

# The Alternatives for Muir Woods National Monument

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## NO-ACTION ALTERNATIVE

### OVERVIEW

Under the no-action alternative, Muir Woods National Monument would continue to be managed to protect the primeval redwood forest in the larger Redwood Creek watershed, and to interpret the monument's natural history, as well as the establishment of the monument, which had a major role in the early American conservation movement.

Muir Woods National Monument would remain a popular international destination and ecological treasure. With trees over 1,000 years old, it preserves a small yet towering vestige of the vast forests of *Sequoia sempervirens* that once graced the slopes and valleys surrounding San Francisco Bay. The monument also supports a diversity of flora and fauna.

The park staff would continue to balance preservation of the redwood ecosystem with providing access to hundreds of thousands of visitors annually. For many visitors, Muir Woods would continue to provide their initial experience with the national park system. Key park objectives would include fostering a conservation ethic among visitors, preserving and restoring habitat for threatened and endangered species, preserving cultural resources such as the Dipsea Trail, supporting public transportation as a way to reduce congestion, and promoting a watershed perspective in land management that includes Mount Tamalpais State Park, two water districts, an organic farm, equestrian stables, and local communities. These are objectives for the entire watershed as well. Overall management of the monument would continue to be guided by the 1980 general management plan.

### ARRIVAL

Today, most visitors arrive by personal vehicles and commercial tour buses. Since 2005, a pilot shuttle service has been used during the summer to help reduce traffic congestion. In the no-action alternative, parking areas would continue to be provided adjacent to Redwood Creek and very near the main concentration of redwoods.

The entrance area would continue to be located at the edge of the redwood forest adjacent to Redwood Creek. It includes a parking area, restrooms, and a small visitor information station with a bookstore and fee collection booth. This area is a hub of activity with a mix of pedestrians, automobiles, and buses. Additional parking areas would continue to exist farther down along Redwood Creek and would continue to be used during periods of peak demand. Maintenance and some other operational functions would continue to be located in the Old Inn on the east side of Muir Woods Road.

## **REDWOOD FOREST AND REDWOOD CREEK**

The main trail system would continue to exist as a series of loops running along Redwood Creek, crossing the creek four times on footbridges. Visitors would continue to have opportunities to stroll among the groves of ancient redwoods. A variety of interpretive waysides and scheduled interpretive programs would continue in order to support the visitor's discovery of the monument's resources. Intersecting with the main trail are other trails that would provide visitors with extended hiking opportunities to adjacent public lands. The Administration-Concession Building would continue to provide food, retail services, restrooms, and park offices. The current use of the nearby historic Superintendent's Residence and associated structures would remain.

Since the monument was established, the National Park Service has increased its understanding of a healthy redwood forest ecosystem. Past practices of allowing visitors to drive, picnic, and camp within the forest have been phased out. Natural fires have been suppressed throughout most of the 20th century, but have been slowly reintroduced through the use of prescribed burns to restore more natural conditions, reduce fuel loading, and to enhance the health of the ecosystem. This land management practice would continue. In the 1930s, the Civilian Conservation Corps lined portions of Redwood Creek with rocks as a means to stabilize and contain the flow of water within the existing channel. These actions may have protected selected redwood trees on the banks, but have also eliminated the natural meandering of the creek across a wider floodplain, constraining its role in sustaining a healthy ecosystem.

## **MUIR WOODS ADDITION (ALSO KNOWN AS CAMINO DEL CANYON, CONLON AVENUE, AND DRUID HEIGHTS)**

Over time, additional tracts of land have been acquired to support the administrative functions and visitor use of the monument. Properties in the area referred to as the Muir Woods Addition were acquired by the National Park Service between 1974 and 1984. These properties include the rustic buildings of historic Camp Hillwood (located up Conlon Avenue), Druid Heights (located at the end of Camino del Canyon), and other structures.

Some structures are used for park operations and a native plants nursery, while others are under special use permits, reservation of use and occupancy, or have been vacated and are scheduled for removal. These uses and planned actions would continue under the no-action alternative. The valuable wildlife habitat in this area, including habitat for northern spotted owl and salmonids, would continue to be protected.

## **COST ESTIMATES**

Cost estimates for the no-action alternative are identified in the table below. The costs shown here are not for budgetary purposes; they are only intended to show a relative comparison of costs among the alternatives.

The alternatives describe the maximum potential capital improvements; lesser improvements may be implemented, or built in phases if necessary. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved general management plan could be many years in the future. Additionally, some of the future long-term funding needed to implement the various actions called for in the alternatives is anticipated to come from nonfederal partners, consistent with the park’s current practices.

### Annual Operating Costs

The annual NPS portion of the Muir Woods National Monument shuttle cost is \$340,000. Shuttle costs have been shared with local transportation agencies as a joint solution to alleviating traffic congestion on the State Route 1 corridor.

Operating costs and staff numbers for Muir Woods National Monument are included in the table titled Summary of Costs Associated with the Implementation of the Alternatives for Park Lands in Marin, San Francisco, and San Mateo Counties.

### One-time Costs

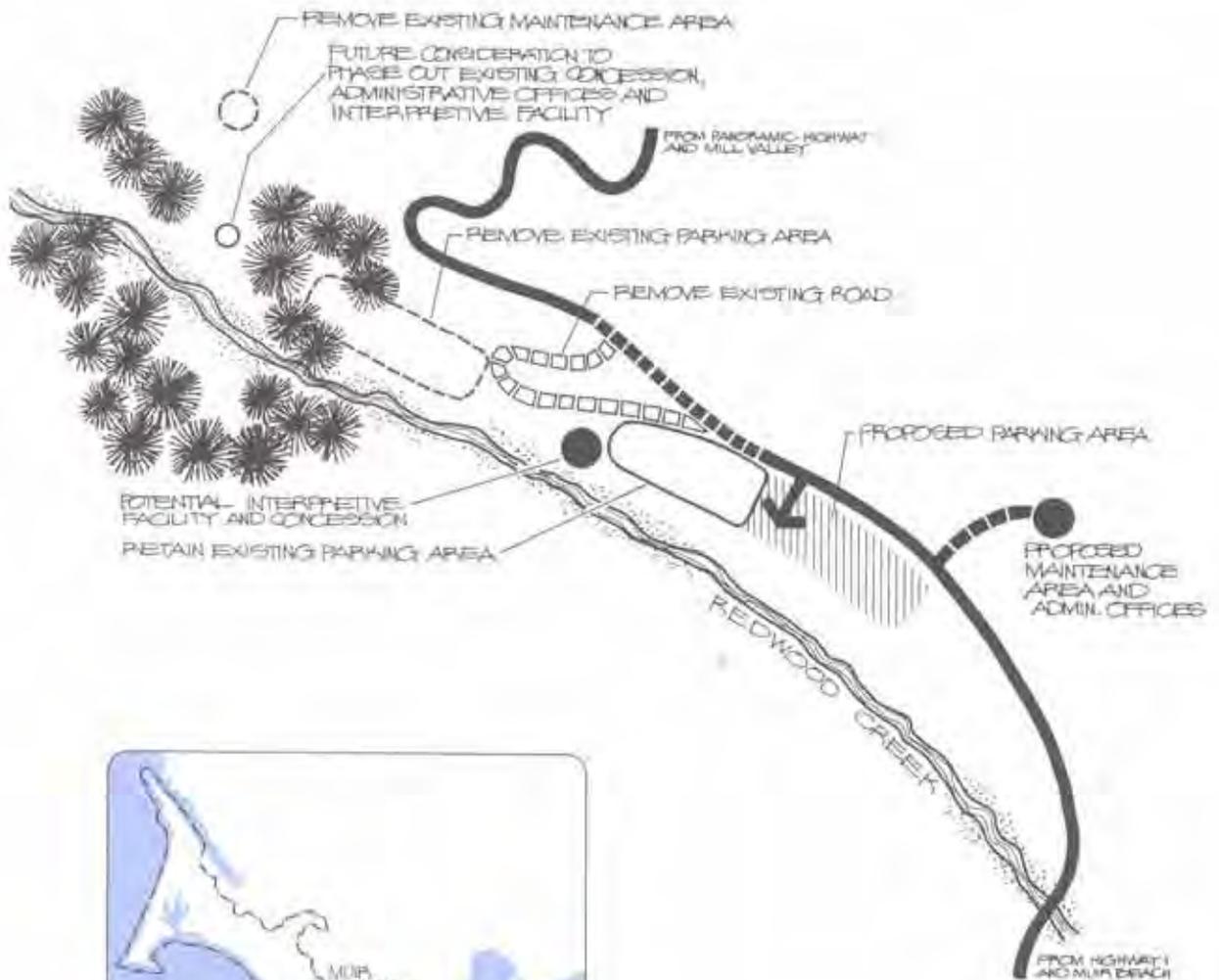
The estimated costs of the no-action alternative reflect the continuation of current management. One-time costs for the no-action alternative are the costs for those projects that are currently approved and funded—any requested but unfunded projects are not considered in this analysis. Therefore, while the action alternatives contain estimates for 20 years of proposed projects, the no-action alternative assumes no new projects would take place except those projects funded in 2009. Examples of currently funded projects include remodeling of the concession facilities, cyclic maintenance, and management of the fee collection program. Total funded one-time costs are \$920,000.

**Table 21: Costs for the No-action Alternative for Muir Woods National Monument**

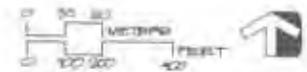
<b>SUMMARY OF COSTS FOR THE NO-ACTION ALTERNATIVE</b>	
<b>Annual Operational Costs</b>	
<b>Shuttle Operations</b>	<b>\$ 340,000</b>
<b>One-time Capital Costs</b>	
<b>Total</b>	<b>\$ 920,000</b>

PART 6: THE ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT

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DOC | MAP 79



UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

**1980 General Management Plan  
Muir Woods National Monument  
No-Action Alternative**

# MUIR WOODS

**DEVELOPMENT CONCEPT  
GOLDEN GATE NATIONAL RECREATION AREA  
POINT REYES NATIONAL SEASHORE**



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# **ALTERNATIVE 1: CONNECTING PEOPLE WITH THE PARKS**

## **OVERVIEW**

In this alternative, the park would offer visitors the opportunity to experience and enjoy the primeval forest ecosystem and understand the monument's place in American conservation history through a variety of enhanced programs, facilities, and trails that access the forest and connect local communities to the park and surrounding open space.

While retaining much of the present system of trails through the forest, some existing facilities and use areas, such as the entrance area and parking lots, would be modified or relocated to reduce their impacts on the ecosystem and improve the park experience.

The monument would continue to welcome a diversity of visitors and support a range of experiences, better serving as a gateway or stepping stone to understanding the national park system.

An offsite welcome center for the shuttle system, with parking and visitor services, would be an important first point for orientation and key to providing sustainable access to the monument.

Collaboration with other public land managers would continue to address watershed restoration and stewardship.

