderness is “an area of undeveloped Federal land . . . without permanent improvements” and “with the imprint of man’s work substantially unnoticeable.” This element considers the amount and type of permanent improvements, structures, installations, and administrative use of motorized tools and mechanized transportation. Improvements in wilderness are generally judged by a number of criteria. Developments in wilderness are generally judged by both number and type. Actions that increase the number of developments or the visual obtrusiveness, permanence, or technological sophistication of the development are considered to be adverse; actions that result in fewer developments or that are less obvious, more temporary, or more primitive are considered beneficial.
 - ***Opportunities for Solitude.*** In wilderness areas, visitor experience is influenced by the number of other groups encountered during a given time period. Actions that increase crowding are considered adverse, while those that reduce crowding are considered beneficial. In high-use wilderness areas such as Segment 1 of the Merced River corridor, solitude is determined to be an area free from crowding. The threshold for crowding is determined in part through visitor surveys that indicate values and attitudes on crowding and congestion. These survey results are compared to encounter rates, people at one time, and/or people per viewshed to determine how visitor-informed thresholds for crowding compare with actual visitor use.
 - ***Primitive Recreation.*** The opportunity for primitive recreation and the quality of primitiveness were considered as having the dimensions of simplicity, lack of technology, and self-reliance (Johnson, Hall, and Cole 2005). Actions that decrease the opportunities for this type of recreation are considered adverse; those that increase such opportunities are considered beneficial.
 - ***Unconfined Recreation.*** This factor considers the difficulty for visitors to travel freely once inside the wilderness and the extent of regulatory requirements placed on them. Actions which increase the managerial control and oversight of wilderness visitors such as requiring visitors to camp in designated areas, are considered adverse, while those that reduce managerial control and oversight are considered beneficial.

Environmental Consequences of Alternative 1 (No Action)

The following section provides an overview of the types of impacts on wilderness character that could occur within the Merced River corridor under Alternative 1 (No Action). This analysis of impacts is limited to Segments 1 and 5. The entirety of Segments 1 and 5 are designated wilderness.

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Untrammeled. Under Alternative 1 (No Action), current activities and actions that exhibit human control and manipulation of the landscape would continue. These management activities strive to repair visitor impacts and include restoration, removal of non-native vegetation, obliterating informal trails, and removal of illegal campsites, fire rings and trash. Although beneficial to other aspects of wilderness character, these activities would have the effect of further manipulating the natural environment. Because these activities are generally over relatively small areas, the impacts of these activities on the untrammeled character of the wilderness would be local, negligible, long-term, and adverse.

Natural. Under Alternative 1 (No Action) the current management activities described above would serve to improve the natural conditions in Segment 1. Removal of non-native vegetation, obliteration of informal trails, educational and enforcement efforts to alter visitor behavior and lessen their impact, and other management activities would allow natural processes to continue with reduced interference from human impacts. The impact of these activities on the natural character of the wilderness would be local, minor, long-term and beneficial.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Untrammeled. Under Alternative 1 (No Action) activities such as hazard tree removal to protect visitors to the Merced Lake High Sierra Camp, would maintain the human control and manipulation of a natural processes. The impacts of this and similar activities on the untrammeled character of the wilderness would be local, minor, long-term, and adverse.

Undeveloped. Under Alternative 1 (No Action), the permanent and semi-permanent structures and facilities in Segment 1 would remain as they are currently and be managed and maintained as they are today. These include the structures and infrastructure at Merced Lake High Sierra Camp, the designated camping areas, and the ranger stations. Motorized equipment would remain in use to operate the High Sierra Camp. Occasional helicopter use would continue to be used to transport goods, materials and waste that cannot be transported by stock to and from the High Sierra Camp. There would be no additional development or improvements under Alternative 1 (No Action). The impact of these activities on the undeveloped character of the wilderness would be local, major, long-term, and adverse.

Natural. Under Alternative 1 (No Action), most wilderness natural resources and ecosystems would remain intact because of the relationship between resource protection and wilderness quotas. In areas

of more intense visitor use (designated camping areas, Merced Lake High Sierra Camp, and along trail corridors), natural resources would continue to show impacts of human use although some restoration and repair would continue to occur. Wilderness patrols, permit requirements, and educational efforts designed to help visitors understand and protect natural resources by altering their behavior would also benefit the natural component of wilderness character. Degradation of meadows and other sensitive resource areas would continue from stock grazing. The projected increase in day visitors in Little Yosemite Valley due to increased park visitation may increase human impacts on the natural resources in this portion of Segment 1. This increase would be small because day hikers must hike 2.5 miles before reaching the Segment 1 wilderness. (Day hikers (except those climbing Half Dome) do not require a permit to hike into the wilderness). Current activities have both adverse and beneficial impacts on the natural character of the wilderness. Overall however, Alternative 1 (No Action) would have a local, moderate, long-term, adverse impact on the natural character of the wilderness.

Solitude. Under Alternative 1 (No Action), wilderness encounter rates closest to Segment 2 would be expected to increase slightly from current rates due to increased visitation to the park. This increase would be small because day hikers must hike 2.5 miles before reaching the Segment 1 wilderness. (Day hikers (except those climbing Half Dome) do not require a permit to hike into the wilderness). Encounter rates would remain at current levels farther into the wilderness as the wilderness zone capacities are not expected to change. The total wilderness zone capacity in Segment 1 would remain at 380 people. Conflicts and encounters between stock and hikers would also continue under Alternative 1 (No Action). Designated camping areas would remain in Alternative 1 and are less conducive to solitude than dispersed camping. Impacts of Alternative 1 (No Action) on solitude would be local, minor, long-term and negligible.

Primitive. Under Alternative 1 (No Action), most experiences in the Yosemite Wilderness would remain as they are today— primitive in nature and exhibiting simplicity, self-reliance, and a lack of technology. Predominant activities, which would continue under Alternative 1, are hiking and backpacking. Camping would continue to be a mix of dispersed camping and camping in the three wilderness camping areas in Segment 1 (Merced Lake and Little Yosemite Valley, which have developed facilities including restrooms, and Moraine Dome, which does not have any developed facilities). Fishing would also continue in Segment 1 under this alternative. Boating would continue to be prohibited in designated wilderness. Activities that would continue and are less primitive in nature include overnight concessioner pack trips. Areas that would continue to promote a less primitive experience are the Merced Lake High Sierra Camp, a developed overnight facility with 60 beds, food service, and restrooms. Impacts of Alternative 1 on the primitive quality of the wilderness would be local, major, long-term and adverse.

