

# Potential Environmental Consequences



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## INTRODUCTION

2 The National Environmental Policy Act (NEPA) requires that environmental documents  
3 discuss the environmental impacts of a proposed federal action, feasible alternatives to  
4 that action, and any adverse environmental effects that cannot be avoided. In this case,  
5 the proposed federal action would be the adoption of a general management plan for  
6 Golden Gate National Recreation Area and Muir Woods National Monument. This  
7 chapter analyzes the potential environmental impacts on natural resources, cultural  
8 resources, visitor use and experience, the social and economic environment,  
9 transportation, and NPS operations and management that could result from implementing  
10 the four alternatives.

11 Because of the general, conceptual nature of the actions described in the alternatives, the  
12 impacts of these actions are analyzed in general, qualitative terms. Thus, this  
13 environmental impact statement should be considered a programmatic analysis. For the  
14 purposes of analysis, it is assumed that all of the specific actions proposed in the alter-  
15 natives would occur during the life of the plan.

16 This environmental impact statement generally analyzes several actions, such as the  
17 development of recreational facilities (including trails and trailheads), the construction of  
18 facilities for visitor orientation and NPS operations, and the maintenance or restoration of  
19 natural and cultural resources. If and when proposed site-specific developments or other  
20 actions are ready for implementation following the approval of the general management  
21 plan, appropriate detailed environmental and cultural compliance documentation would  
22 be prepared. This compliance would be in accordance with the National Environmental  
23 Policy Act of 1969 and the National Historic Preservation Act of 1966, both as amended,  
24 and would meet requirements to identify and analyze each possible impact for the  
25 resources affected.

26 This chapter begins with a description of the methods and assumptions used for each  
27 impact topic. Impact analyses are organized by impact topic and then by alternative. The  
28 existing conditions for all of the impact topics that are analyzed were identified in Part 8  
29 of this document. All of the impact topics retained for detailed analysis are assessed for  
30 each alternative.

31 The analysis of the no-action alternative (continue current management) identifies the  
32 future conditions at Golden Gate National Recreation Area and Muir Woods National  
33 Monument if there are no major changes to facilities or NPS management direction other  
34 than those included in existing approved plans; the no-action alternative assumes  
35 implementation of existing approved plans. The three action alternatives are then  
36 compared to the no-action alternative to identify the incremental changes that would  
37 occur as a result of changes in park facilities, uses, and management. Impacts of recent  
38 decisions and approved plans, such as those identified in Part 1 of this document, are not  
39 evaluated as part of this environmental analysis, except as part of cumulative impact  
40 analysis when appropriate. Although these actions would occur during the life of the  
41 general management plan, they have been (or would be) evaluated in other environmental  
42 documents.

43 The key impacts of each alternative are briefly summarized in volume 1 of this  
44 document. When this project is considered in conjunction with other projects and actions

1 occurring in the region, impacts can become cumulative. The discussion of cumulative  
2 impacts is presented separately in “Part 10: Other Statutory Considerations.”  
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## METHODS AND ASSUMPTIONS FOR ANALYZING POTENTIAL IMPACTS

3

4 The planning team based the impact analysis and the conclusions in this chapter mostly  
5 on the review of existing literature and studies, other environmental documentation  
6 completed for the park, information provided by experts in the National Park Service and  
7 in other agencies, and staff insights and professional judgment. The team's method of  
8 analyzing impacts is further explained below. It is important to remember that all the  
9 impacts have been assessed assuming that mitigative measures will be implemented to  
10 minimize or avoid impacts. (See Volume I, Chapter 7 for mitigative measures). If  
11 mitigative measures were not applied, the potential for resource impacts and the  
12 magnitude of those impacts would increase.

13 The environmental consequences for each impact topic were identified and characterized  
14 based on impact type (adverse or beneficial), intensity, context, and duration. Cumulative  
15 effects are discussed in Part 10.

16 **Impact intensity** refers to the degree or magnitude to which a resource would be  
17 beneficially or adversely affected. Each impact was identified as negligible, minor,  
18 moderate, or major, in conformance with the definitions for these classifications provided  
19 for each impact topic. Because this is a programmatic document, the intensities were  
20 expressed qualitatively.

21 **Context** refers to the setting within which an impact may occur, such as the affected  
22 region or locality. In this document most impacts are either localized (site-specific) or  
23 parkwide.

24 **Impact duration** refers to how long an impact would last. The planning horizon for this  
25 plan is approximately 20 years. Unless otherwise specified, in this document the  
26 following terms are used to describe the duration of the impacts:

27 **Short term:** The impact would be temporary in nature, lasting one to three years or less,  
28 such as the impacts associated with construction and/or disruption of visitor use to an  
29 area of the park.

30 **Long term:** The impact would last more than three years and could be permanent in  
31 nature, such as the loss of soil due to the construction of a new facility. Although an  
32 impact may only occur for a short duration at one time, if it occurs regularly over a longer  
33 period of time the impact may be considered to be a long-term impact. For example, the  
34 noise from a vehicle driving on a road would be heard for a short time and intermittently,  
35 but because vehicles would be driving the same road throughout the 20-year life of the  
36 plan, the impact on the natural soundscape would be considered to be long term.

37 Effects also can be direct or indirect. Direct effects are caused by an action and occur at  
38 the same time and place as the action. Indirect effects are caused by the action and occur  
39 later or farther away, but are still reasonably foreseeable. This document discloses and  
40 analyzes both direct and indirect effects, but does not differentiate between them in the  
41 discussions.

1 The impacts of the action alternatives describe the difference between implementing the  
2 no-action alternative and implementing the action alternatives. To understand a complete  
3 “picture” of the impacts of implementing any of the action alternatives, the reader must  
4 also take into consideration the impacts that would occur in the no-action alternative.

5

6

## 7 **NATURAL RESOURCES**

8 The analysis of natural resources was based on research, knowledge of the area’s  
9 resources, and the best professional judgment of planners and resource specialists, who  
10 have experience with similar types of projects. The definitions for impact intensity of all  
11 impact topics are included in this section under of the impact topics; additional  
12 considerations used in characterizing the severity or intensity, as well as the duration, of  
13 certain impact topics are also discussed.

14 Impacts are determined by comparing projected changes resulting from the action  
15 alternatives (alternatives 1, 2, and 3) to the no-action alternative (continue current  
16 management). For all impact topics the analysis and conclusion sections are conducted at  
17 the parkwide level supported by discussion specific to the counties or to individual  
18 planning areas/sites where the impacts differ from those identified at the parkwide level.  
19 For example, for vegetation and wildlife, a parkwide analysis of the impacts of the  
20 alternatives would appear first, followed by specific discussions for Marin County and at  
21 two sites, Stinson Beach and Rodeo Valley, where impacts to vegetation and wildlife  
22 differ from those described at the parkwide level. A description of the impacts at the  
23 county level or at individual planning areas or sites would occur only when they differ  
24 from the parkwide analysis and conclusions.

25

### 26 **Carbon Footprint and Air Quality**

27 The park’s contribution to global climate change is evaluated by assessing the relative  
28 production of greenhouse gases (carbon dioxide - CO<sub>2</sub>) for each of the alternatives.  
29 Certain actions included in the alternatives of the plan would have an effect on the parks’  
30 total greenhouse gas emissions, known as the carbon footprint. Since some of the actions,  
31 such as the construction of new facilities could increase CO<sub>2</sub> emissions, and other  
32 actions, such as providing alternative transportation and reducing visitors’ dependency  
33 on personal automobiles, could reduce CO<sub>2</sub> emissions, it is important to evaluate the  
34 impact that these actions could have on global warming. Although the National Park  
35 Service would pursue sustainable practices whenever possible in all decisions regarding  
36 operations, facilities management, and development in the parks, and the parks’ focus on  
37 using renewable energy is a continuation of current management trends, the changes in  
38 energy consumption, energy availability, or costs compared to current conditions is of  
39 interest to NPS managers and the public.

40 The analysis of the effects of the actions contained in this plan on the parks’ carbon  
41 footprint is based on a comparison with existing conditions. The baseline that is used for  
42 comparison is the carbon footprint of the no-action alternative, which is included in the  
43 “Natural Resources – Golden Gate National Recreation Area” section of Part 8. The park

1 staff inventoried its emissions in 2006 as part of their Climate Change Action Plan using  
2 the NPS and EPA Climate Leadership in Parks (CLIP) tool. The CLIP tool converts  
3 emissions of various greenhouse gases into a common “metric tons of carbon equivalent”  
4 unit, which provides a basis for comparison among gases and simplifies reduction  
5 tracking. The conversion of a greenhouse gas to metric tons of carbon equivalent is based  
6 upon how strongly that particular gas contributes to the greenhouse effect, and how many  
7 tons of carbon emission would have the same effect.

8 The carbon footprint of each action alternative was calculated using the CLIP tool. NPS  
9 staff input energy consumption information (gallons of diesel fuel used, kilowatt hours  
10 per year, miles driven) into the CLIP tool base on assumptions made for facility use  
11 (square footage of building space), NPS operations, and recreational demand. Actions  
12 that had attributing emissions were assessed in comparison to existing conditions. The  
13 CLIP tool produces quantitative measures of gross emissions, measured as metric tons of  
14 carbon equivalent (MTCE). This data provides a measurement of the carbon footprint.  
15 While the gross emissions of the alternatives are expressed numerically, the impact  
16 analysis (especially for effects on park resources) is general and qualitative. Overall, the  
17 goal of the analysis was to assist park managers with evaluating carbon footprint as part  
18 of their decision-making process.

19 The thresholds to determine the impact intensity for carbon footprint are defined as  
20 follows:

21 **Negligible:** The action would result in a change in total greenhouse gas emissions, but  
22 the change would be at the lowest level of detection, or not measurable. Impacts would  
23 not result in a change to local air quality.

24 **Minor:** The action would result in a slight, but detectable, change in total greenhouse gas  
25 emissions. Impacts could result in a change to local air quality, but the change would be  
26 so slight that it would not be of any measurable or perceptible consequence.

27 **Moderate:** The action would result in a modest change in total greenhouse gas  
28 emissions, which could result in a change to local air quality.

29 **Major:** The action would result in a substantial change in total greenhouse gas emissions,  
30 which could result in a change to local air quality.

31

## 32 **Soils and Geologic Resources and Processes**

33 The effects of the alternatives on soils and geologic resources (including shoreline and  
34 coastal processes) are analyzed based on the possibility of impacts resulting primarily  
35 from facility development and visitor use.

36 The thresholds to determine the impact intensity for these resources are defined as  
37 follows:

38 **Negligible:** The impact is barely detectable and/or would result in no measurable or  
39 perceptible changes to soils and geologic resources or processes. The effects on soil  
40 character and stability, and natural shoreline or coastal processes would be slight.

41 Disruptions to geologic processes would not be perceptible.

1 **Minor:** The impact is slight but detectable, and/or would result in small but measurable  
2 changes to soils and geologic resources; the effect would be localized. There could be  
3 changes in soil character and stability in a relatively small area, but the change would not  
4 noticeably increase the potential for erosion. Disruptions to natural shoreline or coastal  
5 processes would be within the natural range of variability.

6 **Moderate:** The impact is readily apparent and/or would result in easily detectable  
7 changes to soils or geologic resources; the effects would be localized. The effect on soil  
8 productivity and natural shoreline or coastal processes would be apparent. The potential  
9 for erosion to remove small quantities of additional soil would noticeably increase or  
10 decrease. Disruptions to geologic processes are expected to be within the natural range of  
11 variability, but could be perceptible in the short term.

12 **Major:** The impact is severely adverse or exceptionally beneficial and/or would result in  
13 appreciable changes to soils or geologic resources; the effect would be regional in scale.  
14 There would be a strong likelihood that erosion would remove large quantities of  
15 additional soil or erosion would be substantially reduced. Disruptions to natural shoreline  
16 or coastal processes are expected to be outside the natural range of variability and may be  
17 permanent.

18

## 19 **Water Resources and Hydrologic Processes**

20 Terrestrial and freshwater resources (including stream character, water quantity and  
21 quality, watershed processes, wetlands, and floodplains) are analyzed together in this  
22 section because of the similarities of these resources, their interrelationship with each  
23 other, and their collective effect on the overall integrity of hydrologic systems. For  
24 example, terrestrial sediment inputs shape the character of streams: sediment-starved  
25 streams incise, while sediment-rich streams often result in aggradation and widening.  
26 Healthy riparian vegetation can also filter pollutants before reaching a creek; this in turn  
27 affects water quality. In addition, many riparian areas are often classified as wetlands,  
28 depending in part on their duration of saturation each year. Together, all of these  
29 elements affect hydrologic processes that can influence the condition of a watershed.  
30 Marine and estuarine resources/systems are discussed with a focus on water quality and  
31 ocean stewardship. Although impacts to terrestrial/freshwater and marine/estuarine  
32 resources and systems are discussed and analyzed separately, one conclusion is presented  
33 for water resources as a whole.

34 The following impact thresholds have been developed for analyzing water resources:

35 **Negligible:** Stream character, water quality, watershed processes, wetlands, and  
36 floodplains would not be impacted, or the impacts would be undetectable, or if  
37 detectable, the effects would be considered slight, localized, and short-term. Any  
38 measureable changes would be within the natural range of variability.

39 Any impacts to marine/estuarine water quality and ocean resources would be slight,  
40 localized, and mostly inconsequential.

41 **Minor:** Impacts (chemical, physical, or biological) to stream character, water quality,  
42 watershed processes, wetlands, and floodplains would be small, short-term, and localized.  
43 Natural processes, functions, and integrity would be temporarily affected, but would be  
44 within the natural range of variability. The impacts would only affect a few individuals of

1 plant or wildlife species dependent on one or more of these water-related resources. Any  
2 changes would require considerable scientific effort to measure and have barely  
3 perceptible consequences.

4 Any impacts to marine/estuarine water quality and ocean resources would be noticeable  
5 and would be short-term—it would require considerable scientific effort to measure and  
6 would have barely perceptible consequences.

7 **Moderate:** Impacts (chemical, physical, or biological) to stream character, water quality,  
8 watershed processes, wetlands, and floodplains would be readily apparent, long term, and  
9 localized. Natural processes, functions, and integrity would be affected, but would be  
10 only temporarily outside the natural range of variability. The impacts would have a  
11 measurable effect on plant or wildlife species dependent on one or more of these water-  
12 related resources, but all species would remain indefinitely viable within the park and  
13 monument.

14 Any impacts to marine/estuarine water quality ocean resources would be noticeable and  
15 may be long term.

16 **Major:** Impacts (chemical, physical, or biological) would have drastic and permanent  
17 consequences for stream character, water quality, watershed processes, wetlands, and  
18 floodplains that could not be mitigated. Species dependent on one or more of these water-  
19 related resources would be at risk of extirpation from the park. Changes would be readily  
20 measurable, would be outside the natural range of variability, would have substantial  
21 consequences, and would be noticeable on a regional scale.

22 Any impacts to marine/estuarine water quality and ocean resources would be readily  
23 noticeable and long term, and would cause permanent damage or benefit.

24

## 25 **Habitat (Vegetation and Wildlife)**

26 Vegetation and wildlife are addressed together in this section, because an analysis of  
27 potential impacts to wildlife typically involves a discussion of wildlife habitat, which  
28 consists of various vegetation and aquatic communities found within the park and  
29 monument. Soils and substrates, topography, microclimates, and landscape configuration  
30 also affect habitats, but these elements are addressed in separate sections within the  
31 natural resources section of the environmental consequences chapter. Threatened and  
32 endangered species associated with these resources are discussed under a separate impact  
33 topic as well. The effects of the alternatives on marine resources and habitat are analyzed  
34 based on the possibility of impacts resulting primarily from facility development and  
35 visitor use.

36 The thresholds to determine impact intensity for these resources are defined as follows:

37 **Negligible:** There would be no observable or measurable impacts to the spatial extent of  
38 native species or their habitats, or the natural processes sustaining them. There would be  
39 no discernable change in native habitat integrity. Native and nonnative species richness  
40 and abundance would remain the same. Impacts would be of short duration and well  
41 within natural fluctuations.

42 **Minor:** Impacts would be detectable, but they would not be expected to be outside the  
43 natural range of variability and would not be expected to have any long-term effects on

- 1 native species, their habitats, or the natural processes sustaining them. Any changes in  
2 native habitat integrity and native and nonnative species richness and abundance would  
3 be minimal.
- 4 Population numbers, population structure, genetic variability, and other demographic  
5 factors for species might have small, short-term changes, but long-term characteristics  
6 would remain stable and viable. Disturbance of some individuals could be expected, but  
7 without interference to reproduction or other factors affecting population levels.
- 8 Key ecosystem processes might have short-term disruptions that would be within natural  
9 variation. Habitat integrity would be maintained to support species' needs. Impacts would  
10 be outside critical reproduction periods for sensitive native species. Improvements to  
11 habitat quality may be detectable, but would not result in measurable improvements in  
12 ecosystem resiliency.
- 13 **Moderate:** Impacts on native species, their habitats, or the natural processes sustaining  
14 them would be detectable, and they could be outside the natural range of variability for  
15 short periods of time. Population numbers, population structure, genetic variability, and  
16 other demographic factors might experience short-term changes, but would be expected  
17 to rebound to pre-impact numbers and to remain stable and viable in the long term.  
18 Frequent responses to disturbance by some individuals could be expected, with some  
19 negative impacts to feeding, reproduction, or other factors affecting short-term population  
20 levels.
- 21 Breeding animals of concern are present; animals are present during particularly  
22 vulnerable life-stages, such as migration or juvenile stages; mortality or interference with  
23 activities necessary for survival can be expected on an occasional basis, but is not  
24 expected to threaten the continued existence of the species in the park and monument.
- 25 Key ecosystem processes might have short-term disruptions that would be outside natural  
26 variation (but would soon return to natural conditions). Habitat integrity would be  
27 maintained to support species' needs. Some impacts might occur during critical periods  
28 of reproduction or in key habitat for sensitive native species. Improvements to habitat  
29 quality would be detectable and could result in measurable improvements in ecosystem  
30 resiliency.
- 31 **Major:** Impacts on native species, their habitats, or the natural processes sustaining them  
32 would be detectable, and they would be expected to be outside the natural range of  
33 variability for long periods of time or be permanent. Population numbers, population  
34 structure, genetic variability, and other demographic factors might have large, short-term  
35 declines, with long-term population numbers significantly depressed. Frequent responses  
36 to disturbance by some individuals would be expected, with negative impacts to feeding,  
37 reproduction, or other factors resulting in a long-term decrease in population levels.  
38 Breeding colonies of native species might relocate to other portions of the park.
- 39 The impact is severely adverse or exceptionally beneficial or would result in appreciable  
40 changes to wildlife resources and habitat; the effect would be regional in scale. Impacts  
41 would result in a reduction in species numbers, alteration in behavior, reproduction,  
42 migration, or survival. Severe adverse impacts would alter or destroy habitat in a way that  
43 would prevent biological communities that inhabited the area prior to the action from re-  
44 establishing themselves. These impacts are expected to be outside the natural range of  
45 variability and may be permanent.

1 Key ecosystem processes might be disrupted in the long term or permanently. Loss of  
2 habitat integrity might affect the viability of at least some native species. Improvements  
3 to habitat quality would be detectable and permanent and would result in substantial  
4 improvements in ecosystem resiliency.

5

## 6 **Special Status Species**

7 Federal and state listed threatened and endangered species are addressed together in this  
8 section, because many of these species (1) have dual federal and state special status, (2)  
9 occur together in the same habitats, or (3) would be impacted similarly under each  
10 alternative. The environmental consequences for federal threatened and endangered  
11 species are described in such a way that meets the requirements of the National  
12 Environmental Policy Act and the Endangered Species Act (ESA). Definitions for impact  
13 conclusions required for Section 7 ESA consultation are presented below:

14 **No effect:** When a proposed action would not affect a federal listed species, candidate  
15 species, or designated critical habitat.

16 **May affect, not likely to adversely affect:** Effects on federal listed or candidate species  
17 are discountable (i.e., extremely unlikely to occur and not able to be meaningfully  
18 measured, detected, or evaluated) or are completely beneficial.

19 **May affect, likely to adversely affect:** Adverse effects to a federal listed or candidate  
20 species may occur as a direct or indirect result of proposed actions and the effects are  
21 either not discountable or completely beneficial.

22 **Likely to jeopardize proposed species or adversely modify proposed critical habitat**  
23 **(impairment):** The appropriate conclusion when the National Park Service or the U.S.  
24 Fish and Wildlife Service identifies situations in which the proposal could jeopardize the  
25 continued existence of a federal listed or candidate species or adversely modify critical  
26 habitat to a species within or outside park boundaries.

27 The following impact threshold definitions are used to describe the severity and  
28 magnitude of changes to federal and state listed species under each of the alternatives.  
29 Each threshold definition references the Endangered Species Act determinations  
30 described above.

31 **Negligible:** Impacts would be imperceptible or unmeasurable (undetectable). For federal  
32 listed species, this impact intensity would equate to a determination of “no effect.”

33 **Minor:** Impacts would be slightly perceptible and localized in extent; without further  
34 actions, adverse impacts would reverse and the resource would recover. Adverse impacts  
35 may include disturbance to individuals or avoidance of certain areas. Beneficial impacts  
36 would include slight increases to viability of the species in the park as species-limiting  
37 factors (e.g. habitat loss, competition, and mortality) are kept in check. For federal listed  
38 species, this impact intensity would equate to a determination of “may affect, not likely to  
39 adversely affect.”

40 **Moderate:** Impacts would be readily measurable (apparent) and extend farther  
41 geographically than a minor impact; localized in extent; adverse impacts would  
42 eventually reverse and the resource would recover. Adverse impacts may include  
43 disturbance, injury, or mortality of individuals, but the long-term viability of the

1 population would be maintained. For federal listed species, this impact intensity would  
2 equate to a determination of “may affect, likely to adversely affect.” Beneficial impacts  
3 would include increases to viability of the species in the park as species-limiting factors  
4 (e.g. habitat loss, competition, and mortality) are kept in check. For federal listed species,  
5 this impact intensity would equate to a determination of “may affect, not likely to  
6 adversely affect.”

7 **Major:** Impacts would be substantial, highly noticeable, and affecting a large geographic  
8 area; changes would be irreversible with or without active management. Adverse impacts  
9 may include disturbance, injury, or mortality of individuals to the point that the long-term  
10 viability of the population would be compromised. In extreme adverse cases, effects  
11 would be irreversible and populations may be extirpated from the park. For federal listed  
12 species, this impact intensity would equate to a determination of “may affect, likely to  
13 adversely affect.” Beneficial impacts would include increases to viability of the species in  
14 the park as species-limiting factors (e.g. habitat loss, competition, and mortality) are  
15 substantially reduced and species resilience is enhanced by greatly improving habitat  
16 integrity. For federal listed species, this impact intensity would equate to a determination  
17 of “may affect, not likely to adversely affect.”

18

19

## 20 **CULTURAL RESOURCES**

### 21 **Cultural Resources Listed in or Eligible to be Listed in the** 22 **National Register of Historic Places**

23 In this assessment, environmental impacts to cultural resources are described in terms of  
24 type (adverse or beneficial), context, duration (short-term, long-term, or permanent), and  
25 intensity (negligible, minor, moderate, major), which is consistent with the regulations of  
26 the Council on Environmental Quality (CEQ) that implement the National Environmental  
27 Policy Act (NEPA). These impact analyses are intended, however, to comply with the  
28 requirements of both NEPA and Section 106 of the National Historic Preservation Act  
29 (NHPA). In accordance with the Advisory Council on Historic Preservation’s regulations  
30 implementing Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic*  
31 *Properties*), impacts to cultural resources were also identified and evaluated by (1)  
32 determining the area of potential effects; (2) identifying cultural resources present in the  
33 area of potential effects that are either listed in or eligible to be listed in the National  
34 Register of Historic Places; (3) applying the criteria of adverse effect to affected, national  
35 register listed or national register eligible cultural resources; and (4) considering ways to  
36 avoid, minimize or mitigate adverse effects.

37 Under the Advisory Council’s regulations, a determination of either *adverse effect* or *no*  
38 *adverse effect* must also be made for affected national register listed or national register  
39 eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly  
40 or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the  
41 national register, e.g. diminishing the integrity (or the extent to which a resource retains  
42 its historic appearance) of its location, design, setting, materials, workmanship, feeling,  
43 or association. Adverse effects also include reasonably foreseeable effects caused by the  
44 alternatives that would occur later in time, be farther removed in distance or be

1 cumulative (36 CFR 800.5, *Assessment of Adverse Effects*). A determination of *no*  
2 *adverse effect* means there is an effect, but the effect would not diminish the  
3 characteristics of the cultural resource that qualify it for inclusion in the national register.  
4 CEQ regulations and the National Park Service's *Conservation Planning, Environmental*  
5 *Impact Analysis and Decision Making* (Director's Order #12) also call for a discussion of  
6 mitigation, as well as an analysis of how effective the mitigation would be in reducing the  
7 intensity of a potential impact, e.g. reducing the intensity of an impact from major to  
8 moderate or minor. Any resultant reduction in intensity of impact due to mitigation,  
9 however, is an estimate of the effectiveness of mitigation under NEPA only. It does not  
10 suggest that the level of effect as defined by Section 106 is similarly reduced. Cultural  
11 resources are nonrenewable resources and adverse effects generally consume, diminish,  
12 or destroy the original historic materials or form, resulting in a loss in the integrity of the  
13 resource that can never be recovered. Therefore, although actions determined to have an  
14 adverse effect under §106 may be mitigated, the effect remains adverse.  
15 A Section 106 summary is included in the impact analysis sections. The Section 106  
16 summary is an assessment of the effect of the undertaking (implementation of the  
17 alternative), based upon the criterion of effect and criteria of adverse effect found in the  
18 Advisory Council's regulations.

19

## 20 **Archeological Resources**

21 The following impact thresholds have been developed for analyzing impacts to  
22 archeological resources:

23 **Negligible:** Impact is at the lowest level of detection. Impacts would be measurable but  
24 with no perceptible consequences. For purposes of Section 106, the determination of  
25 effect would be *no adverse effect*.

26 **Minor:** Disturbance of a site results in little loss of integrity. The determination of effect  
27 for §106 would be *no adverse effect*.

28 **Moderate:** A site is disturbed but not obliterated. The determination of effect for §106  
29 would be *adverse effect*.

30 **Major:** A site is obliterated. The determination of effect for §106 would be *adverse*  
31 *effect*.

32

1    **Prehistoric and Historic Structures**

2    The following impact thresholds have been developed for analyzing impacts to  
3    prehistoric and historic structures:

4    **Negligible:** Impacts would be at the lowest levels of detection – barely perceptible and  
5    not measurable. There would be no change to defining features that contribute to the  
6    resource’s National Register eligibility. For purposes of Section 106, the determination of  
7    effect would be *no adverse effect*.

8    **Minor:** Impacts would not affect the character-defining features of a building or structure  
9    listed or eligible for the National Register. Impacts would be detectable but would not  
10   diminish the overall integrity of the resource. For purposes of Section 106, the  
11   determination of effect would be *no adverse effect*.

12   **Moderate:** Impacts would alter a character-defining feature(s) of a significant historic  
13   structure or building, and would diminish the overall integrity of the resource to the  
14   extent that its National Register eligibility could be jeopardized. Mitigation measures  
15   would be identified to reduce the level of impact and implemented with a high degree of  
16   success. For purposes of Section 106, the determination of effect would be *adverse effect*.

17   **Major:** Impacts would result from substantial and highly noticeable changes that would  
18   alter the character-defining features of a historic structure/ building, and diminish the  
19   integrity of the resource to the extent that it would no longer be eligible to be listed on the  
20   National Register. Mitigation measures would be identified to reduce the level of impact  
21   and adopted not knowing the degree of success. For purposes of Section 106, the  
22   determination of effect would be *adverse effect*.

23

24    **Cultural Landscapes**

25    The following impact thresholds have been developed for analyzing impacts to cultural  
26    landscapes:

27    **Negligible:** Impacts would be at the lowest levels of detection-barely perceptible and not  
28    measurable. There would be no change to defining features that contribute to the  
29    resource’s National Register eligibility. For purposes of Section 106, the determination of  
30    effect would be *no adverse effect*.

31    **Minor:** Impacts would not affect the character-defining features of a cultural landscape  
32    or structure listed or eligible for the National Register. Impacts would be detectable but  
33    would not diminish the overall integrity of the resource. For purposes of Section 106, the  
34    determination of effect would be *no adverse effect*.

35    **Moderate:** Impacts would alter a character-defining feature(s) of a cultural landscape and  
36    result in measurable changes, and they could diminish the overall integrity of the resource  
37    to the extent that its national register eligibility would be jeopardized. For purposes of  
38    Section 106, the determination of effect would be *adverse effect*.

39    **Major:** Impacts would result from substantial and highly noticeable changes that would  
40    alter the character-defining features of a cultural landscape. These impacts would  
41    diminish the overall integrity of the resource to the extent that it would no longer be

1 eligible to be listed on the National Register. For purposes of Section 106, the  
2 determination of effect would be *adverse effect*.

3

#### 4 **Ethnographic Resources**

5 The following impact thresholds have been developed for analyzing impacts to  
6 ethnographic resources:

7 **Negligible:** Impacts would be at the lowest levels of detection and barely perceptible.  
8 Impacts would neither alter resource conditions, such as traditional access or site  
9 preservation, nor alter the relationship between the resource and the affiliated group's  
10 body of practices and beliefs. For purposes of Section 106, the determination of effect  
11 would be *no adverse effect*.

12 **Minor:** Impacts would be slight but noticeable and would neither appreciably alter  
13 resource conditions, such as traditional access or site preservation, nor alter the  
14 relationship between the resource and the group's body of beliefs and practices. For  
15 purposes of Section 106, the determination of effect would be *no adverse effect*.

16 **Moderate:** Impacts would be apparent and would alter resource conditions or interfere  
17 with traditional access, site preservation, or the relationship between the resource and the  
18 affiliated group's beliefs and practices, even though the group's practices and beliefs  
19 would survive. For purposes of Section 106, the determination of effect would be *adverse*  
20 *effect*.

21 **Major:** Impacts would alter resource conditions. Proposed actions would block or greatly  
22 affect traditional access, site preservation, or the relationship between the resource and  
23 the group's body of beliefs and practices to the extent that the survival of a group's  
24 beliefs and/or practices would be jeopardized. For purposes of Section 106, the  
25 determination of effect would be *adverse effect*.

26

#### 27 **Park Collections**

28 Park collections (prehistoric and historic objects, artifacts, works of art, archival  
29 documents, and natural history specimens) are generally ineligible for listing in the  
30 National Register of Historic Places. As such, Section 106 determinations of effect are  
31 not provided.

32 The following impact thresholds have been developed for analyzing park collections:

33 **Negligible:** Impact(s) would be at the lowest levels of detection – barely measurable with  
34 no perceptible consequences, either adverse or beneficial, to park collections.

35 **Minor:** Impact(s) would affect the integrity of few items in the park collection but would  
36 not degrade the usefulness of the collection for future research and interpretation.

37 **Moderate:** Impact(s) would affect the integrity of many items in the park collection and  
38 diminish the usefulness of the collection for future research and interpretation.

39 **Major:** Impact(s) would affect the integrity of most items in the park collection and  
40 destroy the usefulness of the collection for future research and interpretation.

1 **VISITOR USE AND EXPERIENCE**

2 This impact analysis considers various aspects of visitor use and experience at Golden  
3 Gate National Recreation Area and Muir Woods National Monument, including the  
4 effects on diversity of recreation opportunities and national park experiences; visitor  
5 understanding, education, and interpretation; safe and enjoyable access and circulation to  
6 and within the park; and visitor safety.

7 The analysis is primarily qualitative rather than quantitative due to the conceptual nature  
8 of the alternatives. Impacts on visitor use and experience were determined considering  
9 the best available information. Information on visitor use and opinions were taken from  
10 the public scoping information for this plan and surveys of visitors and nonvisitors  
11 conducted by various researchers. Other information that was considered in the analysis  
12 includes the parks' annual reporting of visitor use levels, including overnight stays, to the  
13 National Park Service's Public Use Statistics Office, and local and regional travel and  
14 tourism data.

15 Primarily, visitors expressed interest in preserving and educating visitors about the  
16 unique natural and cultural resources of the park and monument, continuing to provide  
17 high quality trail opportunities, exploring improved transportation and access to the park  
18 lands and better preserving the scenic beauty of the park's setting.

19 Impacts on visitor use and experience are described in terms of the effect on the  
20 following components:

- 21 • Diversity of recreation opportunities and national park experiences
- 22 • Visitor understanding, education, and interpretation
- 23 • Safe and enjoyable access and circulation to and within the park (see also  
24 transportation section)
- 25 • Visitor safety

26 The duration of a short-term impact would be less than one year. A long-term impact  
27 would last more than one year and would be more permanent in nature.

28 Adverse impacts are those that most visitors would perceive as undesirable. Beneficial  
29 impacts are those that most visitors would perceive as desirable.

30 The thresholds to determine impact intensity are defined as follows:

31 **Negligible:** Most visitors would likely be unaware of any effects associated with  
32 implementation of the alternative.

33 **Minor:** Changes in visitor opportunities and/or setting conditions would be slight but  
34 detectable, would affect few visitors, and would not appreciably limit or enhance  
35 experiences identified as fundamental to the park's purpose and significance.

36 **Moderate:** Changes in visitor opportunities and/or setting conditions would be  
37 noticeable, would affect many visitors, and would result in some changes to experiences  
38 identified as fundamental to the park's purpose and significance.

39 **Major:** Changes in visitor opportunities and/or setting conditions would be highly  
40 apparent, would affect most visitors, and would result in several changes to experiences  
41 identified as fundamental to park purpose and significance.

## 1 SOCIAL AND ECONOMIC ENVIRONMENT

2 When assessing the potential impacts to the social and economic environment, several  
3 impact parameters must be analyzed for each action alternative. First, the *type* of impact  
4 must be determined (i.e., whether the impact is beneficial or adverse). The beneficial and  
5 adverse impacts to the social and economic environment are determined by comparing  
6 the anticipated changes resulting from implementing alternatives 1, 2, and 3 to the results  
7 of continuing current management (i.e., the no-action alternative). Once it is determined  
8 if an impact is beneficial or adverse, the other impact attributes can be assessed, such as  
9 *context, duration, and intensity*.

10 **Context:** The context refers to the setting or geographic scope of the impact to the social  
11 and economic conditions. In this analysis, impacts will be measured relative to the  
12 following three context levels (when applicable):

- 13 • Local gateway communities (immediate proximity to park sites)
- 14 • Three adjacent counties (Marin, San Francisco, and San Mateo)
- 15 • Bay Area (nine-county region)

16  
17 **Intensity:** The intensity refers to the significance or degree of the impact to the social  
18 and economic conditions. The thresholds are defined as follows:

- 19 • **Negligible:** No effects occur or the effects on social and economic conditions  
20 would be unnoticeable. The action would not yield any noticeable or measureable  
21 changes to quality of life, the population demographic, and local economy.
- 22 • **Minor:** The effects on social and economic conditions would be detectable, but  
23 only slight and limited to a small portion of the surrounding community and local  
24 economy. The action would minimally influence the quality of life, the  
25 population demographic, and/or local economy.
- 26 • **Moderate:** The effects on social and economic conditions would be readily  
27 apparent and would influence multiple segments of the community or local  
28 economy. The action would yield changes that are noteworthy or modest to the  
29 quality of life, the population demographic, and/or local economy.
- 30 • **Major:** The effects on social and economic conditions would be very apparent,  
31 significant, and/or widespread throughout the community and local economy.  
32 The action would yield considerable changes to the quality of life, the population  
33 demographic, and/or local economy.

34  
35 In the discussion of impacts to the social and economic environment, an analysis section  
36 and conclusion section are included for each alternative for Golden Gate National  
37 Recreation Area including Alcatraz Island and Muir Woods National Monument,  
38 including the no-action alternative. Also, the analysis begins with a section that addresses  
39 the impacts from actions that are common to all action alternatives for both Golden Gate  
40 National Recreation Area and Muir Woods National Monument. To help with assessing  
41 impacts to the social and economic environment, the planning team considered the  
42 following primary and secondary factors that collectively affect the social and economic  
43 environment of the project area.

1 **TRANSPORTATION**

2 Planning alternatives for the Golden Gate National Recreation Area and Muir Woods  
3 National Monument were developed for park lands in San Mateo, Marin, and San  
4 Francisco counties. For each of the three counties, as well as for Muir Woods National  
5 Monument, the proposed alternatives are discussed with respect to their qualitative effect  
6 on visitor access and circulation related to roadways, parking, bicycle access, pedestrian  
7 access, transit service, and access to transit. Muir Woods National Monument has been  
8 the subject of more detailed transportation analysis in recent years, enabling this section  
9 to include more quantitative analysis than the other areas.