## **ARRIVAL**

### **Offsite Welcome Center**

To enhance the visitor experience and address congestion problems, permanent shuttle service to Muir Woods National Monument would be provided during peak periods throughout the year, supported by a new welcome center in the vicinity of State Route 1 and Highway 101, created in collaboration with Marin County, California State Parks, and Caltrans. Shuttles would travel a distance of about six miles to the monument. Express transit service from downtown San Francisco and improved connections with the regional ferry services would also be pursued. The welcome facility would provide necessary visitor services that could include parking, sheltered waiting areas, restrooms, and orientation to the monument and other regional park destinations. The facility would also connect visitors to other regional and local transportation systems.

### **Diverse Opportunities Zone**

The monument's existing entry area would be redesigned to enhance the visitor's arrival experience, protect resources, and improve safety. Parking at the monument would be reconfigured or relocated using sustainable design practices to reduce impacts to the creek and other sensitive resources. Capacity would meet demand during off-peak periods. Pedestrian access would be improved to offer visitors a more natural experience transitioning into the redwood forest separated from roads and parking.

A modest facility would be provided to receive visitors arriving by different modes of transportation. The services provided could include shuttle dropoff, sheltered waiting areas, orientation, restrooms, food service, and a bookstore. The existing separate structures for fee collection, a bookstore, and restrooms could be replaced as part of the new facility. The goal of the design process would be to accommodate visitor's needs while simultaneously minimizing the overall footprint of development within the old growth forest.

Future use or removal of the Old Inn would be determined through more detailed site planning that would consider its utility for visitor services or operational needs in the redesigned entry area. To allow visitor parking to be reconfigured, the native plant nursery would be relocated to Lower Redwood Creek as part of a stewardship center. Realignment of portions of county-maintained Muir Woods Road would also be explored to improve operational safety and visitor access.

In order to improve pedestrian safety and protect Redwood Creek, the park would collaborate with Marin County to restrict shoulder parking along Muir Woods Road in non-trailhead areas as alternative transportation becomes more readily available.

## **REDWOOD FOREST AND REDWOOD CREEK**

**Scenic Corridor Zone** (Redwood Creek corridor including the existing wooden arch, several existing buildings, and the main loop trails)

This area would be managed to provide a national park experience within the primeval redwood forest setting. The Administration-Concession Building would transition to support stewardship, interpretive, and educational activities, providing a flexible classroom and program space in the woods. Experiences would immerse visitors in nature (the sights, sounds, smells of the forest) where quiet would be encouraged. Improved accessibility would ensure that all visitors could have these experiences. New restrooms and drinking water would be provided near Bridge 4 to protect resources and enhance visitor comfort.

The historic Superintendent's Residence and nearby structures would be used for administrative purposes. Other structures needed to support visitor uses or park operations would be rehabilitated. Nonhistoric or nonessential structures would be removed.

**Natural Zone** (all areas beyond the Redwood Creek corridor)

The majority of the monument would be managed to preserve and restore natural systems and contribute to the primeval forest setting. Visitors within this zone would have opportunities for self-discovery and challenge on trails in a more dispersed and wild park setting.

To provide a diverse continuum of experiences, visitors would be introduced to ways of accessing the adjacent landscapes and the recreational opportunities of Mount Tamalpais State Park, Marin Municipal Water District, and Golden Gate National Recreation Area. The Ben Johnson, Fern Creek, Redwood Creek, and Dipsea trails would provide access to a variety of day and overnight recreational experiences.

## **MUIR WOODS ADDITION (ALSO KNOWN AS CAMINO DEL CANYON, CONLON AVENUE, AND DRUID HEIGHTS)**

### **Diverse Opportunities Zone** (Conlon Avenue)

Camp Hillwood and its immediate surroundings would be adaptively used for day use or overnight educational opportunities. The historic values of the camp would be preserved while the facilities would be adapted to contemporary uses.

All existing operational functions within this zone (maintenance and native plants nursery) would be relocated to the Lower Redwood Creek site (former Banducci flower farm) or in potential shared facilities with Mount Tamalpais State Park nearby at Kent Canyon.

### **Natural Zone** (other areas in Camino del Canyon and Druid Heights)

The majority of the area would be managed to preserve the natural environment. The landscape and streams would be restored to an intact habitat. All nonhistoric structures would be removed and Camino del Canyon Road would be downgraded to a trail.

## **KENT CANYON, MOUNT TAMALPAIS STATE PARK**

The park would work with California State Parks to achieve common objectives for this area. Collaboration would focus on maintenance, parking, and trails. Most maintenance functions in the monument would be relocated to facilities potentially shared with Mount Tamalpais State Park.

## **COST ESTIMATES**

Cost estimates for alternative 1 are identified in the table below. The costs shown here are not for budgetary purposes; they are only intended to show a relative comparison of costs among the alternatives.

The alternatives describe the maximum potential capital improvements; lesser improvements may be implemented, or built in phases if necessary. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved general management plan could be many years in the future. Additionally, some of the future long-term funding needed to implement the various actions called for in the alternatives is anticipated to come from nonfederal partners, consistent with the park's current practices.

### **Annual Operating Costs**

The annual cost to operate the shuttle during peak periods is estimated to range from \$600,000 to \$1,400,000. This is the full cost to operate the shuttle, although historically,

shuttle operation costs have been shared with local transportation agencies as a joint solution to alleviating traffic congestion on the State Route 1 corridor.

**One-time Costs**

This alternative proposes a variety of enhanced programs, facilities, and trails to welcome a diversity of visitors and support a range of experiences. Many of the facilities would be relocated or modified to reduce impacts on the ecosystem and improve the park experience.

One-time costs of the alternative include a mix of projects including rehabilitation of historic structures, new construction, removal of non-historic facilities, and natural resource restoration. Total one-time costs are estimated at \$15.9 million.

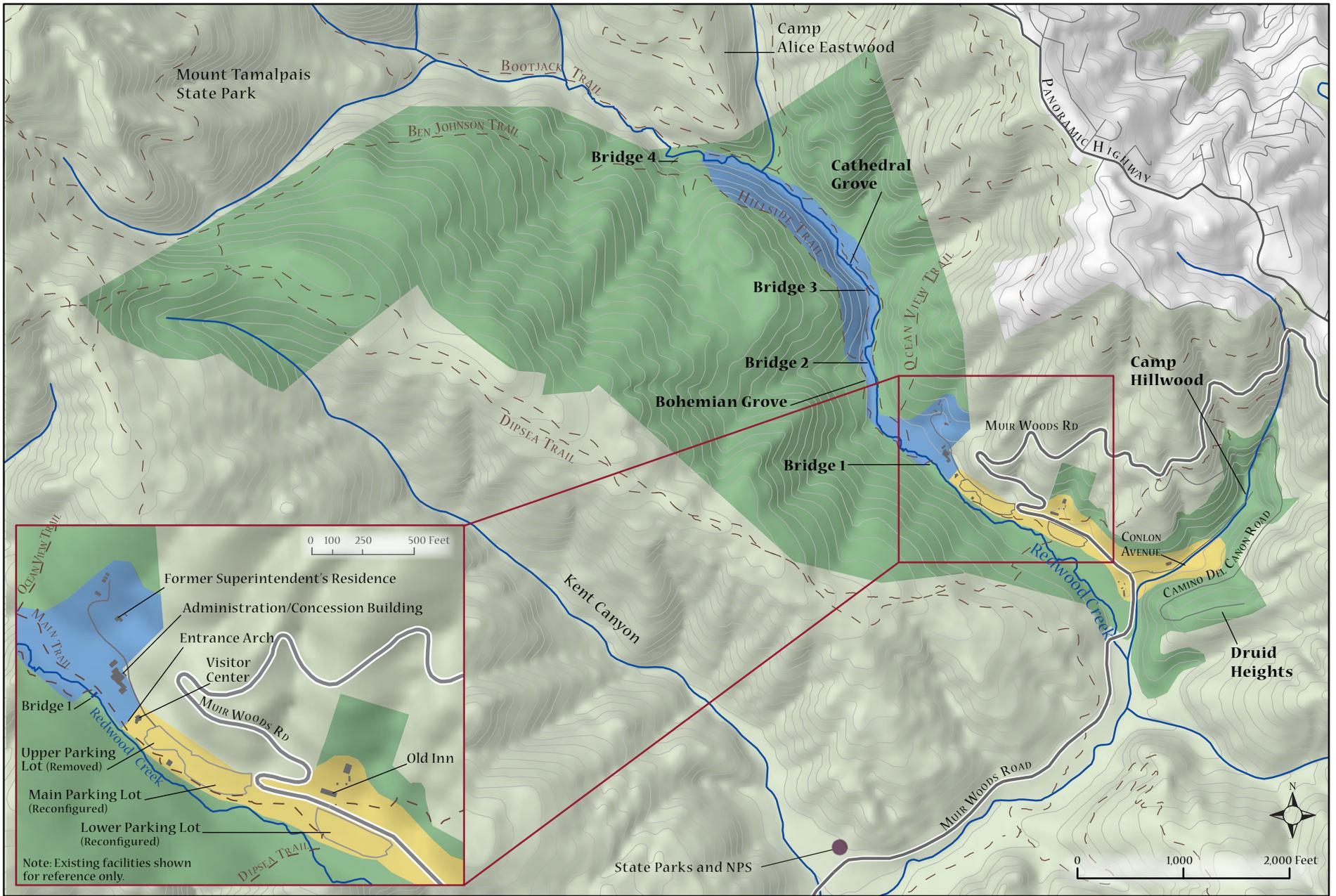
**Table 22: Costs for Alternative 1 for Muir Woods National Monument**

<b>SUMMARY OF COSTS FOR ALTERNATIVE 1</b>	
<b>Annual Operational Costs</b>	
Shuttle Operations	\$ 600,000 - 1,400,000
<b>One-time Capital Costs</b>	
<b>FACILITY REHABILITATION</b>	
Entrance area improvements	\$7,150,000
Entry drive and parking improvements	\$1,300,000
Trail system improvements	\$500,000
<b>HISTORIC PRESERVATION</b>	
Administration-Concessions building: rehabilitate for stewardship and education	\$500,000
Camp Hillwood rehabilitation	\$140,000
Former Superintendent's residence and adjacent structures: rehabilitation	\$420,000
<b>NATURAL RESOURCE RESTORATION</b>	
Muir Woods Addition	\$2,410,000
Within the Monument	\$120,000
<b>FACILITY REMOVAL</b>	
Structures in the Monument and other infrastructure	\$250,000
Nonhistoric structures in the Muir Woods Addition	\$470,000
<b>NEW CONSTRUCTION</b>	
Off-site welcome center	\$2,230,000

<b>SUMMARY OF COSTS FOR ALTERNATIVE 1</b>	
Bridge 4 amenities	\$410,000
<b>Total</b>	<b>\$15,900,000</b>

All costs in 2009 dollars

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**Management Zones**

- Diverse Opportunities
- Scenic Corridor
- Interpretive Corridor
- Evolved Cultural Landscape
- Historic Immersion
- Natural
- Sensitive Resources
- Park Operations

**Connecting People with the Parks**

**Alternative 1**

**Muir Woods National Monument**



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## **ALTERNATIVE 2: PRESERVING AND ENJOYING COASTAL ECOSYSTEMS**

### **OVERVIEW**

Muir Woods National Monument and the Redwood Creek watershed are part of the UNESCO Golden Gate Biosphere Reserve—one of the world’s richest reservoirs of plant and animal life. This alternative would seek to restore the primeval character of the old-growth redwood forest. Visitors would be immersed in the forest, and could experience the natural sounds, smells, light, and darkness of the forest.