Unconfined Recreation. Under Alternative 1 (No Action), the ability for visitors to travel freely once inside the wilderness and the regulatory requirements placed upon them would remain as they are today. Permit regulations would remain unchanged. Day hikers not going to Half Dome do not need a day-use permit to hike in the wilderness and therefore would continue to have the greatest opportunity for unconfined recreation. Alternative 1 would have a segment-wide, moderate, long-term and adverse impact on the unconfined quality of wilderness.

Segment 1 Impact Summary: Implementation of Alternative 1 would result in segmentwide and local, long-term, moderate to major, adverse impacts on wilderness character within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Protect and Enhance River Values

Natural. Under Alternative 1 (No Action), the ecosystem in Segment 5 would continue to function with limited human interference due to the near absence of facilities in this segment and the rugged nature of the landscape.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5. Therefore, Alternative 1 (No Action) would have no impact on the undeveloped character of the wilderness.

Solitude. Under Alternative 1 (No Action), a wide range of opportunities for solitude would continue. Encounter rates in Segment 5 are not well studied, but this segment is less frequently visited than Segment 1. The total capacity of the wilderness zones in Segment 5 would remain at 15. Alternative 1 (No Action) would have no impact on solitude.

Primitive. Under Alternative 1 (No Action), there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology. Alternative 1 (No Action) would have no impact on the primitive character of wilderness in Segment 5.

Unconfined Recreation. Under Alternative 1 (No Action), the wilderness permit system would continue to regulate certain activities while visitors are in the wilderness including the use of existing fire rings and the minimum distance a camp site can be from the water. Alternative 1 would have a segmentwide, negligible, long-term, adverse impact on unconfined recreation in Segment 5.

Segment 5 Impact Summary: Implementation of Alternative 1 would result in segmentwide, long-term, negligible, adverse impacts on wilderness experience within Segment 5.

Summary of Impacts from Alternative 1 (No Action)

Under Alternative 1 (No Action), the greatest impacts on the wilderness character in Segment 1 would be from the infrastructure and visitor use associated with the Merced Lake High Sierra Camp and from improvements to and concentrated visitor use of the three wilderness camping areas in this segment— Little Yosemite Valley, Moraine Dome, and Merced Lake. In addition, under Alternative 1, the wilderness permit requirements detract from the character of unconfined recreation. Alternative 1 would have a local, moderate to major, long-term, adverse impact on wilderness character in Segment 1. In Segment 5, the impact of Alternative 1 (No Action) on wilderness character would be negligible.

Cumulative Impacts of Alternative 1 (No Action)

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. The projects identified below include only those projects that could affect wilderness character within the river corridor or in the study area.

Past Actions

The wilderness permit/trailhead quota system, established in 1974–1976, set limits for the number of people allowed entering the wilderness per day per trailhead. These limits were based on extensive research and monitoring to assess capacity based on ecological and social considerations, and were in response to exceptionally high levels of use in the early to mid-1970s. This system has had beneficial impacts on the wilderness character by protecting natural resources; by contributing to the untrammeled, undeveloped, and natural character of the wilderness; and by providing solitude and primitive and unconfined recreation. In recent years, Yosemite has issued wilderness permits through the use of a trailhead quota system. This limits the number of people camping in the wilderness, thereby enhancing opportunities for experiencing solitude. However, this system represents an agency restriction that affects unconfined recreation in the wilderness.

Present Actions

The wilderness permit/trailhead quota system continues to limit and/or disperse use based on trailhead access. Limiting the number of overnight visitors is likely to protect natural values, and promote solitude but has an adverse impact on the unconfined component of wilderness character.

The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome Trail corridor into compliance with the Wilderness Act.

The *Half Dome Trail Stewardship Plan* addresses crowding along the length of the two-mile trail and by doing so, addresses congestion on the final 400 feet of the trail to the summit. The Half Dome trail is outside the Merced River corridor but within the study area.

The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.

Several other plans or restoration efforts are in various stages of development and implementation, including the following:

- *Fire Management Action Plan for Wilderness* (U. S. Forest Service [USFS])
- *Sierra Nevada Framework for Conservation and Collaboration* (USFS)

- Management Direction for the John Muir, Ansel Adams and Dinkey Lakes, and Monarch wildernesses (USFS)
- *Pinecrest Basin Forest Plan Amendment* (USFS, Stanislaus National Forest)
- *Tuolumne Wild and Scenic River Comprehensive Management Plan* (NPS)

Reasonably Foreseeable Future Actions and Conditions

Reasonably foreseeable future actions proposed in the Yosemite region that could have a cumulative beneficial effect on wilderness character are described below:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land management issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite.
- Clean Water Act and Health and Food Safety Code regulatory updates could result in required upgrades and improvements to wilderness water and wastewater treatment facilities.

Overall Cumulative Impact

The past, present, and future actions, when considered with Alternative 1 (No Action), would result in improved protection and enhancement of wilderness resources; continued limits on overnight use; and retention of manmade structures and facilities. The overall cumulative impact of Alternative 1 (No Action) on wilderness character would be local, moderate to major, long term and adverse.

Environmental Consequences of Actions Common to Alternatives 2–6

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Biological Resource Actions. Programmatic biological resource actions common to all alternatives include:

- Re-route trails out of sensitive habitats through wetlands. New trail routes should avoid wetlands and special status habitat.
- Merced Lakeshore Meadow: Remove informal trails, decompact soils, fill ruts with native soils, and revegetate denuded areas with native plants.
- Relocate sections of trail through wetland in Echo Valley and mineral spring outflow between Merced Lake and Washburn Lake to less sensitive areas. Harden the trail along the wet sections of the Mist Trail to avoid trail widening.
- Reroute the Triple Fork Peak meadow trails to upland where possible.
- Remove and restore informal trails in meadows.

- Relocate or remove all campsites at least 100' away from the ordinary high water mark
- Direct visitor use along river to stable and resilient access points such as sandy beaches and low-angle slopes through delineated trails, maps and brochures. Areas susceptible to erosion—steep riverbanks, and high use areas exhibiting vegetation and soil loss from compaction—will be closed and restored.