10 Transportation impacts for the no-action alternative plus the three action alternatives are  
11 discussed for park lands for each county and separately for Muir Woods National  
12 Monument.

- 13 • Marin County – southeast coastal area, southwest coastal area, Marin Headlands,  
14 and the Stinson Beach area
- 15 • San Francisco – Upper Fort Mason, China Beach, Lands End, East and West Fort  
16 Miley, Ocean Beach, and Fort Funston.
- 17 • San Mateo County – multiple sites
- 18 • Muir Woods National Monument

19  
20 Other than continuing and expanding shuttle service to Muir Woods National Monument,  
21 changes in transit service that would be provided by agencies other than the National  
22 Park Service, are not modeled.

23 Impacts on visitor access and on the transportation system are described in terms of their  
24 effect in the following areas, as applicable:

25 **Multimodal Visitor Connections to Park Sites and Communities**

- 26 • Access by land, including roads, public transit, tour buses, trails, and bicycles
- 27 • Access by water, including ferries, water taxis, or other water transit

28

29 **Functionality of the Transportation System**

- 30 • Land transportation, including traffic flow, congestion, and circulation; parking  
31 availability; transit service availability; transit facility capacity; amenities and  
32 condition; and public safety
- 33 • Water transportation, including facility capacity and condition, multimodal  
34 access, and public health and safety
- 35 • Connectivity, including number and capacity of connections, and availability of  
36 modes of travel
- 37 • Directional and park site identification signs and wayfinding information

38

39 For this analysis, equestrian activity is considered recreational and is not included as part  
40 of the transportation system.

1 Definitions

2 **Type:** The impact is determined to be either beneficial or adverse. The beneficial and  
3 adverse impacts to the transportation system are determined by comparing the anticipated  
4 changes resulting from implementing alternatives 1, 2, and 3 to the results of continuing  
5 current management (i.e., the no-action alternative).

6 **Intensity:** The intensity refers to the significance or degree of the impact to the  
7 transportation system. The thresholds are defined as follows:

8 **Negligible:** Most visitors would likely be unaware of any effects associated with  
9 implementation of the alternative.

10 **Minor:** Changes in visitor access/circulation would be slight but detectable, would affect  
11 few visitors, and would not appreciably limit or enhance visitors' ability to visit park sites  
12 or move within park sites.

13 **Moderate:** Changes in visitor access/circulation would be noticeable, would affect many  
14 visitors, and would result in some changes to visitors' ability to visit park sites or move  
15 within park sites.

16 **Major:** Changes in visitor access/circulation would be highly apparent, would affect  
17 most visitors, and would result in many changes to visitors' ability to visit park sites or  
18 move within park sites.

19 In addition to the terms above, four terms are used to describe the seasonality of  
20 transportation impacts:

21 **Peak season:** the impact would occur primarily from Memorial Day through Labor Day

22 **Shoulder season:** the impact would affect transportation in April and May in the spring,  
23 and in September in the fall

24 **Low visitation or offseason:** the impact would occur primarily from October 1 through  
25 April 30

26 **Year-round:** the impact would affect visitor experiences for much of the year, especially  
27 if adverse effects during peak months had the effect of spreading visitation more evenly  
28 throughout the year

29

30

31 **PARK MANAGEMENT, OPERATIONS, AND FACILITIES**

32 The impact analysis evaluated the effects of the alternatives on Golden Gate National  
33 Recreation Area and Muir Woods National Monument operations, including staffing,  
34 infrastructure, maintenance, visitor facilities, and services.

35 The analysis focused on how operations and facilities might vary with the different  
36 management alternatives. The analysis is qualitative rather than quantitative because of  
37 the conceptual nature of the alternatives. Consequently, professional judgment was used  
38 to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

PART 9: POTENTIAL ENVIRONMENTAL CONSEQUENCES

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- 1 The following impact thresholds have been developed for analyzing park management,  
2 operations, and facilities:
- 3 **Negligible:** The effect would be at or below the lower levels of detection, and would not  
4 have an appreciable effect on park operations and management
- 5 **Minor:** The effects would be detectable, but would be of a magnitude that would not  
6 have an appreciable effect on park operations and management.
- 7 **Moderate:** The effects would be readily apparent and would result in a change in park  
8 operations and management in a manner noticeable to staff and the public.
- 9 **Major:** The effects would be readily apparent and would result in a substantial change in  
10 park operations and management in a manner noticeable to staff and the public. The  
11 change would produce conditions that would be markedly different from existing  
12 operations.
- 13

---

## IMPAIRMENT OF PARK RESOURCES

2

3 In addition to determining the environmental consequences of implementing the alterna-  
4 tives, *NPS Management Policies 2006* (section 1.4) requires analysis of potential effects  
5 to determine whether alternatives would impair the parks' resources and values.

6 The fundamental purpose of the national park system, established by the Organic Act and  
7 reaffirmed by the General Authorities Act, as amended, begins with a mandate to  
8 conserve resources and values. NPS managers must always seek ways to avoid, or to  
9 minimize to the greatest degree practicable, adverse impacts on resources and values.  
10 Although Congress has given the National Park Service the management discretion to  
11 allow certain impacts within a unit, that discretion is limited by the statutory requirement  
12 that the National Park Service must leave resources and values unimpaired unless a  
13 particular law directly and specifically provides otherwise.

14 The prohibited impairment is an impact that, in the professional judgment of the  
15 responsible NPS manager, would harm the integrity of resources and values, including  
16 the opportunities that otherwise would be present for the enjoyment of those resources or  
17 values (*NPS Management Policies 2006* section 1.4.5). An impact would be more likely  
18 to constitute impairment if (1) it results in a moderate or major adverse affect on a  
19 resource or value whose conservation is necessary to fulfill specific purposes identified in  
20 the establishing legislation or proclamation of the area; (2) key to the natural or cultural  
21 integrity of the area or to opportunities for enjoyment of the area; or (3) identified as a  
22 goal in the area's general management plan or other relevant NPS planning documents.

23 A determination on impairment is made in the "Conclusion" section for each required im-  
24 pact topic related to the parks' resources and values. An evaluation of impairment is not  
25 required for topics related to visitor use and experience (unless the impact is resource  
26 based), the social and economic environment, or NPS operations. When it is determined  
27 that an action or actions would have a moderate to major adverse effect, an explanation is  
28 presented of why this would not constitute impairment. Impacts of negligible or minor  
29 intensity would not, by definition, result in impairment. The impairment analysis for each  
30 of the impact topics, found later in this chapter, has determined that none of the  
31 alternatives presented in this plan would result in impairment of park resources.

32

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# ENVIRONMENTAL IMPACTS COMMON TO ALL ALTERNATIVES AT GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT

5

## 6 NATURAL RESOURCES

### 7 Analysis

8 The goals and strategies that are common to all action alternatives include policy  
9 guidance on a variety of topics that would have an impact on natural resources. These  
10 topics include park boundaries, climate change, ocean stewardship, partnerships,  
11 Redwood Creek vision, Sharp Park, transportation, trails, and park collections. In general,  
12 all of the guidance that is included would have a beneficial impact on natural resources.

13 For example, the park boundaries policy (see Volume I, Chapter 3) contains goals for  
14 science-based land and water acquisition that would improve the integrity of natural  
15 resources. It also includes the proposed acquisition of several parcels of land and water in  
16 San Mateo County as well as potential future boundary adjustments across the park.

17 The policy on climate change includes goals for greenhouse gas emissions reductions and  
18 responding to the effects of climate change on natural resources. The management  
19 approach that is included seeks to reduce environmental stressors, maintain biological  
20 diversity, and develop adaptation responses to build resiliency in natural systems and  
21 species.

22 The ocean stewardship policy includes management strategies and objectives that would  
23 help to protect ocean resources through improved research and collaborative management  
24 with other state and federal agencies.

25 The partnerships policy would assist the NPS in developing collaborative arrangement  
26 with other park partners whose programs have shared goals including preservation of  
27 natural resource management.

28 The Redwood Creek vision includes guiding principles and desired future conditions for  
29 natural resource protection and management of the entire Redwood Creek watershed,  
30 which would assist the NPS in meeting its management goals at Golden Gate National  
31 Recreation Area and Muir Woods National Monument.

32 The Native American engagement policies could have minor, adverse impacts on  
33 vegetation and wildlife impacts due to the collection of natural materials. Coordination  
34 between Native Americans and park staff would ensure that habitat integrity would be  
35 maintained.

36 The Sharp Park policy includes guidance and criteria for the potential future acquisition  
37 of Sharp Park by the National Park Service. The policy would ensure that habitat for the  
38 federally listed California red-legged frog and the San Francisco garter snake would be  
39 protected, in addition to providing habitat for other wildlife and plant species and the  
40 potential to connect to a large habitat corridor.

1 The transportation policy includes goals for multi-modal and alternative transportation,  
2 which would assist the National Park Service in reducing its carbon footprint and air  
3 quality concerns in the Bay area.

4 The trails policy includes goals on sustainable trail design and best management  
5 practices, which would assist the National Park Service in improving habitat quality and  
6 integrity by reducing impacts from erosion, exotic and invasive species, and habitat  
7 fragmentation.

8 The park collections policy would benefit natural resources by ensuring that natural  
9 resource specimens (whether geologic, botanical, etc.) are properly protected and  
10 managed.

11

## 12 **Conclusion**

13 Overall, impacts to natural resources resulting from these policies would be long term,  
14 beneficial, and would range from negligible to moderate, throughout Golden Gate  
15 National Recreation Area and Muir Woods National Monument.

16

17

## 18 **CULTURAL RESOURCES**

### 19 **Analysis**

20 Development of new or improved maintenance hubs, a public safety hub, satellite  
21 maintenance offices, and parking areas, as well as expanding the park's trail system and  
22 improving connectivity and accessibility, could adversely impact the park's archeological  
23 resources, historic buildings and structures, and cultural landscapes. As appropriate,  
24 archeological surveys and/or monitoring would precede any ground disturbance. national  
25 register – eligible or national register – listed archeological resources would be avoided  
26 to the greatest extent possible. If such resources could not be avoided, an appropriate  
27 mitigation strategy would be developed in consultation with the California state historic  
28 preservation office and, if necessary, associated American Indian tribes. If during  
29 construction, previously unknown archeological resources were discovered, all work in  
30 the immediate vicinity of the discovery would be halted until the resources could be  
31 identified and documented; if the resources could not be preserved *in situ*, an appropriate  
32 mitigation strategy would be developed in consultation with the state historic  
33 preservation office and associated American Indian tribes. Because national register –  
34 eligible or national register – listed archeological resources would be avoided to the  
35 greatest extent possible, any adverse effects would be expected to be minor to moderate  
36 in intensity and permanent.

37 Archeological resources adjacent to or easily accessible from trails and developed areas  
38 could be vulnerable to surface disturbance, inadvertent damage, and vandalism. A loss of  
39 surface archeological materials, alteration of artifact distribution, and a reduction of  
40 contextual evidence could result. However, continued ranger patrol and emphasis on  
41 visitor education would help to discourage vandalism and inadvertent destruction of

1 cultural remains, and any adverse impacts, if any, would be expected to be negligible to  
2 minor.

3 Every effort would be made to establish new or improved maintenance hubs, a public  
4 safety hub, satellite maintenance offices, and parking facilities in existing developed  
5 areas or in rehabilitated historic buildings whose architectural values are protected and  
6 preserved. Careful design of new facilities would ensure that new buildings and  
7 structures would minimally affect the scale and visual relationships among existing  
8 landscape features or circulation patterns and features. In addition, the topography, native  
9 vegetation patterns, and land use patterns would remain largely unaltered. Any adverse  
10 impacts would be long term and of minor intensity. Improved maintenance facilities and  
11 programs would enable the park to conduct more comprehensive cultural resource  
12 preservation and maintenance programs and thus enhance protection of the park's  
13 cultural resource values—a beneficial impact.

14 Inclusion of the San Mateo County properties (Gregerson Property adjacent to Rancho  
15 Corral de Tierra, Vallemar Acres, and Highway Frontage in the West Cattle Hill vicinity)  
16 and potential future boundary adjustments (the Marin City Ridge, Pacifica Conservation  
17 Area, Montara Mountain Complex, San Mateo County gateway, and Bolinas Lagoon)  
18 would result in enhanced identification, protection, and interpretation of archeological  
19 resources, historic structures, and cultural landscape values in those areas per National  
20 Park Service cultural resource policies, but only if appropriate funding and FTEs were to  
21 be expended on them.

22 Implementation of the park's climate change policy and action plan would result in (1) an  
23 understanding of how to protect and preserve the park's archeological resources, historic  
24 structures, and cultural landscapes by reducing current stressors to such resources, (2)  
25 assisting in development of triage criteria for prioritizing preservation treatments and  
26 other management actions for cultural resources, such as relocation coupled with  
27 sustainable mitigation efforts for shoreline resources, and (3) guiding managed retreat  
28 programs when the triage process indicated that preservation treatment or relocation was  
29 not a feasible option.

30 Establishing a curatorial and research facility that meets NPS standards and can  
31 accommodate all of the park collection will have a long-term beneficial impact to the  
32 preservation of the collections. Strengthening the collection policy and implementing  
33 actions to connect people with the park's museum will have a beneficial impact by  
34 increasing public stewardship opportunities, access to the park's history, and integration  
35 of the park collections into the park's visitor experience.

36 Implementation of the park's Ocean Park Stewardship Policy would result in improved  
37 identification, understanding, protection, and preservation of the park's archeological  
38 (i.e., submerged) resources.

39 Ongoing National Park Service efforts to establish and foster effective partnerships  
40 would result in beneficial impacts on the park's archeological resources, historic  
41 structures, and cultural landscapes because partnerships (1) create appreciation and  
42 support for the park's resources and (2) increase avenues through which communities and  
43 visitors can engage with the park to preserve and enhance those resources.

1 Implementation of the Redwood Creek Vision would result in enhanced collaborative  
2 efforts to identify, protect/preserve, and interpret archeological resources, historic  
3 structures, and cultural landscapes in the Redwood Creek watershed.

4 Ongoing and enhanced Native American engagement programs and protocols by the park  
5 with the Federated Indians of Graton Rancheria and Ohlone tribes and individuals would  
6 result in improved cultural resource management of archeological and ethnographic sites,  
7 collaborative interpretation and education activities, and revitalization of Native  
8 American communities, traditions, and heritage.

9 Additionally, improving ferry access to Alcatraz Island and establishing ferry routes to  
10 other park sites within San Francisco Bay would result in better preservation of the  
11 cultural resources by minimizing transportation impacts to its cultural landscape values.

12 Execution of implementation plans for Alcatraz, such as preparation of a cultural  
13 landscape report, historic resource study, and baseline inventory and HABS recovery  
14 plan, would provide the National Park Service with the knowledge to better preserve and  
15 more effectively interpret the multiple layers of historic development associated with the  
16 island's significant archeological resources, ethnographic sites, historic structures, and  
17 cultural landscapes.

18

## 19 **Conclusion**

20 Because national register – eligible or national register – listed archeological resources  
21 would be avoided to the greatest extent possible, any adverse effects would be expected  
22 to be minor to moderate in intensity and permanent. A loss of surface archeological  
23 materials, alteration of artifact distribution, and a reduction of contextual evidence could  
24 result. However, continued ranger patrol and emphasis on visitor education would  
25 discourage vandalism and inadvertent destruction of cultural remains, and any adverse  
26 impacts would be expected to be negligible to minor if any. Careful design of new  
27 facilities would ensure that new buildings and structures would minimally affect the scale  
28 and visual relationships among existing landscape features or circulation patterns and  
29 features. In addition, the topography, native vegetation patterns, and land use patterns  
30 would remain largely unaltered. Any adverse impacts would be long term and of minor  
31 intensity. Improved maintenance facilities and programs would enable the park to  
32 conduct more comprehensive cultural resource preservation and maintenance programs  
33 and thus enhance protection of the park's cultural resource values – a beneficial impact.

34 Actions common to all alternatives would generally have beneficial impacts on the  
35 protection and preservation of archeological resources, ethnographic sites, historic  
36 structures, and cultural landscapes in Golden Gate National Recreation Area including  
37 Alcatraz Island. Any adverse effects to archeological resources and ethnographic  
38 resources would be expected to be negligible to moderate in intensity and permanent.  
39 Any adverse impacts to cultural landscape resources (including historic buildings and  
40 structures) would be long term and of minor intensity.

41 Concerning the actions common to all alternatives, the Section 106 determination of  
42 effect on archeological resources, ethnographic sites, historic structures, and cultural  
43 landscapes in Golden Gate National Recreation Area including Alcatraz Island is *adverse*  
44 *effect*.

1 Because there would be no major, adverse impacts to a resource or value whose  
2 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
3 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
4 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
5 management plan or other relevant National Park Service planning documents, there  
6 would be no impairment of the Golden Gate National Recreation Area's resources or  
7 values.

8

9

## 10 **VISITOR USE AND EXPERIENCE**

### 11 **Analysis**

12 In addition to the specific proposals in the action alternatives, some of the  
13 recommendations and policies that are common to all action alternatives would have a  
14 beneficial impact on visitor use and experience at both Golden Gate National Recreation  
15 Area and Muir Woods National Monument. Several of the proposed boundary  
16 adjustments would provide new lands for recreation, expanding the diversity of settings,  
17 and new lands for access purposes, facilitating better access options to various park sites;  
18 both of these would have a beneficial impact on visitor use and experience. The  
19 recommendations for educating visitors on climate change and ocean stewardship would  
20 have a beneficial impact on visitor experience by providing visitors with direct access to  
21 the latest research and knowledge, providing increased awareness and inspiration  
22 regarding these important subjects. Actions that improve the preservation and visitor  
23 access to the park collection would strengthen the park's interpretive and education  
24 programs. The new public safety office proposed at Sheldance Nursery would have a  
25 beneficial impact on visitor safety by providing shorter response times and a constant  
26 NPS presence in the southern portion of Golden Gate National Recreation Area. The  
27 partnership strategy will ensure that NPS partnerships continue to serve the needs of  
28 visitors with high quality services, facilities and opportunities. If the park ends up owning  
29 or managing portions of Sharp Park that are contiguous to lands managed by the National  
30 Park Service, visitors would benefit from additional trail based recreation and educational  
31 opportunities. These actions would have a long-term, moderate beneficial impact on the  
32 visitor experience to the park.

33 The transportation strategy emphasizes the goal of providing sustainable, multi-modal  
34 access to many park sites, which would benefit visitors by reducing traffic congestion and  
35 use conflicts, and facilitating more efficient access to and between park sites. Finally, the  
36 trails strategy emphasizes the goal of providing an enduring trail system that serves as a  
37 sustainable network of access within and between park sites. Trails provide one of the  
38 most important ways that visitors experience and enjoy the park and discover its diverse  
39 settings. Providing a long-term strategy to perpetuate a coordinated and sustainable trail  
40 and transportation system would result in a long term, moderate, beneficial impact to the  
41 visitor experience.

42

43

1 **Conclusion**

2 The recommendations and policies that are described in the actions common to all  
3 alternatives will have a long-term, moderate, beneficial influence on the visitor  
4 experience at the park. Visitors would be provided enhanced access throughout the park  
5 by improved trails and transportation systems, increased opportunities for interpretation  
6 and education supported by the park collections and new programs related to climate  
7 change and ocean stewardship. Strengthening the park partnership programs and  
8 preservation of park resources by potential expansion of park boundaries and expanded  
9 increased public safety facilities would contribute to improvements to the visitor  
10 experience.

11

12

13 **SOCIAL AND ECONOMIC ENVIRONMENT**

14 **Analysis**

15 The improvement of community connectivity to Golden Gate National Recreation Area  
16 park sites via an expanded transportation system, multi-mode opportunities, and  
17 enhanced regional trail network could improve the quality of life of residents in the area.  
18 More residents of local communities would be able to visit the park to exercise, enjoy the  
19 natural coastal settings, participate in outdoor recreational activities, educational and  
20 stewardship programs, or simply have a place to escape the urban environment. These  
21 improved community connections with the park could result in an impact that is long-  
22 term, minor to moderate, and beneficial for the local gateway communities and adjacent  
23 counties.

24 In addition, a comprehensive education and stewardship program would be developed to  
25 engage the public in natural and cultural stewardship issues and educate them about park  
26 resources and the threats to their preservation. With more and more residents of the  
27 community becoming more aware and engaged in these important issues, communities  
28 could benefit as residents and organizations take actions that move toward sustainability,  
29 decrease waste and pollution, and other measures that could contribute to improvements  
30 to the community's quality of life. This education and stewardship effort would be  
31 pursued in all alternatives, resulting in an impact that could be long-term, minor, and  
32 beneficial in the context of the local gateway communities and three adjacent counties.

33 All actions that are common to all alternatives would continue to improve the National  
34 Park Service's efforts at maintaining a healthy and productive relationship with Native  
35 American communities in the area. These efforts would codify and continue the park's  
36 policy to work with Coast Miwok and Ohlone communities in activities related to  
37 cultural resource management, interpretation and education, and the revitalization of  
38 community and tradition. This effort to maintain and improve communication with the  
39 Native Americans in the region would be pursued in all alternatives, resulting in an  
40 impact that would be long-term, minor, and beneficial for the local gateway communities,  
41 adjacent counties, and the Bay Area as a whole.

42 The actions common to all alternatives maintain a strong commitment and strategy for  
43 using park partnerships as a tool to provide park programs, preservation activities, and

1 community engagement in park issues while also contributing to the success of the park  
2 partner organizations and agencies. For the National Park Service, this commitment  
3 would provide a cost-effective way to enhance park services, improve visitor  
4 opportunities, and engage the community. For the various partners, this commitment and  
5 strategy would help build and expand organization success and outreach. This emphasis  
6 on partnerships would also increase programs and opportunities for the public to enjoy,  
7 which could increase the quality of life for local residents. This effort would be  
8 maintained and improved in all alternatives, resulting in an impact that would be long-  
9 term, moderate, and beneficial for the local gateway communities. The impact would be  
10 long-term, minor to moderate, and beneficial for the three adjacent counties.

11 In addition to the above actions described in the section “Actions Common to All  
12 Alternatives,” each alternative also includes a proposed action that would ultimately close  
13 the Shelldance Nursery (a commercial operation in Pacifica). This may be considered an  
14 adverse impact to quality of life for some community members who have actively visited  
15 the nursery in the past. In addition, this closure could be considered an adverse impact to  
16 local economy due to job loss, sales tax revenue loss, and the loss of the multiplier effect  
17 of the business monies and its employee salaries. The collective result would be an  
18 impact that is long-term, minor, and adverse for the local gateway communities. The  
19 impact to the three adjacent counties would be negligible. However, it should be noted  
20 that the programs and facilities that may eventually replace the nursery would likely  
21 offset some of these impacts by creating employment and community involvement  
22 opportunities.

23

## 24 **Conclusion**

25 The overall impact to the social and economic environment from actions that are  
26 common to all alternatives could be long-term, minor to moderate, and beneficial with an  
27 affected area that ranges from the local gateway communities to the overall Bay Area.  
28 The beneficial impacts would result from the policies and guidance for boundary  
29 changes, climate change, ocean stewardship, museum collections, and partnership  
30 strategy. Improved parkland accessibility via multi-mode transportation and regional trail  
31 systems would also yield beneficial impacts by enhancing connections between  
32 communities and the park. The park staff commitments to the Native American  
33 community and park partners increase the connections and opportunities in preserving  
34 park resources and providing visitor opportunities. All these actions contribute to  
35 improving the quality of life and local economy.

36 The closure of Shelldance Nursery would have a long-term, minor, adverse impact to the  
37 local gateway community.

38

39

40

1 **TRANSPORTATION**

2 **Analysis**

3 Common to all areas are improved wayfinding systems that include effective directional  
4 signs, site identification, and other wayfinding signs that would facilitate safe and  
5 efficient access by all modes of transportation.

6 **Marin County**

7 In terms of transportation improvements, actions that are common to all alternatives  
8 would pursue multimodal transportation access opportunities to additional park sites. One  
9 example of this pursuit is the Park Service collaboration with the Water Emergency  
10 Transportation Authority (WETA) in developing multiple park access points to this Bay  
11 Area ferry system (e.g., between Fort Baker, Fort Mason, and the Presidio and potentially  
12 other park sites).

13 In the southwest coast area (Muir Beach to Point Bonita), beach and trail access to Muir  
14 Beach would be improved while preserving the area's natural setting. Regional trail  
15 connections would be enhanced; where possible, trail improvements would connect to the  
16 California Coastal Trail. Cumulatively, these measures would provide a long-term, minor  
17 to moderate, beneficial impact on visitor access to the park through improved trails.

18 Increased transit, including increased Muir Woods Shuttle service, would reduce  
19 congestion, minimize impacts on natural resources, and provide a way to get to the beach  
20 without a car. A new and increased transit service could also reduce parking demand  
21 within park locations, increasing it at transit access points adjacent to or outside of park  
22 lands. Increased transit would yield a long-term, moderate, beneficial impact to  
23 transportation by increasing the number and capacity of connections and availability of  
24 non-auto modes of travel.

25 The park staff would also continue to work with the community and Marin County to  
26 manage parking and reduce traffic in Stinson Beach using congestion management tools.  
27 In the developed beach area, the parking lot would be replaced by a more sustainable  
28 parking facility. This would have a long-term, minor to moderate, beneficial impact on  
29 visitor access to the park, depending on the success of the congestion management  
30 efforts. Also at Stinson Beach, the park staff would explore ways to improve non-auto  
31 access to the beach, such as promoting public transportation on weekends during the peak  
32 season.

33 Park managers would work with Marin County and state parks to explore realignment of  
34 Muir Woods Road to reduce impacts to Redwood Creek. A realignment of Muir Woods  
35 Road would have a short-term, moderate, adverse effect on access to the monument for  
36 the duration of construction activities.

37 **San Francisco County**

38 All action alternatives for San Francisco County include the following transportation  
39 measures:

40 Trails would be improved to China Beach and Fort Funston. Safer and more direct  
41 vehicle and trail access to East Fort Miley would be created. Creation of a small overlook  
42 at Black Point (near the San Francisco Maritime National Historical Park's boundary)

1 would allow access to this small part of the Sensitive Resources zone. The trail system in  
2 Lands End would be improved to provide access to the shoreline and vistas, as well as  
3 connections to the community and adjacent park areas. All of the above measures, both  
4 individually and cumulatively, would result in a long-term, minor, beneficial impact on  
5 circulation both to and within these park areas.

6 At Upper Fort Mason the visitor circulation and wayfinding improvements would be  
7 implemented in response to new adjacent bus transit and ferry connections. This would  
8 have a long-term minor beneficial impact on connecting people arriving by transit to this  
9 site.

10 At Ocean Beach the park would collaborate with the City of San Francisco to enhance the  
11 Ocean Beach corridor with improved amenities including improved parking facilities.  
12 This may have a long-term, minor, beneficial impact on the transportation system by  
13 increasing parking availability.

14 ***San Mateo County***

15 All action alternatives for San Mateo County would include improvements to connect  
16 park lands to local communities, improve trails between and within park sites, and add  
17 trailheads and parking. Specific common improvements include new or improved trails  
18 provided along the beach, dunes, and cliffs extending from San Francisco's Ocean Beach  
19 south to Mussel Rock. Also, modest visitor access facilities (trails, trailheads) to beaches,  
20 scenic overlooks, and along the California Coastal Trail between Thornton State Beach to  
21 south of Mussel Rock, would be added. Possible trail improvement at Milagra Ridge  
22 could include connections to Oceana Boulevard, the Pacific coast, Skyline Boulevard,  
23 and Sweeney Ridge. The Shelldance Nursery site would transition from a commercial  
24 nursery to an area providing a variety of visitor services including possible enhanced  
25 trailhead parking serving Sweeney Ridge and Mori Point. Access from State Route 1 and  
26 the trail connection to Mori Point would be improved. The developed portion of Picardo  
27 Ranch would see trailhead and parking improvements.

28 Trailheads and trails would be developed and enhanced to improve accessibility and  
29 connections to the California Coastal Trail and adjacent public lands.

30 From Phleger Estate, trail connections to adjacent lands and the regional trail system  
31 would be pursued in collaboration with San Mateo County and San Francisco Public  
32 Utilities Commission. These connections would include the Bay Area Ridge Trail and a  
33 potential multi-use trail connection between Cañada Road and Skyline Boulevard north  
34 of Phleger Estate.

35 All of the above measures would provide, individually and cumulatively, a long-term,  
36 minor to moderate, beneficial impact on accessibility of these remote sites by trails  
37 connected to neighborhoods and to larger regional trails. Improved and new trailheads,  
38 trailhead parking, and improved directional, site identification, and wayfinding signs  
39 would also add considerable benefits. Long-term, minor, beneficial effects would be  
40 gained through slightly increasing parking at Shelldance and Sweeney Ridge.

41  
42

1 **Conclusion**

2 Throughout Golden Gate National Recreation Area, there would be long-term, minor to  
3 moderate, beneficial effects on visitor connections to the park sites by land through  
4 improved and enhanced trail systems. The potential to increase the transit frequency to  
5 park sites in Marin and San Mateo counties would have a long-term, minor to moderate,  
6 beneficial impact on connectivity by transit. In San Francisco and San Mateo counties,  
7 there would be a long-term, minor to moderate, beneficial enhancement of transportation  
8 functionality through slightly increased parking for San Francisco sites and moderately  
9 increased parking for San Mateo sites. In Marin County, parking management tools, in  
10 connection with increased transit services, could result in a long-term, moderate,  
11 beneficial effect on improving access to Tennessee Valley and Stinson Beach, especially  
12 for those who do not have access to a car.

13

14

15 **PARK MANAGEMENT, OPERATIONS, AND FACILITIES**

16 **Analysis**

17 There are many proposed changes identified in the “actions common to all actions  
18 alternatives” section that would influence park management, operations, and facilities.  
19 While designed to contribute to the protection of resources and the enhancement of  
20 visitor opportunities, the proposed changes will achieve these ends only if staffing and  
21 operating funds are increased in accordance with the expanded services and management  
22 required to implement the alternatives. If funding and needed staffing levels are not made  
23 available when these actions are implemented, the following proposed actions would  
24 have long-term, moderate, adverse effects on park operations:

- 25 • Proposed boundary changes: Currently staff is unable to meet all of the needs of  
26 the existing land base. Additional land will require an increase in the number of  
27 park staff and an increase in facility management funds.
- 28 • Implementation of the climate change policy and the Ocean Stewardship  
29 Program: These changes would require additional staff and funds for baseline  
30 information, monitoring, and adaptive management actions; new infrastructure  
31 for alternative energy production (although some of these initial costs would  
32 result in lower costs in the long run); and additional funding and staff to  
33 implement the education aspect of these programs.
- 34 • Transportation goals and trail planning and development: water shuttle, ferry, and  
35 Bay Trail proposals would require extensive inter-agency collaboration and  
36 potential development related to access; these actions would require additional  
37 long-term staffing and funding increases. The park’s trail goals also would  
38 require increased staffing, coordination with partners, and funding for trails and  
39 maintenance.

40 Many of the proposed changes identified in the “actions common to all actions  
41 alternatives” would address problems associated with operations and maintenance and  
42 thereby have a positive, long-term, minor to moderate, beneficial effect on park  
43 management, operations, and facilities:

- 1       • The removal of facilities not contributing to the mission of the park would have a  
2       long-term, minor to moderate, beneficial effect on park operations. While  
3       removal of properties would require additional staff time during demolition, the  
4       long-term effect would be a reduced need for maintenance and other staff  
5       attention.
- 6       • Implementation of the park collections policy, and particularly the introduction  
7       of a curatorial and research facility for park collections, would benefit park  
8       operations. Collections would be consolidated from 15 current locations,  
9       improving access for both park staff and the public and preservation of the  
10      collections. Development of the proposed park collection facility would result in  
11      long-term, moderate, beneficial impact to park operations.
- 12     • The proposed new maintenance hubs in the Capehart residential area and in the  
13      Presidio of San Francisco would allow for reuse of existing buildings and would  
14      consolidate some maintenance needs. This would achieve noticeable efficiencies.  
15      On the other hand, the Capehart location has a potential to conflict with  
16      neighboring residents and would also cause the loss of some of the park housing  
17      units, if they are not replaced by other housing in the park. Development of the  
18      maintenance hubs would result in long-term, moderate, beneficial impacts to  
19      operations.
- 20     • The establishment of a public safety hub at Fort Baker would allow for faster  
21      multi-agency response to locations north of the Golden Gate Bridge. The hub  
22      would preserve an existing historic building and would meet space, size,  
23      function, mobility, and security requirements not currently met by available  
24      facilities. Development of the public safety hub would result in long-term,  
25      moderate, beneficial impacts to park operations.
- 26     • The park's commitment to working with partners would have a continued impact  
27      on the park's ability to complete projects and programs in all areas of park  
28      operations. Facility rehabilitation and restoration, and even maintenance, could  
29      not be accomplished at the current level without partner funding and volunteer  
30      efforts. This continued commitment would result in long-term, moderate,  
31      beneficial impacts to the operations of the park.
- 32     • Co-locating offices with San Mateo County would improve efficiencies in  
33      interpretation and education as well as facility use. Co-located offices would  
34      provide a long-term, moderate, beneficial impact to the operations.
- 35     • At Alcatraz Island, the expanded maintenance area within the Quartermaster  
36      Warehouse would improve the ability to accomplish maintenance work on the  
37      island. The expansion and improvement to the maintenance area would result in a  
38      long-term, moderate, beneficial impact to operations.
- 39     • At Muir Woods National Monument, moving the maintenance operations from  
40      the Old Inn and Lower Conlon Avenue to a new facility in Kent Canyon, pending  
41      an interagency agreement, would improve efficiencies with both the monument  
42      and state park operations, reduce site impacts at Muir Woods National  
43      Monument, and provide for a more modern facility from which to base  
44      maintenance activities at the monument. The shared facility would moderately  
45      benefit operations over the long term.

1 **Conclusion**

2 Many of the actions common to all alternatives would result in moderate, beneficial  
3 impacts to park management, operations, and facilities. However, if funding and staffing  
4 levels are inadequate, other actions would result in long-term, major, adverse effects to  
5 park management, operations, and facilities.

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# POTENTIAL ENVIRONMENTAL IMPACTS AT GOLDEN GATE NATIONAL RECREATION AREA (INCLUDING ALCATRAZ ISLAND)

4

## 5 NATURAL RESOURCES – PHYSICAL RESOURCES

### 6 Carbon Footprint and Air Quality

#### 7 *No-action Alternative*

##### 8 *Analysis*

9 The continuation of current conditions and management would continue to result in  
10 adverse impacts to air quality/carbon footprint. Baseline greenhouse gas (GHG)  
11 emissions (2008) for Golden Gate National Recreation Area (park lands in Marin and San  
12 Francisco counties only; no data is available for San Mateo County) are estimated at  
13 5,249 metric tons of carbon equivalent (MTCE). Emissions from mobile combustion  
14 represent about 50% of gross emissions.

15 At Alcatraz Island, mobile combustion associated with the operation of the ferry  
16 concession would continue to be the largest contributor of Island GHG emissions.  
17 Stationary combustion associated with power generation using diesel generators would be  
18 eliminated and converted to conventional power supply from the mainland and onsite  
19 generated renewable energy, thereby reducing total emissions. Total GHG emissions for  
20 Alcatraz Island under the no-action alternative would be 1,675 MTCE.

21 Total gross emissions of the entire Golden Gate National Recreation Area / Alcatraz  
22 Island (excluding San Mateo) would be 6,924 MTCE.

23 Greenhouse Gas emissions from visitors and NPS operations do contribute to elevated  
24 ozone and other air quality concerns. The National Park Service would continue to reduce  
25 greenhouse gas emissions by reducing energy consumption and replacing high-emitting  
26 apparatus with green technology—a beneficial impact.

27 Overall, when compared to background levels of air pollution and GHG emissions in the  
28 region or the nation (estimated at 6 billion in 2007), impacts to air quality from the no-  
29 action alternative would be long term, adverse, and negligible.

#### 30 *Conclusion*

31 Total gross emissions of the entire Golden Gate National Recreation Area and Alcatraz  
32 Island (excluding San Mateo) would be 6,924 MTCE, resulting in long-term, minor to  
33 moderate, adverse impacts to the park's carbon footprint. Overall, when compared to  
34 background levels of air pollution and GHG emissions in the region or the nation  
35 (estimated at 6 billion in 2007), impacts to air quality from the no-action alternative  
36 would be long term, adverse, and negligible.