The experience would be more primitive than it is today; the majority of the built environment—buildings, parking lots, paved trails—would be removed, and all visitors would arrive by shuttle, bicycle, or on foot. The landscape would be “messier” than it is today, but the forest would function more naturally: Redwood Creek would be allowed to meander across the floodplain, flooding the valley bottom, uprooting trees, and opening gaps in the canopy.

Where not in conflict with natural resource goals, historic trails and structures could be retained or adapted for contemporary uses. A light-on-the-land, accessible trail would reach into the heart of the forest. Visitors would engage in participatory stewardship, education, and science that further the preservation of the forest and all its parts—the creek, salmon, spotted owls, bats, natural sounds—as part of the continuing history and evolution of the land preservation and conservation movement.

An offsite welcome center for the shuttle system, with parking and visitor services, would be an important first point for orientation and a key to providing sustainable access to the monument.

Restoration of the Redwood Creek watershed would be accelerated in collaboration with other land managers. Actions would include the removal of unneeded management roads, stabilization of sediment sources, and removal of invasive vegetation, as well as removal of streambank stabilization structures in Redwood Creek, removal and possible relocation of some pedestrian bridges, and restoration of natural floodplain function.

### **ARRIVAL**

#### **Offsite Welcome Center**

This area would be the same as in alternatives 1 and 3, except that the shuttle service would run year-round. To the extent feasible, all visitors would come to Muir Woods National Monument either by shuttle service from the new welcome center, or under their own power.

**Park Operations Zone** (Old Inn area)

The Old Inn and adjacent areas would be used for administration and limited maintenance operations. Only a small parking area would be available for special needs. The park entrance would be relocated to the current lower parking lot and designed to accommodate a modest transit stop for the shuttle. It would also provide basic visitor services such as light snacks and restrooms.

**Sensitive Resources Zone** (along Redwood Creek)

The existing main entrance area, including the entire upper parking area, restrooms, and visitor center, as well as a major portion of the lower parking lot, would be removed to restore natural conditions, including seasonal flooding.

## **REDWOOD FOREST AND REDWOOD CREEK**

**Sensitive Resources Zone** (majority of the monument)

The old-growth redwood forest would be managed to achieve the highest level of natural resource integrity. The visitor experience would promote an intimate relationship with the natural resources of the primeval redwood forest. Visitor access would be highly controlled and limited to designated areas and activities. The visitor would have the opportunity to engage in participatory stewardship, and educational and science activities.

The natural conditions of the redwood forest and Redwood Creek would be restored and allowed to continue unimpeded. Floodplain processes and riparian habitat would be restored by removing, realigning, or redesigning trails, bridges, and other impediments to natural processes. Woody debris would accumulate in the creek and on the forest floor.

Visitor services in the forest would be relocated to the transit stop. In consultation with the state historic preservation office and other stakeholders, the existing buildings and other major infrastructure would be removed and the sites restored to their natural conditions. All buildings, except the Old Inn, would be removed, including the former Superintendent's Residence and the Administration-Concession Building.

The trail system would be redesigned to accommodate fewer visitors in a more intimate and appropriate setting. A simple accessible trail would reach into a portion of the old-growth forest. The existing main trail along the creek would be relocated out of the floodplain, and other trails and bridges could be removed, relocated, or redesigned to allow and promote natural processes. Paved surfaces would be removed.

The trail system throughout the monument would be designed to connect to other trails that would allow it to extend from the redwood forest to the ocean, highlighting the connection between the uplands and the ocean and the role that watershed restoration plays in maintaining healthy ecosystems. A reroute of the Redwood Creek crossing of the Dipsea Trail will be explored to find a more appropriate location with less impact to the natural functions of the creek; the rest of the Dipsea Trail would be maintained along its historic alignment.

## **MUIR WOODS ADDITION (ALSO KNOWN AS CAMINO DEL CANYON, CONLON AVENUE, AND DRUID HEIGHTS)**

### **Natural Zone**

The area would be managed to restore native habitat and natural processes with emphasis on removal of unneeded roads and development (including Druid Heights and Camp Hillwood), stabilization of sediment sources, re-establishment of natural drainage patterns, restoration of the tributary creek, and removal of invasive vegetation that has escaped from developed areas.

All existing operational functions within this zone (maintenance and native plants nursery) would be relocated to the Lower Redwood Creek site (former Banducci flower farm) or in potential shared facilities with Mount Tamalpais State Park nearby at Kent Canyon. Water and sewer systems could be relocated to appropriate sites using sustainable technologies and practices.

## **KENT CANYON, MOUNT TAMALPAIS STATE PARK**

The park would work with California State Parks to achieve common objectives for this area. Collaboration would focus on maintenance, parking, and trails. Most maintenance functions in the monument would be relocated to facilities potentially shared with Mount Tamalpais State Park.

## **COST ESTIMATES**

Cost estimates for alternative 2 are identified in the table below. The costs shown here are not for budgetary purposes; they are only intended to show a relative comparison of costs among the alternatives.

The alternatives describe the maximum potential capital improvements; lesser improvements may be implemented, or built in phases if necessary. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved general management plan could be many years in the future. Additionally, some of the future long-term funding needed to implement the various actions called for in the alternatives is anticipated to come from nonfederal partners, consistent with the park's current practices.

### **Annual Operating Costs**

The annual costs to operate the shuttle year-round are estimated to range from \$4,000,000 to \$9,500,000. This is the full cost to operate the shuttle, although historically, shuttle operation costs have been shared with local transportation agencies as a joint solution to alleviating traffic congestion on the State Route 1 corridor.

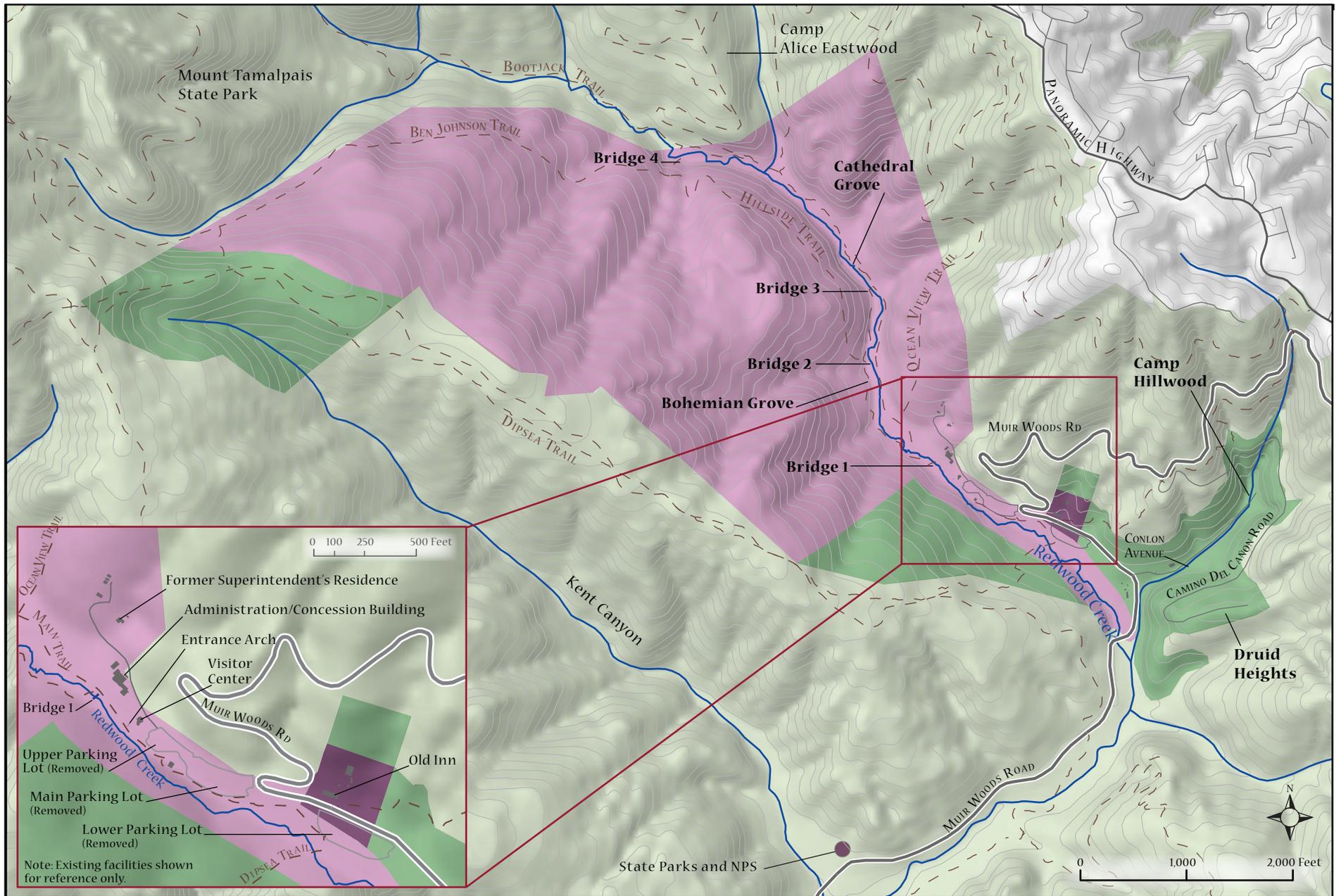
## One-time Costs

In order to achieve the goals of alternative 2, a large portion of the built environment would be removed from the redwood forest and addition lands; however, some trails and structures would be adapted for contemporary uses. Much of the cost of this alternative is attributable to the removal of facilities and infrastructure, new welcome centers, and landscape and natural resource restoration. Total one-time costs are estimated at \$16.9 million.