Untrammeled. Biological resource actions, although beneficial to other aspects of wilderness character, would have a local, negligible, long-term, adverse impact on the untrammeled quality of wilderness character as restoration involves human manipulation of ecological systems.

Natural. Biological resource actions would have a local, minor, long-term beneficial impact on the natural component of wilderness character in Segment 1 as eliminating grazing, removing non-native species and restoration allow ecological processes to recover and lessen some of the evidence of modern civilization on natural areas. Wilderness patrols, permit requirements, and educational efforts designed to help visitors understand and protect natural resources by altering their behavior would also benefit the natural component of wilderness character.

Unconfined. Biological resource actions involving closure, rerouting, and revegetation of informal trails would have a local, minor, short-term, adverse impact on unconfined recreation because these actions would limit the visitor's ability to travel freely in the areas being restored.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

There is one programmatic action proposed to manage use and facilities for Segment 1 that is common to Alternatives 2 – 6. This action is to allow private boating in the wilderness. Because of the difficulty of getting any type of boat or raft into the wilderness, it is unlikely that this would become a widespread activity in Segment 1. Because private boating is not a permanent action, it would have no impact on the untrammeled, natural, undeveloped, primitive, unconfined, and solitary aspects of wilderness character.

Segment 1 Impact Summary: Actions to protect and enhance river values would have local, long-term, minor, beneficial impacts on wilderness experience within Segment 1. Actions to manage user capacities, land use, and facilities would have local, long-term, negligible, adverse impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

There are two actions proposed to manage use and facilities in Segment 5 that are common to Alternatives 2–6. These are to allow private boating in the wilderness and remove informal trails and charcoal rings to protect cultural resources. Because of the difficulty of getting any type of boat or raft into the wilderness, it is unlikely that this would become a widespread activity in Segment 5. Because private boating is not a permanent action, it would have no impact on the untrammeled, natural, undeveloped, primitive, unconfined, and solitary aspects of wilderness character. The removal of

informal trails and charcoal rings would have a local, long-term, minor, adverse impact on the untrammelled quality of the wilderness due to the manipulation required to remove the trails and fire rings. It would also have a local, long-term, negligible, beneficial impact on the natural character of the wilderness in Segment 5. This action would have no impact on the other aspects of wilderness character.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, negligible, beneficial impacts on wilderness experience within Segment 5.

Summary of Impacts from Alternatives 2–6

The management actions common to Alternatives 2–6 focus on restoration and repair of natural resources in Segments 1 and 5. Restoration actions could have a local, negligible, long-term, adverse effect on the untrammelled quality of the Merced Lake Shore Meadow and East Meadow and a local, minor, beneficial impact on the natural qualities of the Yosemite Wilderness.

Cumulative Impacts Common to Alternatives 2–6

Cumulative effects on wilderness character are based on consideration of past, present, and reasonably foreseeable future actions in the Yosemite region, in combination with potential effects of measures common to Alternatives 2–6. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or the study area.

Past Actions

The 1980 *Yosemite General Management Plan* is the basic document for management of Yosemite National Park. The *Merced River Plan/EIS* would amend the *Yosemite General Management Plan* to meet the mandates of the WSRA.

The 1989 *Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite's wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on wilderness character include:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite. The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.

- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project is to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next 5 to 10 years.

Reasonably Foreseeable Future Actions and Conditions

The following is a reasonably foreseeable future action proposed in the Yosemite region that could have a cumulative beneficial effect on wilderness character:

The *Yosemite Wilderness Stewardship Plan/EIS* will address land management issues within the Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite.

Overall Cumulative Impact from Actions Common to Alternatives 2–6

The cumulative impact of the wilderness management measures common to Alternatives 2–6 in conjunction with past, present, and reasonably foreseeable future projects would be local (in Segments 1 and 5), long term, minor, and beneficial. The management measures common to Alternatives 2–6 for Segment 1 would improve the natural, and undeveloped character of the wilderness by eliminating informal trails. Planned present and future actions would improve wilderness protection and enhancement and limit access to protect wilderness character.

Environmental Consequences of Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Biological resource actions under Alternative 2 include:

- Remove the Merced Lake East Meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.

This action would have no impact on the untrammeled, undeveloped, primitive, or unconfined qualities of the wilderness experience. In general, the presence of cattle is not in keeping with the natural quality of the wilderness. Removal of grazing on Merced Lake East Meadow would benefit the natural quality of the meadow. However, stock would still be present on the trails and in the vicinity of Merced Lake and would continue to have an effect on these less fragile parts of the ecosystem. This action would have a local, minor, long-term, adverse impact on the natural quality of the wilderness in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 2, a number of actions are proposed to manage visitor use and facilities including:

- Discontinue designated camping at Little Yosemite Valley camping area, and remove infrastructure, including composting toilet. Allow dispersed camping in this area.
- Close Merced Lake High Sierra Camp and allow dispersed camping at Merced Lake Backpackers Camping Area into the High Sierra Camp footprint. Convert area to designated Wilderness.
- Discontinue designated camping at the Merced Lake Backpackers Camping Area. Allow dispersed camping in the areas of the former Merced Lake Backpackers Camping Area and the Merced Lake High Sierra Camp; remove flush toilets and waste-water system.
- Discontinue designated camping at Moraine Dome. Allow dispersed camping in this area.
- Manage to a capacity of 25 (83% reduction) in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.

Impacts of these actions on wilderness character include:

Untrammeled. Under Alternative 2, restoration activities required at Merced Lake High Sierra Camp and in the designated camping areas would have a long-term negligible impact on the untrammeled character of the wilderness due to the control and manipulation required to restore the area.

Undeveloped. Under Alternative 2, the removal of the permanent and semi-permanent improvements and infrastructure in Segment 1 and restoration to natural conditions would greatly improve the undeveloped character of the wilderness and would also significantly reduce the use of motorized equipment and eliminate the need for routine helicopter trips. By removing the High Sierra Camp and providing the most dispersed camping of any alternative; Alternative 2 would exhibit the most undeveloped character of any alternative.