37 No impairment of air resources would result from this alternative.

1 **Alternative 1: Connecting People with the Parks (NPS Preferred**  
2 **Alternative for park sites in Marin, San Francisco, and San Mateo**  
3 **counties)**

4 **Analysis**

5 Although visitor opportunities would be expanded and enhanced under alternative 1, the  
6 levels and patterns of visitor use and travel within the park under alternative 1 would  
7 remain substantially the same as under the no-action alternative; consequently, the  
8 impacts to air quality/carbon footprint resulting from visitor use at Golden Gate National  
9 Recreation Area would be the same as the no-action alternative.

10 Impacts to air quality/carbon footprint from new recreational development under  
11 alternative 1 would result in short-term, minor, adverse impacts due to emissions  
12 associated with construction activities. Long-term, adverse impacts on air quality/carbon  
13 footprint would also be expected due to increases in energy consumption and related  
14 emissions attributed to these new facilities.

15 Beneficial impacts would occur from the removal of a modest number of facilities and  
16 structures that use energy for their operation and maintenance, resulting in long-term  
17 reductions in air quality emissions and the carbon footprint. Short-term adverse impacts  
18 to air quality would occur as a result of the construction activities needed to remove the  
19 facilities and reclaim the disturbed sites.

20 Under alternative 1, gross emissions for the three-county area of Golden Gate National  
21 Recreation Area would be reduced by 3% to 5,104 metric tons of carbon equivalent  
22 (MTCE).

23 At Alcatraz Island, visitor opportunities would be expanded and access to more areas on  
24 the island and would result in increased ferry transportation and visitor use. This would  
25 result in slightly increased emissions associated with the ferry concession (mobile  
26 combustion) and wastewater treatment. Emissions associated with energy use would also  
27 increase due to increases in facility usage and energy demand. Gross emissions for  
28 Alcatraz Island under alternative 1 could increase by about 15% to 1,936 MTCE.

29 The combined effect of the actions included in alternative 1 would increase the gross  
30 emissions of the entire park (the three-county area plus Alcatraz) by 2% to 7,040 MTCE.  
31 This would result in long-term, minor, adverse impacts on the Park Service's carbon  
32 footprint. As in the no-action alternative, impacts to air quality (when compared to  
33 background levels of air pollution in the region and nation) would be negligible.

34 **Conclusion**

35 The combined effect of the actions included in alternative 1 would increase the gross  
36 emissions of the entire park (the three-county area plus Alcatraz) by 2% to 7,040 MTCE.  
37 This would result in long-term, minor, adverse impacts on the NPS' carbon footprint. As  
38 in the no-action alternative, impacts to air quality (when compared to background levels  
39 of air pollution in the region and nation) would be negligible.

40 No impairment of air resources would result from this alternative.

41

42

43

1 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

2 **Analysis**

3 Although visitor opportunities would be expanded and enhanced under alternative 2, the  
4 levels and patterns of visitor use and travel within Golden Gate National Recreation Area  
5 would remain substantially the same as under the no-action alternative; consequently, the  
6 impacts to air quality/carbon footprint resulting from visitor use would be the same as the  
7 no-action alternative.

8 Impacts to air quality/carbon footprint from new recreational development under  
9 alternative 2 would result in short-term, minor, adverse impacts due to emissions  
10 associated with construction activities. Long-term, adverse impacts on air quality/carbon  
11 footprint would also be expected due to increases in energy consumption and related  
12 emissions attributed to these new facilities.

13 Beneficial impacts would occur from the removal of certain facilities and structures that  
14 use energy for their operation and maintenance, resulting in long-term reductions in air  
15 quality emissions and the carbon footprint. Short-term adverse impacts to air quality  
16 would occur as a result of the construction activities needed to remove the facilities and  
17 reclaim the disturbed sites.

18 Under alternative 2, gross emissions for the three-county area of Golden Gate National  
19 Recreation Area would be reduced by 10% to 4,708 metric tons of carbon equivalent  
20 (MTCE), the lowest of all of the alternatives for the three-county area.

21 At Alcatraz Island, visitor opportunities would be expanded and would result in increased  
22 ferry transportation and visitor use on the Island. This would result in slightly increased  
23 emissions associated with the ferry concession (mobile combustion) and wastewater  
24 treatment. Emissions associated with energy use would also increase due to increases in  
25 facility usage and energy demand. Gross emissions for Alcatraz Island under alternative 2  
26 would increase by about 7% to 1,798 MTCE, the lowest of the three action alternatives  
27 for Alcatraz Island.

28 The combined effect of the actions included in alternative 2 would reduce the gross  
29 emissions of the entire park (the three-county area plus Alcatraz) by 6% to 6,506 MTCE,  
30 the lowest of all of the alternatives. This would result in long-term, minor, beneficial  
31 impacts on the park's carbon footprint. As in the no-action alternative, impacts to air  
32 quality (when compared to background levels of air pollution in the region and nation)  
33 would be negligible.

34 **Conclusion**

35 The combined effect of the actions included in alternative 2 would reduce the gross  
36 emissions of the entire park (the three-county area plus Alcatraz) by 6% to 6,506 MTCE,  
37 the lowest of all of the alternatives. This would result in long-term, minor, beneficial  
38 impacts on the park's carbon footprint. As in the no-action alternative, impacts to air  
39 quality (when compared to background levels of air pollution in the region and nation)  
40 would be negligible.

41 No impairment of air resources would result from this alternative.

42

1 **Alternative 3: Focusing on National Treasures**  
2 **(NPS Preferred Alternative for Alcatraz Island)**

3 **Analysis**

4 Although visitor opportunities would be expanded and enhanced under alternative 3, the  
5 levels and patterns of visitor use and travel within the park under alternative 1 would  
6 remain substantially the same as under the no-action alternative; consequently, the  
7 impacts to air quality/carbon footprint resulting from visitor use would be the same as the  
8 no-action alternative.

9 Impacts to air quality/carbon footprint from new recreational development under  
10 alternative 3 would result in short-term, minor, adverse impacts due to emissions  
11 associated with construction activities. Long-term, adverse impacts on air quality/carbon  
12 footprint would also be expected due to increases in energy consumption and related  
13 emissions attributed to these new facilities.

14 Beneficial impacts would occur from the removal of certain facilities and structures that  
15 use energy for their operation and maintenance, resulting in long-term reductions in air  
16 quality emissions and the carbon footprint. Short-term adverse impacts to air quality  
17 would occur as a result of the construction activities needed to remove the facilities and  
18 reclaim the disturbed sites.

19 Under alternative 3, gross emissions for the three-county area of the park would be  
20 reduced by 9% to 4,799 metric tons of carbon equivalent (MTCE).

21 At Alcatraz Island, visitor opportunities would be expanded and would result in increased  
22 ferry transportation and visitor use on the Island. This would result in slightly increased  
23 emissions associated with the ferry concession (mobile combustion) and wastewater  
24 treatment. Emissions associated with purchased electricity would also increase due to  
25 increases in facility usage and energy demand. Gross emissions for Alcatraz Island under  
26 alternative 3 would increase by about 8% to 1,810 MTCE.

27 The combined effect of the actions included in alternative 3 would reduce the gross  
28 emissions of the entire park (the three-county area plus Alcatraz Island) by 5 % to 6,609  
29 MTCE. This would result in long-term, minor, beneficial impacts on the park's carbon  
30 footprint. As in the no-action alternative, impacts to air quality (when compared to  
31 background levels of air pollution in the region and nation) would be negligible.

32 **Conclusion**

33 The combined effect of the actions included in alternative 3 would reduce the gross  
34 emissions of the entire park (the three-county area plus Alcatraz Island) by 5 %, to 6,609  
35 MTCE. This would result in long-term, minor, beneficial impacts on the park's carbon  
36 footprint. As in the no-action alternative, impacts to air quality (when compared to  
37 background levels of air pollution in the region and nation) would be negligible.

38 No impairment of air resources would result from this alternative.

39

## 1 **Soils and Geologic Resources and Processes**

### 2 ***No Action Alternative***

#### 3 ***Analysis***

4 Under the no-action alternative, the presence and maintenance of existing facilities  
5 (including structures, roads, and trails) would continue to cause parkwide impacts to soils  
6 and geologic resources due to the permanent loss and function of these resources and  
7 from erosion associated with unsustainable trails and roads (including road cuts and  
8 gullies along Conzelman Road, Milagra Ridge, and Highway 1). The impact of these  
9 activities would be long-term, minor, adverse, and localized, but would occur throughout  
10 the park.

11 Coastal geologic resources and processes would continue to be affected by the presence  
12 of facilities and structures located in geologically sensitive areas, such as at Stinson  
13 Beach (parking lot and dune interface) and Slide Ranch in Marin County, Ocean Beach  
14 (seawall and infrastructure) and Fort Funston in San Francisco County, and at Devil's  
15 Slide (road infrastructure) in San Mateo County. The facilities and land uses present at  
16 these areas, as well as NPS management activities to protect infrastructure, would  
17 continue to inhibit natural shoreline processes. The impact of these activities would be  
18 long-term, moderate, adverse, and localized.

19 Projects to improve natural habitat values and ecosystem function, such as those at Big  
20 Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin  
21 Headlands (gully repair), in off-shore marine areas (sand deposits and management), and  
22 at Land's End and Mori Point (trail/road removal and repair), would have beneficial  
23 effects on soils and geologic resources and processes because they would improve or  
24 restore the functionality of natural processes—the impact would be long-term, minor to  
25 moderate, beneficial, and localized.

26 Recreational use would continue to cause compaction and erosion of soils, resulting in  
27 long-term, minor, adverse, localized impacts throughout the park.

28 Park Service efforts to provide educational and participatory stewardship programs would  
29 continue to have a beneficial effect on geologic resources and soils due to increased  
30 public understanding and support for resource protection and management—the impact  
31 would be long term, minor, beneficial, and parkwide.

32 At Alcatraz Island, the presence and maintenance of existing buildings and structures on  
33 Alcatraz Island would continue to destabilize slopes and affect natural erosion and  
34 geologic processes. The National Park Service would continue to implement building  
35 stabilization techniques that would result in long-term, minor, adverse, localized impacts  
36 to soils and geologic resources and processes.

#### 37 ***Conclusion***

38 Overall, the impact to geologic resources and soils from the no-action alternative would  
39 be long-term, range from minor adverse to moderate beneficial, and be localized and  
40 parkwide. Adverse impacts would occur from the presence and maintenance of existing  
41 facilities and visitor use. Beneficial impacts would occur from restoration and education  
42 and stewardship activities.

43 No impairment of geologic resources would result from this alternative.

1 **Alternative 1: Connecting People with the Parks**  
2 **(NPS Preferred Alternative for park sites in Marin, San Francisco, and**  
3 **San Mateo counties)**

4 *Analysis*

5 Under alternative 1, a variety of management zones would be used that would assist in  
6 the protection of soils and geologic resources and processes. Approximately 77% of the  
7 park would be zoned using the Natural and Sensitive Resources management zones.

8 Alternative 1 would reduce soil erosion by eliminating unsustainable trails and roads,  
9 resulting in long-term, minor, beneficial, localized impacts.

10 The removal of facilities or structures, and the reclamation of disturbed building sites  
11 (such as at the Capehart housing area and Tennessee Valley in Marin County; Fort Miley  
12 and Fort Funston in San Francisco County; and Milagra Ridge, Mori Point, and Phleger  
13 Estate in San Mateo County); dune restoration at Fort Funston; managed retreat from sea-  
14 level rise at Ocean Beach; and creek restoration at Eastkoot Creek, Capehart Creek, and  
15 Lower Redwood Creek in Marin County where about eight acres would be improved and  
16 restored to natural conditions, and at Rancho Corral de Tierra in San Mateo County  
17 would improve soil function and integrity and restore natural geologic processes. The  
18 impact of these activities would be long term, minor to moderate, beneficial, and  
19 localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in  
20 adjacent areas) would occur during construction activities.

21 Visitor access and use at specific park sites would be expanded under alternative 1,  
22 resulting in increased soil compaction and erosion; however, compared to use patterns  
23 under the no-action alternative, only slight adverse impacts would be expected. Most  
24 impacts would be contained within defined visitor use areas and on trails. The impact,  
25 especially in areas off-trail, would be long term, minor, adverse, and localized. This  
26 impact would occur in areas throughout the park.

27 New recreational development would have long-term, adverse, localized impacts on soils  
28 and geologic resources throughout the park due to the permanent loss of soil function and  
29 integrity resulting from new development and increased erosion from facility  
30 construction and maintenance. The intensity of the impact would range from negligible to  
31 moderate. In some areas (such as at Upper Fort Mason, Fort Miley, China Beach, and  
32 Fort Funston in San Francisco County; and Shelldance Nursery and Devil's Slide in San  
33 Mateo County) adverse impacts would be negligible to minor because the development  
34 would occur in previously developed or disturbed sites. In other areas (such as at Stinson  
35 Beach, Kirby Cove, along Highway 1, Conzelman, McCullough, and Bunker Roads, at  
36 Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and  
37 Marin City Ridge/Gerbode Valley in Marin County; and at Sweeney Ridge and Rancho  
38 Corral de Tierra in San Mateo County) new development would cause minor to moderate  
39 adverse impacts to soils and geologic resources because these areas are undeveloped and  
40 the impacts would be new.

41 Impacts from NPS educational and stewardship programs would generally be the same as  
42 those described in the no-action alternative.

43 At Alcatraz Island, the existing buildings and structures would be rehabilitated, which  
44 would require additional stabilization measures that would impact natural geologic  
45 processes. This would result in long-term, minor, adverse, localized impacts.

1 ***Conclusion***

2 The elimination of unsustainable roads and trails would reduce soil erosion, resulting in  
3 long-term, minor, beneficial, localized impacts to soils. The removal of facilities and  
4 structures would result in long term, minor to moderate, beneficial, localized impacts,  
5 although new recreational development would have long-term, adverse, localized impacts  
6 on soils and geologic resources. During the removal or construction period, short-term,  
7 minor, adverse impacts (such as increased erosion or compaction in adjacent areas)  
8 would occur.

9 Overall, adverse impacts would occur from new recreational development and expanded  
10 visitor use. Beneficial impacts would occur from trail and road maintenance, the  
11 restoration of disturbed sites and creeks, and improved resource understanding and public  
12 support.

13 No impairment of geologic resources would result from this alternative.

14 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

15 ***Analysis***

16 Under alternative 2, a variety of management zones would assist in the protection of soils  
17 and geologic resources and processes. Approximately 92% of the park—the largest  
18 amount in any of the alternatives—would be zoned using the Natural and Sensitive  
19 Resources management zones.

20 Alternative 2 would reduce soil erosion by eliminating unsustainable trails and roads and  
21 removing and restoring unneeded management roads, resulting in long-term, minor to  
22 moderate, beneficial, localized impacts.

23 Beneficial impacts to soils and geological resources and processes from the removal of  
24 facilities/structures and restoration of natural areas would be greater than under the no-  
25 action alternative. In addition to the actions included in alternative 1, the National Park  
26 Service in alternative 2 would: remove portions of and restore the Capehart housing area  
27 to a natural setting; relocate Slide Ranch out of a sensitive geologic hazard area; work  
28 with Marin County to realign the highway and minimize impacts to Redwood Creek; and  
29 work with Caltrans to further protect geologic processes on the coast of Marin County,  
30 including the potential abandonment of a small segment of Highway 1. These activities  
31 would restore soil function, integrity, and natural geologic processes; when combined  
32 with those actions included in alternative 1, would result in long-term, moderate,  
33 beneficial, and localized impacts.

34 Impacts from visitor access and use at specific park sites would be the same as those  
35 described in alternative 1, resulting in long-term, minor, adverse, and localized impacts.

36 The type of adverse impacts associated with new recreational development under  
37 alternative 2 would be the same impacts as described in alternative 1 although the amount  
38 and distribution of proposed facilities is reduced, resulting in minor, adverse, localized  
39 impacts to soils and geologic resources.

40 Impacts from NPS educational and stewardship programs would generally be the same as  
41 those described in the no-action alternative.

1 At Alcatraz Island, the existing buildings and structures would be stabilized, but coastal  
2 erosion processes would be allowed to evolve naturally. This would result in long-term,  
3 minor, beneficial, localized impacts to geologic resources and processes.

4 **Conclusion**

5 The elimination of unsustainable trails and roads and the removal and restoration of  
6 unneeded management roads, would reduce soil erosion, resulting in long-term, minor to  
7 moderate, beneficial, localized impacts.

8 The removal of facilities/structures and restoration of a large number of natural areas  
9 would result in long-term, moderate, beneficial, and localized impacts.

10 Overall, adverse impacts would occur from new recreational development and expanded  
11 visitor use. Beneficial impacts would occur from trail and road maintenance, the  
12 restoration of disturbed sites and creeks.

13 No impairment of geologic resources would result from this alternative.

14 **Alternative 3: Focusing on National Treasures**  
15 **(NPS Preferred Alternative for Alcatraz Island)**

16 **Analysis**

17 Under alternative 3, a variety of management zones would be used that would assist in  
18 the protection of soils and geologic resources and processes. Approximately 88% of the  
19 park would be zoned in the Natural and Sensitive Resources zones.

20 Impacts to soils from reducing soil erosion would be the same as described in the  
21 alternative 1, resulting in long-term, minor, beneficial, localized impacts.

22 Impacts to soils and geologic resources and processes from the removal of facilities and  
23 structures and the reclamation of disturbed building sites under alternative 3 would be the  
24 same as those described in alternative 1, resulting in long-term, minor to moderate,  
25 beneficial, and localized impacts.

26 Impacts from visitor access and use at specific park sites would be the same as those  
27 described in alternative 1, resulting in long-term, minor, adverse, and localized impacts.

28 Impacts from new recreational development under alternative 3 would generally be the  
29 same as those described in alternative 1. Although the distribution of new development  
30 may be slightly different, the resulting impact to soils and geologic resources and  
31 processes would remain long term, minor to moderate, adverse, and localized.

32 Impacts from NPS educational and stewardship programs would generally be the same as  
33 those described in the no-action alternative.

34 At Alcatraz Island, the existing buildings and structures would be rehabilitated, which  
35 would require additional stabilization measures that would impact natural geologic  
36 processes. This would result in long-term, minor, adverse, localized impacts.

37 **Conclusion**

38 The reduction in soil erosion and the reclamation of disturbed building sites would result  
39 in long-term, minor to moderate, beneficial, localized impacts. Impacts from new  
40 recreational development would be long term, minor to moderate, adverse, and localized.

1 Overall, beneficial impacts would occur from trail and road maintenance, the restoration  
2 of disturbed sites and creeks, and improved resource understanding and public support.  
3 Adverse impacts would occur from new recreational development and expanded visitor  
4 use.

5 No impairment of geologic resources would result from this alternative.

6

## 7 **Water Resources and Hydrologic Processes**

### 8 ***No Action Alternative***

#### 9 ***Analysis***

10 Under the no-action alternative, the presence and maintenance (or lack of maintenance in  
11 some cases) of existing facilities (including structures, roads, and trails) would continue  
12 to cause localized impacts to water quality due to pollution from urban runoff and  
13 turbidity from soil erosion. The impact of these activities would be long term, minor to  
14 moderate, adverse, and localized, but would occur throughout the park.

15 Structures would remain in the 100-year floodplains of several creeks resulting in adverse  
16 impacts. In Marin County, park facilities at Stinson Beach (parking lots and picnic areas)  
17 and Muir Beach (parking lot and Pacific Way) would continue to affect floodplain  
18 function along Redwood Creek and Rodeo Creek. In San Mateo County, horse stables  
19 located in the lower portion of the Rancho Corral de Tierra property are located in the  
20 San Vicente Creek floodplain and would continue to affect floodplain function. Retention  
21 of these facilities would continue to slightly affect the flow of water during floods and the  
22 capacity of the floodplain to store floodwaters. The impact would be long term, minor,  
23 adverse, and localized.

24 Projects to improve natural habitat values and ecosystem function, such as those at Big  
25 Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin  
26 Headlands (gully repair), and at Land's End and Mori Point (trail/road removal and  
27 repair), would have beneficial effects on water resources and hydrologic processes  
28 because they would improve and restore the function and integrity of natural hydrologic  
29 systems—the impact would be long term, minor to moderate, beneficial, and localized.

30 Recreational use would continue to cause erosion of soils resulting in turbidity. Vehicle  
31 use at parking areas and on roadways throughout the park would continue to affect water  
32 quality from runoff that contains chemical contaminants. These activities would result in  
33 long-term, minor, adverse, localized impacts to water quality throughout the park.

34 Park Service efforts to provide educational and participatory stewardship programs would  
35 continue to have a beneficial effect on water resources and hydrologic processes due to  
36 increased public understanding and support for resource protection and management—  
37 the impact would be long term, minor, beneficial, and parkwide.

38 At Alcatraz Island, visitor use and NPS operations (including the cleaning of bird guano)  
39 would continue to contribute nutrients and sediment to the adjacent marine waters  
40 through runoff. Runoff from impervious surfaces on the Island, such as existing buildings  
41 and structures, would also contribute to this issue. Vessels, primarily the passenger ferry,  
42 traveling to the island would impact water quality by introducing hydrocarbons and other  
43 chemicals into the Bay, as well as increasing turbidity near the docking station on the

1 island. Impacts from these activities would result in long-term, minor, adverse, localized  
2 impacts to water quality.

3 ***Conclusion***

4 The continued existence of structures and facilities in some areas of the park would have  
5 long-term, minor to moderate, adverse, and localized impacts on water resources and  
6 hydrologic processes.

7 Projects to improve natural habitat values and ecosystem function would have long-term,  
8 minor to moderate, beneficial, and localized impacts on water resources and hydrologic  
9 processes.

10 Generally, adverse impacts would occur from the continued presence and maintenance of  
11 existing facilities, the continued presence of the existing volume of vehicular traffic, and  
12 continued patterns of visitor use. Beneficial impacts would occur from restoration of  
13 natural areas and from education and stewardship activities.

14 No impairment of water resources would result from this alternative.

15 ***Alternative 1: Connecting People with the Parks***  
16 ***(NPS Preferred Alternative for Park Sites in Marin, San Francisco, and***  
17 ***San Mateo counties)***

18 ***Analysis***

19 Under alternative 1, a variety of management zones would be used that would assist in  
20 the protection of water resources and hydrologic processes. Approximately 77% of the  
21 park would be zoned using the Natural and Sensitive Resources zones.

22 Impacts to water-related resources from the continued presence and maintenance of  
23 existing facilities (including structures, roads, and trails) under alternative 1 would be less  
24 than the no-action alternative because impacts to water quality caused by erosion from  
25 unsustainable trails and roads would be reduced. Alternative 1 would develop a  
26 sustainable trail system and remove and restore unneeded and unsustainable roads and  
27 trails, as well as maintain all trails and roads. These activities would result in long-term,  
28 minor to moderate, beneficial, localized impacts on water quality. Short-term, minor,  
29 adverse impacts to water quality could occur from sedimentation and runoff during  
30 construction activities.

31 The removal of facilities and structures and the reclamation of disturbed building sites  
32 (such as at the Capehart housing area and Tennessee Valley in Marin County; dune  
33 restoration at Fort Funston) would improve natural hydrologic processes. The impact of  
34 these activities would be long term, minor to moderate, beneficial, and localized.

35 Beneficial effects on stream character, water quality, wetlands, floodplains, and  
36 watershed processes would occur from creek restoration at Stinson Beach (Eastkoot  
37 Creek) and especially at Rancho Corral de Tierra. Incised creek banks that adversely  
38 impact floodplain function by restricting creek sinuosity would be restored, thereby  
39 expanding and enhancing wetlands and improving water quality. The overall stream  
40 character and function would be improved by creating a more natural watercourse that  
41 would reduce the potential for erosion, re-create the natural hydrologic regime, and  
42 contribute to improvements in restoring watershed processes and regional water quality.  
43 The impact of these activities would be long-term, moderate, beneficial, and localized.

- 1 Impacts to floodplains would be the same as those described in the no-action alternative.
- 2 Visitor access and use would be expanded throughout the park under alternative 1,  
3 potentially resulting in some increase in erosion along trails and at primary visitor use  
4 areas that could have impacts on water quality—the impact would be long-term,  
5 negligible to minor, adverse, and localized.
- 6 New and/or improved recreational development—including new visitor facilities and  
7 amenities at Stinson Beach, Kirby Cove, along Highway 1, Conzelman, McCullough, and  
8 Bunker Roads, at Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee  
9 Valley, and Marin City Ridge/Gerbode Valley in Marin County; at Upper Fort Mason,  
10 Fort Miley, China Beach, and Fort Funston in San Francisco County; and at Milagra  
11 Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo  
12 County—would have short-term, negligible to minor, adverse, localized impacts on water  
13 quality from increased erosion and sedimentation, and the potential for chemical  
14 contamination resulting from inadvertent chemical spills from heavy equipment at  
15 construction sites. Similar impacts to water quality could occur over the long-term due to  
16 the increased potential for urban pollutants to runoff from parking lots and other  
17 developed features.
- 18 In some areas (such as at Sheldance Nursery and Devil’s Slide in San Mateo County)  
19 adverse impacts would be negligible to minor because the development would occur in  
20 previously developed or disturbed sites. In other areas (such as at Rancho Corral de  
21 Tierra in San Mateo County), adverse impacts to water resources would be minor to  
22 moderate because new development would occur in undisturbed sites.
- 23 Impacts from NPS educational and stewardship programs would generally be the same as  
24 those described in the no-action alternative.
- 25 At Alcatraz Island, impacts from visitor use and NPS operations (including the cleaning  
26 of bird guano) would be greater than those described in the no-action alternative because  
27 greater emphasis would be placed on visitor access and the cleaning of more primary use  
28 areas, resulting in increased potential for water quality impacts such as nutrient and  
29 sediment inputs into marine waters. Turbidity and chemical contamination may also  
30 increase due to increased vessel traffic in the Bay, Impacts from these activities would  
31 result in long-term, minor to moderate, adverse, localized impacts to water quality.
- 32 ***Conclusion***
- 33 The removal and reclamation of facilities and structures, the re-creation of natural  
34 hydrologic regimes, and restoration of watershed processes would result in long-term  
35 minor to moderate, beneficial impacts to water quality, while the construction,  
36 maintenance or removal of trails and facilities would have short-term, minor to moderate,  
37 adverse impacts to water quality.
- 38 There would be long-term minor to moderate, adverse, localized impacts to water quality  
39 on Alcatraz Island resulting from cleaning of primary visitor use areas and increased  
40 vessel traffic in San Francisco Bay.
- 41 Generally, adverse impacts would occur from new recreational development and  
42 expanded visitor use. Beneficial impacts would occur from trail and road maintenance  
43 and the restoration of disturbed sites and creeks.

1 No impairment of water resources would result from this alternative.

2 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

3 **Analysis**

4 Under alternative 2, a variety of management zones would be used that would assist in  
5 the protection of water resources and hydrologic processes. Approximately 92% of the  
6 park would be zoned using the Natural and Sensitive Resources zones.

7 Alternative 2 would reduce impacts to water quality by eliminating erosion from  
8 unsustainable trails and unneeded management roads, resulting in long-term, minor to  
9 moderate, beneficial, localized impacts. Short-term, minor, adverse impacts to water  
10 quality could occur from sedimentation and runoff during construction activities.

11 The magnitude of beneficial impacts associated with the removal of facilities/structures  
12 and the reclamation of disturbed building sites would be greater than under the no-action  
13 alternative. In alternative 2, in addition to the actions included in alternative 1, the  
14 National Park Service would completely remove and restore the Capehart housing area;  
15 work with Marin County to realign the highway and minimize impacts to Redwood  
16 Creek; and could remove or relocate all horse stable stables from the Rancho Corral de  
17 Tierra property. These activities would improve natural hydrologic processes; when  
18 combined with those actions included in alternative 1, they would result in long-term,  
19 moderate, beneficial, and localized impacts on water resources and hydrologic processes.

20 Beneficial effects on stream character, water quality, wetlands, floodplains, and  
21 watershed processes would occur from creek restoration at Stinson Beach (Eastkoot  
22 Creek) and especially at Rancho Corral de Tierra. Incised creek banks that adversely  
23 impact floodplain function by restricting creek sinuosity would be restored, thereby  
24 expanding and enhancing wetlands and improving water quality. The overall stream  
25 character and function would be improved by creating a more natural watercourse that  
26 would reduce the potential for erosion, re-create the natural hydrologic regime, and  
27 contribute to improvements in restoring watershed processes and regional water quality.  
28 Collaborating with municipalities to increase water storage would benefit water resources  
29 by increasing water quantity with park streams. The impact of these activities would be  
30 long-term, moderate, beneficial, and localized.

31 Impacts to floodplains would be less than those described in the no-action alternative  
32 because the removal of the lower horse stable from the 100-year floodplain of San  
33 Vicente Creek at Rancho Corral de Tierra would remove improve floodplain function and  
34 integrity – a long-term, minor, beneficial, localized impact.

35 Impacts from visitor access and use would be the same as those described in alternative 1,  
36 resulting in long-term, minor, adverse, and localized impacts.

37 The magnitude of adverse impacts associated with new recreational development under  
38 alternative 2 would be less than alternative 1 because the amount and distribution of  
39 proposed facilities is reduced. However, the types of impacts would generally be the  
40 same and would result in minor, adverse, localized impacts to water quality and water  
41 resources.

42 Impacts from NPS educational and stewardship programs would generally be the same as  
43 those described in the no-action alternative.

1 At Alcatraz Island, impacts from visitor use and NPS operations would be less than those  
2 described in the no-action alternative because greater portions of the island would be left  
3 to natural reclamation and the focus on maintaining visitor use areas (including the  
4 cleaning of bird guano) would be reduced. Therefore, nutrient and sediment inputs into  
5 marine waters would be reduced. Water quality impacts associated with vessel traffic  
6 would be expected to be the same as in the no-action alternative. Impacts from these  
7 activities would result in long-term, minor, beneficial, localized impacts to water quality.

8 ***Conclusion***

9 The removal of unsustainable trails and unneeded management roads, removal of  
10 facilities and structures, creek restorations, realignment of small sections of roadway, and  
11 the relocation of horse stables from adjacent creeks would result in long-term, minor to  
12 moderate, beneficial impacts to water resources, wetlands, floodplains, and overall  
13 hydrologic processes. However, the construction, maintenance, or removal activities  
14 associated with these changes would have short-term, minor to moderate, adverse  
15 impacts to water quality.

16 Leaving greater portions of Alcatraz Island to natural reclamation and reducing the visitor  
17 use area on the island would result in long-term, minor, beneficial, localized impacts to  
18 water quality. The visitor use area would be reduced providing for a larger area of the  
19 island to naturally reclaim and thereby reduce water quality impacts caused by human  
20 use.

21 Generally, adverse impacts would occur from new recreational development and  
22 expanded visitor use. Beneficial impacts would occur from trail and road maintenance,  
23 and the restoration of disturbed sites, creeks, and floodplains.

24 No impairment of water resources would result from this alternative.

25 ***Alternative 3: Focusing on National Treasures***  
26 ***(NPS Preferred Alternative for Alcatraz Island)***

27 ***Analysis***

28 Under alternative 3, a variety of management zones would be used that would assist in  
29 the protection of water resources and hydrologic processes. Approximately 88% of the  
30 park would be zoned using the Natural and Sensitive Resources zones.

31 As described in alternative 1, impacts to water quality from reducing erosion from  
32 unsustainable trails and roads would be reduced when compared to the no-action  
33 alternative, resulting in long-term, minor to moderate, beneficial, localized impacts.  
34 Short-term, minor, adverse impacts to water quality could occur from sedimentation and  
35 runoff during construction activities.

36 As described in alternative 1, the removal of facilities/structures and the reclamation of  
37 disturbed building sites would result in long-term, minor to moderate, beneficial, and  
38 localized impacts to water resources and hydrologic processes.

39 As described in alternative 1, creek restoration would result in enhanced wetlands,  
40 improved water quality, and overall improvements to stream character and function. The  
41 impact of these activities would be long-term, moderate, beneficial, and localized.

42 Impacts to floodplains would be the same as those described in the no-action alternative.

1 Visitor access and use would be expanded under alternative 3, potentially resulting in  
2 some increase in erosion along trails and at primary visitor use areas that could have  
3 impacts on water quality—the impact would be long-term, negligible to minor, adverse,  
4 and localized.

5 Impacts from new recreational development would generally be the same as described in  
6 alternative 1, resulting in short-term, negligible to minor, adverse, localized impacts on  
7 water quality from increased erosion and sedimentation, and the potential for chemical  
8 contamination resulting from inadvertent chemical spills from heavy equipment at  
9 construction sites. Similar impacts to water quality could occur over the long-term due to  
10 the increased potential for urban pollutants to runoff from parking lots and other  
11 developed features.

12 Impacts from NPS educational and stewardship programs would generally be the same as  
13 those described in the no-action alternative.

14 At Alcatraz Island, impacts from visitor use and NPS operations (including the cleaning  
15 of bird guano) would be greater than those described in the no-action alternative because  
16 greater emphasis would be placed on visitor access and the cleaning or more primary use  
17 areas, resulting in increased potential for water quality impacts such as nutrient and  
18 sediment inputs into marine waters. Water quality impacts, such as turbidity and chemical  
19 contamination, from increased vessel traffic in the Bay may also increase. Additional  
20 impacts associated with the scale of historic structure rehabilitation and facility  
21 improvements under alternative 3 could result in increased impacts to water quality.  
22 Impacts from these activities would result in long-term, minor to moderate, adverse,  
23 localized impacts to water quality.

24 ***Conclusion***

25 The removal and natural restoration of unsustainable trails and unneeded management  
26 roads, the removal of facilities and structures, and creek restoration efforts would result  
27 in long-term, minor to moderate, beneficial impacts to water resources and hydrologic  
28 process. However, the construction, maintenance, or removal of trails and facilities would  
29 have short-term, minor to moderate, adverse impacts to water quality.

30 The scale of historic structure rehabilitation and facility improvements on Alcatraz Island  
31 could result in increased impacts to water quality. The cleaning the primary visitor use  
32 areas and the increased vessel traffic in San Francisco Bay would result in long-term  
33 minor to moderate, adverse, localized impacts to water quality on Alcatraz Island.

34 Adverse impacts would occur from new recreational development and expanded visitor  
35 use. Beneficial impacts would occur from trail and road maintenance and the restoration  
36 of disturbed sites and creeks. No impairment of water resources would result from this  
37 alternative.

38 No impairment of water resources would result from this alternative.

39

40

41

1 **Habitat (Vegetation and Wildlife)**

2 ***No Action Alternative***

3 ***Analysis***

4 Under the no-action alternative, the presence and maintenance (or lack of maintenance in  
5 some cases) of existing facilities (including structures, roads, and trails) would continue  
6 to cause localized impacts to vegetation and wildlife habitat by fragmenting natural areas  
7 and increasing the potential for exotic plant species to displace native species and affect  
8 native habitat. Maintaining facilities and structures in coastal interface areas would  
9 continue to disrupt natural shoreline habitat values resulting in impacts to species that  
10 depend on these areas and diminished biodiversity in general. The impact of these  
11 activities would be long-term, minor to moderate, adverse, and localized, but would occur  
12 throughout the park.

13 Projects to improve natural habitat values and ecosystem function, such as those at Big  
14 Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin  
15 Headlands (gully repair), Kirby Cove (45 acres of exotic plant removal), Fort Funston (20  
16 acres of exotic plant removal), in off-shore marine areas (sand deposits and  
17 management), and at Land's End and Mori Point (trail/road removal and repair), would  
18 have beneficial effects on vegetation, wildlife, and wildlife habitat because they would  
19 reduce the impacts of exotic plant species, improve or restore the functionality of natural  
20 processes, and improve specific habitat components that are required by the affected  
21 species. These kinds of activities would reduce environmental stressors and increase the  
22 resiliency of species and systems to the effects of climate change. Rehabilitating  
23 disturbed sites would improve the integrity and diversity of habitats available to aquatic  
24 and terrestrial organisms. Ongoing vegetation management and monitoring of plants and  
25 wildlife allows the National Park Service to improve native habitat conditions. The use of  
26 spatial and temporal closures would continue to protect wildlife and wildlife habitat. The  
27 impact of these activities would be long-term, minor to moderate, beneficial, and  
28 localized.

29 Recreational use would continue to reduce habitat integrity by trampling plants,  
30 introducing and increasing the spread of exotic species, causing disturbance (flushing and  
31 displacement) to animals, and increasing the potential for human-wildlife conflict  
32 resulting from habituation due to the presence of humans and the introduction of  
33 unnatural food sources. Recreational use also generates noise and unnatural light sources  
34 that affect wildlife. These activities would result in long-term, minor to moderate,  
35 adverse, localized impacts throughout the park.

36 Park Service efforts to provide educational and participatory stewardship programs would  
37 continue to have a beneficial effect on vegetation and wildlife habitat due to increased  
38 public understanding and support for resource protection and management – the impact  
39 would be long-term, minor, beneficial, and parkwide.