**Table 23: Costs for Alternative 2 for Muir Woods National Monument**

<b>SUMMARY OF COSTS FOR ALTERNATIVE 2</b>	
<b>Annual Operational Costs</b>	
Shuttle Operations	\$ 4,000,000 - 9,500,000
<b>One-time Capital Costs</b>	
<b>FACILITY REHABILITATION</b>	
Old Inn modifications	\$230,000
Entrance area improvements	\$300,000
Entry drive and parking improvements	\$570,000
Trail system improvements	\$190,000
<b>HISTORIC PRESERVATION</b>	
None	\$0
<b>NATURAL RESOURCE RESTORATION</b>	
Muir Woods Addition	\$2,470,000
Within the Monument	\$2,800,000
<b>FACILITY REMOVAL</b>	
Structures in the Monument and other infrastructure	\$4,490,000
Nonhistoric structures in the Muir Woods Addition	\$590,000
<b>NEW CONSTRUCTION</b>	
Off-site welcome center	\$5,230,000
<b>Total</b>	<b>\$16,870,000</b>

All costs in 2009 dollars



### Management Zones

- |  |   |
|--|---|
|  Diverse Opportunities      |  Historic Immersion  |
|  Scenic Corridor            |  Natural             |
|  Interpretive Corridor      |  Sensitive Resources |
|  Evolved Cultural Landscape |  Park Operations     |

## Preserving and Enjoying Coastal Ecosystems

### Alternative 2

### Muir Woods National Monument



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## **ALTERNATIVE 3: FOCUSING ON NATIONAL TREASURES THE PREFERRED ALTERNATIVE**

### **OVERVIEW**

Muir Woods National Monument is a window into the complex world of nature and conservation. This alternative would present the monument as a contemplative outdoor museum where visitors would discover the primeval redwood forest and the monument's place in the early United States conservation movement.

A system of trails would lead visitors into the forest to feel, see, and learn, in different ways, about the essential qualities of the forest. These include its giant trees, the ecology of Redwood Creek, and William Kent's generous donation of the forest to the American public. Rather than continue to concentrate visitation along a main trail, visitors would be encouraged to take different thematic interpretive trails, some new and some existing, to experience the different parts of the park. Other trails would link the monument with the surrounding Mount Tamalpais State Park.

Some existing facilities and use areas, such as the entrance area and parking lots, would be modified or relocated to reduce their impacts on the ecosystem and improve the park experience.

An offsite welcome center for the shuttle system, with parking and visitor services, would be an important first point for orientation and a key to providing sustainable access to the monument.

Visitors would continue to be drawn to the monument to see the trees, but they would leave with a richer understanding of this precious ecosystem and how the saving of these few acres helped spark conservation across the United States. They would be motivated to return and learn more of the story.

Building on the interagency *Redwood Creek Watershed: Vision for the Future* (2003), and a cooperative management agreement with California State Parks, the National Park Service would continue to collaborate with the public and other land managers to address watershed restoration, stewardship, and recreation.

### **ARRIVAL**

#### **Offsite Welcome Center**

To enhance the visitor experience and address congestion problems, permanent shuttle service to Muir Woods National Monument would be provided during peak periods throughout the year, supported by a new welcome center in the vicinity of the Caltrans Manzanita park-and-ride at State Route 1 and Highway 101, created in collaboration with Marin County, California state parks, and Caltrans. Shuttles would travel a distance of about six miles to the monument. Express transit service from downtown San Francisco and improved connections with the regional ferry services would also be pursued. The

welcome facility would provide necessary visitor services that could include parking, sheltered waiting areas, restrooms, and orientation to the monument and other regional park destinations. The facility would also connect visitors to other regional and local transportation systems.

### **Diverse Opportunities Zone**

The monument's existing entry area would be redesigned to enhance the visitor's arrival experience, protect resources, and improve safety. Parking at the monument would be reduced, reconfigured and relocated using sustainable design practices to better protect Redwood Creek and other sensitive resources. Removal of parking would primarily be along the shoulder of Muir Woods Road. Parking supply would continue to meet demand during off-peak periods. Pedestrian access would be improved to offer visitors a more natural experience transitioning into the redwood forest separated from roads and parking.

A modest facility would be provided to receive visitors arriving by different modes of transportation. The services provided could include shuttle dropoff, sheltered waiting areas, orientation, restrooms, food service, and a bookstore. The existing separate structures for fee collection, a bookstore, and restrooms could be replaced as part of the new facility. The goal of the design process would be to accommodate visitor's needs while simultaneously minimizing the overall footprint of development in the park.

Future use or removal of the Old Inn would be determined through more detailed site planning that would consider its utility for visitor services or operational needs in the redesigned entry area. To allow visitor parking to be reconfigured, the native plant nursery would be relocated to Lower Redwood Creek as part of a stewardship center. Realignment of portions of county-maintained Muir Woods Road would also be explored to improve operational safety and visitor access.

In order to improve pedestrian safety and protect Redwood Creek, the park would collaborate with Marin County to restrict shoulder parking along Muir Woods Road in areas without trailheads when alternative transportation becomes more readily available.

## **REDWOOD FOREST AND REDWOOD CREEK**

### **Interpretive Corridor Zone** (large corridor around Redwood Creek)

This area would be managed as a setting where visitors discover and interact with the features of the primeval redwood forest. Each trail within the monument would unveil a different story and experience using creative interpretive approaches that are appropriate to the majestic old-growth forest. The trails would be designed and managed to provide visitors with opportunities to learn, explore, and become immersed in the resources that illustrate a particular theme. Examples of thematic trails could include an ecology-themed trail that leads visitors to examine the forest structure and the dynamic habitats of the creek. Another trail would highlight a century of conservation history and quietly usher visitors into Cathedral Grove. Some trails would start at the main entrance and highlight the main redwood groves along the creek. Others would bring visitors down into the woods from higher in the canyon.

The Dipsea Trail and other trails from Mount Tamalpais State Park also would be highlighted, offering opportunities for self-discovery. The experience would be further reinforced through ranger-led activities that engage the visitor with the monument's natural and cultural resources.

Portions of the main trail and bridges could be relocated to allow for creek and floodplain restoration and improvements to the integrity of the redwood forest ecosystem.

The Administration-Concession Building would transition to support interpretive and educational activities, providing flexible classroom and program space in the woods. Nonhistoric and nonessential additions made to this structure and its surroundings would be removed to reduce development in the monument. The adjacent restroom building would be retained.

The historic structures and features that represent the conservation movement would be preserved and rehabilitated, and used to support visitor programming and services. These include the former Superintendent's Residence, equipment shed, garage, trails, monuments, and named groves. The historic creek stabilization rock work could be removed in targeted areas to restore natural creek functions important to forest health.

The use of contained fires limited to interpretive and educational purposes could be permitted by the Superintendent within this zone.

**Sensitive Resources Zone** (upper north-facing slopes of the canyon)

These areas would be managed to preserve the redwood forest and natural sounds that provide a backdrop to the adjacent interpretive corridor zone. Visitor access to this area would be carefully managed and limited to retain the pristine setting and protect its resources.

**Natural Zone** (western portion of the national monument)

This area of the monument would be managed to preserve natural systems and contribute to the primeval forest setting. Visitors within this zone would have opportunities for self-discovery and challenge on the Ben Johnson and Dipsea trails in a more dispersed and wild park setting.

**MUIR WOODS ADDITION (ALSO KNOWN AS CAMINO DEL CANYON, CONLON AVENUE, AND DRUID HEIGHTS)**

**Natural Zone**

The area would be managed to provide low impact trail-based day uses and restore native habitat and natural processes with emphasis on removal of roads, nonhistoric structures, stabilization of sediment sources, re-establishment of natural drainage patterns, restoration of the tributary creek, and removal of invasive vegetation that has escaped from developed areas.

Some historic structures and landscape associated with the bohemian community at Druid Heights would be preserved. Camino del Canyon would be converted to a trail with access by foot or light service vehicle. The structures at Camp Hillwood would be preserved to the extent that this would not compromise natural resource values. Use of

the camp would be for educational and interpretive programs consistent with the natural zone. The segment of Conlon Avenue extending from the lift station to the camp would be downgraded and realigned to restore natural processes and conditions in the tributary to Redwood Creek.

**Diverse Opportunities Zone** (lower Conlon Avenue from Muir Woods Road to the lift station)

A modest parking area and trailhead would be located in this zone. The National Park Service would continue to explore a sustainable wastewater treatment process to replace the existing lift station. Other existing operational functions (maintenance and native plant nursery) would be relocated to the Lower Redwood Creek site (former Banducci flower farm) or in potential shared facilities with Mount Tamalpais State Park nearby at Kent Canyon.

## **KENT CANYON, MOUNT TAMALPAIS STATE PARK**

The park would work with California State Parks to achieve common objectives for this area. Collaboration would focus on maintenance, parking, and trails. Most maintenance functions in the monument would be relocated to facilities potentially shared with Mount Tamalpais State Park.

## **COST ESTIMATES**

Cost estimates for alternative 3 are identified in table 20. The costs shown here are not for budgetary purposes; they are only intended to show a relative comparison of costs among the alternatives.

The alternatives describe the maximum potential capital improvements; lesser improvements may be implemented, or built in phases if necessary. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved general management plan could be many years in the future. Additionally, some of the future long-term funding needed to implement the various actions called for in the alternatives is anticipated to come from nonfederal partners, consistent with the park's current practices.

## **Annual Operating Costs**

The annual costs to operate the shuttle at peak periods throughout the year are estimated to range from \$600,000 to \$1,400,000. This is the full cost to operate the shuttle, although historically, shuttle operation costs have been shared with local transportation agencies as a joint solution to alleviating traffic congestion on the State Route 1 corridor.

### One-time Costs

In alternative 3, Muir Woods National Monument would be presented as an outdoor museum where visitors discover the primeval forest and conservation history. Costs are largely attributable to the proposed welcome centers, rehabilitation of historic structures, and trail system enhancements. Total one-time costs are estimated at \$17.8 million.

**Table 24: Costs for Alternative 3 for Muir Woods National Monument**

<b>SUMMARY OF COSTS FOR ALTERNATIVE 3 (NPS Preferred Alternative)</b>	
<b>Annual Operational Costs</b>	
Shuttle Operations	\$ 600,000 - 1,400,000
<b>One-time Capital Costs</b>	
<b>REHABILITATION PROJECTS</b>	
Entrance area improvements	\$7,150,000
Entry drive and parking improvements	\$1,300,000
Trail system improvements	\$700,000
<b>HISTORIC PRESERVATION</b>	
Administration-Concessions building: rehabilitate for interpretation and education*	\$500,000
Camp Hillwood: rehabilitation*	\$150,000
Former Superintendent's residence and adjacent structures: rehabilitation	\$340,000
<b>NATURAL RESOURCE RESTORATION</b>	
Muir Woods Addition	\$2,500,000
Within the Monument boundary	\$2,200,000
<b>FACILITY REMOVAL</b>	
Minor structures and infrastructure removal	\$250,000
Nonhistoric structures in the Muir Woods	\$470,000