Natural. Under Alternative 2, the removal of facilities and infrastructure and conversion to dispersed camping, and the reduced number of visitors would improve the natural character of Segment 1. Ecological patterns and processes would be subject to fewer concentrated human impacts and would be allowed to recover. Under Alternative 2, concessioner stock use would be eliminated due to the removal of the Merced Lake High Sierra Camp. Administrative trail crew stock use would be

significantly reduced as trails would require less frequent maintenance due to the removal of the High Sierra Camp. The reduction in stock use would improve the natural character of the wilderness due to reduced introduction of non-native species by stock and reduction of meadow grazing which would improve the natural condition of the meadows. Wilderness patrols, permit requirements, and educational efforts designed to help visitors understand and protect natural resources by altering their behavior would also benefit the natural component of wilderness character.

Solitude. Under Alternative 2, wilderness encounter rates would decrease due to the 83% reduction in wilderness zone capacity for the Little Yosemite Valley zone, from 150 to 25 overnight visitors per day. The conversion of all designated camping areas to dispersed camping would also improve the experience of solitude as visitors could camp apart from other campers rather than confined to a designated camping area. These two factors would noticeably improve the experience of solitude for wilderness visitors in Segment 1.

Primitive. Under Alternative 2, most of the activities that detract from the primitive nature of the wilderness, which require visitors to be self-reliant, would be removed, including the Merced Lake High Sierra Camp and all infrastructure. In addition, conversion of all of the designated camping areas to dispersed camping and the associated removal of most facilities would also make Segment 1 more primitive in nature and promote activities that exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 2, the requirements set forth in the wilderness permits would slightly reduce the ability to “recreate freely in the wilderness” and have a negligible, adverse effect on the quality of unconfined recreation. Day hikers not going to Half Dome do not need a permit and would continue to have the greatest opportunity for unconfined recreation. The conversion of all designated camping areas to dispersed camping would have a beneficial effect on unconfined recreation as visitors would be free to choose where they camp.

Segment 1 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, major, beneficial impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5.

Solitude. Under Alternative 2, a wide range of opportunities for solitude would continue. The total wilderness zone capacity of Segment 5 is currently 15 and would remain so. Encounter rates in Segment 5 are not well studied but these segments are known to be less frequently visited than Segment 1.

Primitive. Under Alternative 2, there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 2, the requirements set forth in the wilderness permits would reduce the ability to “recreate freely in the wilderness” and have a negligible adverse effect on the quality of unconfined recreation for the limited number of visitors to Segment 5.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have no impact on the wilderness experience within Segment 5.

Summary of Impacts from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Under Alternative 2, the park would eliminate most of the facilities, infrastructure, and activities that diminish wilderness character; reduce the number of overnight visitors to the Yosemite Wilderness; eliminate overnight stock trips; and close Merced Lake High Sierra Camp, restore the area and designate the area as wilderness. Together, with implementation of mitigation measures MM-NOI-1 through MM-NOI-3 and MM-VEX-1 through MM-VEX-2, as applicable (see Appendix C), these actions would have a segmentwide, long-term, major, beneficial impact on wilderness character in Segment 1. Alternative 2 would have no impact on Segment 5.

Cumulative Impacts from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of the actions under Alternative 2. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or in the study area.

Past Actions

The *1980 Yosemite General Management Plan* is the basic document for management of Yosemite National Park. The *Merced River Plan/EIS* would amend the *Yosemite General Management Plan* to meet the mandates of the WSRA.

The *1989 Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite’s wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on wilderness character include:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite. The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.
- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next 5 to 10 years.

Reasonably Foreseeable Future Actions and Conditions

The reasonably foreseeable future action that could have a cumulative beneficial effect on wilderness character in the region is described below:

The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite.

Overall Cumulative Impact from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

The cumulative impact of the wilderness management measures outlined for Alternative 2 in conjunction with past, present, and reasonably foreseeable future projects would be segmentwide (in Segments 1 and 5), long term, major, and beneficial. Management measures for the wilderness in Alternative 2 would improve the natural, and undeveloped character of the wilderness by removing manmade facilities and stock use. Reducing the number of wilderness visitors and conversion from designated to dispersed camping increases opportunities for solitude. Planned present and future actions would improve wilderness management and limit access to protect wilderness character.

Environmental Consequences of Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Biological resource actions under Alternative 2 include:

- Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.

This action would have no impact on the untrammelled, undeveloped, primitive, or unconfined qualities of the wilderness experience. Initially this action would have the same impact on the natural quality of the wilderness as Alternative 2 – grazing would be removed from the meadow but the cattle would continue to be present in the same numbers on the trails and elsewhere in the Merced Lake area. Generally, the presence of cattle detracts from the natural quality of the wilderness. Allowing the meadow to recover and then monitoring and adapting grazing levels could potentially reduce the number of cattle in the wilderness and have a local, negligible, long-term **beneficial** impact on the natural quality of the wilderness in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 3, a number of actions are proposed to manage visitor use and facilities including:

- Discontinue designated camping at Little Yosemite Valley camping area, and remove infrastructure, and retain composting toilet. Allow dispersed camping in this area.
- Discontinue designated camping at the Merced Lake Backpackers Camping Area. Allow dispersed camping in the areas of the former Merced Lake Backpackers Camping Area and portions of the Merced Lake High Sierra Camp; replace flush toilets with composting toilet and remove waste-water system.
- Convert Merced Lake High Sierra Camp to a temporary pack camp with a maximum of 15 people allowed. Remove all permanent infrastructure. Convert area to designated Wilderness.
- Discontinue designated camping at Moraine Dome. Allow dispersed camping in this area.
- Manage to a capacity of 75 (50% reduction) in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.

Impacts of these actions on wilderness character include:

Untrammelled. Under Alternative 3, restoration activities, required at Merced Lake High Sierra Camp and in the designated camping areas would have a long-term negligible impact on the untrammelled character of the wilderness due to the control and manipulation required to restore this area.

Undeveloped. Under Alternative 3, the removal of most of the permanent and semi-permanent improvements and infrastructure in Segment 1 and restoration to natural conditions would greatly improve the undeveloped character of the wilderness and would also significantly reduce the use of motorized equipment and eliminate the need for routine helicopter trips. The Merced Lake High Sierra Camp area would be designated as wilderness once the character of this potential wilderness addition had been restored. Together these actions would improve the undeveloped quality of Segment 1.