40 At Alcatraz Island, waterbirds would continue to be affected by visitor use (day use,  
41 special events, etc.) and NPS operations, including managing gulls and other waterbirds  
42 in visitor use areas. Boat traffic in the marine waters adjacent to the Island would  
43 continue to cause disturbance to nesting birds. These activities would result in long-term,  
44 minor, adverse, localized impacts. At the same time, the National Park Service would  
45 continue to protect nesting habitat and bird use areas on the Island using seasonal

1 closures, especially the preferred habitats on the western perimeter of the Island. This  
2 would result in long-term, moderate, beneficial, localized impacts to waterbird  
3 populations. Given the combined effects of disturbance and protective actions, the  
4 numbers of breeding pairs of waterbirds on the Island have steadily increased over the  
5 last decade. This trend is expected to continue. Collectively, impacts to waterbirds as a  
6 result of the no-action alternative would be long-term, minor to moderate, adverse, and  
7 localized.

#### 8 ***Conclusion***

9 The conditions related to existing facilities would continue to cause fragmentation of  
10 habitat and the potential for exotic plant species to displace native species. The  
11 continuation of current recreational use also would reduce habitat integrity. The impacts  
12 would be long-term, minor to moderate, adverse, and localized but would occur  
13 throughout the park.

14 Habitat restoration efforts and educational and participatory stewardship programs would  
15 result in long-term, minor to moderate, beneficial impacts that would occur both at the  
16 local level (habitat restoration) and parkwide(stewardship programs).

17 Impacts to waterbirds would be long-term, minor to moderate, adverse, and localized.

18 Generally, adverse impacts would occur from the presence and maintenance of existing  
19 facilities and visitor use. Beneficial impacts would occur from restoration and ongoing  
20 management and monitoring activities.

21 No impairment of vegetation or wildlife resources would result from this alternative.

#### 22 ***Alternative 1: Connecting People with the Parks (NPS Preferred*** 23 ***Alternative for park sites in Marin, San Francisco, and San Mateo*** 24 ***counties)***

#### 25 ***Analysis***

26 Under alternative 1, a variety of management zones would be used that would assist in  
27 the protection of vegetation and wildlife habitat. Approximately 77% of the park would  
28 be zoned as the Natural and Sensitive Resources zone.

29 Sensitive Resource zones at Bird Island and Point Bonita Cove would serve to protect  
30 seabirds and pinipeds, a beneficial impact when compared to the no-action alternative.

31 The impacts to vegetation and wildlife from the continued presence and maintenance of  
32 existing facilities (including structures, roads, and trails) under alternative 1 would be less  
33 than the no-action alternative because impacts to vegetation and wildlife habitat caused  
34 by erosion from unsustainable trails and roads would be reduced. Alternative 1 would  
35 develop a sustainable trail system and eliminate and rehabilitate unneeded and  
36 unsustainable roads and trails, as well as maintain all trails and roads. Impacts to native  
37 habitat from fragmentation and exotic species would be reduced. These activities would  
38 result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

39 The removal of facilities/structures and the reclamation of disturbed building sites (such  
40 as at the Capehart housing area and Tennessee Valley in Marin County; dune restoration  
41 at Fort Funston; the removal of 30 acres of European beach grass would improve the  
42 integrity of natural habitats and processes; restoration of a large tract of second-  
43 generation redwood forest at Phleger Estate; and extensive exotic plant removal at Ranch

1 Corral de Tierra. Creek restoration at Stinson Beach (Eastkoot Creek), and especially at  
2 Rancho Corral de Tierra would improve vegetation and wildlife habitat by improving  
3 habitat structure and the diversity of habitats available to support various species' needs.  
4 These kinds of activities would reduce environmental stressors and increase the resiliency  
5 of species and systems to the effects of climate change. The impact of these activities  
6 would be long-term, moderate, beneficial, and localized.

7 Visitor access and use would be expanded under alternative 1, potentially resulting in  
8 additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at  
9 primary visitor use areas—the impact would be long-term, minor, adverse, and localized.

10 New and/or improved recreational development (including new visitor facilities and  
11 amenities at Stinson Beach, Kirby Cove, along Highway 1, Conzelman, McCullough, and  
12 Bunker Roads, at Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee  
13 Valley, and Marin City Ridge / Gerbode Valley in Marin County; at Upper Fort Mason,  
14 Fort Miley, China Beach, and Fort Funston in San Francisco County; and at Milagra  
15 Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo  
16 County) would have long-term, minor, adverse, localized impacts on vegetation and  
17 wildlife due to the permanent loss of plants and wildlife habitat. Short-term, minor,  
18 adverse impacts to vegetation would also occur from injury or loss of plants during  
19 construction activities; however, the area would be re-planted with native plants and the  
20 natural habitat would be reclaimed. Similarly, short-term adverse impacts to wildlife,  
21 such as disturbance, would occur during construction. The rehabilitation and use of Pier 4  
22 at Fort Mason would result in impacts (habitat disturbance during construction) to marine  
23 resources—the impact would be short-term, minor, adverse, and localized.

24 Impacts from NPS educational and stewardship programs would generally be the same as  
25 those described in the no-action alternative. Similarly, impacts from vegetation and  
26 wildlife management and monitoring activities under alternative 1 would be the same as  
27 those described in the no-action alternative. However, the establishment of a native plant  
28 nursery would provide additional capacity to improve native vegetation and wildlife  
29 habitat and expand stewardship efforts—a beneficial impact.

30 At Alcatraz Island, adverse impacts to waterbirds under alternative 1 would be greater  
31 than those described in the no-action alternative because new visitor amenities (namely  
32 food service, modest overnight accommodations, and special events) would cause  
33 increased disturbance to nesting waterbirds and human-wildlife conflict. Additionally,  
34 historic restoration of the Parade Grounds and removal of the rubble piles would cause  
35 habitat loss and disturbance to waterbird populations. Expanded visitor use of the Agave  
36 Trail would affect use of the tidepools by foraging birds. As in the no-action alternative,  
37 the National Park Service would continue to protect nesting and roosting habitats and  
38 initiate habitat enhancements in other areas of the island where possible—resulting in  
39 beneficial impacts. Boat traffic in the vicinity of the colonial nesting birds would be  
40 restricted to nonmotorized boating, resulting in beneficial impacts. Given the combined  
41 effects of disturbance and protective actions, the numbers of breeding pairs of waterbirds  
42 on the Island could decrease over time depending on the frequency and intensity of  
43 expanded visitor activity. Collectively, these activities would result in long-term,  
44 moderate, adverse, localized impacts to waterbirds on the island.

45

1 **Conclusion**

2 The development of a sustainable trail system and elimination of unneeded and  
3 unsustainable roads and trails, the removal of facilities/structures with reclamation of  
4 disturbed building sites, and habitat restoration efforts would result in long-term, minor to  
5 moderate, beneficial, localized impacts on vegetation and wildlife.

6 The expansion of visitor access and use and the development of new or improved  
7 recreational facilities would result in long-term, minor, adverse, and localized impacts.  
8 The construction activities related to these developments would result in short-term,  
9 minor, and adverse impacts.

10 Impacts from NPS educational and stewardship programs would generally be the same as  
11 those described in the no-action alternative. Similarly, impacts from vegetation and  
12 wildlife management and monitoring activities under alternative 1 would be the same as  
13 those described in the no-action alternative. However, the establishment of a native plant  
14 nursery would provide additional capacity to improve native vegetation and wildlife  
15 habitat and expand stewardship efforts—a beneficial impact.

16 Habitat restoration efforts and educational and participatory stewardship programs would  
17 result in long-term, minor to moderate, beneficial impacts that would occur both at the  
18 local level (habitat restoration) and parkwide(stewardship programs). An additional  
19 beneficial impact would result from the establishment of a native plant nursery.

20 Impacts to waterbirds would be long-term, moderate, adverse, and localized.

21 Generally, adverse impacts would occur from the presence and maintenance of existing  
22 facilities and visitor use. Beneficial impacts would occur from natural resource  
23 restoration and ongoing management and monitoring activities.

24 No impairment of vegetation or wildlife resources would result from this alternative.

25 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

26 **Analysis**

27 Under alternative 2, a variety of management zones would be used that would assist in  
28 the protection of vegetation and wildlife habitat. Approximately 92% of the park would  
29 be zoned using the Natural and Sensitive Resources zones.

30 Sensitive Resource zones at Bird Island and Point Bonita Cove would serve to protect  
31 seabirds and pinipeds, a beneficial impact when compared to the no-action alternative.

32 The impacts to vegetation and wildlife from the continued presence and maintenance of  
33 existing facilities (including structures, roads, and trails) under alternative 2 would be less  
34 than the no-action alternative because impacts to vegetation and wildlife habitat caused  
35 by erosion from unsustainable trails and roads would be reduced. Alternative 2 would  
36 develop a sustainable trail system and eliminate and rehabilitate unneeded trails and  
37 management roads, as well as maintain all trails and roads. Impacts to native habitat from  
38 fragmentation and exotic species would be reduced. These activities would result in long-  
39 term, minor, beneficial, localized impacts on vegetation and wildlife.

40 The magnitude of beneficial impacts associated with the removal of facilities/structures  
41 and the reclamation of disturbed building sites, as well as from creek restoration, would  
42 be greater than under the no-action alternative. In alternative 2, in addition to the actions

1 included in alternative 1, the National Park Service would completely remove and restore  
2 the Capehart housing area; work with Marin County to realign the highway and minimize  
3 impacts to Redwood Creek; remove structures and restore about 10 acres at Slide Ranch,  
4 as well as convert about 3.5 acres of existing farmland to native habitat; restore about 18  
5 acres of uplands at Golden Gate Dairy; remove the nonnative forest and improve natural  
6 habitat conditions at Fort Miley; and improve the and remove all horse stable stables  
7 from the Rancho Corral de Tierra property. These kinds of activities would reduce  
8 environmental stressors and increase the resiliency of species and systems to the effects  
9 of climate change. These activities would also improve habitat structure and the diversity  
10 of habitats available to support various species' needs, and when combined with those  
11 actions included in alternative 1, would result in long-term, moderate, beneficial, and  
12 localized impacts.

13 Visitor access and use would be expanded under alternative 2, potentially resulting in  
14 additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at  
15 primary visitor use areas—the impact would be long-term, minor, adverse, and localized.

16 The type of adverse impacts associated with new recreational development under  
17 alternative 2 would be the same impacts as described in alternative 1 although the amount  
18 and distribution of proposed facilities is reduced resulting in minor, adverse, localized  
19 impacts to vegetation and wildlife habitat.

20 Impacts from NPS educational and stewardship programs would generally be the same as  
21 those described in the no-action alternative, with one exception. Partnering with other  
22 agencies to manage visitor access and promote restoration and habitat management as  
23 part of the UNESCO Biosphere Reserve would elevate this issue and could result in  
24 benefits to vegetation and wildlife habitat. Impacts from vegetation and wildlife  
25 management and monitoring activities under alternative 2 would be the same as those  
26 described in the no-action alternative. The establishment of a native plant nursery would  
27 provide additional capacity to improve native vegetation and wildlife habitat and expand  
28 stewardship efforts—resulting in a beneficial impact.

29 At Alcatraz Island, adverse impacts to waterbirds under alternative 2 would be less than  
30 those described in the no-action alternative because waterbird nesting and use areas  
31 would be allowed to expand and conflicts with visitors use and NPS operations would be  
32 reduced. Visitor use areas would be expanded and visitor activities would be highly  
33 controlled on the Island. The Model Industries Building and New Industries Building  
34 would be managed as ruins and would provide additional habitat to nesting birds. Park  
35 operations near the Power Plant would be modified to reduce conflicts with nesting birds.  
36 The marine waters within the vicinity of the colonial nesting birds would be closed to  
37 boating during the breeding season, resulting in beneficial impacts. The allowance of  
38 modest overnight accommodations on the Island would increase the potential for human-  
39 wildlife conflict, an adverse impact. As in the no-action alternative, the National Park  
40 Service would continue to protect nesting and roosting habitats and initiate habitat  
41 enhancements in other areas of the Island where possible—resulting in beneficial  
42 impacts. Given the combined effects of disturbance and protective actions, the numbers  
43 of breeding pairs of waterbirds on the Island would be expected to be maintained or  
44 increase over time. Collectively, these activities would result in long-term, moderate,  
45 beneficial, localized impacts to waterbirds on the island.

46

1 **Conclusion**

2 The development of a sustainable trail system and the elimination of unneeded roads, and  
3 the removal of a large number of structures and the restoration of natural vegetation in  
4 these areas would result in long-term, minor, beneficial, localized impacts on vegetation  
5 and wildlife.

6 The expansion of visitor access and use and the development of new or improved  
7 recreational facilities would result in long-term, minor, adverse, and localized impacts.  
8 The construction activities related to these developments would result in short-term,  
9 minor, and adverse impacts.

10 Habitat restoration efforts and educational and participatory stewardship programs would  
11 result in long-term, minor to moderate, beneficial impacts that would occur both at the  
12 local level (habitat restoration) and parkwide(stewardship programs). Additional  
13 beneficial impacts would result from the establishment of a native plant nursery and  
14 partnering with other agencies to manage visitor access and promote restoration and  
15 habitat management as part of the UNESCO Biosphere Reserve.

16 Impacts to waterbirds on the island would be long-term, moderate, beneficial, localized i

17 Generally, adverse impacts would occur from the presence and maintenance of existing  
18 facilities and visitor use. Beneficial impacts would occur from restoration and ongoing  
19 management and monitoring activities.

20 No impairment of vegetation or wildlife resources would result from this alternative.

21 **Alternative 3: Focusing on National Treasures**

22 **Analysis**

23 Under alternative 3, a variety of management zones would be used that would assist in  
24 the protection of vegetation and wildlife habitat. Approximately 88% of the park would  
25 be zoned using the Natural and Sensitive Resources zones.

26 The impacts to vegetation and wildlife from the continued presence and maintenance of  
27 existing facilities (including structures, roads, and trails) under alternative 3 would be less  
28 than the no-action alternative because impacts to vegetation and wildlife habitat caused  
29 by erosion from unsustainable trails and roads would be reduced. Alternative 3 would  
30 develop a sustainable trail system and eliminate and rehabilitate unneeded and  
31 unsustainable roads and trails, as well as maintain all trails and roads. Impacts to native  
32 habitat from fragmentation and exotic species would be reduced. These activities would  
33 result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

34 Natural resource restoration includes the dune restoration that involves the removal of 30  
35 acres of European beach grass at Fort Funston; restoration of a large tract of second-  
36 generation redwood forest at Phleger Estate; and extensive exotic plant removal at Ranch  
37 Corral de Tierra and the managed retreat from sea-level rise at Ocean Beach would  
38 improve the integrity of natural habitats and processes. Creek restoration at Stinson  
39 Beach (Eastkoot Creek), and especially at Rancho Corral de Tierra would improve  
40 vegetation and wildlife habitat by improving habitat structure and the diversity of habitats  
41 available to support various species' needs. These kinds of activities would reduce  
42 environmental stressors and increase the resiliency of species and systems to the effects

1 of climate change. The impact of these activities would be long-term, moderate,  
2 beneficial, and localized.

3 Visitor access and use would be expanded under alternative 3, potentially resulting in  
4 additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at  
5 primary visitor use areas—the impact would be long-term, minor, adverse, and localized.

6 New and/or improved recreational development (including new visitor facilities and  
7 amenities at Stinson Beach, Kirby Cove, along Highway 1, Conzelman, McCullough, and  
8 Bunker Roads, at Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee  
9 Valley, and Marin City Ridge/Gerbode Valley in Marin County; at Upper Fort Mason,  
10 Fort Miley, China Beach, and Fort Funston in San Francisco County; and at Milagra  
11 Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo  
12 County) would have long-term, minor, adverse, localized impacts on vegetation and  
13 wildlife due to the permanent loss of plants and wildlife habitat. Short-term, minor,  
14 adverse impacts to vegetation would occur from injury or loss of plants during  
15 construction activities; however, the area would be re-planted with native plants and the  
16 natural habitat would be reclaimed. Similarly, short-term adverse impacts to wildlife,  
17 such as disturbance, would occur during construction.

18 Impacts from NPS educational and stewardship programs would generally be the same as  
19 those described in the no-action alternative. Similarly, impacts from vegetation and  
20 wildlife management and monitoring activities under alternative 3 would be the same as  
21 those described in the no-action alternative. The establishment of a native plant nursery  
22 would provide additional capacity to improve native vegetation and wildlife habitat and  
23 expand stewardship efforts—a beneficial impact.

24 At Alcatraz Island, adverse impacts to waterbirds under alternative 3 would be greater  
25 than those described in the no-action alternative because new visitor amenities (namely  
26 food service, modest overnight accommodations, and special events) would cause  
27 increased disturbance to nesting waterbirds and human-wildlife conflict. The utilization  
28 of Pier 4 at Fort Mason as the primary point of embarkation for visitor transportation to  
29 the Island would result in additional impacts to seabirds caused by the proximity of vessel  
30 traffic and increased garbage and marine debris. Gulls would be more highly managed in  
31 primary visitor use areas, which would take up more of the Island under alternative 3,  
32 resulting in disturbance and displacement of gulls. Additionally, the level of historic  
33 restoration to the Island (i.e., Parade Grounds, removal of rubble piles, building  
34 restoration and adaptive reuse) would cause habitat loss and disturbance to waterbird  
35 populations. As in the no-action alternative, the National Park Service would continue to  
36 protect nesting and roosting habitats and initiate habitat enhancements in other areas of  
37 the island where possible; these actions would result in beneficial impacts. Management  
38 zoning on the west side of the island under alternative 3 would protect nesting gulls from  
39 visitor use effects. The Model Industries Building and New Industries Building, both of  
40 which are proximate to sensitive gull habitat, would be managed in a way that protects  
41 gull activity. The marine waters within the vicinity of the colonial nesting birds would be  
42 closed to boating during the breeding season, resulting in beneficial impacts. Given the  
43 combined effects of disturbance and protective actions, the numbers of breeding pairs of  
44 waterbirds on the island could change over time depending on the frequency and intensity  
45 of expanded visitor activity, but minimum numbers of nesting pairs would support the

1 maintenance of viable populations. Collectively, these activities would result in long-  
2 term, moderate, adverse, localized impacts to waterbirds on the island.

### 3 ***Conclusion***

4 The development of a sustainable trail system and the elimination of unneeded roads and  
5 the restoration of natural vegetation in these areas would result in long-term, minor,  
6 beneficial, localized impacts on vegetation and wildlife.

7 The expansion of visitor access and use and the development of new or improved  
8 recreational facilities would result in long-term, minor, adverse, and localized impacts.  
9 The construction activities related to these developments would result in short-term,  
10 minor, and adverse impacts.

11 Natural resource restoration would result in long-term, moderate, beneficial, and  
12 localized impacts.

13 Habitat restoration efforts and educational and participatory stewardship programs would  
14 result in long-term, minor to moderate, beneficial impacts that would occur both at the  
15 local level (habitat restoration) and parkwide (stewardship programs).

16 Impacts to waterbirds on the island would be long-term, moderate, adverse, and localized.

17 Generally, adverse impacts would occur from the presence and maintenance of existing  
18 facilities and visitor use. Beneficial impacts would occur from restoration and ongoing  
19 management and monitoring activities.

20 No impairment of vegetation or wildlife resources would result from this alternative.

21

## 22 **Special Status Species (Federal and State Threatened and** 23 **Endangered Species)**

### 24 ***No Action Alternative***

#### 25 ***Introduction***

26 In general, many of the impacts to vegetation and wildlife described above in the habitat  
27 section would apply to special status species. For example, visitor use and new  
28 development would result in changes that would have adverse impacts to listed species  
29 and their habitats. Likewise, vegetation management and creek restoration would result in  
30 beneficial impacts to listed species and their habitats. Keeping this in mind, the analysis  
31 provided below generalizes about the effects of land management priorities and, where  
32 possible, focuses on the impacts that specific actions included in the alternatives may  
33 have on listed species and their habitats.

#### 34 ***Federal Threatened and Endangered Species***

35 **California red-legged frog (*Rana aurora draytonii*)**. Wetland restoration and  
36 management, such as the project completed at Mori Point, would continue to improve  
37 habitat for the frog—resulting in a beneficial impact. Creek restoration in Marin County  
38 would improve wetlands and riparian habitat that could serve as potential future habitat  
39 for the frog. Exotic plant removal, especially in riparian and wetland areas, could also  
40 improve the structure and condition of vegetation that supports frogs. All of these  
41 activities should improve and protect breeding and foraging habitat by improving  
42 conditions for emergent riparian vegetation and other vegetation conditions preferred by

1 the frog, such as dense, shrubby riparian areas. Controlling and managing visitor use  
2 would reduce impacts to frogs, such as habitat alteration and direct impacts from  
3 recreational use and development; however, some adverse impacts would continue.  
4 Long-term park operations and short-term project specific construction impacts to the  
5 species may occur. These may involve “take” associated with removal and translocation  
6 of individuals outside construction areas or impacts of existing roadways/trails and their  
7 maintenance. The National Park Service would continue to monitor frog populations and  
8 survey potential habitat. The primary threat to the frog would continue to be habitat loss –  
9 an adverse impact associated with increased urbanization of the region. There has not  
10 been any designated critical habitat in Marin or San Mateo counties managed by Golden  
11 Gate National Recreation Area (Federal Register 71: 19244-19346). Collectively, impacts  
12 to the California red-legged frog resulting from NPS actions that are part of the no-action  
13 alternative (the continuation of current management and trends) would be long-term,  
14 beneficial, minor, and localized. The determination of effect under Section 7 of the  
15 Endangered Species Act would be “*may affect, likely to adversely affect*” for project  
16 specific actions in the short-term, and “*may affect, not likely to adversely affect*”  
17 for land use and park management over the long-term. Consultation for specific  
18 projects would occur as necessary.

19 **Mission blue butterfly (*Icaricia icaroides missionensis*)**. Coastal scrub habitat and  
20 grassland restoration, including exotic plant removal and vegetation management, in the  
21 Marin Headlands and at Milagra Ridge and Sweeney Ridge in San Mateo County, would  
22 continue to improve conditions for lupine plants that support Mission blue butterflies.  
23 The Marin Headlands-Fort Baker Plan being implemented in cooperation with the  
24 Federal Highways Administration would cause some adverse impacts and loss of habitat  
25 (which is being mitigated) in the vicinity of Conzelman and Bunker Roads due to  
26 construction; however, it would result in long-term benefits to butterfly habitat. The use  
27 of prescribed fire, an action analyzed under the Fire Management Plan/EIS, would also  
28 continue to have short-term adverse effects on butterflies and butterfly habitat with long-  
29 term beneficial effects. Conditions at park lands in San Mateo County, such as the  
30 widespread presence of exotic plants, would continue to cause adverse impacts to  
31 potential butterfly habitat. Controlling and managing visitor use in known habitat areas  
32 throughout the park would reduce impacts to butterflies, such as the trampling of host and  
33 nectar plants and direct impacts to larvae and pupae from recreational use and  
34 development; however, some adverse impacts would continue. The National Park Service  
35 would continue to monitor butterfly populations and survey potential habitat. The  
36 primary threat to the butterfly would continue to be habitat loss—resulting in an adverse  
37 impact associated with increased urbanization of the region. Collectively, impacts to the  
38 Mission blue butterfly resulting from NPS actions that are part of the no-action  
39 alternative (the continuation of current management and trends) would be long-term,  
40 beneficial, minor, and localized. The determination of effect under Section 7 of the  
41 Endangered Species Act would be “*may affect, likely to adversely affect*” for project  
42 specific actions in the short-term, and “*may affect, not likely to adversely affect*” for land  
43 use and park management over the long-term. Consultation for specific projects would  
44 occur as necessary.

45 **Tidewater goby (*Eucyclogobius newberryi*)**. Because tidewater gobies are currently  
46 only found in Rodeo Lagoon within the planning area, impacts would be restricted to this

1 location. Park Service management of Rodeo Lagoon is compatible with tidewater goby  
2 activities and requirements. Throughout its range, the primary threats to gobies include  
3 loss and modification of habitat, water diversions, predatory and competitive introduced  
4 fish species, habitat channelization, and degraded water quality. NPS activities, such as  
5 vegetation management, wetland enhancement, and efforts to improve water quantity and  
6 quality within the watershed, near Rodeo Creek would have beneficial impacts on  
7 maintaining appropriate habitat characteristics that support gobies in Rodeo Lagoon. The  
8 National Park Service would continue to monitor goby populations and habitat and  
9 inventory potential habitat. Collectively, impacts to the tidewater goby resulting from  
10 NPS actions that are part of the no-action alternative (the continuation of current  
11 management and trends) would be long-term, beneficial, minor, and localized. The  
12 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
13 *affect, likely to adversely affect*” for project specific actions in the short-term, and “*may*  
14 *affect, not likely to adversely affect*” for land use and park management over the long  
15 term. Consultation for specific projects would occur as necessary.

16 **California brown pelican (*Pelecanus occidentalis californicus*).** California brown  
17 pelicans use nearshore marine and estuarine habitats, in addition to beaches, rocky cliffs,  
18 and offshore rocks and islands in the park. The protection of primary roost sites at Bird  
19 Island, Rodeo Beach/Lagoon, and Seal Rocks in Marin County, and at Alcatraz Island,  
20 Lands End and other offshore rocks in San Francisco County, would provide beneficial  
21 impacts to California brown pelicans. Park Service restoration activities at Rodeo Lagoon  
22 should improve bathing, resting, and roosting habitat—resulting in a beneficial impact.  
23 Collectively, impacts to the California brown pelican resulting from NPS actions that are  
24 part of the no-action alternative (the continuation of current management and trends)  
25 would be long-term, beneficial, minor, and localized. The determination of effect under  
26 Section 7 of the Endangered Species Act would be “*may affect, not likely to adversely*  
27 *affect.*”

28 **San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Because San Francisco  
29 garter snakes are currently restricted to localities in San Mateo County (the only  
30 documented occurrence is at Mori Point/Sharp Park). Two other locations within the  
31 planning area (Milagra Ridge and Rancho Corral de Tierra) appear to have suitable  
32 habitat to support breeding populations of San Francisco garter snakes (Swaim Biological  
33 Inc. 2006). In addition, two other sites (Sweeny Ridge and Cattle Hill) can provide  
34 connectivity between known snake populations or between high quality aquatic habitats  
35 that potentially supports San Francisco garter snakes (Swaim Biological Inc. 2006).  
36 Therefore, impacts would be restricted to these locations. Because California red-legged  
37 frogs are an important prey item for this species, effects on red-legged frogs are expected  
38 to have cascading effects on the snake.

39 Wetland restoration and management at Mori Point could have short-term adverse  
40 impacts on California red-legged frogs and the San Francisco garter snake, but would  
41 result in long-term habitat improvements—a beneficial impact. Some types of exotic tree  
42 removal would also improve the structure and condition of habitat that supports snakes.  
43 Controlling and managing visitor use would reduce impacts to snakes, such as habitat  
44 alteration and direct impacts from recreational use and development; however, some  
45 adverse impacts would continue. The National Park Service would continue to monitor  
46 snake populations and survey potential habitat—resulting in a beneficial impact. The

1 primary threat to the snake would continue to be habitat loss and alteration—an adverse  
2 impact associated with increased urbanization of the region. Collectively, impacts to the  
3 San Francisco garter snake resulting from NPS actions that are part of the no-action  
4 alternative (the continuation of current management and trends) would be long-term,  
5 beneficial, minor to moderate, and localized. The determination of effect under Section 7  
6 of the Endangered Species Act would be “*may affect, likely to adversely affect*” for  
7 project specific actions in the short-term, and “*may affect, not likely to adversely affect*”  
8 for land use and park management over the long-term. Consultation for specific projects  
9 would occur as necessary.

10 **San Bruno elfin butterfly (*Callophrys mossii bayensis*).** Because the San Bruno elfin  
11 butterfly is currently only known to occur at Milagra Ridge within the planning area,  
12 impacts would be restricted to this location. Other suitable habitat may be present at other  
13 locations in San Mateo County.

14 Exotic plant removal and vegetation management would continue to improve conditions  
15 for *Sedum spathulifolium*, the succulent plant that hosts butterfly larvae. Controlling and  
16 managing visitor use in known habitat areas would reduce impacts to butterflies, such as  
17 the trampling of host plants and direct impacts to larvae and pupae from recreational use  
18 and development; however, some adverse impacts would continue. The National Park  
19 Service would continue to monitor butterfly populations and survey potential habitat—  
20 resulting in a beneficial impact. The primary threat to the butterfly would continue to be  
21 habitat loss—an adverse impact associated with increased urbanization of the region.  
22 Collectively, impacts to the San Bruno elfin butterfly resulting from NPS actions that are  
23 part of the no-action alternative (the continuation of current management and trends)  
24 would be long-term, beneficial, minor, and localized. The determination of effect under  
25 Section 7 of the Endangered Species Act would be “*may affect, not likely to adversely*  
26 *affect.*”

27 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
28 **Central California Coast (*O. mykiss*).** These two listed salmonid species are analyzed  
29 together because of the similarities in their life characteristics, habitat requirements, and  
30 the effects of impacts on the two species.

31 Coho salmon are restricted to Redwood Creek and Eastkoot Creek in Marin County,  
32 estuarine sites such as Bolinas Lagoon, as well as the nearshore waters of the Pacific  
33 Ocean. Steelhead trout are restricted to Redwood Creek and the drainages to Bolinas  
34 Lagoon and Rodeo Lagoon in Marin County; and West Union Creek, a tributary to San  
35 Francisquito Creek, in San Mateo County. Therefore, impacts would be restricted to these  
36 locations.

37 NPS activities, such as vegetation management, creek restoration, and efforts to improve  
38 water quantity and quality within the Redwood Creek watershed, would have beneficial  
39 impacts on maintaining habitat characteristics that support anadromous fish. Projects in  
40 Marin County at the Lower Redwood Creek property (floodplain restoration), Big  
41 Lagoon (estuarine and wetland restoration), Stinson Beach (stream and wetland  
42 restoration) and Muir Woods National Monument (vegetation management) would have  
43 beneficial impacts on habitat parameters required by the two species. These projects  
44 would improve riparian vegetation and in-stream habitat complexity—resulting in  
45 improvements to spawning, rearing, and migratory habitats. Critical habitat would be

1 affected by restoration activities. Within the immediate project area, short-term, minor,  
2 adverse, localized impacts to nearly all essential features of critical habitat (substrate,  
3 water quality, water quantity, water temperature, water velocity, cover/shelter, food,  
4 riparian vegetation, space, and safe passage conditions) would be expected. However,  
5 these short-term impacts would be outweighed by the beneficial impacts expected to  
6 occur over the long term. The National Park Service would continue to monitor coho and  
7 steelhead populations and habitat inventory potential habitat.

8 Controlling and managing visitor use would reduce impacts to coho and steelhead, such  
9 as habitat alteration and direct impacts from recreational use and development; however,  
10 some adverse impacts would continue. The primary threats to coho and steelhead would  
11 continue to be loss and modification of habitat, water diversions, habitat channelization,  
12 sedimentation, and degraded water quality—adverse impacts associated with increased  
13 urbanization of the region. Collectively, impacts to coho salmon and steelhead trout  
14 resulting from NPS actions that are part of the no-action alternative (the continuation of  
15 current management and trends) would be long-term, beneficial, minor, and localized.  
16 The determination of effect under Section 7 of the Endangered Species Act would be  
17 “*may affect, likely to adversely affect*” for project specific actions in the short-term, and  
18 “*may affect, not likely to adversely affect*” for land use and park management over the  
19 long-term. Consultation for specific projects would occur as necessary.

20 **Western snowy plover (*Charadrius alexandrinus nivosus*).** The western snowy plover  
21 nests in coastal Marin County at Point Reyes National Seashore and Dillon Beach.  
22 Nonbreeding snowy plovers regularly use habitat within the planning area at Ocean  
23 Beach. Snowy plovers are occasionally observed at Rodeo Beach, though these birds tend  
24 to remain only for short periods of time. Therefore, impacts would be restricted to these  
25 locations.

26 Seasonal visitor use restrictions requiring dogs to be on leash on a portion of Ocean  
27 Beach would continue to assist in the protection of plovers—resulting in a beneficial  
28 impact. However, visitor use (especially dogs off-leash) would continue to disturb  
29 foraging or roosting birds resulting in long-term, minor, adverse, localized impacts. The  
30 National Park Service would continue to restrict park management activities in plover  
31 habitat, provide guidance for beach patrol activities, and is currently developing a  
32 shorebird plover docent program—all of which assist with plover protection and provide  
33 beneficial impacts. The National Park Service would continue to monitor plover  
34 populations and survey potential habitat. The primary threat to the plover within the  
35 region would continue to be habitat loss—an adverse impact associated with increased  
36 urbanization of the region and the loss or alteration of beach habitat. Collectively,  
37 impacts to the western snowy plover resulting from NPS actions that are part of the no-  
38 action alternative (the continuation of current management and trends) would be long-  
39 term, minor, adverse, and localized. The determination of effect under Section 7 of the  
40 Endangered Species Act would be “*may affect, likely to adversely affect.*”

41 **Northern spotted owl (*Strix occidentalis caurina*).** Suitable habitat for northern spotted  
42 owls includes all evergreen forested habitat north of State Route 1 in Marin County.  
43 Within the planning area, known spotted owl populations are currently limited to Muir  
44 Woods National Monument, Homestead Valley, and the Stinson Gulch area. Therefore,  
45 impacts would be restricted to these locations.

1 Vegetation management actions designed to protect and enhance coniferous forest,  
2 including old-growth, second growth and remnant stands, would provide potential  
3 roosting, feeding, and nesting habitat for the owl—resulting in a beneficial impact. The  
4 National Park Service would continue to monitor owl populations and survey potential  
5 habitat. Visitor use in the area would continue to disturb owls. Barred owls would also  
6 likely continue to invade preferred spotted owl habitats—an adverse impact. Ongoing  
7 actions to reduce human-created noise and light at Muir Woods National Monument  
8 would result in improvements to habitat conditions. Current actions to reduce barred owl  
9 use and nesting would help reduce adverse impacts to spotted owls. The primary threat to  
10 the northern spotted owl in the region would continue to be the loss of habitat – an  
11 adverse impact associated with increased urbanization of the region. Other threats include  
12 expansion in the range of the barred owl (*Strix varia*), West Nile virus, changes in habitat  
13 due to Sudden Oak Death, and recreational pressure. Locally, in Muir Woods National  
14 Monument, the primary threat is from barred owls. Collectively, impacts to the northern  
15 spotted owl resulting from NPS actions that are part of the no-action alternative (the  
16 continuation of current management and trends) would be long-term, minor, beneficial  
17 and localized. The determination of effect under Section 7 of the Endangered Species Act  
18 would be “*may affect, not likely to adversely affect.*”

19 **San Francisco lessingia (*Lessingia germanorum*).** Vegetation management, including  
20 exotic plant removal, would continue to improve conditions for the San Francisco  
21 lessingia. Restoration projects at Fort Funston (about 20 acres of ice plant removal) in  
22 areas that should contain open sandy soils and dunes would reduce competition with  
23 nonnative vegetation—resulting in a beneficial impact. Controlling and managing visitor  
24 use in known habitat areas would reduce impacts to the lessingia, such as the trampling of  
25 plants; however, some adverse impacts would continue. The National Park Service would  
26 continue to monitor lessingia populations and survey potential habitat—resulting in a  
27 beneficial impact. The primary threat to the lessingia would continue to be habitat loss—  
28 an adverse impact associated with increased urbanization of the region—and habitat  
29 alteration resulting in increases in invasive, nonnative plants. Collectively, impacts to the  
30 San Francisco lessingia resulting from NPS actions that are part of the no-action  
31 alternative (the continuation of current management and trends) would be long-term,  
32 beneficial, minor, and localized. The determination of effect under Section 7 of the  
33 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

#### 34 ***State Threatened and Endangered Species***

35 **Bank swallow (*Riparia riparia*).** The only known nesting location for bank swallows  
36 within the park is in the coastal bluffs at Fort Funston. The National Park Service would  
37 continue to maintain natural geologic processes that erode the cliffs and provide suitable  
38 nesting habitat—resulting in a beneficial impact. Visitor use in the vicinity of the nest  
39 sites, as well as the defacing of the sandy cliffs themselves, would continue to disturb  
40 individual birds and affect nesting activity and success—an adverse impact. The National  
41 Park Service would continue to monitor bank swallow populations and survey potential  
42 habitat—resulting in a beneficial impact. The primary threat to the bank swallow would  
43 continue to be habitat loss—resulting in an adverse impact associated with increased  
44 urbanization, conversion of natural habitats, and channelization of waterways in the  
45 region. Collectively, impacts to the bank swallow resulting from NPS actions that are part  
46 of the no-action alternative (the continuation of current management and trends) would  
47 be long-term, beneficial, minor, and localized.