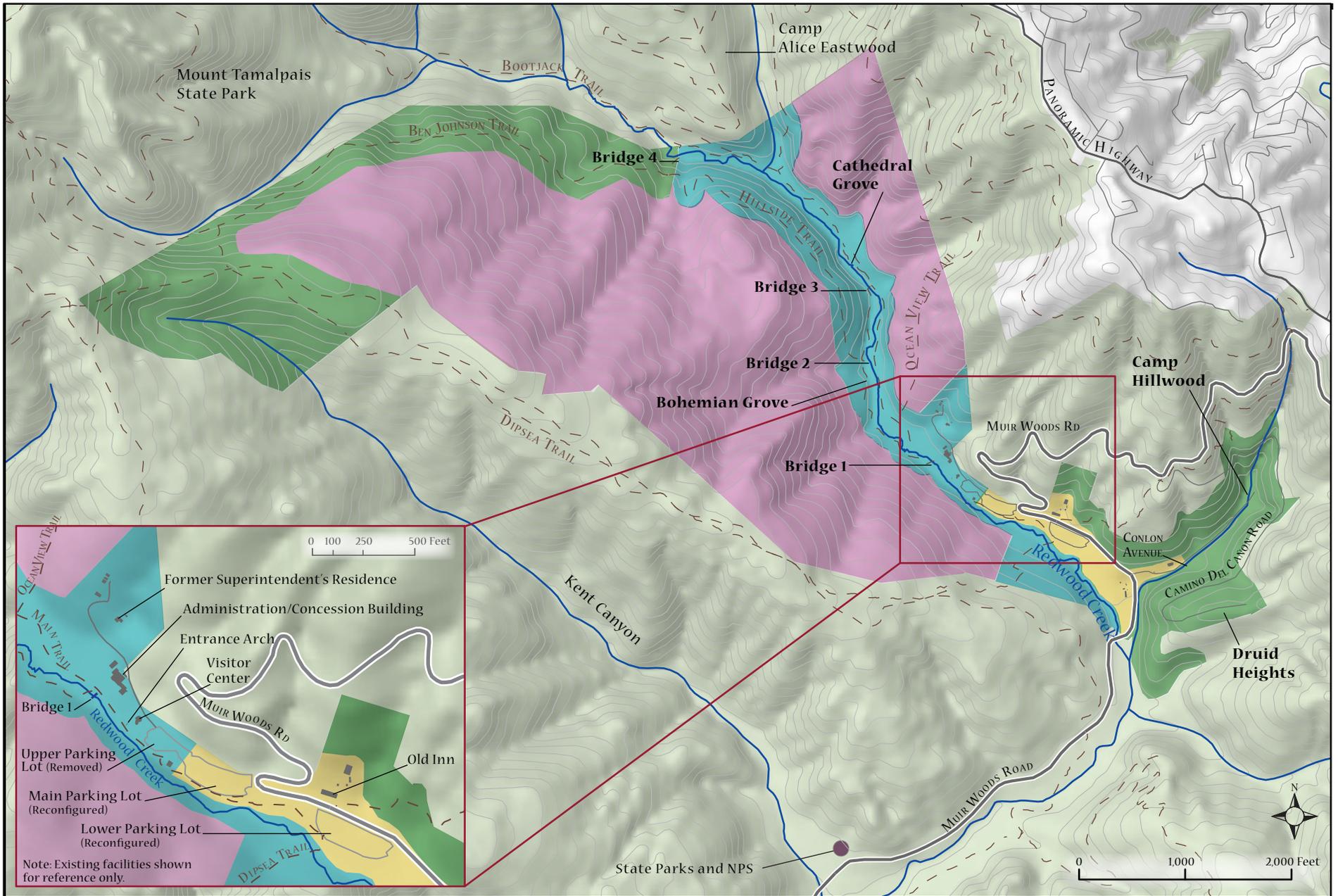
PART 6: ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT

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Addition	
<b>NEW CONSTRUCTION</b>	
Off-site welcome center	\$2,230,000
<b>Total</b>	<b>\$17,790,000</b>

All costs in 2009 dollars

\*These projects are desirable/lower priority, and while important to full implementation of the alternative, may be accomplished with nonfederal funds or in later phases.



### Management Zones

- |  |   |
|--|---|
|  Diverse Opportunities      |  Historic Immersion  |
|  Scenic Corridor            |  Natural             |
|  Interpretive Corridor      |  Sensitive Resources |
|  Evolved Cultural Landscape |  Park Operations     |

### Focusing on National Treasures

#### Alternative 3 – Preferred Alternative Muir Woods National Monument





Restored banks of Redwood Creek along with redesigned segments of the main trail improve ecological functions and conditions for visitors in the forest.



A meadow-like pedestrian entrance to the monument is created by reorganizing vehicular circulation and support facilities.

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## SUMMARY OF COSTS ESTIMATES FOR MUIR WOODS NATIONAL MONUMENT

The cost figures shown here and throughout the plan are intended only to provide conceptual costs for general comparison of alternatives. National Park Service and industry cost estimating guidelines were used to develop the costs (in 2009 dollars) to the extent possible, but the estimates should not be used for budgeting purposes. Specific costs will be determined in subsequent, more detailed planning and design exercises, and after considering the design of facilities, identification of detailed resource protection needs, and changing visitor expectations. Actual costs to the National Park Service will vary depending on when actions are implemented, and on contributions by partners and volunteers.

The alternatives describe the maximum potential capital improvements; lesser improvements may be implemented, or built in phases if necessary. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved general management plan could be many years in the future. Additionally, some of the future long-term funding needed to implement the various actions called for in the alternatives is anticipated to come from nonfederal partners, consistent with the park's current practices.

**Table 25: Summary of Costs Associated with the Implementation of the Alternatives for Muir Woods National Monument**

	No-action Alternative	Alternative 1	Alternative 2	Alternative 3 (NPS Preferred)
Annual Operational Costs (Shuttle Operations) <sup>1</sup>	\$340,000	\$600,000 – \$1,400,000	\$4,000,000 – \$9,500,000	\$600,000 – \$1,400,000
One-time Capital Costs <sup>2</sup>	\$920,000	\$15,900,000	\$16,870,000	\$17,790,000

**NOTES:**

- 1 The cost of operating the shuttle was estimated by Nelson and Nygaard in 2009 dollars. This is the full cost to operate the shuttle, although historically, the shuttle operations have been a shared cost with local transportation agencies. Marin County and the National Park Service share costs for this as a joint solution to alleviating traffic congestion on the State Route 1 corridor.
- 2 One-time costs for the no-action alternative only include costs associated with projects already approved and fully funded.
- 3 All costs are in 2009 dollars.

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## DEFERRED MAINTENANCE

The “Actions Common to All Alternatives” section, earlier in this document, contained a discussion of facilities that could be removed to reduce maintenance funding needs. However, in addition to removing facilities, expending one-time costs on park facilities would reduce the deferred maintenance by bringing the facilities up to a sustainable condition. Deferred maintenance—or work needed to bring park assets into good condition—exceeds \$198.1 million at Golden Gate National Recreation Area and Muir Woods National Monument, according to the 2009 *Park Asset Management Plan*.

Each alternative contains proposals that would reduce total deferred maintenance. Although the reductions in deferred maintenance are similar in amount for each alternative, the alternatives do not all contain the same proposals for reducing deferred maintenance; each alternative proposes different treatments for structures, including rehabilitation or removal.

Park staff continue to seek out additional measures to reduce deferred maintenance at the park. The *Park Asset Management Plan*, in particular, addresses strategies for reducing deferred maintenance.

**Table 26: Reductions in Deferred Maintenance Associated with the Implementation of the Alternatives for Muir Woods National Monument**

	No-action Alternative	Alternative 1	Alternative 2	Alternative 3 (NPS Preferred)
Muir Woods National Monument	\$0	\$1,650,000	\$2,080,000	\$1,650,000

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## ENVIRONMENTALLY PREFERABLE ALTERNATIVE FOR MUIR WOODS NATIONAL MONUMENT

The environmentally preferable alternative is the alternative that promotes the national environmental policy expressed in the National Environmental Policy Act (Sec. 101(b)). This includes alternatives that

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources" (NPS DO-12 Handbook, Section 2.7D).

The alternatives are very similar with respect to criteria 1, 2, 5, and 6. The park staff continues to work in achieving these factors as a basic course of implementing the legal mandates for Muir Woods National Monument. All the alternatives equally meet the attainment for these four criteria; therefore, the evaluation focuses on criteria 3 and 4.

The no-action alternative represents continuation of the existing management strategy in order to provide a baseline against which to compare the effects of the other (action) alternatives. The no-action alternative is the weakest alternative when considering criteria 3 and 4. In this alternative, the visitor experience is based primarily on self-discovery with some scheduled interpretive programs. The natural and historic resources of the national monument are protected but continue to be impacted by past human disturbance such as stream bank stabilization, locating parking facilities adjacent to Redwood Creek, and locating concession services within the old-growth redwood forest. The new land additions to Muir Woods National Monument lack any planning and guidance regarding the type of visitor opportunities and the level of natural and cultural resource preservation that should be implemented. In the no-action alternative, visitor access to the national monument would continue to be by individual vehicles, tour buses and the park's shuttle bus during the summer season—which contribute to social and environmental problems.

Alternative 2 provides for significant improvements to the natural environment through restoration work that addresses past human disturbances such as removing the bank stabilization, narrowing trails, eliminating the majority of parking, and providing a year-round shuttle system. But in consideration to criteria 3, the alternative limits the range of beneficial uses to those visitors looking to experience a more primitive and natural setting with a focus on education. The no-action alternative provides a greater variety of visitor

opportunities than alternative 2. In regards to criteria 4, alternative 2 proposes to remove important historic and cultural features of our national heritage.

The actions associated with the implementation of alternative 1 improve upon the no-action alternative and alternative 2 by enhancing recreational opportunities such as picnicking, interpretation, and stewardship programs. The social and environmental impacts associated with parking and other past human disturbances would be improved, as well. Alternative 1 provides a good balance of addressing past human disturbances and providing a range of beneficial uses with minimal impacts.

Alternative 3 is very similar to alternative 1 in balancing the restoration of past human disturbances and providing a wider range of beneficial uses. Alternative 3 is better at accomplishing criteria 3 and 4 with the implementation of a comprehensive education and interpretive program, incorporating thematic trails, that would help visitors to easily learn about and explore the natural and cultural resources of the national monument.

After considering the environmental consequences of the alternatives, including consequences to the human environment, the National Park Service has concluded that the NPS preferred alternative, alternative 3 for Muir Woods National Monument, is also the environmentally preferable alternative. This alternative best realizes the full range of national environmental policy goals as stated in section 101 of the National Environmental Policy Act.