Natural. Under Alternative 3, the removal of facilities and infrastructure and conversion of all of the camping areas to dispersed camping, and the reduced number of visitors would improve the natural character of Segment 1. Ecological patterns and processes would be subject to fewer concentrated human impacts and would be allowed to recover. Two composting toilets – one at Merced Lake and the other at Little Yosemite Valley would lessen the impact of human use on the natural environment. Under Alternative 3, concessioner stock use would be eliminated due to the removal of the Merced Lake High Sierra Camp. Administrative trail crew stock use would be significantly reduced as trails would require less frequent maintenance due to the removal of the High Sierra Camp. The reduction in stock use would improve the natural character of the wilderness due to reduced introduction of non-native species by stock and reduction of meadow grazing which would improve the natural condition of the meadows. Wilderness patrols, permit requirements, and educational efforts designed to help visitors understand and protect natural resources by altering their behavior would also benefit the natural component of wilderness character.

Solitude. Under Alternative 3, the capacity of the Little Yosemite Valley zone would be reduced by 50%, from 150 to 75 visitors per day. This reduction in the number of visitors would lessen encounter rates and noticeably improve the experience of wilderness solitude. Conversion of all designated camping areas to dispersed camping would allow campers to camp away from other groups and increase the experience of solitude.

Primitive. Under Alternative 3 most of the activities that detract from the primitive character of the wilderness would be removed, including the Merced Lake High Sierra Camp and all infrastructure. Designated camping would be removed at all three camping areas in favor of dispersed camping. Flush toilets would be replaced with a composting toilet at Merced Lake Backpackers Camping Area and the composting toilet at Little Yosemite Valley would remain. Composting toilets reduce the experience of simplicity and self-sufficiency somewhat but, as mentioned above, improve the natural quality of the wilderness. Under Alternative 3, Segment 1 would become more primitive in nature and provide for activities that exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 3, the requirements set forth in the wilderness permits would reduce the ability to “recreate freely in the wilderness” and have a negligible adverse effect the quality of unconfined recreation. Day hikers not going to Half Dome do not need a permit and would continue to have the greatest opportunity for unconfined recreation.

Segment 1 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, moderate, beneficial impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5.

Solitude. Under Alternative 3, a wide range of opportunities for solitude would continue. The total overnight capacity of the wilderness in Segment 5 is currently 15 and would remain so. Encounter rates in Segment 5 are not well studied but these segments are less frequently visited than Segment 1.

Primitive. Under Alternative 3, there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Under Alternative 3, wilderness permit regulations would continue to affect the quality of unconfined recreation in Segment 5.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have no impact on the wilderness experience within Segment 5.

Summary of Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Under Alternative 3, the park would eliminate most of the facilities, infrastructure, and activities that affect wilderness character, reduce Little Yosemite Valley wilderness zone capacity by 50%, reduce stock use, and remove the Merced Lake High Sierra Camp, restore the area and designate it as wilderness while providing a temporary pack camp. Together, with implementation of mitigation measures MM-NOI-1 through MM-NOI-3 and MM-VEX-1 through MM-VEX-2, as applicable (see Appendix C), these actions would have a local, long-term, moderate, beneficial impact on wilderness character in Segment 1. Alternative 3 would have no impact on Segment 5.

Cumulative Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of the actions under Alternative 3. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or within the study area in Alternative 3.

Past Actions

The 1980 *Yosemite General Management Plan* is the basic document for management of Yosemite National Park. The *Merced River Plan/EIS* would amend the *Yosemite General Management Plan* to meet the mandates of the Wild and Scenic Rivers Act.

The 1989 *Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite's wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on wilderness character include the following:

- The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component.
- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next 5 to 10 years.

Reasonably Foreseeable Future Actions

The following reasonably foreseeable future action is anticipated to have a net beneficial effect:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite. The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.

Overall Cumulative Impact from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

The cumulative impact of the wilderness management measures outlined for Alternative 3 in conjunction with past, present, and reasonably foreseeable future projects would be segmentwide (in Segments 1 and 5), long term, moderate, and beneficial. Management measures for the Yosemite wilderness in Alternative 3 would improve the untrammelled, natural, and undeveloped wilderness qualities by removing the Merced Lake High Sierra Camp and infrastructure, converting designated camping areas

to dispersed camping, reducing infrastructure, and reducing stock use. Reducing the number of wilderness visitors increases opportunities for solitude. Planned present and future actions would improve wilderness stewardship and limit access to protect wilderness character.

Environmental Consequences of Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Segment 1: Merced River Above Nevada Fall

Biological resource actions under Alternative 4 include:

- Remove the Merced Lake East Meadow from grazing permanently. Require all administrative pack stock passing through the Merced Lake area to carry pellet feed.

This action would have no impact on the untrammled, undeveloped, primitive, or unconfined qualities of the wilderness experience. In general, the presence of cattle is not in keeping with the natural quality of the wilderness. Removal of grazing on Merced Lake East Meadow would benefit the natural quality of the meadow. However, stock will still be present on the trails and in the vicinity of Merced Lake and would continue to have an effect on these less fragile parts of the ecosystem. This action would have a local, minor, long-term adverse impact on the natural quality of the wilderness in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 4, a number of actions are proposed to manage visitor use and facilities including:

- Decrease the designated camping area at Little Yosemite Valley; retain composting toilet.
- Expand Merced Lake Backpackers Camping Area, which is designated camping, into the area of former Merced Lake High Sierra Camp; replace flush toilets with composting toilet and remove waste-water system.
- Close Merced Lake High Sierra Camp and restore the area to natural conditions. Area would be converted to designated Wilderness.
- Continue designated camping at Moraine Dome.
- Manage to a capacity of 100 in the Little Yosemite Valley Zone using a zone quota or zone pass through system. All other zone capacities within the Merced WSR Corridor remain the same.
- Permits required for private boating. Private use limited to 5 boats per day with backcountry permit.

Impacts of these actions on wilderness character include:

Untrammled. Under Alternative 4, restoration activities required at Merced Lake High Sierra Camp would have a long-term negligible adverse impact on the untrammled character of the wilderness due to the control and manipulation required to restore this area.