1 **Montara Manzanita (*Arctostaphylos montaraensis*)**. The Montara manzanita is  
 2 endemic to the slopes of Montara Mountain in San Mateo County. Most of the known  
 3 habitat is located in McNee Ranch State Park, outside of NPS-owned lands; therefore,  
 4 any impacts would be restricted to this location. No actions included in this alternative  
 5 would have any impact on the Montara manzanita or its habitat.

6 **Conclusion**

7 **Table 16: Potential Impacts to Special Status Species of Golden Gate National Recreation**  
 8 **Area, No-action Alternative**

Species	Status	ESA Determination
California red-legged frog ( <i>Rana aurora draytonii</i> )	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 park management over the long-term
Mission blue butterfly ( <i>Icaricia icaroides missionensis</i> )	Federal endangered	"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 park management over the long-term
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	Federal endangered	"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 park management over the long-term
California brown pelican ( <i>Pelecanus occidentalis californicus</i> )	Federal endangered	"may affect, not likely to adversely affect"
San Francisco garter snake ( <i>Thamnophis sirtalis tetrataenia</i> )	Federal endangered	"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 park management over the long-term
San Bruno elfin butterfly ( <i>Callophrys mossii bayensis</i> )	Federal endangered	"may affect, not likely to adversely affect"

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	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 park management over the long-term
Western snowy plover ( <i>Charadrius alexandrinus nivosus</i> )	Federal threatened	"may affect, likely to adversely affect"
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	"may affect, not likely to adversely affect"
San Francisco lessingia ( <i>Lessingia germanorum</i> )	Federal endangered	"may affect, not likely to adversely affect"
Bank swallow ( <i>Riparia riparia</i> )	Federal candidate; State threatened	long-term, beneficial, minor, and localized
Montara Manzanita ( <i>Arctostaphylos montaraensis</i> )	State threatened	no impact

1

2 No impairment of listed species would result from this alternative.

3 **Alternative 1: Connecting People with the Parks**  
4 **(NPS Preferred Alternative for park sites in Marin, San Francisco, and**  
5 **San Mateo counties)**

6 **Introduction**

7 Under alternative 1, a variety of management zones would be used that would assist in  
8 the protection of special status species. Approximately 77% of the park would be zoned  
9 in the Natural and Sensitive Resources zones.

10 **Federal Threatened and Endangered Species**

11 **California red-legged frog (*Rana aurora draytonii*).** Impacts to California red-legged  
12 frogs and their habitat from alternative 1 would be the same as the no-action alternative  
13 with the exception of impacts to habitat from expanded restoration of natural areas.  
14 Vegetation management, including exotic plant removal, especially in riparian and  
15 wetland areas in San Mateo County, would be greater than under the no-action  
16 alternative, creating improvements to vegetative structure and condition that could  
17 improve breeding and foraging habitat—resulting in a beneficial impact. Impacts to the  
18 frog from new recreational development under alternative 1 would not occur because any  
19 new facilities would be sited to avoid existing or potential frog habitat. Impacts to the  
20 California red-legged frog resulting from NPS actions that are part of the alternative 1  
21 would be long-term, beneficial, minor, and localized. The determination of effect under

1 Section 7 of the Endangered Species Act would be “*may affect, not likely to adversely*  
2 *affect.*”

3 **Mission blue butterfly (*Icaricia icaroides missionensis*).** Impacts to mission blue  
4 butterflies and their habitat from alternative 1 would be the same as the no-action  
5 alternative with the exception of vegetation management actions in San Mateo County  
6 and new recreational development in San Mateo and Marin counties. Vegetation  
7 management, including exotic plant removal, in San Mateo County park lands would  
8 improve conditions that support the host lupine—resulting in a beneficial impact.  
9 However, increased visitor use in this area could also cause adverse impacts to host  
10 plants and butterfly larvae and pupae. New recreational development in known habitat in  
11 Marin and San Mateo counties would slightly increase the adverse impacts that are  
12 described under the no-action alternative. Impacts to the Mission blue butterfly resulting  
13 from NPS actions that are part of alternative 1 would be long-term, beneficial, minor, and  
14 localized. The determination of effect under Section 7 of the Endangered Species Act  
15 would be “*may affect, not likely to adversely affect.*”

16 **Tidewater goby (*Eucyclogobius newberryi*).** Impacts to tidewater gobies and their  
17 habitat from alternative 1 would be the same as the no-action alternative. Impacts to the  
18 tidewater goby resulting from NPS actions that are part of alternative 1 would be long-  
19 term, beneficial, minor, and localized. The determination of effect under Section 7 of the  
20 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

21 **California brown pelican (*Pelecanus occidentalis californicus*).** Impacts to California  
22 brown pelicans and their habitat from alternative 1 would be the same as the no-action  
23 alternative. The determination of effect under Section 7 of the Endangered Species Act  
24 would be “*may affect, not likely to adversely affect.*”

25 **San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Impacts to the San  
26 Francisco garter snake and their habitat under alternative 1 would be the same as under  
27 the no-action alternative with the exception of habitat improvements in San Mateo  
28 County. Vegetation management, including exotic plant removal in riparian and wetland  
29 areas, would improve the structure and condition of vegetation that supports snakes—  
30 resulting in a beneficial impact. Impacts to the San Francisco garter snake resulting from  
31 NPS actions that are part of alternative 1 would be long-term, beneficial, minor to  
32 moderate, and localized. The determination of effect under Section 7 of the Endangered  
33 Species Act would be “*may affect, not likely to adversely affect.*”

34 **San Bruno elfin butterfly (*Callophrys mossii bayensis*).** Impacts to the San Bruno elfin  
35 butterfly and their habitat under alternative 1 would be the same as under the no-action  
36 alternative, with the exception of habitat improvements at Milagra Ridge and other park  
37 lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including  
38 earthwork and native plantings covering about 20 acres) could improve conditions for  
39 host plant recruitment and butterfly use. Vegetation management, including exotic plant  
40 removal, elsewhere in San Mateo County would improve the structure and condition of  
41 vegetation and could increase the potential for local range expansion into additional  
42 suitable habitat—resulting in a beneficial impact. Impacts to the San Bruno elfin butterfly  
43 resulting from NPS actions that are part of alternative 1 would be long-term, beneficial,  
44 minor to moderate, and localized. The determination of effect under Section 7 of the  
45 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

1 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
2 **Central California Coast (*O. mykiss*).** Adverse impacts to coho salmon and steelhead  
3 trout and their habitat would be the same as those described under the no-action  
4 alternative. The types of beneficial impacts described under the no-action alternative  
5 would be the same under alternative 1 but the scale would be greater, resulting in  
6 increased beneficial impacts. Restoration activities in the Redwood Creek watershed in  
7 Marin County and at various creeks within San Mateo County would improve habitat  
8 characteristics that support anadromous fish. The goal of reconnecting creeks to the  
9 ocean on San Mateo County park lands, and partnering with CalTrans to improve fish  
10 passage, would provide the habitat required to support the life cycle of these anadromous  
11 fish—resulting in a beneficial impact. Impacts to coho salmon and steelhead trout  
12 resulting from NPS actions that are part of alternative 1 would be long-term, beneficial,  
13 moderate, and localized. The determination of effect under Section 7 of the Endangered  
14 Species Act would be “*may affect, not likely to adversely affect.*”

15 **Western snowy plover (*Charadrius alexandrinus nivosus*).** Impacts to Western snowy  
16 plover and their habitat from alternative 1 would be the same as the no-action alternative.  
17 The determination of effect under Section 7 of the Endangered Species Act would be  
18 “*may affect, not likely to adversely affect.*”

19 **Northern spotted owl (*Strix occidentalis caurina*).** Impacts to northern spotted owls and  
20 their habitat from alternative 1 would be the same as the no-action alternative with the  
21 exception of habitat improvements near Stinson Beach. Creek restoration near Stinson  
22 Beach would improve habitat conditions for species such as small mammals and  
23 songbirds, which are the primary prey species of the spotted owl. Impacts to the northern  
24 spotted owl would be long-term, minor, beneficial, and localized. The determination of  
25 effect under Section 7 of the Endangered Species Act would be “*may affect, not likely to*  
26 *adversely affect.*”

27 **San Francisco lessingia (*Lessingia germanorum*).** Adverse impacts to the San  
28 Francisco lessingia and its habitat would be the same as those described under the no-  
29 action alternative. The types of beneficial impacts described under the no-action  
30 alternative would be the same under alternative 1, but the scale would be greater,  
31 resulting in increased beneficial impacts due to expanded vegetation management and  
32 native plant habitat restoration. Impacts to the San Francisco lessingia resulting from  
33 NPS actions that are part of alternative 1 would be long-term, beneficial, minor, and  
34 localized. The determination of effect under Section 7 of the Endangered Species Act  
35 would be “*may affect, not likely to adversely affect.*”

#### 36 ***State Threatened and Endangered Species***

37 **Bank swallow (*Riparia riparia*).** Impacts to bank swallows and their habitat from  
38 alternative 1 would be the same as the no-action alternative. Impacts would be long-term,  
39 beneficial, minor, and localized.

40 **Montara Manzanita (*Arctostaphylos montaraensis*).** The Montara manzanita is  
41 endemic to the slopes of Montara Mountain in San Mateo County. Most of the known  
42 habitat is located in McNee Ranch State Park, outside of NPS-owned lands. Limited  
43 surveying of known populations and potential habitat outside of this area has been  
44 conducted.

1 Under alternative 1, the National Park Service would acquire lands in San Mateo County.  
 2 In particular, the Ranch Corral de Tierra property, which is adjacent to McNee Ranch  
 3 State Park, would be acquired. Impacts to the Montara manzanita could occur from  
 4 visitor use and habitat restoration. Increased visitor use in San Mateo County, in  
 5 particular at Ranch Corral de Tierra which is adjacent McNee Ranch, could cause  
 6 increased erosion and trampling of plants along trails in the Montara Mountain area—  
 7 resulting in a long-term, minor to moderate, adverse, localized impact. Habitat restoration  
 8 in this area could also improve conditions for this rare plant (a beneficial impact), but  
 9 would not likely result in range expansion or an increase in individual plants due to the  
 10 specific habitat requirements of the species. The National Park Service would monitor  
 11 Montara Manzanita populations and survey potential habitat and would manage visitor  
 12 use and construction activities within known habitat to avoid or minimize impacts the  
 13 species—resulting in beneficial impacts. Collectively, impacts to the Montara manzanita  
 14 or its habitat from alternative 1 would be long-term, minor, adverse, and localized.

15 **Conclusion**

16 **Table 17 : Potential Impacts to Special Status Species of Golden Gate National Recreation**  
 17 **Area, Alternative 1**

Species	Status	ESA Determination
California red-legged frog ( <i>Rana aurora draytonii</i> )	Federal threatened	"may affect, not likely to adversely affect"
Mission blue butterfly ( <i>Icaricia icaroides missionensis</i> )	Federal endangered	"may affect, not likely to adversely affect"
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	Federal endangered	"may affect, not likely to adversely affect"
California brown pelican ( <i>Pelecanus occidentalis californicus</i> )	Federal endangered	"may affect, not likely to adversely affect"
San Francisco garter snake ( <i>Thamnophis sirtalis tetrataenia</i> )	Federal endangered	"may affect, not likely to adversely affect"
San Bruno elfin butterfly ( <i>Callophrys mossii bayensis</i> )	Federal endangered	"may affect, not likely to adversely affect"
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	Federal threatened	"may affect, not likely to adversely affect"

Species	Status	ESA Determination
Western snowy plover ( <i>Charadrius alexandrinus nivosus</i> )	Federal threatened	“may affect, not likely to adversely affect.”
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	“may affect, not likely to adversely affect”
San Francisco lessingia ( <i>Lessingia germanorum</i> )	Federal endangered	“may affect, not likely to adversely affect”
Bank swallow ( <i>Riparia riparia</i> )	Federal candidate; State threatened	long-term, beneficial, minor, and localized
Montara Manzanita ( <i>Arctostaphylos montaraensis</i> )	State threatened	long-term, minor, adverse, and localized

1

2 No impairment of listed species would result from this alternative.

3 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**4 **Introduction**5 Under alternative 2, a variety of management zones would be used that would assist in  
6 the protection of special status species. Approximately 92% of the park would be zoned  
7 using the Natural and Sensitive Resources zones.8 **Federal Threatened and Endangered Species**9 **California red-legged frog (*Rana aurora draytonii*).** Impacts to California red-legged  
10 frogs and their habitat from alternative 2 would be the same as the no-action alternative  
11 with the exception of impacts to habitat from expanded restoration of natural areas.  
12 Vegetation management, including exotic plant removal, especially in riparian and  
13 wetland areas in Marin and San Mateo counties, would be greater than under the no-  
14 action alternative resulting in improvements to vegetative structure and condition that  
15 could improve breeding and foraging habitat—resulting in a beneficial impact. Impacts to  
16 the frog from new recreational development under alternative 2 would not occur because  
17 any new facilities would be sited to avoid existing or potential frog habitat. Impacts to the  
18 California red-legged frog resulting from NPS actions that are part of the alternative 2  
19 would be long-term, beneficial, minor, and localized. The determination of effect under  
20 Section 7 of the Endangered Species Act would be “*may affect, not likely to adversely*  
21 *affect.*”22 **Mission blue butterfly (*Icaricia icaroides missionensis*).** Impacts to mission blue  
23 butterflies and their habitat from alternative 2 would be the same as those of the no-action  
24 alternative, with the exception of impacts resulting from vegetation management actions  
25 and new recreation development in San Mateo County and from park land use in Marin  
26 County. Vegetation management, including exotic plant removal, in San Mateo County  
27 park lands would improve conditions that support the host lupine—resulting in a

1 beneficial impact. However, increased visitor use in this area could also cause adverse  
2 impacts to host plants and butterfly larvae and pupae. New recreational development in  
3 known habitat in San Mateo County would slightly increase the adverse impacts that are  
4 described under the no-action alternative. Management zoning of known habitat in Marin  
5 County would provide greater protection of butterfly habitat than under the no-action  
6 alternative—creating a beneficial impact. Impacts to the Mission blue butterfly resulting  
7 from NPS actions that are part of alternative 2 would be long-term, beneficial, minor, and  
8 localized. The determination of effect under Section 7 of the Endangered Species Act  
9 would be “*may affect, not likely to adversely affect.*”

10 **Tidewater goby (*Eucyclogobius newberryi*).** Impacts to tidewater gobies and their  
11 habitat from alternative 2 would be the same as the no-action alternative, with the  
12 exception of greater beneficial impacts resulting from expanded restoration efforts and  
13 watershed protection. Impacts to the tidewater goby resulting from NPS actions that are  
14 part of alternative 2 would be long-term, beneficial, minor, and localized. The  
15 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
16 *affect, not likely to adversely affect.*”

17 **California brown pelican (*Pelecanus occidentalis californicus*).** Impacts to California  
18 brown pelicans and their habitat from alternative 2 would be the same as the no-action  
19 alternative. The determination of effect under Section 7 of the Endangered Species Act  
20 would be “*may affect, not likely to adversely affect.*”

21 **San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Impacts to the San  
22 Francisco garter snake and their habitat under alternative 2 would be the same as under  
23 the no-action alternative, with the exception of impacts created by habitat improvements  
24 in San Mateo County. Vegetation management, including exotic plant removal in riparian  
25 and wetland areas, would improve the structure and condition of vegetation that supports  
26 snakes—resulting in a beneficial impact. Impacts to the San Francisco garter snake  
27 resulting from NPS actions that are part of alternative 2 would be long-term, beneficial,  
28 minor to moderate, and localized. The determination of effect under Section 7 of the  
29 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

30 **San Bruno elfin butterfly (*Callophrys mossii bayensis*).** Impacts to the San Bruno elfin  
31 butterfly and their habitat under alternative 2 would be the same as under the no-action  
32 alternative, with the exception of habitat improvements at Milagra Ridge and other park  
33 lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including  
34 earthwork and native plantings covering about 20 acres) could improve conditions for  
35 host plant recruitment and butterfly use. Vegetation management, including exotic plant  
36 removal, elsewhere in San Mateo County would improve the structure and condition of  
37 vegetation and could increase the potential for local range expansion into additional  
38 suitable habitat—resulting in a beneficial impact. Impacts to the San Bruno elfin butterfly  
39 resulting from NPS actions that are part of alternative 2 would be long-term, beneficial,  
40 minor to moderate, and localized. The determination of effect under Section 7 of the  
41 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

42 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
43 **Central California Coast (*O. mykiss*).** Adverse impacts to coho salmon and steelhead  
44 trout and their habitat would be the same as those described under the no-action  
45 alternative. The types of beneficial impacts described under the no-action alternative

1 would be the same under alternative 2 but the scale would be greater, resulting in  
2 increased beneficial impacts. Restoration activities in the Redwood Creek watershed in  
3 Marin County and at various creeks within San Mateo County would improve habitat  
4 characteristics that support anadromous fish. The goal of reconnecting creeks to the  
5 ocean on San Mateo County park lands, and partnering with CalTrans to improve fish  
6 passage, would provide the habitat required to support the life cycle of these anadromous  
7 fish—resulting in a beneficial impact. Impacts to coho salmon and steelhead trout  
8 resulting from NPS actions that are part of alternative 2 would be long-term, beneficial,  
9 moderate, and localized. The determination of effect under Section 7 of the Endangered  
10 Species Act would be “*may affect, not likely to adversely affect.*”

11 **Western snowy plover (*Charadrius alexandrinus nivosus*).** Impacts to Western snowy  
12 plover and their habitat from alternative 2 would be the same as the no-action alternative.  
13 The determination of effect under Section 7 of the Endangered Species Act would be  
14 “*may affect, not likely to adversely affect.*”

15 **Northern spotted owl (*Strix occidentalis caurina*).** Impacts to northern spotted owls and  
16 their habitat from alternative 2 would be the same as the no-action alternative with the  
17 exception of habitat improvements near Stinson Beach. Creek restoration near Stinson  
18 Beach would improve habitat conditions for species such as small mammals and  
19 songbirds, which are the primary prey species of the spotted owl. Impacts to the northern  
20 spotted owl would be long-term, minor, beneficial, and localized. The determination of  
21 effect under Section 7 of the Endangered Species Act would be “*may affect, not likely to*  
22 *adversely affect.*”

23 **San Francisco lessingia (*Lessingia germanorum*).** Adverse impacts to the San  
24 Francisco lessingia and its habitat would be the same as those described under the no-  
25 action alternative. The types of beneficial impacts described under the no-action  
26 alternative would be the same under alternative 2 but the scale would be greater, resulting  
27 in increased beneficial impacts due to expanded vegetation management and native plant  
28 habitat restoration. The removal of nonhistoric buildings at Fort Funston would provide  
29 an opportunity to restore dune habitat and create an area of expansion for the lessingia.  
30 Impacts to the San Francisco lessingia resulting from NPS actions that are part of  
31 alternative 2 would be long-term, beneficial, minor, and localized. The determination of  
32 effect under Section 7 of the Endangered Species Act would be “*may affect, not likely to*  
33 *adversely affect.*”

#### 34 ***State Threatened and Endangered Species***

35 **Bank swallow (*Riparia riparia*).** Impacts to bank swallows and their habitat from  
36 alternative 1 would be the same as the no-action alternative. Impacts would be long-term,  
37 beneficial, minor, and localized.

38 **Montara Manzanita (*Arctostaphylos montaraensis*).** The Montara manzanita is  
39 endemic to the slopes of Montara Mountain in San Mateo County. Most of the known  
40 habitat is located in McNee Ranch State Park, outside of NPS-owned lands. Limited  
41 surveying of known populations and potential habitat outside of this area has been  
42 conducted.

43 Under alternative 2, the National Park Service would acquire lands in San Mateo County.  
44 In particular, the Ranch Corral de Tierra property, which is adjacent to McNee Ranch

1 State Park, would be acquired. Impacts to the Montara manzanita could occur from  
 2 visitor use and habitat restoration. Increased visitor use in San Mateo County, in  
 3 particular at Ranch Corral de Tierra, which is adjacent McNee Ranch, could cause  
 4 increased erosion and trampling of plants along trails in the Montara Mountain area—  
 5 resulting in a long-term, minor to moderate, adverse, localized impact. Habitat restoration  
 6 in this area could also improve conditions for this rare plant (a beneficial impact), but  
 7 would not likely result in range expansion or an increase in individual plants due to the  
 8 specific habitat requirements of the species. The National Park Service would monitor  
 9 Montara manzanita populations and survey potential habitat and would manage visitor  
 10 use and construction activities within known habitat to avoid or minimize impacts the  
 11 species—resulting in beneficial impacts. Collectively, impacts to the Montara manzanita  
 12 or its habitat from alternative 2 would be long-term, minor, adverse, and localized.

13 **Conclusion**

14 **Table 18: Potential Impacts to Special Status Species of Golden Gate National Recreation**  
 15 **Area, Alternative 2**

Species	Status	ESA Determination
California red-legged frog ( <i>Rana aurora draytonii</i> )	Federal threatened	“may affect, not likely to adversely affect”
Mission blue butterfly ( <i>Icaricia icaroides missionensis</i> )	Federal endangered	“may affect, not likely to adversely affect”
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	Federal endangered	“may affect, not likely to adversely affect”
California brown pelican ( <i>Pelecanus occidentalis californicus</i> )	Federal endangered	“may affect, not likely to adversely affect”
San Francisco garter snake ( <i>Thamnophis sirtalis tetrataenia</i> )	Federal endangered	“may affect, not likely to adversely affect”
San Bruno elfin butterfly ( <i>Callophrys mossii bayensis</i> )	Federal endangered	“may affect, not likely to adversely affect”

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	Federal threatened	"may affect, not likely to adversely affect"
Western snowy plover ( <i>Charadrius alexandrinus nivosus</i> )	Federal threatened	"may affect, not likely to adversely affect."
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	"may affect, not likely to adversely affect"
San Francisco lessingia ( <i>Lessingia germanorum</i> )	Federal endangered	"may affect, not likely to adversely affect"
Bank swallow ( <i>Riparia riparia</i> )	Federal candidate; State threatened	long-term, beneficial, minor, and localized
Montara Manzanita ( <i>Arctostaphylos montaraensis</i> )	State threatened	long-term, minor, adverse, and localized

1

2 No impairment of listed species would result from this alternative.

3 **Alternative 3: Focusing on National Treasures**  
4 **(NPS Preferred Alternative for Alcatraz Island)**

5 **Introduction**

6 Under alternative 3, a variety of management zones would be used that would assist in  
7 the protection of special status species. Approximately 88% of the park would be zoned  
8 using the Natural and Sensitive Resources zones.

9 **Federal Threatened and Endangered**

10 **California red-legged frog (*Rana aurora draytonii*).** Impacts to California red-legged  
11 frogs and their habitat from alternative 3 would be the same as the no-action alternative  
12 with the exception of impacts to habitat from expanded restoration of natural areas.  
13 Vegetation management, including exotic plant removal, especially in riparian and  
14 wetland areas in San Mateo County, would be greater than under the no-action  
15 alternative, creating improvements to vegetative structure and condition that could  
16 improve breeding and foraging habitat—resulting in a beneficial impact. Impacts to the  
17 frog from new recreational development under alternative 3 would not occur because any  
18 new facilities would be sited to avoid existing or potential frog habitat. Impacts to the  
19 California red-legged frog resulting from NPS actions that are part of the alternative 3  
20 would be long-term, beneficial, minor, and localized. The determination of effect under

1 Section 7 of the Endangered Species Act would be “*may affect, not likely to adversely*  
2 *affect.*”

3 **Mission blue butterfly (*Icaricia icaroides missionensis*).** Impacts to mission blue  
4 butterflies and their habitat from alternative 3 would be the same as the no-action  
5 alternative with the exception of vegetation management actions and new recreational  
6 development in San Mateo County, and park land uses in Marin County. Vegetation  
7 management, including exotic plant removal, in San Mateo County park lands would  
8 improve conditions that support the host lupine—a beneficial impact. However, increased  
9 visitor use in this area could also cause adverse impacts to host plants and butterfly larvae  
10 and pupae. New recreational development in known habitat in Marin and San Mateo  
11 counties would slightly increase the adverse impacts that are described under the no-  
12 action alternative. Treatments to restore cultural landscapes in known habitat in Marin  
13 County could have adverse impacts (i.e. loss or conversion of habitat) on native coastal  
14 shrub habitats and grasslands that support lupine and butterflies; however, butterfly  
15 habitat protection objectives would be included in any plans to change existing conditions  
16 in this area. Impacts to the Mission blue butterfly resulting from NPS actions that are part  
17 of alternative 3 would be long-term, adverse, minor, and localized. The determination of  
18 effect under Section 7 of the Endangered Species Act would be “*may affect, not likely to*  
19 *adversely affect.*”

20 **Tidewater goby (*Eucyclogobius newberryi*).** Impacts to tidewater gobies and their  
21 habitat from alternative 3 would be the same as the no-action alternative. Impacts to the  
22 tidewater goby resulting from NPS actions that are part of alternative 3 would be long-  
23 term, beneficial, minor, and localized. The determination of effect under Section 7 of the  
24 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

25 **California brown pelican (*Pelecanus occidentalis californicus*).** Impacts to California  
26 brown pelicans and their habitat from alternative 3 would be the same as the no-action  
27 alternative. The determination of effect under Section 7 of the Endangered Species Act  
28 would be “*may affect, not likely to adversely affect.*”

29 **San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Impacts to the San  
30 Francisco garter snake and their habitat under alternative 3 would be the same as under  
31 the no-action alternative with the exception of habitat improvements in San Mateo  
32 County. Vegetation management, including exotic plant removal in riparian and wetland  
33 areas, would improve the structure and condition of vegetation that supports snakes—a  
34 beneficial impact. Impacts to the San Francisco garter snake resulting from NPS actions  
35 that are part of alternative 3 would be long-term, beneficial, minor to moderate, and  
36 localized. The determination of effect under Section 7 of the Endangered Species Act  
37 would be “*may affect, not likely to adversely affect.*”

38 **San Bruno elfin butterfly (*Callophrys mossii bayensis*).** Impacts to the San Bruno elfin  
39 butterfly and their habitat under alternative 3 would be the same as under the no-action  
40 alternative, with the exception of habitat improvements at Milagra Ridge and other park  
41 lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including  
42 earthwork and native plantings covering about 20 acres) could improve conditions for  
43 host plant recruitment and butterfly use. Vegetation management, including exotic plant  
44 removal, elsewhere in San Mateo County would improve the structure and condition of  
45 vegetation and could increase the potential for local range expansion into additional

- 1 suitable habitat—resulting in a beneficial impact. Impacts to the San Bruno elfin butterfly  
2 resulting from NPS actions that are part of alternative 3 would be long-term, beneficial,  
3 minor to moderate, and localized. The determination of effect under Section 7 of the  
4 Endangered Species Act would be “*may affect, not likely to adversely affect.*”
- 5 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
6 **Central California Coast (*O. mykiss*).** Adverse impacts to coho salmon and steelhead  
7 trout and their habitat would be the same as those described under the no-action  
8 alternative. The types of beneficial impacts described under the no-action alternative  
9 would be the same under alternative 3 but the scale would be greater, resulting in  
10 increased beneficial impacts. Restoration activities in the Redwood Creek watershed in  
11 Marin County and at various creeks within San Mateo County would improve habitat  
12 characteristics that support anadromous fish. The goal of reconnecting creeks to the  
13 ocean on San Mateo County park lands, and partnering with CalTrans to improve fish  
14 passage, would provide the habitat required to support the life cycle of these anadromous  
15 fish—a beneficial impact. Impacts to coho salmon and steelhead trout resulting from NPS  
16 actions that are part of alternative 3 would be long-term, beneficial, moderate, and  
17 localized. The determination of effect under Section 7 of the Endangered Species Act  
18 would be “*may affect, not likely to adversely affect.*”
- 19 **Western snowy plover (*Charadrius alexandrinus nivosus*).** Impacts to Western snowy  
20 plover and their habitat from alternative 3 would be the same as the no-action alternative.  
21 The determination of effect under Section 7 of the Endangered Species Act would be  
22 “*may affect, not likely to adversely affect.*”
- 23 **Northern spotted owl (*Strix occidentalis caurina*).** Impacts to northern spotted owls and  
24 their habitat from alternative 3 would be the same as the no-action alternative. The  
25 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
26 *affect, not likely to adversely affect.*”
- 27 **San Francisco lessingia (*Lessingia germanorum*).** Adverse impacts to the San  
28 Francisco lessingia and its habitat would be the same as those described under the no-  
29 action alternative. The types of beneficial impacts described under the no-action  
30 alternative would be the same under alternative 3 but the scale would be greater, resulting  
31 in increased beneficial impacts due to expanded vegetation management and native plant  
32 habitat restoration. Impacts to the San Francisco lessingia resulting from NPS actions that  
33 are part of alternative 3 would be long-term, beneficial, minor, and localized. The  
34 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
35 *affect, not likely to adversely affect.*”
- 36 ***State Threatened and Endangered***
- 37 **Bank swallow (*Riparia riparia*).** Impacts to bank swallows and their habitat from  
38 alternative 3 would be the same as the no-action alternative. Impacts would be long-term,  
39 beneficial, minor, and localized.
- 40 **Montara Manzanita (*Arctostaphylos montaraensis*).** The Montara manzanita is  
41 endemic to the slopes of Montara Mountain in San Mateo County. Most of the known  
42 habitat is located in McNee Ranch State Park, outside of NPS-owned lands. Limited  
43 surveying of known populations and potential habitat outside of this area has been  
44 conducted.

1 Under alternative 3, the National Park Service would acquire lands in San Mateo County.  
 2 In particular, the Ranch Corral de Tierra property, which is adjacent to McNee Ranch  
 3 State Park, would be acquired. Impacts to the Montara manzanita could occur from  
 4 visitor use and habitat restoration. Increased visitor use in San Mateo County, in  
 5 particular at Ranch Corral de Tierra, which is adjacent McNee Ranch, could cause  
 6 increased erosion and trampling of plants along trails in the Montara Mountain area—  
 7 resulting in a long-term, minor to moderate, adverse, localized impact. Habitat restoration  
 8 in this area could also improve conditions for this rare plant (a beneficial impact), but  
 9 would not likely result in range expansion or an increase in individual plants due to the  
 10 specific habitat requirements of the species. The National Park Service would monitor  
 11 Montara Manzanita populations and survey potential habitat and would manage visitor  
 12 use and construction activities within known habitat to avoid or minimize impacts to the  
 13 species—these actions would result in beneficial impacts. Collectively, impacts to the  
 14 Montara manzanita or its habitat from alternative 3 would be long-term, minor, adverse,  
 15 and localized.

16 **Conclusion**

17 **Table 19: Potential Impacts to Special Status Species of Golden Gate National Recreation**  
 18 **Area, Alternative 3**

Species	Status	ESA Determination
California red-legged frog ( <i>Rana aurora draytonii</i> )	Federal threatened	“may affect, not likely to adversely affect”
Mission blue butterfly ( <i>Icaricia icaroides missionensis</i> )	Federal endangered	“may affect, not likely to adversely affect”
Tidewater goby ( <i>Eucyclogobius newberryi</i> )	Federal endangered	“may affect, not likely to adversely affect”
California brown pelican ( <i>Pelecanus occidentalis californicus</i> )	Federal endangered	“may affect, not likely to adversely affect”
San Francisco garter snake ( <i>Thamnophis sirtalis tetrataenia</i> )	Federal endangered	“may affect, not likely to adversely affect”
San Bruno elfin butterfly ( <i>Callophrys mossii bayensis</i> )	Federal endangered	“may affect, not likely to adversely affect”

PART 9: POTENTIAL ENVIRONMENTAL CONSEQUENCES

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	Federal threatened	"may affect, not likely to adversely affect"
Western snowy plover ( <i>Charadrius alexandrinus nivosus</i> )	Federal threatened	"may affect, not likely to adversely affect."
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	"may affect, not likely to adversely affect"
San Francisco lessingia ( <i>Lessingia germanorum</i> )	Federal endangered	"may affect, not likely to adversely affect"
Bank swallow ( <i>Riparia riparia</i> )	Federal candidate; State threatened	long-term, beneficial, minor, and localized
Montara Manzanita ( <i>Arctostaphylos montaraensis</i> )	State threatened	long-term, minor, adverse, and localized

1

2 No impairment of listed species would result from this alternative.

3

4

5 **CULTURAL RESOURCES**

6 **Archeological Resources**

7 ***No Action Alternative***

8 ***Analysis***

9 Currently, 10% of Golden Gate National Recreation Area has been surveyed for  
 10 prehistoric and historic archeological resources. To date, approximately 365  
 11 archeological sites have been inventoried, but the significance of those sites requires  
 12 further study and evaluation. Furthermore, comprehensive consultations with American  
 13 Indian tribes regarding archeological sites with ethnographic significance in the park will  
 14 continue into the future. As a result of this need for additional survey work and  
 15 consultation, archeological resources are subject to potential deterioration, lack of  
 16 adequate protection in some cases, and possible loss of integrity from natural processes,  
 17 ongoing agricultural and ranching operations, inadvertent visitor activity, and vandalism.

1 The Muir Beach Archeological District and the Point Lobos Archeological Sites are  
2 currently subject to erosion and possible loss of integrity from natural processes and  
3 human activities such as inadvertent visitor activity and vandalism. Thus, this alternative  
4 could have a permanent, minor to moderate, adverse impact on these archeological  
5 resources. The *King Philip* and *SS Tennessee* shipwrecks and associated remains are  
6 currently subject to deterioration and loss of integrity from natural processes such as  
7 ocean surf and human activities such as vandalism; thus this alternative could have a  
8 permanent moderate adverse impact on these archeological resources.

9 On Alcatraz Island, not much is known about any prehistoric and historic archeological  
10 resources. A comprehensive professional baseline archeological survey of the island and  
11 consultations with American Indian tribes regarding archeological sites with  
12 ethnographic significance will continue to be needed. Park staff suspect that Alcatraz  
13 Island has potential for buried prehistoric and historic deposits associated with  
14 prehistoric, military, prison, and maritime commercial themes. On Alcatraz Island, just as  
15 with the rest of Golden Gate National Recreation Area, there is need for additional survey  
16 work and consultation; without this, archeological resources are subject to potential  
17 deterioration, lack of adequate protection in some cases, and possible loss of integrity  
18 from natural processes and human activities. The lack of survey and knowledge and  
19 possible loss of integrity from natural processes and human activities, as described above,  
20 could have a permanent, minor to moderate, adverse impact on archeological resources.  
21 **Need to discuss if the actions taken today and continue into the future is really as adverse**  
22 **as described.**

### 23 ***Conclusion***

24 Little information is available concerning prehistoric and historic archeological resources  
25 in Golden Gate National Recreation Area and on Alcatraz Island. A comprehensive  
26 professional archeological survey has been conducted for only approximately 10% of the  
27 park's acreage.

28 Actions under this alternative could have a permanent, minor to moderate, adverse impact  
29 on archeological resources associated with the Muir Beach Archeological District and the  
30 Point Lobos Archeological Sites, and could have permanent, moderate adverse impacts  
31 on the *King Philip* and *SS Tennessee* shipwrecks and associated remains.

32 Alcatraz Island has the potential for a wide range of buried prehistoric and historic  
33 deposits associated with its prehistoric, military, prison, and maritime commercial  
34 themes. The park staff continues to work in protecting and preserving known  
35 archeological resources. The lack of survey and knowledge and possible loss of integrity  
36 from natural processes and human activities, as described above, could result in a  
37 permanent, minor to moderate, adverse impact on archeological resources.

38 Based upon the above analysis, under this alternative the Section 106 determination of  
39 effect on archeological resources in Golden Gate National Recreation Area and on  
40 Alcatraz Island would be *adverse effect*.

41 Because there would be no major adverse impacts to a resource or value whose  
42 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
43 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
44 natural or cultural integrity of the park; or (3) identified as a goal in the park's general

1 management plan or other relevant National Park Service planning documents, there  
2 would be no impairment of the park's archeological resources or values.

3 ***Alternative 1: Connecting People with the Parks***

4 ***Analysis***

5 Archeological sites continually deteriorate, due primarily to the effects of weather and  
6 gravity. Left alone, sites will inevitably degrade over time. However, impacts from  
7 human visitation and use contribute to the effects of natural agents of deterioration, and  
8 can substantially increase the rate of site deterioration. Archeological resources adjacent  
9 to or easily accessible from visitor use areas or trails would continue to be vulnerable to  
10 inadvertent damage and vandalism. Inadvertent impacts would include picking up or  
11 otherwise displacing pottery sherds and other artifacts, the compaction of cultural  
12 deposits, and the creation of social trails (which can lead to erosion and destabilization of  
13 the original site architecture). Intentional vandalism includes removing artifacts and  
14 probing or digging in sites. Inadvertent damage or vandalism would result in a loss of  
15 surface archeological materials, alteration of artifact distribution, and a reduction of  
16 contextual evidence. Many such adverse impacts could be mitigated through additional  
17 stabilization of the site, the elimination of social trails to disturbed or vulnerable sites,  
18 and/or systematically collecting surface artifacts for long-term curation. Continued ranger  
19 patrol and emphasis on visitor education, regarding the significance and fragility of such  
20 resources and how visitors can reduce their impacts to archeological resources, would  
21 discourage vandalism and inadvertent impacts and minimize adverse impacts. The  
22 actions under this alternative could result in permanent adverse impacts of minor to  
23 moderate intensity to archeological resources.