# SUMMARY TABLES FOR MUIR WOODS NATIONAL MONUMENT

Table 27: Comparison of Alternatives for Muir Woods National Monument

<b>COMPARISON OF ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT</b>			
<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 (PREFERRED)</b>
<b>OVERVIEW</b>			
<p>Management of the monument would continue to provide visitors with self-guiding opportunities to explore the primeval forest. Scheduled interpretive opportunities would continue to be provided.</p> <p>Existing facilities would remain in their current locations.</p>	<p>Alternative 1 would offer visitors the opportunity to experience and enjoy the primeval forest ecosystem and understand the monument's place in American conservation history through a variety of enhanced programs, facilities, and trails that access the forest and connect local communities to the park and surrounding open space.</p> <p>The monument would continue to welcome a diversity of visitors and support a range of experiences, better serving as a gateway or stepping stone to understanding the national park system.</p> <p>Some existing facilities and uses would be modified or relocated to reduce their impacts on the ecosystem and improve the park experience.</p>	<p>Alternative 2 would restore the primeval character of the old-growth redwood forest. Visitors would immerse themselves in the forest to experience the natural sounds, smells, light, and darkness of the forest.</p> <p>The experience would be primitive; buildings, parking lots, and paved trails would be removed, and all visitors would arrive by shuttle, bicycle, or on foot.</p> <p>The landscape would be less controlled, and the forest would function more naturally. Redwood Creek would meander across the floodplain, flooding the valley bottom, uprooting trees, and opening gaps in the canopy.</p>	<p>Alternative 3 would present the monument as a contemplative outdoor museum where visitors could discover and learn about the primeval redwood forest and the monument's place in the U.S. conservation movement.</p> <p>A system of interpretive trails would lead visitors into the forest to touch, see, and learn, about the essential qualities of the forest, including the monument's place in American conservation history.</p> <p>Several existing facilities would be modified or relocated to reduce their impacts on redwood forest ecosystem.</p>

<b>COMPARISON OF ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT</b>			
<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 (PREFERRED)</b>
<b>ARRIVAL</b>			
<p>The monument entrance would remain at the edge of the redwood forest near Redwood Creek and continue to include parking, restrooms, and a small visitor information station. Parking lots further down Redwood Creek would remain.</p> <p>Visitors would continue to arrive by personal vehicle or tour bus, with a shuttle service provided in the summer.</p> <p>Maintenance and operational functions would remain at the Old Inn.</p>	<p>The entrance would be redesigned to enhance visitor experience, protect resources, and improve safety. The parking lot would be reconfigured using sustainable design practices.</p> <p>A welcome center would be provided in the vicinity of State Route 1 and Highway 101 with visitor services including parking, shelter, restrooms, food service, and orientation to the monument and regional park destinations.</p> <p>Shuttle service would be provided during peak periods. Express transit and connections with regional and local transportation systems would be explored.</p>	<p>The entrance would be relocated to the lower parking lot area and designed to accommodate a year-round shuttle service. The majority of parking would be removed.</p> <p>Along Redwood Creek, the main entrance, upper parking lot, restrooms, and visitor center would be removed to restore the area to natural conditions.</p> <p>The Old Inn and adjacent area would be used for administration and maintenance.</p> <p>A welcome center would be provided as described in Alternative 1.</p>	<p>Same as Alternative 1.</p>
<b>REDWOOD FOREST AND REDWOOD CREEK</b>			
<p>The main trail system would continue as a series of loops running along Redwood Creek with connections to other trails. Visitors would have opportunities to stroll in the groves of ancient redwoods. Interpretive waysides and scheduled interpretive programs would support the visitor's discovery of the monument's</p>	<p>The Redwood Creek corridor and main loop trails would be managed to provide a national park experience within a primeval redwood forest setting.</p> <p>The Administration-Concession Building would be used to support interpretive, educational, and stewardship activities.</p> <p>Improve accessibility of</p>	<p>The old-growth forest would be managed to achieve highest level of natural resource integrity.</p> <p>The majority of the built environment would be removed including the Administration-Concession Building.</p> <p>Visitor access to designated areas and activities would be controlled. Visitors</p>	<p>The corridor around Redwood Creek would be managed to allow visitors to discover and interact with the primeval redwood forest.</p> <p>Portions of trails and bridges would be relocated to allow for creek and floodplain restoration and ecosystem improvements.</p> <p>Administration-</p>

<b>COMPARISON OF ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT</b>			
<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 (PREFERRED)</b>
<p>resources.</p> <p>The Administration-Concession Building would continue to provide food, retail services, restrooms, and park offices. The current use of the nearby historic Superintendent's Residence and associated structures would remain. While many past practices have already been phased out, others would continue to affect the healthy functioning of ecosystem.</p>	<p>trails; add new restrooms and drinking water near bridge 4.</p> <p>Use historic Superintendent's Residence for administrative purposes. Rehabilitate other structures for park uses and remove non-historic nonessential structures.</p> <p>Area beyond Redwood Creek corridor would be managed to preserve and restore natural systems. Dispersed trails in a wild park setting would provide opportunities for self-discovery and challenge.</p>	<p>would be encouraged to engage in stewardship, education, and science activities.</p> <p>Floodplain processes would be restored by removing, realigning, or redesigning trails, bridges, and other impediments to natural processes.</p> <p>The trail system would be redesigned to accommodate fewer visitors in a more intimate setting; an accessible trail would provide access to a portion of the old-growth forest. Trails would connect to other trails from ocean to uplands and highlight watershed restoration.</p>	<p>Concession Building would be used for interpretive and educational activities. Non-historic additions to the structure would be removed.</p> <p>Structures representing the conservation movement would be preserved and rehabilitated.</p> <p>The upper north-facing slopes of the canyon would be preserved to protect redwood forest and natural sounds. Visitor access would be carefully managed to protect the pristine natural setting and resources.</p> <p>The western portion would be managed to preserve natural systems and contribute to primeval forest setting. Ben Johnson and Dipsea trails would allow self-discovery in a more dispersed and wild park setting.</p>
<b>MUIR WOODS ADDITION (CAMINO DEL CANYON, CONLON AVENUE, AND DRUID HEIGHTS)</b>			
<p>Structures on these lands would continue to be used for park operations and a native plants nursery; others are under special use permits, reservation of use and occupancy, or have been vacated and are scheduled for removal. These uses and planned actions would</p>	<p>Camp Hillwood would be adaptively used for day use or overnight educational programs.</p> <p>Operational functions at Conlon Avenue would be relocated to other areas.</p> <p>The majority of Camino Del Canyon and Druid Heights would be managed to preserve</p>	<p>These areas would be managed to restore native habitat and natural processes.</p> <p>All operational functions would be relocated.</p> <p>Water and sewer systems would be relocated.</p>	<p>Structures of Camp Hillwood would be preserved to the extent that this would not compromise natural resource values. Use of the camp would be for educational and interpretive programs consistent with the Natural Zone designation.</p> <p>Conlon Avenue would</p>

<b>COMPARISON OF ALTERNATIVES FOR MUIR WOODS NATIONAL MONUMENT</b>			
<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 (PREFERRED)</b>
<p>continue.</p> <p>The valuable wildlife habitat in this area would continue to be protected.</p>	<p>the natural setting. The natural landscape and streams would be restored and all nonhistoric structures would be removed.</p>		<p>have a modest parking area and trailhead.</p> <p>The Park Service would continue to explore a sustainable wastewater treatment solution to replace the existing lift station. Other operational functions would be relocated.</p> <p>Some historic structures and landscape features at Druid Heights would be preserved. Access would be by foot or light service vehicle.</p> <p>Camino Del Canyon and Druid Heights would be managed to provide trails and restore native habitat and natural processes.</p>
<b>KENT CANYON, MOUNT TAMALPAIS STATE PARK</b>			
	<p>Collaboration with California State Parks would focus on maintenance, parking, and trails.</p> <p>Most maintenance functions would be relocated to shared facilities.</p>	Same as Alternative 1.	Same as Alternative 1.



Table 28: Summary of Potential Key Impacts of Implementing the Alternatives for Muir Woods National Monument

<b>POTENTIAL KEY IMPACTS ON MUIR WOODS NATIONAL MONUMENT</b>				
	<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 – NPS PREFERRED</b>
<b>NATURAL RESOURCES</b>				
<b>Carbon Footprint and Air Quality</b>	Total gross emissions for Muir Woods National Monument would be estimated at 2,257 MTCE, resulting in long-term, minor, adverse impacts to the monument's carbon footprint. Overall, when compared to background levels of air pollution and GHG emissions in the region or the nation (estimated at 6 billion in 2007), impacts to air quality from the no-action alternative would be long-term, adverse, and negligible. No impairment of air resources would result from this alternative.	The combined effect of the actions included in alternative 1 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,812 MTCE. This would result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As in the no-action alternative, impacts to air quality (when compared to background levels of air pollution in the region and nation) would be negligible. No impairment of air resources would result from this alternative.	The combined effect of the actions included in alternative 2 is estimated to decrease the gross emissions of Muir Woods National Monument by 82% to 401 MTCE. This would result in long-term, major, beneficial impacts on the Park Service's carbon footprint. As in the no-action alternative, impacts to air quality (when compared to background levels of air pollution in the region and nation) would be negligible. No impairment of air resources would result from this alternative.	The combined effect of the actions included in alternative 3 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,813 MTCE. This would result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As in the no-action alternative, impacts to air quality (when compared to background levels of air pollution in the region and nation) would be negligible. No impairment of air resources would result from this alternative.
<b>Soils and Geologic Resources and Processes</b>	Overall, the impact to geologic resources and soils from the no-action alternative would be long-term, range from minor to moderate adverse to minor beneficial, and be localized and monument-wide. Adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and education and stewardship activities. No impairment of geologic resources would result from this alternative.	Overall, the impact to soils and geologic resources and processes from alternative 1 would be short- and long-term, range from negligible adverse to minor beneficial, and be localized. Adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail relocation, the restoration of disturbed sites, and improved resource understanding and public support. No impairment of geologic resources would result from this alternative.	Overall, the impact to soils and geologic resources and processes from alternative 2 would be short- and long-term, range from minor adverse to moderate beneficial, and localized. Adverse impacts would occur from visitor use and construction. Beneficial impacts would occur from the removal of facilities and structures and restoration of disturbed sites. No impairment of geologic resources would result from this alternative.	Overall, the impact to soils and geologic resources and processes from alternative 3 would be short and long term, range from negligible adverse to moderate beneficial, and be localized. Adverse impacts would occur from new recreational development and visitor use. Beneficial impacts would occur from the removal of facilities and structures and restoration of the upper parking lot and disturbed sites, as well as creek restoration activities. No impairment of geologic resources would result from this alternative.
<b>Water Resources and Hydrologic Processes</b>	Overall, the impact to water resources and hydrologic processes from the no-action alternative would be long-term, range from minor adverse to minor beneficial, and be localized and monumentwide. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), visitor use. Beneficial impacts would occur from education and stewardship activities. No impairment of water resources would result from this alternative.	Overall, the impact to water-related resources from alternative 1 would be short- and long-term, range from negligible adverse to minor beneficial, and be localized and parkwide. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance and the restoration of disturbed sites and removal of the upper parking area. No impairment of water resources would result from this alternative.	Overall, the impact to water-related resources from alternative 2 would be short and long term, range from minor adverse to moderate-major beneficial, and be localized. Adverse impacts would occur from expanded visitor use and restoration activities. Beneficial impacts would occur from the restoration of disturbed sites, removal of structures, facilities, roads, and asphalt parking areas and substantial creek and floodplain restoration. No impairment of water resources would result from this alternative.	Overall, the impact to water-related resources from alternative 3 would be short and long term, range from negligible adverse to moderate beneficial, and be localized. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), new recreational development and expanded visitor use and construction and restoration activities. Beneficial impacts would occur from the restoration of disturbed sites, removal of the upper parking area, improvements to Redwood Creek and restoration of in the Camino del Canyon and Druid Heights area. No impairment of water resources would result from this alternative.
<b>Habitat (Vegetation and Wildlife)</b>	Overall, the impact to vegetation and wildlife habitat from the no-action alternative would be long-term, range from minor-moderate adverse to minor beneficial, and be localized and monumentwide. Adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and ongoing management and monitoring activities. No impairment of vegetation or wildlife resources would result from this alternative.	Overall, the impact to vegetation and wildlife habitat from alternative 1 would be short and long term. They would range from negligible adverse to minor or moderate beneficial and would be localized and monumentwide. Adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from the restoration of disturbed sites. No impairment of water resources would result from this alternative.	Overall, the impact to vegetation and wildlife habitat from alternative 2 would be short and long term. They would range from minor adverse to moderate or major beneficial and would be localized and monumentwide. Adverse impacts would occur from visitor use and construction activities. Beneficial impacts would occur from the restoration of disturbed sites and creeks. No impairment of water resources would result from this alternative.	Overall, the impact to vegetation and wildlife habitat from alternative 3 would be short and long term, range from minor adverse to moderate beneficial, and be localized and monumentwide. Adverse impacts would occur from visitor use and construction activities. Beneficial impacts would occur from the restoration of disturbed sites and creeks. No impairment of water resources would result from this alternative.