Undeveloped. Under Alternative 4, the permanent and semi-permanent improvements in Segment 1, including the concrete foundations and permanent structures at Merced Lake High Sierra Camp, would be removed. Some of the designated campsites and all permanent infrastructure at Little Yosemite Valley camping area would be removed. These actions would improve the undeveloped quality of the wilderness in Segment 1.

Natural. Under Alternative 4, the removal of facilities and infrastructure at Merced Lake High Sierra Camp, a small decrease in designated camping, and the reduced number of visitors would improve the natural character of Segment 1. The retention of most designated camping areas would have more concentrated human impacts than Alternatives 2 and 3. However, retaining composting toilets would be beneficial to the natural quality of the wilderness. Under Alternative 4, concessioner stock use would be eliminated due to the removal of the Merced Lake High Sierra Camp. Administrative trail crew stock use would be significantly reduced as trails would require less frequent maintenance due to the removal of the High Sierra Camp. The reduction in stock use would improve the natural character of the wilderness due to reduced introduction of non-native species by stock and reduction of meadow grazing which would improve the natural condition of the meadows. Wilderness patrols, permit requirements, and educational efforts designed to help visitors understand and protect natural resources by altering their behavior would also benefit the natural component of wilderness character.

Solitude. Under Alternative 4, the capacity of the Little Yosemite Valley zone would be reduced by 33%, from 150 to 100 visitors per day. This would improve the experience of solitude for wilderness visitors in Segment 1. However, because most of the designated camping areas are being retained, Alternative 4 would be less beneficial to wilderness solitude than Alternatives 2 and 3 due to the greater concentration of visitors in the designated camping areas.

Primitive. Under Alternative 4, many of the activities that detract from the primitive nature of the Yosemite Wilderness would be removed, including the Merced Lake High Sierra Camp and all its associated infrastructure. Alternative 4 retains most of the designated camping in this area with the exception of a reduction in designated camping at Little Yosemite Valley camping area. Designated camping is a less primitive experience than dispersed camping as the visitor can be less self-reliant. Composting toilets would be located at Little Yosemite Valley and Merced Lake camping areas. These would detract from the primitive wilderness experience but benefit the natural experience.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 4, the requirements set forth in the wilderness permits would reduce the ability to “recreate freely in the wilderness” and have a negligible adverse effect on the quality of unconfined recreation. Day hikers not going to Half Dome do not need a permit and would continue to have the greatest opportunity for unconfined recreation.

Segment 1 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, moderate, beneficial impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5.

Solitude. Under Alternative 4, a wide range of opportunities for solitude would continue. The total overnight capacity of Segment 5 would continue to be regulated by the wilderness zone system with a capacity of 15 people in Segment 5. Encounter rates in Segment 5 are not well studied but this segment is less frequently visited than Segment 1.

Primitive. Under Alternative 4, there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Under Alternative 4, wilderness permit regulations would continue to affect the quality of unconfined recreation in Segment 5.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have no impact on the wilderness experience within Segment 5.

Summary of Impacts from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Under Alternative 4, the park would eliminate most of the facilities, infrastructure, and activities that affect wilderness character, reduce by 33% the capacity of the Little Yosemite Valley zone, and remove all infrastructure and facilities at Merced Lake High Sierra camp restore the area and designate it as wilderness. Together, with implementation of mitigation measures MM-NOI-1 through MM-NOI-3 and MM-VEX-1 through MM-VEX-2, as applicable (see Appendix C), these actions would have a segmentwide, long-term, moderate, beneficial impact on wilderness character in Segment 1. Alternative 4 would have no impact on Segment 5.

Cumulative Impact from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of the actions under Alternative 4. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or the study area.

Past Actions

The 1980 *Yosemite General Management Plan* is the basic document for management of Yosemite National Park. The *Merced River Plan/EIS* would amend the *Yosemite General Management Plan* to meet the mandates of the WSRA.

The 1989 *Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite's wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on wilderness character include the following:

- The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component.
- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next 5 to 10 years.

Reasonably Foreseeable Future Actions

The following reasonably foreseeable future action is anticipated to have a net beneficial effect:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite. The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.

Overall Cumulative Impact from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

The cumulative impact of the wilderness management measures under Alternative 4 in conjunction with past, present, and reasonably foreseeable future projects would be segmentwide (in Segments 1 and 5), long term, moderate, and beneficial. Management measures for the wilderness in Alternative 4 would improve the natural, and undeveloped wilderness qualities by removing and restoring the Merced Lake High Sierra Camp. The number of wilderness visitors would be reduced, which increases

opportunities for solitude. Planned present and future actions would improve wilderness stewardship and limit access to protect wilderness character.

Environmental Consequences of Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Biological resource actions under Alternative 5 include:

- Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.

This action would have no impact on the untrammelled, undeveloped, primitive, or unconfined qualities of the wilderness experience. Initially this action would have the same impact on the natural quality of the wilderness as Alternative 2 – grazing would be removed from the meadow but the cattle would continue to be present in the same numbers on the trails and elsewhere in the Merced Lake area. Generally, the presence of cattle detracts from the natural quality of the wilderness. Allowing the meadow to recover and then monitoring and adapting grazing levels could potentially reduce the number of cattle in the wilderness and have a local, minor, long-term adverse impact on the natural quality of the wilderness in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 5, actions to manage visitor use and facilities include:

- Continue designated camping at Little Yosemite Valley camping area. Retain infrastructure, such as composting toilet.
- Retain location of the Merced Lake Backpackers Camping Area as a designated camping area. Replace flush toilets with composting toilet.
- Retain the Merced Lake High Sierra Camp, reducing the capacity to 11 units (42 beds). Replace the flush toilets with composting toilet.
- Continue designated camping at Moraine Dome.
- All zone capacities within the Merced WSR Corridor remain the same.
- Private use limited to 10 boats per day with backcountry permit

Impacts of these actions on wilderness character include:

Untrammeled. Under Alternative 5, the minor restoration activities due to the reduction in the size of Merced Lake High Sierra Camp would have a long-term negligible impact on the untrammeled character of the wilderness due to the control and manipulation required to restore this area.

Natural. Under Alternative 5, the natural character of Segment 1 would be similar to that in Alternative 1 (No Action) due to the retention of most of the manmade facilities in Segment 1.