24 Prior to demolition of any national register – listed or national register – eligible building  
25 or structure, a survey for archeological resources in the general vicinity of the affected  
26 structure would be designed and conducted in consultation with the appropriate state  
27 historic preservation office. The excavation, recordation, and mapping of any significant  
28 cultural remains would be completed prior to demolition, to ensure that important  
29 archeological data that otherwise would be lost is recovered and documented. Adverse  
30 impacts to affected archeological resources would be permanent and of minor to  
31 moderate intensity.

32 Park staff would continue to work to protect archeological resources from unauthorized  
33 removal or other destructive actions. Modification or relocation of existing trails, and  
34 construction, development, or improvement of trails, roadways, pull-offs, picnic and  
35 camping areas, overlooks, buildings, parking areas, visitor amenities, and interpretive  
36 facilities could affect the integrity of some archeological resources, but every effort  
37 would be undertaken to avoid known or discovered archeological sites. If such sites could  
38 not be avoided, mitigative procedures would be undertaken in consultation with the  
39 California state historic preservation office. Any adverse impacts would be permanent  
40 and of minor to moderate intensity.

41 Additionally, it is estimated that a substantial number of the park's archeological sites  
42 could be lost as a result of rising sea levels during the coming years. The National Park  
43 Service recognizes that archeological resources help connect visitors with the park and its  
44 values. Prehistoric archeological sites on park lands, which provide the last vestiges of  
45 sites associated with indigenous peoples in the region, were among the first sites in the

1 park listed in the National Register of Historic Places. Mitigation is currently taking place  
2 for historic archeological sites, but to a lesser degree for prehistoric sites. Historic  
3 archeological resources may be impacted under this alternative, pursuant to consultation  
4 and in compliance with mitigative measures approved by the California state historic  
5 preservation office, whereas indigenous prehistoric sites under this alternative would be  
6 preserved intact in consultation with American Indian tribes and organizations. Any  
7 adverse impacts would be permanent and of minor to moderate intensity.

8 Under this alternative, the Muir Beach Archeological District would be in the Natural  
9 Management zone. Archeological resources would be identified and evaluated, and  
10 would be provided stabilization, security, or other protection commensurate with their  
11 significance and sensitivity; however, they would generally not be incorporated as visitor  
12 education opportunities in the park's interpretive programs. Although some archeological  
13 resources in the archeological district could be lost (resulting in permanent adverse  
14 impacts of minor intensity), these actions would generally result in beneficial impacts on  
15 archeological resources.

16 Under this alternative, the Point Lobos Archeological Sites would be in the Evolved  
17 Cultural Landscape zone. Archeological resources would be identified and stabilized as  
18 part of cultural landscape enhancement, and they would be used as visitor education  
19 opportunities to interpret human occupation of and interaction with the coastal  
20 environment. Although some archeological resources could be lost (resulting in  
21 permanent adverse impacts of minor intensity), these actions would generally result in  
22 beneficial impacts on archeological resources.

23 There are no proposed actions under this alternative that would affect the *King Philip* and  
24 *SS Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this  
25 alternative on these sites would be the same as those listed in the no-action alternative –  
26 permanent, moderate, and adverse.

27 On Alcatraz Island, within the Diverse Opportunities, Evolved Cultural Landscape, and  
28 Historic Immersion zones, the archeological resources would be identified and may be  
29 stabilized for incorporation into visitor interpretive opportunities, thus enhancing their  
30 protection through increased awareness and understanding. In the Natural and Sensitive  
31 management zones, which generally cover the island's perimeter areas, archeological  
32 resources would be identified, evaluated, and provided stabilization, security, or other  
33 protection commensurate with their significance and sensitivity. Any adverse impacts  
34 would be permanent and of minor to moderate intensity.

### 35 ***Conclusion***

36 Although actions under this alternative could result in long-term, beneficial impacts to  
37 the archeological resources in the Muir Beach Archeological District and the Point Lobos  
38 Archeological Sites, this alternative's actions could result in permanent adverse impacts  
39 of minor to moderate intensity to archeological resources in the Muir Beach  
40 Archeological District and on Alcatraz Island, and permanent moderate adverse impacts  
41 on the *King Philip* and *SS Tennessee* shipwrecks and associated remains.

42 Under this alternative, the Section 106 determination of effect on archeological resources  
43 in Golden Gate National Recreation Area and on Alcatraz Island would be *adverse effect*.

1 Because there would be no major, adverse impacts to a resource or value whose  
2 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
3 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
4 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
5 management plan or other relevant National Park Service planning documents, there  
6 would be no impairment of the park's archeological resources or values.

7 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

8 ***Analysis***

9 Actions under this alternative would result in impacts to archeological resources similar  
10 to those listed under alternative 1. Park staff would continue to work to protect  
11 archeological resources from unauthorized removal or other destructive actions. Coastal  
12 ecosystem restoration and rehabilitation of pastoral and rural landscapes could impact the  
13 integrity of some archeological resources. Accordingly, this alternative would require a  
14 detailed archeological resource stabilization and recovery plan to preserve the integrity of  
15 the park's archeological resources. As part of all earth-disturbing activities, every effort  
16 would be undertaken to avoid known or discovered archeological sites. If such sites could  
17 not be avoided, mitigative procedures would be undertaken in consultation with the  
18 California state historic preservation office. Additionally, prehistoric archeological sites,  
19 which represent the last vestiges of remnant sites associated with indigenous peoples in  
20 the region, would be preserved intact in consultation with American Indian tribes and  
21 organizations. Any adverse impacts would be permanent and of minor to moderate  
22 intensity.

23 Archeological resources, including the Muir Beach Archeological District and the Point  
24 Lobos Archeological Sites, in the Natural, and Sensitive Resources zones, which cover  
25 much of the park land in this alternative, would be identified, evaluated, and provided  
26 stabilization, security, or other protection commensurate with their significance and  
27 sensitivity. However, they would generally not be incorporated as visitor education  
28 opportunities in the park's interpretive programs. Archeological resources in the Evolved  
29 Cultural Landscape and Historic Immersion zones would be identified and stabilized, as  
30 part of cultural landscape enhancement and used as visitor education opportunities to  
31 interpret human occupation of and interaction with the coastal environment. Although  
32 some archeological resources could be lost (resulting in permanent adverse impacts of  
33 minor intensity), these actions would generally result in beneficial impacts on  
34 archeological resources.

35 There are no proposed actions under this alternative that would affect the *King Philip* and  
36 *SS Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this  
37 alternative on these sites would be the same as those listed in the no action alternative –  
38 permanent, moderate, and adverse.

39 In addition to the actions identified in the above analysis, managing archeological  
40 resources on Alcatraz would require a detailed archeological resource stabilization and  
41 recovery plan. As part of all earth-disturbing activities, every effort would be undertaken  
42 to avoid known or discovered archeological sites. In the Evolved Cultural Landscape and  
43 Historic Immersion management zones, which form the central historical core of the  
44 island in this alternative, archeological resources would be identified and stabilized as  
45 part of cultural landscape enhancement and visitor interpretive opportunities. In the

1 Natural and Sensitive Resources management zones, which cover much of the rest of the  
2 island in this alternative, archeological resources would be identified, stabilized, or  
3 provided protection commensurate with their significance and sensitivity. Although some  
4 archeological resources could be lost (resulting in permanent adverse impacts of minor  
5 intensity), these actions would generally result in beneficial impacts to archeological  
6 resources on Alcatraz Island.

### 7 ***Conclusion***

8 Although actions under this alternative could result in permanent adverse impacts of  
9 moderate intensity to some archeological resources, including the *King Philip* and SS  
10 *Tennessee* shipwreck sites and their associated remains, this alternative would generally  
11 have beneficial impacts on archeological resources in the park, including the Muir Beach  
12 Archeological District, the Point Lobos Archeological Sites, and on Alcatraz Island.

13 Under this alternative, the Section 106 determination of effect on archeological resources  
14 in Golden Gate National Recreation Area would be *adverse effect*, and on Alcatraz  
15 Island, it would be *no adverse effect*.

16 Because there would be no major, adverse impacts to a resource or value whose  
17 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
18 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
19 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
20 management plan or other relevant National Park Service planning documents, there  
21 would be no impairment of the park's archeological resources or values.

22

### 23 ***Alternative 3: Focusing on National Treasures***

#### 24 ***Analysis***

25 Park staff would continue to work to protect archeological resources from unauthorized  
26 removal or other destructive actions. Generally, archeological resources under this  
27 alternative would be 1) stabilized for interpretation purposes or as part of cultural  
28 landscape enhancement, or 2) incorporated into historic immersion opportunities and  
29 stabilized and protected to allow public understanding without the threat of damage,  
30 removal, or vandalism. Although modification or development of facilities, and the  
31 rehabilitation or restoration of resources to immerse visitors in the compelling history and  
32 stories of the park's cultural sites could affect the integrity of some archeological  
33 resources, every effort would be undertaken to avoid disturbance of known or discovered  
34 archeological sites. If such sites could not be avoided, mitigative procedures would be  
35 undertaken in consultation with the California state historic preservation office. Although  
36 some archeological sites could be lost (resulting in permanent adverse impacts of minor  
37 intensity), actions under this alternative would generally have beneficial impacts on  
38 archeological resources.

39 Archeological resources in the Natural zone, including the Muir Beach Archeological  
40 District, would be identified, evaluated, and provided stabilization, security, or other  
41 protection commensurate with their significance and sensitivity, but would generally not  
42 be incorporated as visitor education opportunities in the park's interpretive programs.  
43 Archeological resources in the Evolved Cultural Landscape zone, such as the Point Lobos  
44 Archeological Sites, would be identified and stabilized, as part of cultural landscape

1 enhancement and used as visitor education opportunities to interpret human occupation of  
2 and interaction with the coastal environment. Although some archeological resources  
3 could be lost (resulting in permanent adverse impacts of minor intensity), these actions  
4 would generally result in beneficial impacts on archeological resources.

5 There are no proposed actions under this alternative that would affect the *King Philip* and  
6 *SS Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this  
7 alternative on these sites would be the same as those listed in the no action alternative –  
8 permanent, moderate, and adverse.

9 On Alcatraz Island, alternative 3 is designed to enhance the contributing features of  
10 Alcatraz Island National Historic Landmark. The analysis, cataloging, and proactive  
11 recovery of archeological resources on Alcatraz Island would be given a high priority.  
12 These activities would result in enhancement of the island's cultural resource research  
13 and interpretive programs and would contribute to its emerging/growing park collections.  
14 Archeological resources in the Evolved Cultural Landscape and Historic Immersion  
15 zones, which cover the majority of the island in this alternative, would be identified,  
16 protected, or stabilized. They then would be incorporated into historic immersion and  
17 visitor education interpretive opportunities or become a part of cultural landscape  
18 enhancement. Under this alternative, the preservation and interpretation of key  
19 archeological resources, and access to such resources illustrating the island's prehistoric  
20 and historic periods and themes, would be given high priority. As part of all earth-  
21 disturbing activities, every effort would be undertaken to avoid known or discovered  
22 archeological sites. If such sites could not be avoided, mitigative procedures would be  
23 undertaken in consultation with the California state historic preservation office. Although  
24 some archeological sites could be lost (resulting in permanent adverse impacts of minor  
25 intensity), actions under this alternative would generally have beneficial impacts on  
26 archeological resources on Alcatraz Island.

27 ***Conclusion***

28 Although actions under this alternative could result in permanent adverse impacts of  
29 moderate intensity to some archeological resources, including the *King Philip* and *SS*  
30 *Tennessee* shipwreck sites and their associated remains, this alternative would generally  
31 have beneficial impacts on archeological resources in the park, including the Muir Beach  
32 Archeological District, the Point Lobos Archeological Sites, and on Alcatraz Island.

33 Under this alternative, the Section 106 determination of effect on archeological resources  
34 in Golden Gate National Recreation Area would be *adverse effect*, and on Alcatraz Island  
35 it would be *no adverse effect*.

36 There would be no impairment of archeological resources under this alternative because  
37 adverse impacts would be of only minor intensity.

38

39

1 **Ethnographic Resources/Traditional Cultural Properties**

2 ***No Action Alternative***

3 ***Analysis***

4 Currently, there are no identified ethnographic resources or traditional cultural properties  
5 within Golden Gate National Recreation Area or on Alcatraz Island. However, Alcatraz  
6 Island was occupied by “Indians of All Tribes” from November 1969 to June 1971 as an  
7 internationally publicized protest to focus attention on the plight of American Indians and  
8 to assert the need for Indian unity and solidarity for achieving self-determination and  
9 securing political rights. Thus, the occupation increased awareness of the American  
10 Indian’s political, economic, and social concerns and provided the foundation for what  
11 would become a political movement—the American Indian Movement—to promote  
12 cultural pride and to secure and protect Indian rights. The occupation resulted in the  
13 nation’s increased awareness of American Indian concerns and issues and the  
14 establishment of D-Q University (a tribal community college that focuses on indigenous  
15 peoples) at Davis, California, and other institutions throughout the nation. Tangible  
16 evidence of the occupation on Alcatraz Island includes graffiti and physical alterations  
17 attributed to the Indians’ activities. Since the occupation, the island has become a  
18 symbolic focal point of American Indian pride and solidarity among relocated American  
19 Indians in the San Francisco Bay Area, as well as in the nation at large. Thus, the  
20 National Park Service, in recognition of the ethnographic significance of Alcatraz Island  
21 for American Indians and the island’s potential for listing in the National Register of  
22 Historic Places as a Traditional Cultural Property, is in consultation with American  
23 Indians regarding the identification, preservation, and interpretation of the island’s  
24 ethnographic resources. This action would have a long-term, negligible to minor,  
25 beneficial impact to the resource.

26 ***Conclusion***

27 Currently, there are no identified ethnographic resources or traditional cultural properties  
28 in Golden Gate National Recreation Area and on Alcatraz Island. However, the National  
29 Park Service recognizes the ethnographic significance of Alcatraz Island for American  
30 Indians as a result of the island’s occupation from 1969 to 1971 and thus its potential for  
31 listing in the National Register of Historic Places as a traditional cultural property. This  
32 action would have a long-term, negligible to minor, beneficial impact to the resource.

33 Under this alternative, the Section 106 determination of effect on ethnographic  
34 resources/traditional cultural properties for Golden Gate National Recreation Area and  
35 Alcatraz Island would be *no adverse effect*.

36 No impairment of ethnographic resources would result from this alternative.

37 ***Alternative 1: Connecting People with the Parks***

38 ***Analysis***

39 Although Alcatraz Island has ethnographic significance for American Indians, there are  
40 no identified or recognized potential ethnographic resources or traditional cultural  
41 properties in Golden Gate National Recreation Area. On Alcatraz Island, some  
42 archeological sites and features with ethnographic significance and some resources  
43 having associations with the occupation of 1969-1971 could be lost due to erosion or  
44 other natural processes such as weathering, under this alternative. This alternative’s

1 emphasis on connecting people with the park's resources and stories would build and  
2 expand upon the National Park Service's ongoing consultation efforts with American  
3 Indians for the identification, preservation, and interpretation of ethnographic resources  
4 on Alcatraz Island. This action would have a long-term, beneficial impact to the resource.

5 ***Conclusion***

6 Although Alcatraz Island has ethnographic significance for American Indians, there are  
7 no identified or recognized potential ethnographic resources or traditional cultural  
8 properties in Golden Gate National Recreation Area. Identification, preservation, and  
9 interpretation of ethnographic resources on Alcatraz Island would be enhanced as a result  
10 of expanding National Park Service consultations with American Indians. This action  
11 would have a long-term-beneficial impact to the resource.

12 Under this alternative, the Section 106 determination of effect on ethnographic resources  
13 and traditional cultural properties in Golden Gate National Recreation Area and Alcatraz  
14 Island would be *no adverse effect*.

15 No impairment of ethnographic resources would result from this alternative.

16 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

17 ***Analysis***

18 Although Alcatraz Island has ethnographic significance for American Indians, there are  
19 no identified or recognized potential ethnographic resources or traditional cultural  
20 properties in Golden Gate National Recreation Area.

21 On Alcatraz Island, some archeological sites and features with ethnographic significance  
22 and some resources having associations with the occupation of 1969-1971 could be lost  
23 due to erosion or other natural processes. A minimum amount of stabilization would be  
24 afforded ethnographic resources so that the island's integrity as a potential traditional  
25 cultural property would not be compromised. Additionally, this alternative's emphasis on  
26 providing visitors with opportunities to engage in Alcatraz Island's isolation, natural  
27 resources, and layers of history via ecotourism, outdoor learning, and natural and cultural  
28 resource stewardship programming would build and expand upon the National Park  
29 Service's ongoing consultation efforts with American Indians for the identification,  
30 preservation, and interpretation of ethnographic resources on Alcatraz Island. This action  
31 would have a long-term, beneficial impact to the resource.

32 ***Conclusion***

33 Although Alcatraz Island has ethnographic significance for American Indians, there are  
34 no identified or recognized potential ethnographic resources or traditional cultural  
35 properties in Golden Gate National Recreation Area. Ethnographic significance and some  
36 resources having associations with the occupation of 1969-1971 could be lost due to  
37 erosion or other natural processes such as weathering under this alternative; a minimum  
38 amount of stabilization would be afforded ethnographic resources so that the island's  
39 integrity as a potential traditional cultural property would not be compromised. This  
40 action would have a long-term beneficial impact to the resource.

41 Under this alternative, the Section 106 determination of effect on ethnographic  
42 resources/traditional cultural properties in Golden Gate National Recreation Area and  
43 Alcatraz Island would be *no adverse effect*.

1 No impairment of ethnographic resources would result from this alternative.

2 ***Alternative 3: Focusing on National Treasures***

3 ***Analysis***

4 Although Alcatraz Island has ethnographic significance for American Indians, there are  
5 no identified or recognized potential ethnographic resources or traditional cultural  
6 properties in Golden Gate National Recreation Area.

7 Under this alternative, which is designed to enhance the contributing features of Alcatraz  
8 Island National Historic Landmark, analysis and cataloging of ethnographic resources on  
9 Alcatraz Island in consultation with American Indian tribes and groups would be given a  
10 high priority, thereby enhancing the island's cultural resource research and interpretive  
11 programs and contributing to its emerging and growing park collections. The island's  
12 potential for listing as a traditional cultural property in the National Register of Historic  
13 Places would also be evaluated and studied in consultation with American Indian tribes  
14 and groups. This action would have a long-term, beneficial impact to the resource.

15 Ethnographic resources in the Evolved Cultural Landscape and Historic Immersion  
16 zones, which cover the majority of the island in this alternative, would be identified,  
17 protected, and stabilized. Ethnographic resources that are not archeological sites could be  
18 rehabilitated or restored. They would be incorporated into historic immersion/visitor  
19 education interpretive opportunities or become part of cultural landscape enhancement.  
20 Under this alternative, preservation and interpretation of, as well as public access to, key  
21 ethnographic resources illustrating the island's prehistoric and historic periods and  
22 themes would be given high priority. This action would have a long-term, beneficial  
23 impact to the resource.

24 ***Conclusion***

25 Although Alcatraz Island has ethnographic significance for American Indians, there are  
26 no identified or recognized potential ethnographic resources or traditional cultural  
27 properties in Golden Gate National Recreation Area. On Alcatraz Island, analysis and  
28 cataloging of ethnographic resources and the evaluation of the island's potential for  
29 listing in the National Register of Historic Places as a traditional cultural property in  
30 consultation with American Indian tribes and groups would be given higher priority than  
31 other areas of Golden Gate National Recreation Area. These actions would enhance the  
32 island's cultural resource research and interpretive programs and contribute to its  
33 emerging and growing park collections. This action would have a long-term, beneficial  
34 impact to the resource.

35 Under this alternative, the Section 106 determination of effect on ethnographic  
36 resources/traditional cultural properties in Golden Gate National Recreation Area and  
37 Alcatraz Island would be *no adverse effect*.

38 No impairment of ethnographic resources would result from this alternative.

39

40

## 1 **Historic Buildings and Structures**

### 2 ***No Action Alternative***

#### 3 ***Analysis***

4 Extensive studies have been conducted and are underway in Golden Gate National  
5 Recreation Area to identify and evaluate historic buildings and structures for listing in the  
6 National Register of Historic Places and designation as National Historic Landmarks. The  
7 park's cultural resources include more than 700 historic buildings, and the park contains  
8 the nation's largest collection of military installations and fortifications dating from 1776  
9 through the Cold War. The surveys and research necessary to determine the eligibility of  
10 a structure, district, or landscape for listing in the National Register of Historic Places are  
11 a prerequisite for understanding the resource's significance, as well as the basis of  
12 informed decision-making in the future regarding how the resource should be managed.  
13 Such surveys and research would result in beneficial long-term impacts.

14 The park staff works to protect and preserve historic buildings as financial resources and  
15 opportunities become available. The National Park Service and park partners adaptively  
16 use many historic buildings for various public and private purposes, including  
17 administration and operations; staff housing; offices; commercial ventures; historic  
18 residence leasing programs; recreation, educational, and interpretive programs; and  
19 ongoing agricultural and ranching activities. Although the park's historic buildings and  
20 structures have generally retained their integrity, the incremental and piecemeal approach  
21 to their preservation and maintenance, as well as their various adaptive uses, has resulted  
22 in long-term, minor to moderate, adverse impacts because historic buildings, fabric, and  
23 integrity have been lost. As the park's information database regarding historic buildings  
24 increases, the significance of some resources may become better understood and  
25 preservation treatments may increase, resulting in a long-term, beneficial impact.

26 All historic buildings on Alcatraz Island are contributing resources to the Alcatraz Island  
27 National Historic Landmark. The park staff works to protect and preserve historic  
28 buildings as financial resources and opportunities become available. Located in San  
29 Francisco Bay, the historic structures on Alcatraz Island are constantly assaulted by the  
30 marine environment and weather. The structures are numerous, large, and very difficult  
31 to maintain, given the amount of financial resources required to preserve their historic  
32 integrity. The weather and lack of significant capital investment dollars has resulted in  
33 varying degrees of preservation of some key historic buildings, as well as varying degrees  
34 of deterioration and loss of historic fabric in others. Building 64 (historic barracks) has  
35 been partially rehabilitated and is adaptively used for administrative purposes and some  
36 visitor services. Parts of the building, including the upper floors, have not been  
37 rehabilitated and remain unused. The Main Prison Building and several adjacent areas,  
38 such as the Recreation Yard, have been rehabilitated and are managed as part of the  
39 central visitor experience. Portions of the Main Prison Building are closed. Adjacent  
40 buildings, such as the Laundry and Model Industries buildings, have suffered severe  
41 deterioration and loss of historic fabric. The Lighthouse has been afforded minimal  
42 preservation, although it is managed to serve its historic function. The Power Plant and  
43 Quartermaster Warehouse have been afforded minimal preservation and are currently  
44 used for park operations and maintenance. Overall, the impacts to historic buildings and  
45 structures on Alcatraz Island under this alternative are long-term, minor to moderate, and  
46 adverse.

1 ***Conclusion***

2 The National Park Service and park partners adaptively use many historic buildings and  
3 structures in the park for various public and private purposes. The park staff works to  
4 protect and preserve historic buildings as financial resources and opportunities become  
5 available. Although the park's historic buildings and structures have generally retained  
6 their integrity, the incremental and piecemeal approach to their preservation and  
7 maintenance, as well as their various adaptive uses, has resulted in long-term, minor to  
8 moderate, adverse impacts because historic buildings, fabric, and integrity have been lost.  
9 As the park's information database increases for historic buildings structures, the  
10 significance of some buildings may become better understood, and preservation treatment  
11 may increase, resulting in a long-term, beneficial impact.

12 On Alcatraz Island, all the historic buildings are contributing resources to the Alcatraz  
13 Island National Historic Landmark. The marine environment, weather, and lack of  
14 significant capital investment dollars has resulted in varying degrees of preservation of  
15 some key historic buildings, as well as varying degrees of deterioration and loss of  
16 historic fabric in others. Impacts of actions under this alternative to historic buildings and  
17 structures on Alcatraz Island are long-term, minor to moderate, and adverse.

18 Under this alternative, the Section 106 determination of effect on historic buildings and  
19 structures in Golden Gate National Recreation Area and Alcatraz Island would be  
20 *adverse effect*.

21 Because there would be no major adverse impacts to a resource or value whose  
22 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
23 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
24 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
25 management plan or other relevant National Park Service planning documents, there  
26 would be no impairment of the park's historic buildings and structures.

27 ***Alternative 1: Connecting People with the Parks***

28 ***Analysis***

29 When compared with the no-action alternative, actions under alternative 1, which focuses  
30 on connecting people with the park's resources, would generally provide better  
31 opportunities for strengthening the integrity and adaptive use of historic buildings and  
32 structures that contribute to properties listed in or determined eligible for listing in the  
33 National Register of Historic Places or designated as National Historic Landmarks.

34 Although actions under this alternative, such as adaptive reuse of historic structures by  
35 park partners or for park operations and interpretation, could result in localized loss of  
36 some historic fabric on a few historic buildings (resulting in permanent minor adverse  
37 impacts), overall this alternative would improve the integrity and enhance the  
38 preservation of the park's historic buildings and structures resulting in a long-term,  
39 beneficial impact.

40 Historic seacoast fortifications on the Hill 640 Military Reservation would be stabilized  
41 and preserved, resulting in a long-term beneficial impact by halting their further  
42 deterioration. Historic buildings at the Rapozo Ranch (Miwok Stables) and Golden Gate  
43 Dairy in the Tennessee Valley would be rehabilitated and adaptively used, resulting in  
44 long-term beneficial impacts by preserving their documented historical and architectural  
45 values. Historic buildings at Forts Barry and Cronkhite in the Marin Headlands would be

1 rehabilitated and continue to be adaptively used by the park and park partners for  
2 recreational, educational, and stewardship activities, thereby contributing to long-term  
3 beneficial impacts by preserving their documented historical and architectural values.  
4 Historic buildings at the nearby Nike Missile Site would be rehabilitated or restored to  
5 their period of significance for interpretive purposes, resulting in long-term beneficial  
6 impacts by preserving their documented historical and architectural values.

7 Based on their condition, significance, and suitability for recreational, educational, or  
8 operational purposes, historic seacoast fortifications in the Marin Headlands would be  
9 rehabilitated, stabilized, allowed to deteriorate naturally, or removed if they become  
10 unsafe. While rehabilitation and stabilization would have long-term, beneficial impacts  
11 on many of the fortifications because their documented historical and architectural values  
12 would be preserved, some would be lost through natural deterioration or removal,  
13 resulting in permanent adverse impacts of minor intensity.

14 No building or structure listed in or determined eligible for listing in the national register  
15 would be removed or allowed to decay naturally (“molder”) without prior review by park  
16 and region cultural resource specialists, including approval by the regional director, and  
17 consultation with the California state historic preservation office. Before a national  
18 register – listed or national register – eligible structure is removed or allowed to molder,  
19 appropriate documentation recording the structure would be prepared in accordance with  
20 Section 110 (b) of the National Historic Preservation Act and the documentation  
21 submitted to the HABS/HAER/HALS program.

22 Historic seacoast fortifications in the Kirby Cove area would be rehabilitated and  
23 interpreted, resulting in long-term, beneficial impacts by preserving their documented  
24 historical and architectural values. Historic buildings in the Point Bonita Historic District  
25 would be rehabilitated for interpretation of the site’s association with maritime  
26 commercial and military history, resulting in long-term, beneficial impacts by preserving  
27 their documented historical and architectural values. Historic buildings in Upper Fort  
28 Mason (Fort Mason Historic District) and the San Francisco Port of Embarkation  
29 National Historic Landmark would be rehabilitated and adaptively used to serve as a  
30 portal to the park and to provide for uses such as a hostel or other overnight  
31 accommodations, park headquarters, and park/partner offices and programs, resulting in  
32 long-term beneficial impacts by preserving their documented historical and architectural  
33 values. Historic buildings at Fort Miley would be rehabilitated and adaptively used, and  
34 the Marine Exchange Lookout Station (Octagon House) would be rehabilitated and used  
35 for interpretation, resulting in long-term beneficial impacts by preserving their  
36 documented historical and architectural values.

37 Historic Battery Davis at Fort Funston would be rehabilitated and interpreted, resulting in  
38 long-term beneficial impacts by preserving its documented historical and architectural  
39 values. Other extant buildings at Fort Funston would be retained and could be expanded  
40 to meet park operational needs, resulting in long-term, minor, adverse impacts because  
41 some localized historic fabric could be lost. Historic seacoast fortifications on Milagra  
42 Ridge, Sweeney Ridge, and other locations in San Mateo County, as well as historic  
43 structures associated with the San Francisco Bay Discovery Site National Historic  
44 Landmark, would be afforded preservation treatment, resulting in long-term, beneficial  
45 impacts by preserving their documented historical and architectural values.

1 As the park's information increases regarding historic buildings in the San Mateo County  
2 area, the significance and preservation treatment of some buildings may also evolve,  
3 thereby contributing to some long-term beneficial impacts. Historic agriculture-related  
4 buildings at Rancho Corral de Tierra would be stabilized if determined eligible for listing  
5 in the National Register of Historic Places, resulting in long-term beneficial impacts  
6 because their deterioration would be halted. The Montara Lighthouse and associated  
7 historic buildings, which constitute the only complete lighthouse facility in the park,  
8 would be rehabilitated and adaptively used to interpret their association with maritime  
9 commercial history as an aid to navigation, resulting in long-term beneficial impacts  
10 because their documented historical and architectural values would be preserved.

11 Although the aforementioned actions would result in the loss of some historic buildings  
12 and structures through natural deterioration and removal (resulting in permanent adverse  
13 impacts of minor intensity), many would be preserved, rehabilitated, adaptively used, and  
14 interpreted (resulting in long-term, minor, beneficial impacts). Overall, these actions  
15 would have long-term, minor, adverse impacts on historic buildings and structures in the  
16 park.

17 All historic buildings on Alcatraz Island are contributing resources to the Alcatraz Island  
18 National Historic Landmark. Actions under this alternative would result in improvement  
19 in the condition of historic buildings and structures all across the island. Although this  
20 alternative would result in some localized deterioration or loss of historic fabric on some  
21 historic buildings as a result of various adaptive uses, all primary buildings would be  
22 rehabilitated, and improvements in conditions of most historic buildings would generally  
23 range between "fair" and "good."

24 Various actions under this alternative would have long-term, beneficial impacts on  
25 historic buildings on Alcatraz Island because they would preserve the buildings'  
26 documented historical and architectural values. Building 64 and the Laundry Building  
27 would be rehabilitated and adaptively used as multi-purpose facilities to host an expanded  
28 variety of visitor services. The hospital wing of the Main Prison Building would be  
29 rehabilitated and adaptively used for visitor activities. The Guard House would be  
30 rehabilitated, and the Officers' Club and Warden's House would be stabilized as ruins.  
31 The Power Plant and Quartermaster Warehouse, as well as a portion of the Model  
32 Industries Building, would be rehabilitated and adaptively used for maintenance, storage,  
33 public safety, and to showcase alternative energy technology.

34 Other historic buildings on Alcatraz Island would be stabilized, rehabilitated, allowed to  
35 deteriorate naturally, or be removed, depending on their condition and integrity,  
36 interpretive value, and suitability for adaptive use. As previously mentioned, no building  
37 or structure listed in or determined eligible for listing in the national register would be  
38 removed or allowed to decay naturally ("molder") without prior review by park and  
39 region cultural resource specialists, including approval by the regional director, and  
40 consultation with the California state historic preservation office. Although the  
41 aforementioned actions on Alcatraz Island would result in the loss of some historic  
42 buildings and structures through natural deterioration and removal (resulting in  
43 permanent adverse impacts of minor to moderate intensity), many would be preserved,  
44 rehabilitated, adaptively used, and interpreted. Overall, these actions would have  
45 permanent, minor to moderate, adverse impacts on historic buildings and structures on  
46 Alcatraz Island.

1 ***Conclusion***

2 Implementing the actions under alternative 1 would generally provide better opportunities  
3 for strengthening the integrity and adaptive use of historic buildings and structures that  
4 are listed in or determined eligible for listing the National Register of Historic Places or  
5 are designated as National Historic Landmarks. Actions under this alternative, such as  
6 adaptive reuse of historic structures, could result in localized loss of historic fabric on  
7 some historic buildings (resulting in permanent adverse impacts of minor intensity) but  
8 would generally improve the integrity and enhance the preservation of the park's historic  
9 buildings, resulting in general overall long-term, beneficial impacts.

10 Actions under this alternative would generally have long-term, beneficial impacts on the  
11 historic buildings and structures associated with the following designated National  
12 Historic Landmarks and properties listed in or determined eligible for the National  
13 Register of Historic Places because their documented historical and architectural values  
14 would be preserved through rehabilitation and adaptive use or interpretation. These  
15 properties include Rapozo Ranch and Golden Gate Dairy in Tennessee Valley; Forts  
16 Barry and Cronkhite and the nearby Nike Missile Site; San Francisco Port of  
17 Embarkation National Historic Landmark; seacoast fortifications in the Kirby Cove area;  
18 Point Bonita Historic District; Upper Fort Mason (Fort Mason Historic District); Fort  
19 Miley, including the Marine Exchange Outlook Station (Octagon House); Battery Davis  
20 at Fort Funston; and the Montara Lighthouse and its associated historic buildings.

21 Because actions under this alternative would stabilize or afford other preservation  
22 treatment to halt further deterioration of the following properties, this alternative would  
23 generally have long-term beneficial impacts on the the following designated National  
24 Historic Landmarks and properties listed in or determined eligible for listing in the  
25 National Register of Historic Places: Hill 640 Military Reservation; seacoast  
26 fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San Mateo  
27 County; San Francisco Bay Discovery Site National Historic Landmark; and Rancho  
28 Corral de Tierra (if this property were determined eligible for listing in the National  
29 Register of Historic Places).

30 While rehabilitation and stabilization would have long-term beneficial impacts on many  
31 of the historic seacoast fortifications in the Marin Headlands because their documented  
32 historical and architectural values would be preserved, some would be lost through  
33 natural deterioration or removal, resulting in permanent, adverse impacts of minor  
34 intensity.

35 Extant buildings at Fort Funston, other than Battery Davis, would be retained and could  
36 be expanded to meet park operational needs, resulting in long-term, minor, adverse  
37 impacts because some localized historic fabric could be lost.

38 All historic buildings and structures on Alcatraz Island are contributing resources to the  
39 Alcatraz Island National Historic Landmark. Under alternative 1, actions would result in  
40 improvement in the condition of historic buildings across the island. Although this  
41 alternative would result in some localized deterioration or loss of historic buildings  
42 (resulting in permanent, adverse impacts of minor to moderate intensity), all primary  
43 buildings would be rehabilitated, and improvements in conditions of most historic  
44 buildings would generally range between "fair" and "good," resulting in general overall  
45 long-term beneficial impacts.

1 Historic buildings and structures in the park and on Alcatraz Island could suffer wear and  
2 tear from increased visitation and various adaptive uses, but monitoring human impacts  
3 to the historic structures could result in the imposition of visitation and use levels or other  
4 constraints that would contribute to the stability or integrity of the resources, without  
5 unduly hindering interpretation for visitors or appropriate use. Unstaffed or minimally  
6 staffed structures could be more susceptible to vandalism. However, continued ranger  
7 patrol and emphasis on visitor education regarding the significance of such resources and  
8 how visitors and users can reduce their impacts to historic resources, would discourage  
9 vandalism and inadvertent impacts and minimize adverse impacts. Adverse impacts  
10 would be long-term and negligible to minor in intensity.

11 Under this alternative, the Section 106 determination of effect on historic buildings and  
12 structures in Golden Gate National Recreation Area would be *no adverse effect*. On  
13 Alcatraz Island, the Section 106 determination of effect on historic buildings and  
14 structures would be *adverse effect*.

15 Because there would be no major, adverse impacts to a resource or value whose  
16 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
17 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
18 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
19 management plan or other relevant National Park Service planning documents, there  
20 would be no impairment of the park's historic buildings and structures.