**POTENTIAL KEY IMPACTS ON MUIR WOODS NATIONAL MONUMENT**

	<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 – NPS PREFERRED</b>
<b>Special Status Species (Federal and State Threatened and Endangered Species)</b>	<ul style="list-style-type: none"> <li>• <b>Coho salmon and Steelhead trout</b>, Central California Coast (Federal threatened): “may affect, likely to adversely affect” for project specific actions in the short-term, and “may affect, not likely to adversely affect” for land use and monument management over the long-term.</li> <li>• <b>Northern spotted owl</b> (Federal threatened): “may affect, not likely to adversely affect”</li> <li>• <b>Marbled murrelet</b> (Federal threatened): “may affect, not likely to adversely affect”</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Coho salmon and Steelhead trout</b>, Central California Coast (Federal threatened): “may affect, likely to adversely affect” for project specific actions in the short-term, and “may affect, not likely to adversely affect” for land use and monument management over the long-term.</li> <li>• <b>Northern spotted owl</b> (Federal threatened): “may affect, not likely to adversely affect”</li> <li>• <b>Marbled murrelet</b> (Federal threatened): “may affect, not likely to adversely affect”</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Coho salmon and Steelhead trout</b>, Central California Coast (Federal threatened): “may affect, likely to adversely affect” for project specific actions in the short-term, and “may affect, not likely to adversely affect” for land use and monument management over the long-term.</li> <li>• <b>Northern spotted owl</b> (Federal threatened): “may affect, not likely to adversely affect”</li> <li>• <b>Marbled murrelet</b> (Federal threatened): “may affect, not likely to adversely affect”</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Coho salmon and Steelhead trout, Central California Coast</b> (Federal threatened) “may affect, likely to adversely affect” for project specific actions in the short-term, and “may affect, not likely to adversely affect” for land use and monument management over the long-term.</li> <li>• <b>Northern spotted owl</b> (Federal threatened) “may affect, not likely to adversely affect”</li> <li>• <b>Marbled murrelet</b> (Federal threatened) “may affect, not likely to adversely affect”</li> </ul>
<b>CULTURAL RESOURCES</b>				
<b>Archeological Resources</b>	<p>Because much of the monument has not been surveyed for archeological resources, there is potential for the monument to contain buried prehistoric and historic resources. Such resources could potentially be subject to loss of integrity from natural processes, ongoing agricultural and ranching operations, and inadvertent visitor activity or vandalism. Adverse impacts would be permanent and of minor to moderate intensity.</p> <p>Archeological surveys and/or monitoring would precede any ground disturbing activity. If significant archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the state historic preservation officer. Any adverse impacts to archeological resources would be permanent and minor to moderate in intensity</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Because much of the monument has not been surveyed for archeological resources, there is potential for the monument to contain buried prehistoric and historic resources. Such resources could potentially be subject to loss of integrity from natural processes, ongoing agricultural and ranching operations, and inadvertent visitor activity or vandalism. Adverse impacts would be permanent and of minor to moderate intensity.</p> <p>There would be more opportunities to identify and evaluate archaeological resources, and provide stabilization, security, or other protection commensurate with their significance and sensitivity – a beneficial impact. Such resources could also be incorporated into visitor interpretive opportunities.</p> <p>Archeological surveys and/or monitoring would precede any ground disturbing activity. If significant archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the state historic preservation officer. Any adverse impacts to archeological resources would be permanent and minor to moderate in intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Because much of the monument has not been surveyed for archeological resources, there is potential for the monument to contain buried prehistoric and historic resources. Such resources could potentially be subject to loss of integrity from natural processes, ongoing agricultural and ranching operations, and inadvertent visitor activity or vandalism. Adverse impacts would be permanent and of minor to moderate intensity.</p> <p>Archeological surveys and/or monitoring would precede any ground disturbing activity. If significant archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the state historic preservation officer. Any adverse impacts to archeological resources would be permanent and minor to moderate in intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Because much of the monument has not been surveyed for archeological resources, there is potential for the monument to contain buried prehistoric and historic resources. Such resources could potentially be subject to loss of integrity from natural processes, ongoing agricultural and ranching operations, and inadvertent visitor activity or vandalism. Adverse impacts would be permanent and of minor to moderate intensity.</p> <p>There would be more opportunities to identify and evaluate archaeological resources, and provide stabilization, security, or other protection commensurate with their significance and sensitivity – a beneficial impact. Such resources could also be incorporated into visitor interpretive opportunities.</p> <p>Archeological surveys and/or monitoring would precede any ground disturbing activity. If significant archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the state historic preservation officer. Any adverse impacts to archeological resources would be permanent and minor to moderate in intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>
<b>Ethnographic Resources/ Traditional Cultural Properties</b>	<p>Surveys and research are necessary to determine whether resources within the monument are eligible for listing as a traditional cultural property are a prerequisite for understanding the resource’s significance, as well as the basis of informed decision-making in the future regarding how the resource should be managed. Such surveys and research would be a negligible to minor, beneficial long-term impact.</p>	<p>Surveys and research are necessary to determine whether resources within the monument are eligible for listing as a traditional cultural property are a prerequisite for understanding the resource’s significance, as well as the basis of informed decision-making in the future regarding how the resource should be managed. Such surveys and research would be a negligible to minor, beneficial long-term impact.</p>	<p>Surveys and research are necessary to determine whether resources within the monument are eligible for listing as a traditional cultural property are a prerequisite for understanding the resource’s significance, as well as the basis of informed decision-making in the future regarding how the resource should be managed. Such surveys and research would be a negligible to minor, beneficial long-term impact.</p>	<p>Surveys and research are necessary to determine whether resources within the monument are eligible for listing as a traditional cultural property are a prerequisite for understanding the resource’s significance, as well as the basis of informed decision-making in the future regarding how the resource should be managed. Such surveys and research would be a negligible to minor, beneficial long-term impact.</p>

<b>POTENTIAL KEY IMPACTS ON MUIR WOODS NATIONAL MONUMENT</b>				
	<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 – NPS PREFERRED</b>
	No impairment of monument resources or values would result from this alternative.	No impairment of monument resources or values would result from this alternative.	No impairment of monument resources or values would result from this alternative.	No impairment of monument resources or values would result from this alternative.
<b>Historic Structures</b>	<p>The monument would continue to stabilize and preserve historic structures as financial resources and opportunities become available. The monument’s historic structures, such as Muir Woods National Monument Historic District and historic buildings at Camp Hillwood, have generally retained their integrity but the incremental and piecemeal approach to preservation and maintenance, as well as their various adaptive uses, has resulted in long-term, minor to moderate, adverse impacts because historic buildings, fabric, and integrity have been lost.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Historic buildings in the Muir Woods National Monument Historic District and at Camp Hillwood would be rehabilitated and adaptively used for interpretive, educational, recreational, administrative, and stewardship activities/purposes. This would result in long-term, beneficial impacts because their historical and architectural values would be preserved.</p> <p>Plans for evaluating other historic buildings under National Register of Historic Places criteria in the Muir Woods Addition would afford preservation treatment to determined-eligible structures, and a thus result in long-term, beneficial impacts to potentially eligible buildings.</p> <p>Although increased visitation could accelerate the deterioration of historic structures, monitoring human impacts to historic structures, increased ranger patrol, and increased historical interpretation could indirectly discourage vandalism and inadvertent impacts and minimize adverse impacts. Adverse impacts would be long term and negligible to minor in intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>To fully restore the primeval character and natural conditions of the monument, all historic structures in the monument (including unevaluated properties in the Muir Woods Addition area) would be removed under this alternative. These actions would result in permanent adverse impacts of major intensity because historic structures would be lost.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Actions under alternative 3 would result in long-term, beneficial impacts to historic buildings in the Muir Woods Historic District because their historical and architectural values would be preserved. The majority of the historic Camp Hillwood buildings would be stabilized and adaptively used, resulting in long-term beneficial impacts. However, some buildings at Camp Hillwood could be removed, resulting in permanent adverse impacts of minor intensity.</p> <p>Buildings in the Muir Woods Addition area would be evaluated against National Register of Historic Places criteria, and those determined eligible would be stabilized, resulting in long-term beneficial impacts. Although increased visitation could accelerate the deterioration of historic structures, monitoring human impacts to historic structures, increased ranger patrol, and increased historical interpretation could indirectly discourage vandalism and inadvertent impacts and minimize adverse impacts. Adverse impacts would be long term and negligible to minor in intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>
<b>Cultural Landscape Resources</b>	<p>Overall, the cultural landscape at the monument retains its historic natural appearance, and preservation treatment of cultural landscape features is ongoing as opportunities arise. This continuing management under the no-action alternative would result in mostly long-term, negligible, and beneficial impacts, and some individual impacts that are minor and adverse.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Actions under alternative 1 would result in long-term, beneficial impacts to cultural landscape resources because much of the monument’s cultural landscape, including historic trails and associated facilities, would be preserved. The introduction of new elements into the cultural landscape, such as restrooms and drinking water facilities, would result in some long-term, adverse impacts of minor intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>To more fully restore the primeval character and natural conditions of the monument, virtually all cultural landscape features, including the historic structures, would be removed under alternative 2. Although some cultural landscape features would be preserved if not in conflict with natural resource goals, many features would be lost and some would be redesigned or relocated. Thus, actions under alternative 2 would result in permanent and long-term adverse impacts of major intensity to the national monument’s cultural landscape resources.</p> <p>No impairment of monument resources or values would result from this alternative.</p>	<p>Alternative 3 would provide for the most comprehensive retention, rehabilitation, and preservation of cultural landscape resources in the monument, resulting in overall long-term, beneficial impacts. However, construction of new trails and the relocation or redesign of others, as well as the removal of portions of the CCC-constructed erosion-control stone revetments in Redwood Creek, would result in some permanent and long-term, adverse impacts of minor intensity, because some cultural landscape resources would be lost and the cultural landscape’s integrity would be diminished. Therefore, the combined impacts of alternative 3 on the monument’s cultural landscape resources would be long term and beneficial; although there would be some permanent and long-term adverse impacts of minor intensity.</p> <p>No impairment of monument resources or values would result from this alternative.</p>
<b>Park Collections</b>	The alternatives for the monument’s collections are covered under the environmental consequences in the “Actions Common to All Actions Alternatives” section and by each alternative for Golden Gate National Recreation	The alternatives for the monument’s collections are covered under the environmental consequences in the “Actions Common to All Actions Alternatives” section and by each alternative for Golden Gate National	The alternatives for the monument’s collections are covered under the environmental consequences in the “Actions Common to All Actions Alternatives” section and by each alternative for Golden Gate National	The alternatives for the monument’s collections are covered under the environmental consequences in the “Actions Common to All Actions Alternatives” section and by each alternative for Golden Gate National