Undeveloped. Under Alternative 5, Merced Lake High Sierra Camp would experience a reduction in the number of beds, from 60 to 42 beds. This could result in removal of approximately four cabins. The amount of needed infrastructure, food, and supplies would also be reduced, thus lessening the number of trips required to stock the camp. Presumably, the footprint of the camp could be reduced and part of the area restored. Retention of the Merced Lake High Sierra Camp would prevent this area from receiving a wilderness designation. This alternative would also require retention of the existing wastewater facilities to support showers and dishwashing. Alternative 5 also retains designated camping and infrastructure at the Little Yosemite Valley and Merced Lake camping areas. Designated camping and infrastructure are generally present in more developed areas. Despite some improvements, Alternative 5 does not improve the overall undeveloped quality of the wilderness in Segment 1.

Solitude. Under Alternative 5, the capacity of the Little Yosemite Valley wilderness zone would remain at the current level of 150 visitors per day; designated camping would remain in all three camping areas; and the High Sierra Camp would only be reduced by 18 beds. Opportunities for solitude would not noticeably improve in Segment 1.

Primitive. Under Alternative 5, some of the activities that detract from the primitive nature of the wilderness would be reduced but not eliminated. The number of beds at Merced Lake High Sierra Camp would be reduced from 60 to 42 and flush toilets at the camp replaced with composting toilets. Wastewater facilities would remain to support showers and dishwashing. Designated camping would be retained at the three designated camping areas in Segment 1 which would result in a less primitive experience than dispersed camping. Alternative 5 would not noticeably improve the primitive quality of Segment 1.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 5, the requirements set forth in the wilderness permits would reduce the ability to “recreate freely in the wilderness” and have a negligible adverse effect on the quality of unconfined recreation. Day hikers not going to Half Dome do not need a permit and would continue to have the greatest opportunity for unconfined recreation.

Segment 1 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, negligible to minor, beneficial impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5.

Solitude. Under Alternative 5 a wide range of opportunities for solitude would continue. The total overnight capacity of Segment 5 would continue to be regulated by the wilderness zone system with a capacity of 15 people in Segment 5. Encounter rates in Segment 5 are not well studied but this segment is less frequently visited than Segment 1.

Primitive. Under Alternative 5, there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Under Alternative 5, wilderness permit regulations would continue to affect the quality of unconfined recreation in Segment 5.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have no impact on the wilderness experience within Segment 5.

Summary of Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Compared with Alternative 1 (No Action), Alternative 5 would include actions that together with implementation of mitigation measures MM-NOI-1 through MM-NOI-3 and MM-VEX-1 through MM-VEX-2, as applicable (see Appendix C), would have a local, long-term, negligible to minor, beneficial impact on the natural, and undeveloped character of the wilderness and opportunities for wilderness solitude and primitive recreation in Segment 1. Alternative 5 actions in Segment 1 would retain all three designated camping areas at their current size and configuration, and reduce the capacity of the Merced Lake High Sierra Camp by 18 beds. Stock use in the wilderness would be retained to serve the High Sierra Camp and maintain the trails, and the capacity of the Little Yosemite Valley zone would remain at 150 visitors per day, thus maintaining current trail quotas for this zone. Under Alternative 5, no actions would affect Segment 5.

Cumulative Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of the actions in Alternative 5. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or in the study area.

Past Actions

The 1980 *Yosemite General Management Plan* is the basic document for management of Yosemite. The Merced River Plan/EIS would amend the *Yosemite General Management Plan* to meet the mandates of the WSRA.

The 1989 *Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite's wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on the wilderness character include the following:

- The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in addressing its Merced River corridor component.
- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next 5 to 10 years.

Reasonably Foreseeable Future Actions and Conditions

Reasonably foreseeable future actions proposed in the Yosemite region that could have a cumulative beneficial effect on wilderness character are described below:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed; soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite. The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.
- The Clean Water Act and Health and Food Safety Code regulatory updates could result in required upgrades and improvements to wilderness water and wastewater treatment facilities.

Overall Cumulative Impact from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

The cumulative impact of the wilderness management measures under Alternative 5, in conjunction with past, present, and reasonably foreseeable future projects, would be segmentwide (in Segments 1 and 5), long term, negligible to minor, and beneficial. Management measures for the wilderness under Alternative 5 include reducing the Merced Lake High Sierra Camp capacity while maintaining the three existing Segment 1 designated camping areas, stock use, and the current wilderness quotas. Planned present and future actions would improve wilderness stewardship and limit access to protect wilderness character.

Environmental Consequences of Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Segment 1: Merced River Above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Biological resource actions under Alternative 6 include:

- Develop preliminary grazing capacities for the Merced Lake East Meadow. When the meadow recovers, allow administrative grazing at established capacities. Monitor annually for five years, adapting use levels as needed.

This action would have no impact on the untrammelled, undeveloped, primitive, or unconfined qualities of the wilderness experience. Initially this action would have the same impact on the natural quality of the wilderness as Alternative 2 – grazing would be removed from the meadow but the cattle would continue to be present in the same numbers on the trails and elsewhere in the Merced Lake area. Generally, the presence of cattle detracts from the natural quality of the wilderness. Allowing the meadow to recover and then monitoring and adapting grazing levels could potentially reduce the number of cattle in the wilderness and have a local, minor, long-term adverse impact on the natural quality of the wilderness in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 6, actions to manage visitor use and facilities are similar to Alternative 1 (No Action) and include:

- Continue designated camping at Little Yosemite Valley camping area. Retain infrastructure, such as composting toilet.
- Retain location of the Merced Lake Backpackers Camping Area as a designated camping area. Replace flush toilets with composting toilet.
- Retain the Merced Lake High Sierra Camp, keeping 22 units (60 beds). Replace the flush toilets with composting toilet.

- Continue designated camping at Moraine Dome.
- All zone capacities within the Merced WSR Corridor remain the same.
- Private use limited to 10 boats per day with backcountry permit

Impacts of these actions on wilderness character include:

Untrammelled. Under Alternative 6, the effects on the untrammelled quality of Segment 1 are similar to Alternative 1 (No Action).

Natural. Under Alternative 6, the natural character of Segment 1 would be similar to that in Alternative 1 (No Action) due to the retention of all of the manmade facilities in Segment 1. There would be no improvement to the natural character of the wilderness in Segment 1 under Alternative 6.