## 21 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

### 22 ***Analysis***

23 Actions under alternative 2, which emphasizes the preservation and enhancement of  
24 interconnected coastal ecosystems in which marine resources are valued and featured,  
25 would generally provide some opportunities for strengthening the integrity and adaptive  
26 use of historic buildings or structures that contribute to properties in the park that are  
27 listed in or determined eligible for the National Register of Historic Places or designated  
28 as National Historic Landmarks. Compared with alternative 1, actions under this  
29 alternative would result in the stabilization of more historic buildings and structures.  
30 However, not as many buildings and structures would be rehabilitated, interpreted, and  
31 adaptively used. Actions that would help to achieve the primary goals of coastal  
32 ecosystem restoration and rehabilitation of pastoral and rural landscapes could adversely  
33 impact the integrity of some historic buildings because of the likely loss of some historic  
34 fabric. This alternative would require a detailed historic building stabilization and  
35 recovery plan to provide stabilization guidance for a significant number of historic  
36 buildings. Although actions under this alternative, such as various adaptive uses, could  
37 result in localized loss of historic fabric on some historic buildings and structures and  
38 some historic buildings could be lost, overall this alternative would improve the integrity  
39 and preservation of most of the park's historic buildings. Thus, actions under this  
40 alternative would result in impacts that range from long-term and beneficial to permanent  
41 and adverse of minor to moderate intensity.

42 Historic buildings in the Natural and Sensitive Resources management zones, which  
43 cover much of the park lands in this alternative, would be identified, stabilized, allowed  
44 to deteriorate naturally, or be removed if they become unsafe. These actions would result  
45 in impacts ranging from long-range and beneficial to permanent and adverse of minor to

1 moderate intensity. As mentioned earlier, no building or structure listed in or determined  
2 eligible for listing in the national register would be removed or allowed to decay naturally  
3 (“molder”) without prior review by park and region cultural resource specialists,  
4 including approval by the regional director, and consultation with the California state  
5 historic preservation office.

6 Historic buildings in the Evolved Cultural Landscape and Historic Immersion  
7 management zones would undergo preservation treatments ranging from stabilization to  
8 restoration to their period of significance, based on their condition and interpretive value;  
9 these actions would result in impacts that are generally long-term and beneficial.

10 Historic coastal defense fortifications on the Hill 640 Military Reservation would be  
11 stabilized, thus resulting in a long-term beneficial impact because its deterioration would  
12 be halted. Historic buildings at the Rapozo Ranch (Miwok Stables) and Golden Gate  
13 Dairy in the Tennessee Valley would be rehabilitated and adaptively used, resulting in  
14 long-term beneficial impacts because their documented historical and architectural values  
15 would be preserved. Historic buildings at Forts Barry and Cronkhite in the Marin  
16 Headlands would be rehabilitated and continue to be adaptively used by the park and park  
17 partners for recreational, educational, and stewardship activities, resulting in long-term  
18 beneficial impacts because their documented historical and architectural values would be  
19 preserved. Historic buildings at the nearby Nike Missile Site would be rehabilitated or  
20 restored to their period of significance for interpretive purposes, resulting in long-term  
21 beneficial impacts because their documented historical and architectural values would be  
22 preserved.

23 Based on their condition, significance, and suitability for recreational, educational, or  
24 operational purposes, historic seacoast fortifications in the Marin Headlands would be  
25 rehabilitated, stabilized, allowed to deteriorate naturally, or removed if they become  
26 unsafe. While rehabilitation and stabilization would have long-term beneficial impacts on  
27 many of the fortifications because their documented historical and architectural values  
28 would be preserved, some would be lost through natural deterioration or removal,  
29 resulting in permanent adverse impacts of minor intensity.

30 The following actions under this alternative would result in long-term, beneficial impacts  
31 on historic buildings and structures in the park because their historical and architectural  
32 values would be preserved: Historic coastal defense fortifications in the Kirby Cove area  
33 would be rehabilitated and interpreted. Historic buildings at the Montara Lighthouse,  
34 which constitute the only complete lighthouse facility in the park, would be rehabilitated,  
35 and adaptively used for stewardship and environmental education, while the historic  
36 buildings at the Point Bonita Lighthouse would be rehabilitated for interpretation of the  
37 site’s association with maritime commercial and military history. Historic buildings in  
38 Upper Fort Mason (Fort Mason Historic District) and the San Francisco Port of  
39 Embarkation National Historic Landmark would be rehabilitated and adaptively used to  
40 serve as a portal to the park and provide for uses such as a hostel and other overnight  
41 accommodations, park headquarters, and park and park partner offices and programs.  
42 Historic buildings in the Fort Miley area would be rehabilitated and adaptively used. The  
43 Marine Exchange Lookout Station (Octagon House) would be rehabilitated and  
44 adaptively used to engage the public in the natural and human history of the coastal  
45 marine environment.

1 Historic Battery Davis at Fort Funston would be stabilized, resulting in long-term  
2 beneficial impacts because its deterioration would be halted. Other extant buildings at  
3 Fort Funston would be retained and could be expanded to support park operations,  
4 stewardship, and education activities, resulting in long-term, minor, adverse impacts  
5 because some localized historic fabric could be lost.

6 Historic coastal defense fortifications on Milagra Ridge, Sweeney Ridge, and other  
7 locations in San Mateo County, as well as historic structures associated with the San  
8 Francisco Bay Discovery Site National Historic Landmark, would receive preservation  
9 treatment, resulting in long-term, beneficial impacts because their historical and  
10 architectural values would be preserved.

11 As the park's information and understanding of historic buildings in the San Mateo  
12 County area increases, the significance and preservation treatment of some buildings may  
13 also evolve, resulting in some long-term, beneficial impacts. Historic agriculture-related  
14 buildings at Rancho Corral de Tierra would be stabilized (if the property were determined  
15 eligible for listing in the National Register of Historic Places), thus resulting in long-  
16 term, beneficial impacts because their deterioration would be halted.

17 Under alternative 2, more historic buildings on Alcatraz Island would become managed  
18 ruins. However, evaluation criteria and a stabilization plan are needed to determine the  
19 minimum level of historic building or fabric integrity needed in order to retain the  
20 island's National Historic Landmark designation. Many of the island's historic buildings  
21 would only be stabilized (resulting in long-term, beneficial impacts because their  
22 deterioration would be halted), while some buildings could be lost overtime, (resulting in  
23 long-term, minor to moderate, adverse impacts).

24 However, the Main Prison Building would receive preservation treatment and Building  
25 64 would be rehabilitated and adaptively used to support science, education, and  
26 stewardship programs and administrative functions. The Guard House and other historic  
27 buildings between the entry pier and the Main Prison Building would receive  
28 preservation treatment to interpret their layers of history. The Main Prison Building,  
29 including the hospital wing, would be rehabilitated or restored. The Laundry and Model  
30 Industries buildings and the Officers' Club would be stabilized as ruins. Other historic  
31 buildings would be stabilized, rehabilitated; after Historic American Building Survey  
32 records have been developed, these buildings would be allowed to deteriorate naturally or  
33 would be removed, depending on their condition/integrity, interpretive value, and  
34 suitability for adaptive use. As mentioned earlier, no structure listed in or eligible for  
35 listing in the national register would be removed or allowed to decay naturally ("molder")  
36 without prior review by park and region cultural resource specialists, including approval  
37 by the regional director, and consultation with the California state historic preservation  
38 office. Collectively, the aforementioned actions would result in impacts ranging from  
39 long-term and beneficial to permanent and adverse of minor to moderate intensity.

#### 40 ***Conclusion***

41 When compared with the no-action alternative, actions under alternative 2 would  
42 generally provide some opportunities for strengthening the integrity and adaptive use of  
43 historic buildings and structures that contribute to properties listed in or determined  
44 eligible for listing in the National Register of Historic Places or designated National  
45 Historic Landmarks. Compared with alternative 1, actions under this alternative would

1 result in the stabilization of more historic buildings; however, not as many buildings  
2 would be rehabilitated, interpreted, and adaptively used. The primary goals for coastal  
3 ecosystem restoration and rehabilitation of pastoral and rural landscapes could impact the  
4 integrity of some historic buildings. This alternative would require a detailed historic  
5 building stabilization and recovery plan to provide stabilization guidance for a significant  
6 number of historic buildings. Although actions under this alternative could result in  
7 localized loss of historic fabric of some historic buildings, and some historic buildings  
8 could be lost, overall this alternative would improve the integrity and preservation of  
9 most of the park's historic buildings that contribute to properties listed in or determined  
10 eligible for listing in the National Register of Historic Places or designated as National  
11 Historic Landmarks. Collectively, actions under this alternative would result in impacts  
12 ranging from long-term and beneficial to permanent and adverse of minor to moderate  
13 intensity.

14 Because their documented historical and architectural values would be preserved through  
15 rehabilitation/restoration and adaptive use or interpretation, actions under this alternative  
16 would generally have long-term, beneficial impacts on the historic buildings and  
17 structures associated with designated National Historic Landmarks and properties listed  
18 in or determined eligible for the National Register of Historic Places. These properties  
19 include the Rapozo Ranch and Golden Gate Dairy in Tennessee Valley; Forts Barry and  
20 Cronkhite and the nearby Nike Missile Site; San Francisco Port of Embarkation National  
21 Historic Landmark; seacoast fortifications in the Kirby Cove area; Point Bonita Historic  
22 District; Upper Fort Mason (Fort Mason Historic District); Fort Miley, including the  
23 Marine Exchange Outlook Station (Octagon House); Battery Davis at Fort Funston;  
24 seacoast fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San  
25 Mateo County; and the Montara Lighthouse and its associated historic buildings.

26 Actions under this alternative would generally have long-term, beneficial impacts on the  
27 historic buildings and structures associated with the following designated National  
28 Historic Landmarks and properties listed in or determined eligible for listing in the  
29 National Register of Historic Places: Hill 640 Military Reservation; San Francisco Bay  
30 Discovery Site National Historic Landmark; and Rancho Corral de Tierra (if this property  
31 were determined eligible for listing in the National Register of Historic Places). These  
32 actions would have beneficial impacts because these buildings and structures would be  
33 stabilized or afforded other preservation treatment, thus halting their deterioration:

34 While rehabilitation and stabilization would have long-term, beneficial impacts on many  
35 of the historic seacoast fortifications in the Marin Headlands because their documented  
36 historical and architectural values would be preserved, some would be lost through  
37 natural deterioration or removal, resulting in permanent adverse impacts of minor  
38 intensity.

39 Extant buildings at Fort Funston, other than Battery Davis, would be retained and could  
40 be expanded to meet park operational needs, resulting in long-term, minor adverse  
41 impacts because some localized historic fabric could be lost.

42 Under alternative 2, more historic buildings and structures on Alcatraz Island would  
43 become managed ruins. However, a benchmark/threshold evaluation stabilization plan is  
44 needed to determine the minimum level of historic building/fabric integrity needed in  
45 order to retain the island's National Historic Landmark designation. These actions would

1 result in long-term impacts, ranging from long-term and beneficial to permanent and  
2 adverse of minor to moderate intensity.

3 Historic structures in the park and on Alcatraz Island could suffer wear and tear from  
4 increased visitation and various adaptive uses, but monitoring the carrying capacity of  
5 historic structures could result in the imposition of visitation and use levels or other  
6 constraints that would contribute to the stability or integrity of the resources without  
7 unduly hindering interpretation or appropriate use. Unstaffed or minimally staffed  
8 structures could be more susceptible to vandalism. However, continued ranger patrol and  
9 emphasis on visitor education regarding the significance of such resources and how  
10 visitors and users can reduce their impacts to historic resources, would discourage  
11 vandalism and inadvertent impacts and minimize adverse impacts. Adverse impacts  
12 would be long-term and negligible to minor in intensity.

13 Under this alternative, the Section 106 determination of effect on historic buildings and  
14 structures in Golden Gate National Recreation Area and on Alcatraz Island would be  
15 *adverse effect*.

16 Because there would be no major, adverse impacts to a resource or value whose  
17 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
18 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
19 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
20 management plan or other relevant National Park Service planning documents, there  
21 would be no impairment of the park's historic buildings and structures.

### 22 ***Alternative 3: Focusing on National Treasures***

#### 23 ***Analysis***

24 Under alternative 3, which features the park's nationally important cultural and natural  
25 resources and promotes their preservation for visitor appreciation and understanding,  
26 nationally significant buildings and structures would be rehabilitated and adaptively used  
27 to showcase the park's military, maritime commercial, and agricultural/ranching history  
28 and to support visitor programming and services. The condition of all primary buildings  
29 would be improved, and of the four alternatives considered in this general management  
30 plan this alternative would provide for the greatest number of historic buildings preserved  
31 in "good" condition. This alternative would also provide for public accessibility to the  
32 greatest number of historic buildings in the park reflecting all eras and themes of the  
33 park's history. This alternative, which would require extensive stabilization,  
34 rehabilitation, and restoration of historic buildings and structures, would provide  
35 significant opportunities for creative interpretive programs, visitor services, and the  
36 development of cultural resource stewardship programs. Although actions under this  
37 alternative could result in some localized adverse impacts on historic buildings or on  
38 components and features of some of the buildings used adaptively (resulting in permanent  
39 adverse impacts of minor intensity), overall this alternative would generally have  
40 comprehensive long-term, beneficial impacts on the park's historic buildings and  
41 structures.

42 Historic coastal defense fortifications on the Hill 640 Military Reservation would be  
43 stabilized, resulting in long-term, beneficial impacts because their deterioration would be  
44 halted. Historic buildings at the Golden Gate Dairy in the Tennessee Valley would be  
45 rehabilitated, and adaptively used, resulting in long-term beneficial impacts because their

1 documented historical and architectural values would be preserved. Depending on their  
2 condition and suitability for use as recreational, educational, or operational facilities,  
3 historic buildings at the Rapozo Ranch (Miwok Stables) would be rehabilitated,  
4 stabilized, allowed to deteriorate naturally, or be removed if they become unsafe.

5 Rehabilitating buildings would result in long-term, beneficial impacts because their  
6 documented historical and architectural values would be preserved, stabilizing buildings  
7 would result in long-term, beneficial impacts because their deterioration would be halted,  
8 and allowing buildings to deteriorate naturally or removing them would result in long-  
9 term to permanent adverse impacts of minor intensity. As previously mentioned, no  
10 national register – listed or national register – eligible building or structure would be  
11 removed or allowed to decay naturally (“molder”) without prior review by park and  
12 region cultural resource specialists, including approval by the regional director, and  
13 consultation with the California state historic preservation office.

14 Historic buildings at Forts Barry and Cronkhite and the nearby Nike Missile Site would  
15 be rehabilitated, interpreted, and adaptively used, resulting in long-term ,beneficial  
16 impacts because their documented historical and architectural values would be preserved.  
17 Historic coastal fortifications in the Marin Headlands, as well as the Kirby Cove area,  
18 would be rehabilitated and interpreted, resulting in long-term beneficial impacts because  
19 their documented historical and architectural values would be preserved. Historic  
20 buildings at the Montara Lighthouse, the park’s only complete intact lighthouse facility,  
21 would be rehabilitated or restored and adaptively used for interpretation and visitor  
22 accommodations, resulting in long-term beneficial impacts because their documented  
23 historical and architectural values would be preserved. Historic buildings at the Point  
24 Bonita Lighthouse would be rehabilitated-for interpretation, resulting in long-term,  
25 beneficial impacts because their documented historical and architectural values would be  
26 preserved.

27 Historic buildings in Upper Fort Mason (Fort Mason Historic District) would be  
28 rehabilitated for interpretation of the installation’s military and civilian history and for  
29 adaptive use for visitor services and expanded overnight accommodations, resulting in  
30 long-term, beneficial impacts because their documented historical and architectural  
31 values would be preserved. Compared with the no-action alternative, alternative 3 would  
32 result in more Fort Mason historic buildings dedicated to visitor services, thus enhancing  
33 the park’s visitor experience. Building 201 would be rehabilitated and adaptively used as  
34 the park’s headquarters and a museum to showcase the military history of Fort Mason  
35 and the 20th century San Francisco Port of Embarkation, a National Historic Landmark  
36 that serves as the centerpiece of the Fort Mason Historic District.

37 Historic buildings associated with or near West Fort Miley, such as the USS *San*  
38 *Francisco* Memorial and the Marine Exchange Lookout Station (Octagon House), would  
39 be rehabilitated to showcase the area’s military and maritime history. Historic buildings  
40 at East Fort Miley would be rehabilitated and adaptively used for park maintenance and  
41 public safety operations. These actions would result in long-term, beneficial impacts to  
42 historic buildings because their documented historical and architectural values would be  
43 preserved.

44 Historic Battery Davis at Fort Funston would be rehabilitated within the context of  
45 restoring the area’s natural setting, resulting in long-term beneficial impacts because its  
46 documented historical and architectural values would be preserved. Historic coastal

1 defense fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San  
2 Mateo County, as well as historic structures associated with the San Francisco Bay  
3 Discovery Site National Historic Landmark, would be afforded preservation treatment,  
4 resulting in long-term, beneficial impacts because their documented historical and  
5 architectural values would be preserved. As the park's information database increases for  
6 historic buildings in the San Mateo County area, the significance and preservation  
7 treatment of some buildings may also increase, resulting in a long-term beneficial impact.  
8 Historic buildings at Rancho Corral de Tierra would be stabilized if the property was  
9 determined eligible for listing in the National Register of Historic Places, resulting in  
10 long-term beneficial impacts because their deterioration would be halted. Historic  
11 buildings at the Montara Lighthouse, which includes the park's only complete lighthouse  
12 facility, would be rehabilitated and adaptively used for interpretive purposes, resulting in  
13 long-term, beneficial impacts because their documented historical and architectural  
14 values would be preserved. Although the aforementioned actions would result in the loss  
15 of some historic buildings and structures through natural deterioration and removal  
16 (resulting in permanent adverse impacts of minor intensity), many buildings and  
17 structures would be preserved, rehabilitated, adaptively used, and interpreted. Overall,  
18 these actions would have long-term, beneficial impacts on the park's historic buildings  
19 and structures.

20 Alternative 3 would enhance the preservation of features that contribute to the  
21 significance of Alcatraz Island National Historic Landmark by providing for an  
22 improvement in the condition of its historic buildings and structures. This alternative,  
23 which provides the largest Historic Immersion management zone on the island of the four  
24 alternatives considered in this general management plan, would provide for the greatest  
25 number of historic buildings preserved in "good" condition and for public accessibility to  
26 the greatest number of historic buildings reflecting all eras of the island's history.  
27 Although actions under this alternative could result in some localized adverse impacts on  
28 Alcatraz Island National Historic Landmark's historic buildings or on some components  
29 and features of some of the buildings used adaptively (resulting in permanent adverse  
30 impacts of minor intensity), overall this alternative would generally have comprehensive  
31 long-term, beneficial impacts on the island's historic buildings and structures.

32 Actions under this alternative would require extensive stabilization, rehabilitation, and  
33 restoration of historic buildings on Alcatraz Island, and would provide for increased  
34 opportunities for creative interpretive programs, visitor services, and development of  
35 cultural resource stewardship programs. Selected portions of Building 64 would be  
36 restored to tell the story of its history and use. Areas of the building in which period  
37 restoration would be undertaken include the post office, canteen, and a prison-era guard  
38 apartment. A significant portion of the building would be stabilized to preserve its  
39 integrity. Other areas of the building would be rehabilitated for visitor services and  
40 administrative functions, including modest overnight accommodations for participants in  
41 education, conservation, and stewardship programs. The Main Prison Building (which  
42 includes the main cellblock, hospital wing, administration wing, and basement citadel)  
43 and adjacent areas, including the Laundry Building and Officers' Club, would provide  
44 visitors with the opportunities to explore the federal penitentiary's history.

45 Under this alternative, visitors would also have access to the widest range of historic  
46 buildings in historically accurate condition that tell stories about the different layers of

1 Alcatraz Island’s history. Treatments ranging from upgrades to exhibits and furnishings,  
2 to more complete restoration would continue with the goal of increasing access to and  
3 interpretation of the Main Prison Building. In this alternative, the park would manage  
4 most of the historic buildings to reinforce the sense of history. The Officers’ Club would  
5 be stabilized as a ruin while providing visitors with opportunities to explore its historic  
6 components. Additional preservation would be possible with the involvement of partners  
7 to provide for a more complete visitor experience and interpret the building’s lengthy  
8 history. The Laundry Building would be rehabilitated as a multi-purpose facility,  
9 including flexible space that could accommodate and support interpretation, special  
10 events, classrooms, and meetings. The Lighthouse and surrounding area would be  
11 preserved to provide visitors with opportunities to learn about the maritime commercial  
12 history associated with Alcatraz Island and its strategic location in San Francisco Bay.  
13 The Model Industries Building would be stabilized as a ruin. The Quartermaster  
14 Warehouse would be rehabilitated and used for maintenance, storage, and public safety  
15 functions. Along with the Power Plant, it could house green sustainable infrastructure  
16 technologies.

17 The perimeter of the island, including the coastal cliffs, would be managed to support  
18 interpretation of the island’s cultural and natural history and to provide greater access for  
19 visitors. Historic buildings along the island’s perimeter would be stabilized, rehabilitated,  
20 allowed to deteriorate naturally, or removed, depending on their condition/integrity,  
21 interpretive value, and suitability for adaptive use. Although the aforementioned actions  
22 would result in the loss of some historic buildings and structures on Alcatraz Island  
23 through natural deterioration and removal (resulting in permanent adverse impacts of  
24 minor intensity), many would be preserved, rehabilitated, adaptively used, and  
25 interpreted. Overall, the aforementioned actions would have a long-term beneficial  
26 impact on historic buildings and structures on Alcatraz Island.

27 ***Conclusion***

28 Under alternative 3, nationally significant buildings would be rehabilitated and adaptively  
29 used to showcase the park’s military, maritime, commercial, and agricultural and  
30 ranching history themes and to support visitor programming and services. The condition  
31 of all primary buildings would be improved, and of the four alternatives considered in  
32 this general management plan this alternative would provide for the greatest number of  
33 historic buildings preserved in “good” condition. It would also provide for public access  
34 to the greatest number of historic buildings. Although, actions under this alternative could  
35 result in some localized adverse impacts to enhance visitor access to and understanding  
36 of the park’s resources (resulting in long-term, adverse impacts of minor intensity),  
37 overall this alternative would generally have comprehensive beneficial impacts on the  
38 park’s historic buildings and structures.

39 Actions under this alternative would generally have long-term beneficial impacts on the  
40 historic buildings and structures associated with the following designated National  
41 Historic Landmarks and properties listed in or determined eligible for listing in the  
42 National Register of Historic Places: Golden Gate Dairy in Tennessee Valley; Forts Barry  
43 and Cronkhite and the nearby Nike Missile Site; San Francisco Port of Embarkation  
44 National Historic Landmark; seacoast fortifications in the Marin Headlands and Kirby  
45 Cove areas; Point Bonita Historic District; Upper Fort Mason (Fort Mason Historic  
46 District); Fort Miley, including the Marine Exchange Outlook Station (Octagon House)

1 and the nearby USS *San Francisco* Memorial; Battery Davis at Fort Funston; seacoast  
2 fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San Mateo  
3 County; San Francisco Bay Discovery Site National Historic Landmark; and the Montara  
4 Lighthouse and its associated historic buildings. The documented historical and  
5 architectural values of these buildings and structures would be preserved through  
6 rehabilitation/restoration and adaptive use or interpretation.

7 Actions under this alternative would generally have long-term beneficial impacts on the  
8 park's historic buildings and structures associated with the following properties listed on  
9 or determined eligible for the National Register of Historic Places because they would be  
10 stabilized or afforded other preservation treatment, thus halting their deterioration: Hill  
11 640 Military Reservation, and Rancho Corral de Tierra (if this property were determined  
12 eligible for listing in the National Register of Historic Places).

13 While rehabilitation and stabilization would have long-term, beneficial impacts on some  
14 historic buildings at the Rapozo Ranch in Tennessee Valley because their documented  
15 historical and architectural values would be preserved, some would be lost through  
16 natural deterioration or removal, resulting in permanent, adverse impacts of minor  
17 intensity.

18 Extant buildings at Fort Funston other than Battery Davis would be retained and could be  
19 expanded to meet park operational needs, resulting in long-term, minor adverse impacts  
20 because some localized historic fabric could be lost.

21 This alternative is designed to significantly enhance the preservation of features that  
22 contribute to the significance of the Alcatraz Island National Historic Landmark.  
23 Additionally, actions under this alternative provide visitor access to the widest range of  
24 historic buildings in historically accurate condition that tell stories about the different  
25 layers of history on Alcatraz Island. The condition of all primary buildings on the island  
26 would be improved, and this alternative, which includes the largest Historic Immersion  
27 management zone on the island of the four alternatives considered in this general  
28 management plan, would provide for the greatest number of the island's historic  
29 buildings preserved in "good" condition. Although actions under this alternative could  
30 result in some localized adverse effects on Alcatraz Island National Historic Landmark's  
31 historic buildings or components and features of some of the buildings to enhance  
32 interpretation and visitor access (long-term adverse impacts of minor intensity), overall  
33 this alternative would have beneficial impacts on the landmark's historic buildings.

34 Historic structures in the park and on Alcatraz Island could suffer wear and tear from  
35 increased visitation and various adaptive uses, but monitoring the carrying capacity of  
36 historic structures could result in the imposition of visitation and use levels or other  
37 constraints that would contribute to the stability or integrity of the resources without  
38 unduly hindering interpretation for visitors or other appropriate use. Unstaffed or  
39 minimally staffed structures could be more susceptible to vandalism. However, continued  
40 ranger patrol and emphasis on visitor education regarding the significance of such  
41 resources and how visitors and users can reduce their impacts to historic resources, would  
42 discourage vandalism and inadvertent impacts and minimize adverse impacts. Adverse  
43 impacts would be long term and negligible to minor in intensity.

1 Under this alternative, the Section 106 determination of effect on historic buildings in  
2 Golden Gate National Recreation Area and on Alcatraz Island would be *no adverse*  
3 *effect*.

4 There would be no impairment of historic buildings and structures under this alternative  
5 because adverse impacts would be of only minor intensity.

6

## 7 **Cultural Landscape Resources**

### 8 ***No Action Alternative***

#### 9 ***Analysis***

10 Numerous cultural landscapes have been identified in Golden Gate National Recreation  
11 Area, but not all have been inventoried and evaluated. Cultural landscapes in the park  
12 include those associated with military installations and fortifications, lighthouses and  
13 maritime commerce, and agricultural and ranching themes. Cultural landscape  
14 preservation treatment is conducted as opportunities arise. The incremental approach to  
15 preservation of cultural landscape resources has resulted in varying degrees of  
16 preservation and possible localized loss of resource integrity, but overall the park's  
17 cultural landscape resources have retained their historic integrity.

18 The park staff is working to preserve cultural landscapes that have integrity and they  
19 continue to learn about cultural landscape resources. For instance, although the  
20 significance of the cultural landscape values in the immediate area of the Phleger Estate  
21 and other locations in San Mateo County has not been evaluated or determined, as the  
22 National Park Service information database evolves for these areas such landscape  
23 resource values will be preserved as part of the rural agricultural or natural landscape.  
24 The above actions would have a long-term, beneficial impact.

25 Alcatraz Island National Historical Landmark, which includes the entire island, presents a  
26 cultural landscape comprising a wide range of archeological and historic resources,  
27 structures, and features associated with its historical use as a Civil War fort, military  
28 prison, lighthouse operation for maritime commerce, federal penitentiary, and the Indian  
29 Occupation of 1969-71. Currently, cultural landscape resource preservation activities are  
30 conducted as opportunities arise. This incremental approach to preservation has resulted  
31 in varying degrees of preservation of some key cultural landscape resources and features  
32 as well as the deterioration or loss of others. For instance, the overall cultural landscape  
33 adjacent to the Main Prison Building has been minimally preserved, although localized  
34 adverse effects have resulted because of its use as seasonal and year-round habitat for sea  
35 birds. The impacts on Alcatraz Island would range from long-term, and beneficial to  
36 moderate and adverse.

#### 37 ***Conclusion***

38 Numerous cultural landscapes have been identified in Golden Gate National Recreation  
39 Area, but not all have been inventoried and evaluated. Cultural landscape preservation  
40 treatment is conducted as opportunities arise. This incremental approach to preservation  
41 of cultural landscape resources has resulted in possible localized loss of resource  
42 integrity, but overall the park's known cultural landscape resources have retained their  
43 historic integrity. These actions would have a long-term, beneficial impact.

1 The cultural landscape resource preservation activities for the Alcatraz Island National  
2 Historical Landmark are incrementally implemented as opportunities arise and therefore  
3 result in varying degrees of preservation of some key cultural landscape resources and  
4 features as well as the deterioration or loss of others. The impacts on Alcatraz Island  
5 would range from long-term, negligible and beneficial to moderate and adverse.

6 Under this alternative, the Section 106 determination of effect on cultural landscape  
7 resources in Golden Gate National Recreation Area would be *no adverse effect* and for  
8 cultural landscape resources on Alcatraz Island, the determination would be *adverse*  
9 *effect*.

10 Because there would be no major, adverse impacts to a resource or value whose  
11 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
12 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
13 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
14 management plan or other relevant National Park Service planning documents, there  
15 would be no impairment of the park's cultural landscape resources.

#### 16 ***Alternative 1: Connecting People with the Parks***

##### 17 ***Analysis***

18 The surveys and research necessary to determine the eligibility of a landscape for listing  
19 in the National Register of Historic Places are a prerequisite for understanding the  
20 landscape's significance, and form the basis of informed decision-making in the future  
21 regarding how the landscape and its contributing features and patterns should be  
22 managed. Completing such surveys and research would create a beneficial, long-term  
23 impact.

24 Careful design would ensure that the rehabilitation or restoration of buildings and  
25 structures, the construction of parking areas, and the expansion or development of trails  
26 would minimally affect the scale and visual relationships among significant landscape  
27 features. In addition, the topography, vegetation, circulation features, and land use  
28 patterns of any significant cultural landscape would remain largely unaltered. Any  
29 adverse impacts would be long-term or permanent and range in intensity from negligible  
30 to minor.

31 When compared with those of the no-action alternative, actions under alternative 1 would  
32 provide better opportunities for strengthening and enhancing the integrity of cultural  
33 landscape features (including historic buildings and structures) that contribute to  
34 properties listed in the National Register of Historic Places or designated National  
35 Historic Landmarks. Although actions under this alternative could result in localized loss  
36 of some cultural landscape features, overall this alternative would improve the integrity  
37 and enhance the preservation of the park's cultural landscape resources. Cultural  
38 landscape resources would be managed primarily to perpetuate their historic values, one  
39 component of which is scenery. Although some cultural landscape resources could be lost  
40 (resulting in permanent adverse impacts of minor to moderate intensity), these actions  
41 would generally have a long-term, beneficial impact.

42 Under this alternative, significant cultural landscape resources associated with the  
43 historic coastal defense fortifications at the Hill 640 Military Reservation as well as at  
44 Milagra Ridge, Sweeney Ridge, and other locations in San Mateo County that can be

## PART 9: POTENTIAL ENVIRONMENTAL CONSEQUENCES

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1 preserved without compromising natural resource values would be afforded preservation  
2 treatment. As the park staff learns more about the cultural landscape resources in and  
3 near the Phleger Estate and other locations in the San Mateo County area, the recognized  
4 significance and preservation treatment of some landscape features may also increase.  
5 These actions would generally have a long-term, beneficial impact on cultural landscape  
6 resources, although some would likely be lost (resulting in permanent adverse impacts of  
7 minor to moderate intensity).

8 Cultural landscape resources associated with the Rapozo Ranch (Miwok Stables), Golden  
9 Gate Dairy, and Miwok Trail in the Tennessee Valley would be preserved. Significant  
10 cultural landscape resources associated with the rural agricultural landscape at Rancho  
11 Corral de Tierra in San Mateo County that can be preserved without compromising  
12 natural resource values would be afforded preservation treatment if determined eligible  
13 for listing in the National Register of Historic Places. These actions would have a long-  
14 term, beneficial impact on cultural landscape resources, although some would likely be  
15 lost (resulting in permanent adverse impacts of minor to moderate intensity).

16 Significant cultural landscape resources at Forts Barry, Cronkhite, and Miley; Kirby  
17 Cove; and the nearby Nike Missile Site in the Marin Headlands would be preserved  
18 through rehabilitation and would be managed to perpetuate their historic values. They  
19 would continue to be used by the park and park partners for recreational, educational,  
20 interpretive, and stewardship programs and activities and to provide visitors with an  
21 expanded menu of opportunities that are strongly linked to the park purpose. Elements of  
22 such landscapes could be adapted to accommodate visitor use and education purposes or  
23 park administrative purposes, resulting in long-term, beneficial impact on cultural  
24 landscape resources, although some would likely be lost (resulting in permanent adverse  
25 impacts of minor to moderate intensity).

26 Cultural landscape resources associated with the Montara Lighthouse, the only complete  
27 lighthouse facility in the park, would be preserved through rehabilitation and used to  
28 interpret its association with maritime commerce as an aid to navigation. Cultural  
29 landscape resources associated with the Point Bonita Lighthouse would be preserved  
30 through rehabilitation and used to interpret the site's association with maritime  
31 commercial and military history.

32 Cultural landscape resources in Upper Fort Mason (Fort Mason Historic District) would  
33 be preserved through rehabilitation and restoration and would be interpreted. Significant  
34 cultural landscape resources associated with Battery Davis at Fort Funston would be  
35 stabilized and elements could be adapted to accommodate visitor use and education.

36 Cultural landscape resources associated with San Francisco Bay Discovery Site National  
37 Historic Landmark on Sweeney Ridge would be preserved, enhanced, and interpreted.  
38 These actions would result in long-term, beneficial impact on cultural landscape  
39 resources, although some would likely be lost (resulting in permanent adverse impacts of  
40 minor to moderate intensity).

41 Alcatraz Island National Historical Landmark, which includes the entire island, presents  
42 an intact cultural landscape comprising a wide range of archeological and historic  
43 resources, structures, and features associated with its historical use as a Civil War fort,  
44 military prison, lighthouse operation for maritime commerce, federal penitentiary, and  
45 the Indian Occupation of 1969-71. Although this alternative would result in some  
46 localized deterioration or loss of cultural landscape resources, it would provide for an

1 overall improvement in the condition of such resources. Actions under this alternative  
2 would provide for some enhanced preservation and rehabilitation of cultural landscape  
3 resources on the island. For instance, landscaped areas around the Main Prison Building  
4 and Lighthouse would be rehabilitated to protect and interpret their layers of history. The  
5 Parade Ground's cultural landscape would be rehabilitated, and rubble would be  
6 removed. However, this alternative would also result in some localized deterioration or  
7 loss of cultural landscape features on the island because some areas of the island would  
8 be designed to accommodate visitor use and park and partner administration and  
9 operations, and others would be allowed to revert to a more natural state. These actions  
10 would have a long-term, beneficial impact on cultural landscape resources, although  
11 some cultural landscape resources would likely be lost (resulting in permanent adverse  
12 impacts of minor to moderate intensity).

### 13 ***Conclusion***

14 Throughout the park, alternative 1 would provide improved opportunities for  
15 strengthening and enhancing the integrity of cultural landscape resources (including  
16 historic buildings and structures) that contribute to properties listed in the National  
17 Register of Historic Places or designated National Historic Landmarks. Although actions  
18 under this alternative could result in localized loss of some cultural landscape features  
19 due to increasing visitor opportunities, overall this alternative would improve the  
20 integrity and enhance the preservation of the park's cultural landscape features. These  
21 actions would have a long-term, minor, and beneficial impact on cultural landscape  
22 resources, although some would likely be lost (resulting in permanent adverse impacts of  
23 minor to moderate intensity).

24 On Alcatraz Island, actions under this alternative would result in an overall improvement  
25 in the condition of cultural landscape resources. Although, there may be some localized  
26 deterioration or loss of some cultural landscape resources, the features near all primary  
27 historic buildings would be rehabilitated. These actions would have a long-term,  
28 beneficial impact on cultural landscape resources, although some would likely be lost  
29 (resulting in permanent adverse impacts of minor to moderate intensity).

30 Under this alternative, the Section 106 determination of effect on cultural landscape  
31 resources in Golden Gate National Recreation Area and on Alcatraz Island would be  
32 *adverse effect*.

33 Because there would be no major, adverse impacts to a resource or value whose  
34 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
35 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
36 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
37 management plan or other relevant National Park Service planning documents, there  
38 would be no impairment of the park's cultural landscape resources.

### 39 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

#### 40 ***Analysis***

41 The surveys and research necessary to determine the eligibility of a landscape for listing  
42 in the National Register of Historic Places are a prerequisite for understanding the  
43 landscape's significance, as well as for forming the basis of informed decision making in  
44 the future regarding how the landscape and its contributing features and patterns should

1 be managed. Completing such surveys and research would result in a beneficial long-  
2 term impact.