<b>POTENTIAL KEY IMPACTS ON MUIR WOODS NATIONAL MONUMENT</b>				
	<b>NO ACTION</b>	<b>ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3 – NPS PREFERRED</b>
	Area. No impairment of monument collections would result from this alternative.	Recreation Area. No impairment of monument collections would result from this alternative.	Recreation Area. No impairment of monument collections would result from this alternative.	Recreation Area. No impairment of monument collections would result from this alternative.
<b>VISITOR USE AND EXPERIENCE</b>				
	The no-action alternative would result in long-term, minor to moderate, beneficial impacts from continued opportunities to experience the unique and highly valued characteristics of the primeval forest via hiking trails and educational programs. However, minor to moderate adverse impacts on the visitor experience from visitor crowding, noise, and informal parking during peak times would continue.	Under alternative 1, impacts to the visitor experience would be long term, minor to moderate, and beneficial. The improvements to the arrival experience to the park, along with enhanced educational and interpretive opportunities, directly address the primary interests and concerns of most visitors to the monument.	Alternative 2 would result in long term, minor to moderate, beneficial impacts to the visitor experience, primarily due to enhancements to the monument's natural setting and the promotion of a more authentic and connected visitor experience with the primeval forest. However, long-term, minor to moderate, adverse impacts to the visitor experience would also occur, since some visitors would likely find it challenging to visit given the lack of parking and support facilities, and the increased regulation of visitor access.	Actions proposed in the NPS preferred alternative would result in long term, minor to moderate, beneficial impacts to the visitor experience. This alternative contributes to the purpose of the monument by providing high quality recreation and education opportunities that welcome a wide audience to experience and understand the most important resources and stories of Muir Woods National Monument.
<b>SOCIAL AND ECONOMIC ENVIRONMENT</b>				
	In the context of the local gateway communities and the three adjacent counties, the beneficial impacts to the social and economic environment from the no-action alternative would be long term and minor to moderate. The beneficial impacts could result from maintaining the park's contribution to the local economy and quality of life, existing education and stewardship programs, as well as maintaining collaborative efforts with several local governments and land managers to maintain and expand open land protection in the region.	The beneficial impacts to the quality of life and economy from alternative 1 would be short term to long term, and range from minor to moderate for the gateway communities and three adjacent counties. The beneficial impacts would result from: (1) a substantial increase in public outreach programs, visitor orientation, and new welcoming facilities, (2) improved connections to local and regional transportation systems and reduced traffic congestion, (3) new engineering and construction contracts for facility improvements, and (4) job creation from visitor service increases in the park and from shuttle service expansion.  The adverse impacts of alternative 1 could be long term and minor in the context of the gateway communities. The adverse impacts could result from a reduction in local business activity due to park visitors using public transit instead of personal vehicles.	The beneficial impacts to the quality of life and economy from alternative 2 would be short-term to long-term and minor for the gateway communities and three adjacent counties. The beneficial impacts could result from (1) increased cooperation with other local governments and land managers to pursue preservation of additional public lands in the area, (2) contract work created by various reclamation projects, (3) possible new jobs created by the significant expansion in the shuttle service for the park, and (4) the expanded shuttle service that would allow more local residents to access the park and reduce traffic congestion.  The adverse impacts from alternative 2 could be long term, ranging from minor to moderate for the gateway communities and three adjacent counties. The adverse impacts could result from a reduction in local business activity from park visitors who would need to take public transit to the park.	The beneficial impacts to the quality of life and economy from alternative 3 could be long-term, ranging from minor to moderate for the gateway communities and three adjacent counties. The beneficial impacts could result from (1) a moderate increase in public outreach, visitor orientation, and new welcoming facilities at the park, (2) improved connections to local and regional transportation systems and less traffic congestion, (3) a modest number of jobs created by expanded visitor welcoming services and expanded shuttle service, and (4) the community's improved awareness, pride, and appreciation of the national significance of the monument.  The adverse impacts of alternative 3 could be long term and minor for the gateway communities. The adverse impacts could result from a reduction in local business activity due to park visitors using public transit instead of personal vehicles.
<b>TRANSPORTATION</b>				
	With no further action taken, visitor connections to Muir Woods National Monument and the functionality of the transportation system to the monument could experience a long-term, minor to moderate, adverse impact. Access roads and intersections on State Route 1 between Highway 101 and Muir Woods National Monument would continue to be congested, slowing shuttle service, and making it difficult at peak times for emergency vehicles to travel in	The transportation measures included in this alternative are likely to have a long-term, major, beneficial impact on connections between both ferry and regional bus transit and Muir Woods National Monument and the Muir Woods Shuttle. The shuttle would become the primary mode of access to the monument during peak demand periods. A much larger proportion of visitors could be expected to park	Alternative 2 proposes actions which would significantly alter the transportation system serving Muir Woods National Monument. Redesign of pedestrian access to the monument entrance is likely to have a long-term, moderate, beneficial impact on visitor access and safety.  In conjunction with the parking provided at the offsite	The transportation measures included in this alternative are likely to have a long-term, major, beneficial impact on connections between both ferry and regional bus transit and Muir Woods National Monument and the Muir Woods Shuttle. The shuttle would become the primary mode of access to the monument during peak demand periods. A much larger proportion of visitors could be expected to park

**POTENTIAL KEY IMPACTS ON MUIR WOODS NATIONAL MONUMENT**

NO ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3 – NPS PREFERRED
<p>the area. The existing parking lots at the monument are likely to continue to fill early in the day from May to September, particularly on the weekends, and the unsafe roadside parking situation could also continue. On a positive note, shuttle service can be expected to see continued increases in ridership, helping reduce road congestion.</p>	<p>remotely and take the shuttle or express service from San Francisco.</p> <p>The reduction in the number of cars on the roads approaching Muir Woods National Monument would have a long-term, moderate, beneficial impact on the functionality of the transportation system by reducing congestion. The reduction in visitor-related congestion would allow the shuttles to stay on schedule, and would allow emergency vehicles improved access to the area. This alternative could have a long-term, minor to moderate, beneficial impact on pedestrian and bicycle access by making the access roads safer for these visitors due to reduced traffic and congestion and reduction of road shoulder parking,, and by re-designing the walkways from the entry area to the monument so they are separated from auto traffic. Even with a 33% reduction in parking, and a projected increase in demand, there would still be adequate parking during the off season (October through April) when the shuttle is not running. During the peak season, the reduction in parking would be offset by an increase in transit service. The reduction in parking could have a long-term, moderate, adverse impact on parking availability on those days when the shuttle is not running.</p>	<p>welcome center and other remote parking lots, and the greatly increased transit service to the monument, this alternative would have a long-term, major, beneficial, impact on availability of transit, improved traffic flow, and number and capacity of transit connections.</p> <p>Removing parking from Muir Woods National Monument is likely to result in a reduction in the number of cars on the roads in southwest Marin, allowing transit to better run on schedule and emergency vehicles to have access, and offering less auto congestion to residents. However, while expanded transportation options may increase visitation, from the point of view of the visitor who arrives at the monument by car and is unable to park, the impact would be long-term, moderate, and adverse, limiting the ability of some visitors to visit the monument.</p> <p>The increase in transit services from San Francisco and the Sausalito Ferry, if fully funded through points in south Marin, is likely to have long-term, major, beneficial effects on the transportation system to the monument as well as throughout the southwest Marin County area, by increasing multimodal opportunities to get to the monument and increasing connectivity to regional transportation.</p> <p>Auto access may experience a long-term, minor to moderate, beneficial impact since there may be much less auto traffic on Muir Woods Road, while bus traffic on State Route 1 would increase significantly.</p>	<p>remotely and take the shuttle or express service from San Francisco.</p> <p>The reduction in the number of cars on the roads approaching Muir Woods National Monument would have a long-term, moderate, beneficial impact on the functionality of the transportation system by reducing congestion. The reduction in visitor-related congestion would allow the shuttles to stay on schedule, and would allow emergency vehicles improved access to the area. This alternative could have a long-term, minor to moderate, beneficial impact on pedestrian and bicycle access by making the access roads safer for these visitors due to reduced traffic and congestion and reduction of road shoulder parking,, and by re-designing the walkways from the entry area to the monument so they are separated from auto traffic. Even with a 33% reduction in parking, and a projected increase in demand, there would still be adequate parking during the off season (October through April) when the shuttle is not running. During the peak season, the reduction in parking would be offset by an increase in transit service. The reduction in parking could have a long-term, moderate, adverse impact on parking availability on those days when the shuttle is not running.</p>
<b>PARK MANAGEMENT, OPERATIONS, AND FACILITIES</b>			
<p>Continued long-term, moderate, beneficial impacts to operations would result from partner and volunteer efforts.</p> <p>The continued impact of low staffing levels on park operations is moderate, long-term, and adverse. Inadequate project and operational funding would result in major, long-term, adverse impacts to park facilities. Inappropriate space for staff would also result in continued long-term, minor to moderate, adverse impacts to monument operations.</p>	<p>Increased staff would result in moderate, long-term, beneficial impacts, if funded. If funding is available for construction, rehabilitation, restoration, and demolition projects, these projects would result in moderate, long-term, beneficial impacts to park operations. Construction and landscape restoration activities would also result in short-term, minor, adverse impacts while they are underway. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.</p>	<p>Increased staff would result in moderate, long-term, beneficial impacts, if funded. If fully funded, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in major, long-term, beneficial impacts to park operations. Construction and landscape restoration activities also would result in short-term, minor, adverse impacts to park operations. Removal of much of the development from inside the monument could make public safety responses more difficult, and would result in a minor to moderate, long-term, adverse impact to park operations. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.</p>	<p>Increased staff would result in moderate, long-term, beneficial impact if adequate funding is available. If funding is available, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in moderate, long-term, beneficial impacts to park operations. Construction and landscape restoration activities also would result in short-term, minor, adverse impacts to park operations while the activities are underway. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.</p>



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

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