Undeveloped. The effects of Alternative 6 on the undeveloped quality of the wilderness are similar to Alternative 1 (No Action). All of the existing facilities, infrastructure, and designated camping areas would be retained resulting in a level of development very similar to what exists today. Wastewater facilities would need to be retained at the High Sierra Camp in order to support showers and dishwashing. The same amount of use of machinery and equipment would be necessary. Retention of the Merced Lake High Sierra Camp would prevent this area from receiving a wilderness designation. Alternative 6 would not improve the undeveloped character of the wilderness in Segment 1.

Solitude. Under Alternative 6, the capacity of the Little Yosemite Valley wilderness zone would remain at the current level of 150 overnight visitors per day and all designated camping areas would remain. Under Alternative 6, opportunities for solitude would not improve in Segment 1.

Primitive. Under Alternative 6, the primitive nature of Segment 1 would be similar to Alternative 1 (No Action). Retention of the Merced Lake High Sierra Camp, infrastructure, and designated camping areas all detract from the primitive character of the wilderness in Segment 1.

Unconfined Recreation. Unconfined recreation is affected by management restrictions placed on visitors once they are inside the wilderness. Under Alternative 6, the requirements set forth in the wilderness permits would reduce the ability to “recreate freely in the wilderness” and have a negligible adverse effect on the quality of unconfined recreation. Day hikers not going to Half Dome do not need a permit and would continue to have the greatest opportunity for unconfined recreation.

Segment 1 Impact Summary: Actions to manage user capacities, land use, and facilities would have local, long-term, negligible, beneficial impacts on wilderness experience within Segment 1.

Segment 5: South Fork Merced River Above Wawona

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Undeveloped. There are no developed facilities in Segment 5.

Solitude. Under Alternative 6, a wide range of opportunities for solitude would continue. The total overnight capacity of the Segment 5 wilderness is currently 15 and would remain so. Encounter rates in Segment 5 are not well studied but this segment is less frequently visited than Segment 1.

Primitive. Under Alternative 6, there would be no developed facilities in Segment 5; thus, experiences in this segment would remain primitive in nature and exhibit simplicity, self-reliance, and a lack of technology.

Unconfined Recreation. Under Alternative 6, wilderness permit regulations would continue to affect the quality of unconfined recreation in Segment 5.

Segment 5 Impact Summary: Actions to manage user capacities, land use, and facilities would have no impact on the wilderness experience within Segment 5.

Summary of Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Under Alternative 6, the wilderness character would remain much the same as it is today. The Merced Lake High Sierra Camp, designated camping areas and supporting infrastructure would be similar to today. The Little Yosemite Valley wilderness zone capacity would remain the same as under Alternative 1 (No Action), and pack stock would continue to access the wilderness. Therefore, Alternative 6 would improve wilderness character slightly but not to the extent it would be improved with Alternatives 2 and 3. Alternative 6 with implementation of mitigation measures MM-NOI-1 through MM-NOI-3 and MM-VEX-1 through MM-VEX-2, as applicable (see Appendix C), would have a local, long-term, negligible, beneficial impact on wilderness character in Segment 1. Alternative 6 would not affect wilderness character in Segment 5.

Cumulative Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Cumulative effects on wilderness character are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in combination with potential effects of Alternative 6. The projects identified below include only those projects that could affect wilderness character within the Merced River corridor or in the study area.

Past Actions

The 1980 *Yosemite General Management Plan* is the basic document for management of Yosemite National Park. The *Merced River Plan/EIS* would amend the *Yosemite General Management Plan* to meet the mandates of the WSRA.

The 1989 *Yosemite National Park Wilderness Management Plan* establishes management direction for Yosemite's wilderness areas and includes a trailhead quota system for overnight visitors and a Wilderness Impacts Monitoring System (WIMS) to track and address use-related impacts in wilderness areas.

Present Actions

Projects currently underway that may have an effect on wilderness character include the following:

- The *Yosemite Wilderness Stewardship Plan/EIS* will use direction from the Merced River Plan in developing its Merced River corridor component. It may prescribe actions that are more restrictive than the Merced River Plan in order to preserve wilderness character. The Wilderness Stewardship Plan cannot prescribe actions that are less restrictive than the Merced River Plan or the actions may fail to protect river values.
- The Half Dome Interim Permit Program: 2010-2012 manages access to Half Dome to a target of 400 people per day. This permit system is considered the minimum required action to protect and enhance all aspects of wilderness character, particularly opportunities for solitude. The purpose and need for this project was to protect and enhance wilderness character, address safety and risk management concerns, and bring the Half Dome trail corridor into compliance with the Wilderness Act.
- The *Half Dome Trail Stewardship Plan* addresses wilderness character on the Half Dome trail and may affect use patterns along trails between Happy Isles and Little Yosemite Valley.
- The Wilderness Restoration Program ecologically restores visitor use impacts to protect and enhance the natural condition and wilderness character.
- The *Yosemite Long-Range Interpretive Plan* outlines a comprehensive approach to interpreting park natural and cultural resources and will guide interpretive and educational efforts for the next five to 10 years.

Reasonably Foreseeable Future Actions and Conditions

Reasonably foreseeable future actions proposed in the region that could have a cumulative beneficial effect on wilderness character include:

- The *Yosemite Wilderness Stewardship Plan/EIS* will address land stewardship issues within the Yosemite Wilderness, including visitor use; vegetation associations; air resources; noise issues; watershed, soils; cultural landscapes; and other natural, cultural, and social resource variables. The plan update will also address the use of the five High Sierra Camps in Yosemite.
- Clean Water Act and Health and Food Safety Code regulatory updates could result in required upgrades and improvements to wilderness water and wastewater treatment facilities.

Overall Cumulative Impact from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

The cumulative impact of the wilderness management measures under Alternative 6, in conjunction with past, present, and reasonably foreseeable future projects, would be segmentwise (in Segments 1 and 5), long term, negligible, and beneficial. Management measures for the Wilderness in Alternative 6 would be similar to those that exist currently. The Merced Lake High Sierra Camp, stock use, designated camping areas, and wilderness quotas would not change. Planned present and future actions would improve wilderness stewardship and limit access to protect wilderness character.