3 Careful design would ensure that the rehabilitation or restoration of buildings and  
4 structures, the construction of parking areas, and the expansion or development of trails  
5 would minimally affect the scale and visual relationships among significant landscape  
6 features. In addition, the topography, vegetation, circulation features, and land use  
7 patterns of any significant cultural landscape would remain largely unaltered. Any  
8 adverse impacts would be long term or permanent and range in intensity from negligible  
9 to minor.

10 When compared to those of the no-action alternative, actions under alternative 2 would  
11 generally provide for slightly better opportunities for strengthening the integrity and  
12 adaptive use or interpretation of cultural landscape resources (including historic buildings  
13 and structures) that contribute to properties listed in the National Register of Historic  
14 Places or designated National Historic Landmarks. More cultural landscape resources  
15 would be stabilized in this alternative; however, not as many would be rehabilitated,  
16 interpreted, and adaptively used. Coastal ecosystem restoration of existing pastoral and  
17 rural landscapes could impact the integrity of some cultural landscape resources. This  
18 alternative would require a detailed cultural landscape resources stabilization and  
19 recovery plan. Although actions under this alternative could result in the localized loss of  
20 some cultural landscape resources, especially in the Natural and Sensitive Resources  
21 management zones, actions under this alternative would generally improve the integrity  
22 and enhance the preservation of the park's cultural landscape resources, particularly in  
23 the Evolved Cultural Landscape and Historic Immersion management zones. These  
24 actions would have a long-term, beneficial impact.

25 Cultural landscape resources in the Natural and Sensitive Resources management zones,  
26 which cover much of the park land in this alternative, would be allowed to revert to a  
27 more natural state, except where significant landscape resources could be preserved  
28 without compromising natural resource values. Cultural landscape resources in the  
29 Evolved Cultural Landscape and Historic Immersion management zones would be  
30 identified and rehabilitated to emphasize their significant character-defining features  
31 based on the level of historical documentation available.

32 Cultural landscape resources associated with the Hill 640 Military Reservation coastal  
33 defense fortifications overlooking the Pacific Ocean and the southern end of Stinson  
34 Beach that can be preserved without compromising natural resource values would be  
35 afforded preservation treatment. Cultural landscape resources associated with the rural  
36 pastoral landscape at the Rapozo Ranch (Miwok Stables), and Golden Gate Dairy in the  
37 Tennessee Valley would be preserved through rehabilitation. Nonhistoric residences near  
38 the Golden Gate Dairy could be removed if they do not contribute to essential community  
39 services or park operations, and nonhistoric structures and facilities at the Rapozo Ranch  
40 would be removed, thus improving the integrity of their respective cultural landscapes.  
41 Cultural landscape resources at Forts Barry and Cronkhite and at the nearby Nike Missile  
42 Site in the Marin Headlands would be preserved through rehabilitation. Cultural  
43 landscape resources associated with historic coastal fortifications in the Marin Headlands  
44 would be managed to perpetuate their historic values, and elements could be adapted to  
45 accommodate visitor use or park and partner administration. Cultural landscape resources  
46 associated with coastal defense fortifications in the Kirby Cove area, as well as those

1 associated with the Point Bonita Lighthouse and Lifesaving Station and Fort Miley,  
2 would be preserved through rehabilitation. Cultural landscape resources associated with  
3 the Montara Lighthouse, which constitute the only complete lighthouse facility in the  
4 park, would be preserved through rehabilitation. Cultural landscape resources in Upper  
5 Fort Mason (Fort Mason Historic District) would be preserved through rehabilitation or  
6 restoration.

7 Cultural landscape resources associated with Battery Davis at Fort Funston would be  
8 stabilized. Other cultural landscape resources at Fort Funston that can be preserved  
9 without compromising natural resource values would be afforded preservation treatment.  
10 Cultural landscape resources associated with historic coastal defense fortifications on  
11 Milagra Ridge, Sweeney Ridge, and other locations in San Mateo County that can be  
12 preserved without compromising natural resource values would be afforded preservation  
13 treatment. As the park's information database increases for cultural landscape resources  
14 in and near the Phleger Estate and other locations in the San Mateo County area, the  
15 significance and preservation treatment of some landscape features may also increase.  
16 Historic agriculture-related buildings at Rancho Corral de Tierra that can be preserved  
17 without compromising natural resource values would be afforded preservation treatment  
18 if determined eligible for listing in the National Register of Historic Places. Cultural  
19 landscape resources associated with San Francisco Bay Discovery Site National Historic  
20 Landmark on Sweeney Ridge would be preserved, enhanced, and interpreted. The  
21 majority of the actions listed above would have long-term, beneficial impacts while some  
22 natural resource restoration efforts would result in long-term, adverse impacts of minor  
23 intensity.

24 Under alternative 2, many of the cultural landscape resources on Alcatraz Island would  
25 become ruins. Evaluation criteria and a stabilization plan are needed to determine the  
26 minimum level of cultural landscape resource integrity needed to retain Alcatraz Island  
27 National Historic Landmark designation. Furthermore, many of the island's cultural  
28 landscape features would only be stabilized, and some could be lost overtime.

29 The landscaped areas between the entry pier and the Main Prison Building and around the  
30 Main Prison Building, Lighthouse, and Recreation Yard would receive preservation  
31 treatment in order to interpret their layers of history. The Recreation Yard would be  
32 rehabilitated or restored, while the Parade Ground would be stabilized as a ruin and its  
33 rubble piles retained to serve as bird habitat. Other cultural landscape resources would be  
34 stabilized, rehabilitated, allowed to deteriorate naturally after Historic American Building  
35 Survey recordation, or removed, depending on their condition, integrity, interpretive  
36 value, and suitability for adaptive use. The impacts on Alcatraz Island would range from  
37 long-term, beneficial to adverse of moderate intensity.

38 ***Conclusion***

39 Alternative 2 would generally provide for some opportunities for strengthening the  
40 integrity and adaptive use or interpretation of cultural landscape resources (including  
41 historic buildings and structures) that contribute to properties listed in the National  
42 Register of Historic Places or designated National Historic Landmarks. The coastal  
43 ecosystem restoration and rehabilitation of existing pastoral and rural landscapes could  
44 impact the integrity of some cultural landscape resources. The majority of the actions  
45 listed above would have a long-term, beneficial impact on the cultural landscape  
46 resources in Golden Gate National Recreation Area, while some natural resource

1 restoration efforts would likely result in long-term, adverse impacts of moderate  
2 intensity.

3 Under this alternative, more cultural landscape resources on Alcatraz Island would  
4 become ruins, many of the island's cultural landscape features would only be stabilized;  
5 thus, many could be lost overtime. Recent findings indicate that cultural landscape  
6 resources on the island are deteriorating at a rapid rate, and this alternative would do little  
7 to reverse that trend. The impacts on Alcatraz Island would range from long-term,  
8 beneficial to moderate and adverse of moderate intensity.

9 Under this alternative, the Section 106 determination of effect on cultural landscape  
10 resources in Golden Gate National Recreation Area would be *adverse effect* and for  
11 cultural landscape resources on Alcatraz Island the determination would be *adverse*  
12 *effect*.

13 Because there would be no major, adverse impacts to a resource or value whose  
14 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
15 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
16 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
17 management plan or other relevant National Park Service planning documents, there  
18 would be no impairment of the park's cultural landscape resources.

### 19 ***Alternative 3: Focusing on National Treasures***

#### 20 ***Analysis***

21 The surveys and research necessary to determine the eligibility of a landscape for listing  
22 in the National Register of Historic Places are a prerequisite for understanding the  
23 landscape's significance, as well as the basis of informed decision making in the future  
24 regarding how the landscape and its contributing features and patterns should be  
25 managed. Such surveys and research would be a beneficial long-term impact.

26 Careful design would ensure that the rehabilitation or restoration of buildings and  
27 structures, the construction of parking areas, and the expansion or development of trails  
28 would minimally affect the scale and visual relationships among significant landscape  
29 features. In addition, the topography, vegetation, circulation features, and land use  
30 patterns of any significant cultural landscape would remain largely unaltered. Any  
31 adverse impacts would be long-term or permanent and range in intensity from negligible  
32 to minor.

33 Under alternative 3, historically significant cultural landscape resources (including  
34 historic buildings and structures) that have integrity would be rehabilitated and adaptively  
35 used to showcase the park's military, maritime commercial, and agricultural/ranching  
36 history themes and to support visitor programming and services. The condition of all  
37 primary cultural landscape resources would be improved; when compared with the other  
38 alternatives in this plan, this alternative would provide for the most long-term, beneficial  
39 comprehensive improvement, preservation, and rehabilitation of cultural landscape  
40 features. Thus, implementation of this alternative would result in significant efforts to  
41 preserve and restore cultural landscape resources in "good" condition and for public  
42 accessibility to the greatest number of cultural landscape features reflecting all eras and  
43 themes (particularly historic military themes in the Marin Headlands and historic  
44 maritime commercial themes) of the park's history. Actions under this alternative could

1 result in some localized adverse effects on some cultural landscape resources or  
2 components and features of those resources in order to enhance visitor access to and  
3 understanding of the park's resources or to facilitate park operations; however, overall  
4 this alternative would generally have comprehensive long-term, beneficial impacts on the  
5 park's cultural landscape resources. However, the loss of some cultural landscape  
6 resources would result in permanent adverse impacts of minor intensity.

7 Actions in alternative 3 would require extensive stabilization, rehabilitation, and  
8 restoration of cultural landscape features, and it would create opportunities for creative  
9 interpretive programs, visitor services, and development of cultural resource stewardship  
10 programs. Cultural landscape resources associated with the Hill 640 Military Reservation  
11 would be preserved. Cultural landscape resources associated with the pastoral landscape  
12 at the Golden Gate Dairy in the Tennessee Valley would be preserved through  
13 rehabilitation. Cultural landscape resources at the Rapozo Ranch (Miwok Stables) in  
14 Tennessee Valley would be managed to perpetuate their historic values. Elements could  
15 be adapted to accommodate visitor use and education. Cultural landscape resources  
16 associated with Forts Barry and Cronkhite, the nearby Nike Missile Site, and the Kirby  
17 Cove area would be rehabilitated and interpreted. Cultural landscape resources associated  
18 with historic coastal defense fortifications in the Marin Headlands would be rehabilitated  
19 and interpreted. Cultural landscape resources associated with the Montara Lighthouse, the  
20 park's only complete intact light station complex, would be rehabilitated or restored.  
21 Nonhistoric structures would be removed from the site to improve the integrity of its  
22 cultural landscape. Cultural landscape resources associated with the Point Bonita  
23 Lighthouse would be preserved through rehabilitation. Cultural landscape resources  
24 associated with Upper Fort Mason (Fort Mason Historic District) would be preserved and  
25 rehabilitated, and some could be adapted to accommodate visitor use or park and partner  
26 administration. Cultural landscape resources associated with West Fort Miley, the USS  
27 *San Francisco* Memorial, and Marine Exchange Lookout Building (Octagon House)  
28 would be preserved through rehabilitation. Significant character-defining features of the  
29 cultural landscape at East Fort Miley would be preserved, although some elements could  
30 be modified to enable park operations functions. Cultural landscape resources associated  
31 with coastal defense fortifications on Milagra Ridge, Sweeney Ridge, and other locations  
32 in San Mateo County that can be preserved without compromising natural resource  
33 values would be afforded preservation treatment. As the park's information database  
34 increases for cultural landscape resources in and near the Phleger Estate and other areas  
35 in San Mateo County, the significance and preservation treatment of some landscape  
36 features may also increase. Cultural landscape resources at Rancho Corral de Tierra that  
37 can be preserved without compromising natural resource values would be afforded  
38 preservation treatment if determined eligible for listing in the National Register of  
39 Historic Places. Cultural landscape resources associated with San Francisco Bay  
40 Discovery Site NHL would be preserved, rehabilitated, and interpreted. The  
41 aforementioned actions would generally result in long-term beneficial impacts. However,  
42 the loss of some cultural landscape resources would result in permanent adverse impacts  
43 of minor intensity.

44 This alternative, which is designed to enhance the contributing features of Alcatraz Island  
45 National Historic Landmark, would provide for a general improvement in the condition  
46 of cultural landscape resources there. The condition of all primary cultural landscape  
47 resources and features on Alcatraz Island would be improved, especially those resources

1 within the Historic Immersion management zone that covers a significant portion of the  
2 island. Although actions under this alternative could result in some localized adverse  
3 effects on Alcatraz Island National Historic Landmark’s individual cultural landscape  
4 resources in order to enhance visitor access to and understanding of the island’s  
5 resources, overall this alternative would generally have comprehensive beneficial impacts  
6 on the landmark’s cultural landscape resources.

7 Actions under this alternative would require extensive stabilization, rehabilitation, and  
8 restoration of historic buildings, and it would provide for increased opportunities for  
9 creative interpretive programs, visitor services, and the development of cultural resource  
10 stewardship programs. The goal is to provide opportunities to immerse visitors in the  
11 island’s historic prison landscape in the vicinity of Building 64, re-creating the  
12 atmosphere evocative of its layers of history. In the vicinity of the Main Prison Building  
13 and adjacent areas (including the landscaped areas in the vicinity of the Guard House and  
14 Warden’s House), visitors would also have access to the widest range of cultural  
15 landscape resources and features in historically accurate conditions that tell stories about  
16 the different layers of island history. Treatments ranging from upgrades to exhibits and  
17 furnishings to more complete landscape restoration would continue with the goal of  
18 access to and interpretation of the landscape’s features. The park staff would also manage  
19 most of the adjacent landscaped areas, such as the Parade Ground, to reinforce the sense  
20 of history as visitors move around the island. The Parade Ground would be rehabilitated  
21 to portray its historic periods and support year-round visitor exploration. Design for the  
22 Parade Ground’s rehabilitation would incorporate measures for wildlife habitat and  
23 removal of the rubble piles.

24 The landscaped area around the lighthouse would be preserved to provide visitors with  
25 opportunities to learn about the maritime commercial history of Alcatraz Island and its  
26 strategic location in San Francisco Bay. The perimeter of the island, including the coast  
27 cliffs, would be managed to support interpretation of the island’s cultural and natural  
28 history and to provide greater access for visitors. Cultural landscape resources along the  
29 island’s perimeter would be stabilized, rehabilitated, allowed to deteriorate naturally, or  
30 removed depending on their condition and integrity, interpretive value, and suitability for  
31 adaptive use. The historic 1,000-foot “no trespass” zone around the island would be re-  
32 established, demarcated by buoys circling the island. The above actions would result in  
33 long-term beneficial impacts. However, the loss of some cultural landscape resources  
34 would result in permanent adverse impacts of minor intensity.

35 ***Conclusion***

36 In alternative 3, the historically significant cultural landscape resources (including  
37 historic buildings and structures) that have integrity would be rehabilitated and adaptively  
38 used to showcase the park’s military, maritime commercial, and agricultural/ranching  
39 history themes and support visitor programming and services. Implementation of this  
40 alternative would result in a comprehensive effort to improve, preserve, and rehabilitate  
41 the cultural landscape resources in “good” condition and for public access to the greatest  
42 number of cultural landscape features, reflecting all eras and themes (particularly historic  
43 military themes in the Marin Headlands and historic maritime commercial themes) of the  
44 park’s history. The above actions would result in long-term beneficial impacts to cultural  
45 landscape resources. However, the loss of some cultural landscape resources would result  
46 in permanent adverse impacts of minor intensity.

1 On Alcatraz Island, this alternative would provide for a general improvement in the  
2 condition of all primary cultural landscape resources and features preserved in “good”  
3 condition and for public access to the greatest number of such resources and features  
4 reflecting all eras of the island’s history. The above actions would result in beneficial  
5 impacts to cultural landscape resources. However, the loss of some cultural landscape  
6 resources would result in permanent adverse impacts of minor intensity.

7 Under this alternative, the Section 106 determination of effect on cultural landscape  
8 resources in Golden Gate National Recreation Area and on Alcatraz Island would be *no*  
9 *adverse effect*.

10 There would be no impairment of cultural landscape resources under this alternative  
11 because adverse impacts would only be of minor intensity.

12

### 13 **Park Collections**

#### 14 ***No-action Alternative***

##### 15 ***Analysis***

16 According to NPS *Management Policies 2006*, the National Park Service will collect,  
17 protect, preserve, provide access to, and use objects, specimens, and archival collections  
18 to aid understanding among park visitors, and to advance knowledge in the humanities  
19 and sciences. Further, collections management facilities need to accommodate the special  
20 needs of park collections for long-term preservation and protection by ensuring that they  
21 are stored in energy efficient buildings. Director’s Order 24: *Park Collections*  
22 *Management Guideline* (September 2008) provides further guidance, standards, and  
23 requirements for preserving, protecting, documenting, and providing access to and use of  
24 National Park Service collections.

25 Golden Gate National Recreation Area’s 2009 *Collection Management Report*  
26 documented 4,210,233 items in the park collections; these include items from the park’s  
27 coastal defense fortifications and military installations. Additionally, the park collections  
28 include items from Alcatraz Island, such as original FBI evidence from the 1962 Alcatraz  
29 escape, as well as original uniforms, other accoutrements, and everyday objects from the  
30 island. The park collections are currently stored in 15 different facilities throughout the  
31 park that function as visitor centers, interpretive exhibits, or dedicated storage areas. Of  
32 the four largest storage repositories, two are located in buildings owned by the Presidio  
33 Trust with no lease agreements in place. This places the park collections in a vulnerable  
34 position because of potential eviction and deteriorating structural conditions. The park  
35 staff are monitoring the collections and taking steps to resolve these issues. The current  
36 conditions for collections at the park do not meet NPS standards for long-term  
37 preservation, protection, and use and would result in long-term, moderate, and adverse  
38 impacts.

##### 39 ***Conclusion***

40 The current conditions for park collections at the park do not meet National Park Service  
41 standards for long-term preservation, protection, and use. Thus, continuation of current  
42 management of the park collections would be expected to have long-term, moderate,  
43 adverse impacts on the park collections.

1 Because there would be no major, adverse impacts to a resource or value whose  
2 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
3 legislation or proclamation of Golden Gate National Recreation Area; (2) key to the  
4 natural or cultural integrity of the park; or (3) identified as a goal in the park's general  
5 management plan or other relevant National Park Service planning documents, there  
6 would be no impairment of the park's collections.

7 ***Alternative 1: Connecting People with the Parks***

8 ***Analysis***

9 In addition to the actions proposed for the park collection described under the "Actions  
10 Common to All Alternatives" section, in which the collections are consolidated into one  
11 or more facilities, alternative 1 would allow for the incorporation of artifacts into the  
12 visitor experience on a case-by-case basis at sites that are managed for historic  
13 immersion. This action would help visitors to better understand the historic context of a  
14 particular site and how park collections are inextricably linked to the park's historic  
15 resources. Use of these artifacts would still require that they be used in a way that meets  
16 NPS standards for the preservation and protection of park collections. The public's  
17 awareness of the park collections would be increased and could result in increasing  
18 donations and support for "growing" and conserving the collections, thus resulting in  
19 overall long-term, beneficial impacts.

20 ***Conclusion***

21 Incorporating the park collections in ways that enhance the visitor experience and helps  
22 expose the values of the collection while still meeting NPS preservation standards would  
23 have a long-term, beneficial impact on the value of the collection.

24 No impairment of park collections would result from this alternative.

25 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

26 ***Analysis***

27 In addition to the actions proposed for the park collections described under the "Actions  
28 Common to All Alternatives" section, in which the collections are consolidated into one  
29 or more facilities, the actions under alternative 2 would increase the ecosystem  
30 management approach of the alternative by generating more specimens for the natural  
31 research collection. This action would contribute to the monitoring and studies associated  
32 with influence that climate change could have on the park's natural resources. The result  
33 of improving the natural resource portion of the park collections could result in improved  
34 understanding of park resources and to increased access for researchers and managers to  
35 a body of knowledge that is necessary for future management decisions. The actions  
36 under alternative 2 would have a long-term, beneficial impact to the park collections.

37 ***Conclusion***

38 The increased emphasis of collecting and preserving natural resource specimen would  
39 have a long-term, negligible, and beneficial, impact to the park collections.

40 No impairment of park collections would result from this alternative.

41

1 **Alternative 3: Focusing on National Treasures**

2 **Analysis**

3 In addition to the actions proposed for the park collection described under the “Actions  
4 Common to All Alternatives” section in which the collections are consolidated into one  
5 or more facilities, the actions under alternative 3 would include treatments of historic  
6 buildings and cultural landscape resources that range from upgrades to exhibits and  
7 furnishings to more complete restoration. The goal of these actions would be increasing  
8 access to and interpretation of some of the park’s most significant resources. A larger  
9 number of artifacts and archival items would be prominently displayed for visitor  
10 education and interpretation under this alternative, thus enhancing the visitor experience,  
11 resulting in a beneficial impact. The public’s awareness of the park collections would be  
12 increased and could result in increasing donations and support for “growing” and  
13 conserving the collections, thus resulting in overall long-term, beneficial effects.

14 **Conclusion**

15 Incorporating the park collections in ways that enhance the visitor experience and helps  
16 expose the values of the collection while still meeting NPS preservation standards would  
17 have a long-term, beneficial impact on the value of the collection.

18 No impairment of park collections would result from this alternative.

19

20

21 **VISITOR USE AND EXPERIENCE**

22 **No Action Alternative**

23 **Analysis**

24 In the no-action alternative, visitors would continue to access a diversity of recreational  
25 opportunities in a wide range of settings throughout Golden Gate National Recreation  
26 Area. The park’s extensive system of hiking, bicycling, and equestrian trails would be  
27 available for visitors and residents. Overnight camping and lodging opportunities would  
28 continue. Beach recreation, along with wildlife viewing and scenic touring, would also be  
29 important components of the visitor experience. Continuing these visitor opportunities  
30 provide for a long-term, moderate, beneficial impact to the visitor experience.

31 During scoping and in recent visitor surveys, most respondents acknowledged their  
32 enjoyment of the park’s visitor opportunities and suggested that the variety of activities  
33 should be maintained. Some people noted concerns about any further regulation or  
34 reduction of recreation opportunities, particularly for mountain bikers, equestrians, and  
35 dog owners. There was also interest in additional recreation opportunities, particularly  
36 more and different trail connections. There were some concerns expressed about conflicts  
37 between recreation activities that share facilities and areas. The park staff would continue  
38 to work to improve upon user conflict situations and conditions that currently contribute  
39 to long-term, minor, adverse impacts within the park. The park staff would also continue  
40 to complete trail improvements identified in the Trails Forever program, focusing on the  
41 California Coastal Trail and its connectors between Muir Beach and Mori Point.

1 A variety of educational and interpretive programs would continue to be offered by the  
2 National Park Service and its partners throughout the park. Continuing the current  
3 opportunities would have a long-term, minor, beneficial impact. Some of the public has  
4 expressed interest in having more interpretive and educational opportunities, including  
5 more on-site interpretive materials and programs. In addition, a need has been expressed  
6 for increasing outreach to diverse audiences. Access to the park collections and the  
7 integration of the collection into interpretive and educational programming and facilities  
8 have been identified as needs. This alternative would not provide these opportunities,  
9 resulting in a long-term, minor, adverse impact.

10 Visitor access to the various park sites would continue via multiple modes of auto, transit,  
11 bicycle, and pedestrian access. Some park sites are challenging to reach, given limited  
12 transit options and parking infrastructure, congested roadways, and conflicts between  
13 autos and bicyclists or pedestrians. There has been a significant amount of feedback from  
14 the public regarding a desire to explore the expansion and enhancements of alternative  
15 modes of access to and between park sites to provide easier access, reduced traffic  
16 congestion, and orientation opportunities. In addition, the need for more signs, maps, and  
17 orientation information to help visitors explore the park has been mentioned. Visitors  
18 have access to most of the sites within Golden Gate National Recreation Area. There are  
19 some areas that have restricted access to protect sensitive resources or visitor safety. In  
20 addition, some areas are restricted for certain types of activities. The San Mateo County  
21 park lands have minimal facilities and services to support visitation, but access is  
22 permitted. Overall, continuing the current conditions regarding access would result in  
23 long-term, minor to moderate, adverse impacts on the visitor experience.

24 Finally, there are locations within the park where visitor safety is an issue. Use conflicts  
25 between multiple modes of transportation are a concern in certain areas. Use conflicts  
26 between types of recreation activities can also occur and cause both real and perceived  
27 safety problems such as conflicts between bicyclists and equestrians. In addition, the park  
28 faces safety concerns that are typical of being in close proximity to a large urban area.  
29 The actions described above would have a long-term, minor to moderate adverse impacts  
30 on the visitor experience.

31 On Alcatraz Island, the primary visitor activities of visiting the cellhouse and enjoying  
32 the sights and sounds of the island in the middle of the bay would continue in this  
33 alternative; a long-term, moderate, beneficial impact. The existing interpretive programs  
34 would also continue to focus primarily on the military history and federal prison-era  
35 stories. In addition, visitors would have opportunities for self-guided exploration on only  
36 a small portion of the island.

37 During scoping for the plan, there were some mentions of additional recreation  
38 opportunities that were desired including more trail access around the island, more access  
39 to a larger number of structures, and overnight opportunities. Further, some visitors have  
40 expressed interest in more diverse interpretive programs. Visitors are provided limited  
41 opportunities to explore the historic military fortification and citadel that are located  
42 under the federal prison. The lack of some of these desired improvements would be a  
43 long-term, minor to moderate, adverse impact on those visitors seeking these  
44 opportunities.

45 Alcatraz continues to provide outstanding opportunities for understanding the stories and  
46 structures associated with the federal penitentiary period of the island. The audio tour is

1 popular with visitors and gives them an excellent understanding of life on “the Rock.”  
2 The audio tour has also provided a means to better distribute the flow of visitors and  
3 reduce noise associated with large groups visiting the cellhouse. The National Park  
4 Service and its partners have also managed the levels of use visiting the island to help  
5 control issues associated with crowding and conflicts resulting in a long-term, moderate,  
6 beneficial impact. There are isolated occasions and certain locations where crowding and  
7 use conflicts do occur resulting in long-term, minor, adverse impacts. In particular,  
8 certain locations along the walk to the cellhouse can sometimes become crowded, and  
9 there are occasional conflicts between the visitor tram and pedestrians during high use  
10 days.

11 Alcatraz Island also supports one of the largest concentrations of nesting waterbirds in  
12 San Francisco Bay. Visitors have some opportunities to learn about and observe the  
13 colonies as part of their visit to the island; a long-term, minor, beneficial impact for  
14 visitors interested in understanding the important role the island plays in the ecological  
15 system of the bay. However, many areas of the island are currently closed during  
16 breeding season to protect the colonies from human disturbance. This results in long-  
17 term, minor, adverse impacts to visitors who may want to explore these areas. In addition,  
18 the sights and smells associated with large numbers of birds during the nesting season has  
19 resulted in some minor, adverse impacts to the visitor experience.

20 Visitors have access to the island via the NPS concession-run ferry. The ferry ride to the  
21 island is one of the highlights of the visitor experience given the views of the island and  
22 the city, along with the orientation and interpretive information provided; a long-term,  
23 minor, beneficial impact. There are times when tickets are sold out to the island and some  
24 visitors are unable to take a trip to the island at their desired date and time resulting in a  
25 long-term, moderate, adverse impact on the visitor experience. During scoping for this  
26 plan, some members of the public expressed interest in having alternative access  
27 opportunities to the island by motorized and nonmotorized boats. This alternative would  
28 not explore additional access opportunities causing a long-term, minor, adverse, impact.

29 Visitor safety at Alcatraz Island is generally good in the no action alternative, although  
30 there are some safety issues associated with the deteriorating condition of historic  
31 structures; long-term, minor, adverse impact.

### 32 **Conclusion**

33 The no-action alternative for Golden Gate National Recreation Area would result in long-  
34 term, minor to moderate, beneficial impacts from continued opportunities to access high-  
35 quality resource-dependent visitor opportunities and experience the natural, historic, and  
36 scenic qualities of the park. Visitors would have extensive trail, beach, and educational  
37 opportunities, which are some of the most valued activities in the park. However, minor  
38 to moderate adverse impacts on the visitor experience from traffic congestion, use  
39 conflicts, limited facilities in San Mateo County, and restricted to access to a few desired  
40 locations would continue.

41 The no-action alternative for Alcatraz Island would result in long-term, minor to  
42 moderate, beneficial impacts from continued opportunities to access the cellhouse and the  
43 immediate surrounding landscape. In addition, high quality interpretive and educational  
44 programs and materials would continue to be provided. However, minor to moderate

1 adverse impacts on the visitor experience from conflicts with birds, limited access to  
2 areas and structures on the island, and some visitor crowding would continue.

3

4 **Alternative 1: Connecting People with the Parks (NPS Preferred**  
5 **Alternative for park sites in Marin, San Francisco, and San Mateo**  
6 **counties, except Alcatraz Island)**

7 ***Analysis***

8 The emphasis of alternative 1 for the Golden Gate National Recreation Area is  
9 connecting people with the parks. This alternative would increase the diversity of  
10 recreational opportunities offered throughout the park and encourage wider participation  
11 by the local and regional population, including those that are not traditional park visitors.  
12 The establishment of recreation “portals,” or locations from which multiple activities may  
13 be staged and initiated, is a primary component of this alternative. These portals would be  
14 located in Tennessee Valley, Marin Headlands, Upper Fort Mason, and Rancho Corral de  
15 Tierra. The portals would include trailheads and other visitor facilities to better support  
16 access to a diversity of recreation opportunities, and help connect visitors with the  
17 information and support services they need to plan and enjoy their visit to the park. The  
18 above efforts to welcome and orient the park visitor would have a long-term, moderate,  
19 beneficial impact on the visitor use and experience at the park.

20 Rehabilitation, expansion, and upgrades to existing facilities, including trails, trailheads,  
21 campsites, picnic areas, and parking would better support visitor activities throughout the  
22 park, including community based park stewardship programs. In particular,  
23 enhancements to the park’s trails would be beneficial since the trails are one of the most  
24 important aspects of visitor opportunities, and these improvements were highly sought  
25 after by the public. New facilities are also proposed in key park locations in this  
26 alternative including warming huts ; a variety of overnight accommodations, from  
27 camping to rustic cabins; stewardship centers; picnic facilities; and trails. Establishing  
28 these facilities would result in a long-term, moderate, beneficial effect on visitor  
29 opportunities and the facilitation of visitor activities throughout the park lands.

30 Under alternative 1, existing recreation activities would continued and be better  
31 supported through the facilities and access improvements already mentioned. Some  
32 activities would be expanded in this alternative, including educational and stewardship  
33 opportunities, and public equestrian programs and trailhead facilities. Equestrian facilities  
34 would be retained and improved at Rancho Corral de Tierra. to expand public access and  
35 related benefits. These activities would allow the park staff to engage a wider audience  
36 and better demonstrate the unique and interesting resources found throughout the park  
37 lands. Further, scenic viewing throughout the park would be enhanced at key points  
38 through the addition of overlooks, landscape and facility restoration, and improvements  
39 for non-automobile access to park sites. The above actions would result in long-term,  
40 moderate, beneficial, impacts.

41 Stewardship and volunteer activities would be enhanced in this alternative, resulting in a  
42 long-term, moderate, beneficial impact. New stewardship and educational facilities are  
43 proposed at several park locations. Efforts for programming and educational materials by

1 park staff and partners would be purposively aimed at engaging a wider audience, as well  
2 as enhancing individual understanding of park resources and values.

3 Public access to park sites, including parking improvements, public transportation  
4 connections, and multimodal access would be enhanced as a result of the alternative,  
5 resulting in long-term, moderate, beneficial impacts. Improved public transportation  
6 opportunities would help connect a larger audience to park sites, offer better connections  
7 between sites, and reduce use conflicts. Further, some of the improvements would allow  
8 for easier access to busy sites, reducing visitor frustration and improving the quality of  
9 park visits.

10 Visitor safety would benefit by several actions in this alternative resulting in long-term,  
11 moderate, beneficial impacts. Implementing roadside improvements to State Route 1 and  
12 Panoramic Highway would benefit visitors with better wayfinding, overlooks for safe  
13 scenic viewing, and more separation between auto and bicycle use. Other safety  
14 improvements could include enhancements to multimodal transportation options to ease  
15 use conflicts and road congestion during peak times. Finally, increased ranger presence  
16 throughout the park lands, particularly in San Mateo County, would improve response  
17 capabilities for park staff. However, the addition of new multiuse trails may cause a small  
18 amount of increased conflicts among visitors.

19 Restrictions on public access in Sensitive Resource zones would result in some long-  
20 term, minor, adverse impacts on visitor access and opportunities for recreation, but  
21 effective educational programming and information associated with these areas could  
22 also improve visitor understanding of these highly sensitive and exceptional resources.

23 On Alcatraz Island, alternative 1 would offer a wider variety of settings, experiences, and  
24 activities for visitors to enjoy. Stewardship activities would be a focus of this alternative  
25 to increase visitors' understanding and appreciation of the unique and diverse natural and  
26 cultural resources on the island. In addition to telling the stories of the infamous prison  
27 history, the National Park Service would offer visitors opportunities to understand other  
28 historic periods and the island's natural history, as well as to enjoy a diversity of scenic  
29 and recreational experiences on the island, including special events. Increased  
30 preservation, interpretation, and reuse of historic buildings would expand the range of  
31 activities for visitors and allow them to better understand the lives of people who lived  
32 and worked in those buildings, resulting in long-term, moderate, beneficial impacts.

33 Further, this alternative could increase visitor amenities at key locations including food  
34 service at Building 64. This alternative also includes additional strategies in core visitor  
35 use areas, such as removal of the rubble piles on the parade grounds to minimize the  
36 conflict between visitors and birds, thereby increasing access and improving the  
37 experience in these areas. This wider range of activities, settings, and services would  
38 likely appeal to a wider audience of participants and would also likely encourage an  
39 increase in repeat visitation. Further, this alternative would allow for a greater dispersion  
40 of visitors throughout the island, helping to minimize crowding at key sites like the  
41 cellhouse. The above actions would have a long-term, moderate, beneficial impact on the  
42 visitor experience.

43 Visitor safety would benefit through the preservation of the buildings as well as through  
44 increased bird management, resulting in long-term, minor, beneficial impacts. While

1 reduced crowding could increase safety in some areas, allowing visitors to explore more  
2 of the island's rugged and natural settings could bring about more incidents.

3 **Conclusion**

4 The actions proposed in alternative 1 for Golden Gate National Recreation Area would  
5 result in long term, moderate, beneficial impacts to the visitor experience. The diversity  
6 of recreational opportunities provided, the new and enhanced visitor support facilities,  
7 and the purposeful effort to engage a more diverse audience would have a positive and  
8 important impact on the visitor experience to the park. Further, the emphasis on improved  
9 access, particularly transportation connections, would be a beneficial impact on the  
10 visitor experience by reducing traffic congestion and use conflicts.

11 Alternative 1 would result in long term, moderate, beneficial impacts to the visitor  
12 experience on Alcatraz Island. The enhancements to the park setting through increased  
13 preservation of the structures; the increased access to the island's various layers of  
14 historic resources and natural settings; and the purposeful effort to increase programming  
15 options and connect with a more diverse audience would help create this long-term,  
16 moderate, beneficial impact. The number of visitors who could be accommodated on the  
17 island may also be slightly increased upon implementation of this alternative given the  
18 increased number of opportunities and the ability to better disperse visitors, resulting in a  
19 long-term, minor, beneficial impact.

20

21 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

22 **Analysis**

23 Alternative 2 proposes a visitor experience that is focused on forging individual  
24 connections with the park's natural and cultural resources through more natural and  
25 challenging visitor opportunities and enhanced stewardship activities. Visitors would still  
26 have a diversity of recreation activities available to them, but there would be an emphasis  
27 on encouraging more self-reliant and more natural and wild experiences throughout much  
28 of the park lands. For those visitors who enjoy solitude, natural quiet, and some challenge  
29 during their visit to the park, this alternative would generally result in long term, minor,  
30 and beneficial impacts. In addition, those visitors who enjoy connecting to the park lands  
31 via stewardship and educational programs would also benefit from this alternative.  
32 However, for those visitors who prefer a wider range of activities and more support  
33 services to facilitate their visit, this alternative would have some long-term, minor,  
34 adverse impacts.

35 Some visitor facility improvements are proposed in this alternative for key locations  
36 throughout all three counties. These facilities would improve access to select sites, better  
37 connect sites within the park, and facilitate stewardship and education opportunities,  
38 resulting in long-term, moderate, beneficial impacts. For example, upper Fort Mason  
39 would serve as the primary portal for stewardship and participatory science activities with  
40 access to programs throughout the park, allowing these opportunities to be better  
41 marketed, coordinated, and facilitated. Alternative 2 also proposes the removal of some  
42 facilities. Equestrian facilities at Rancho Corral de Tierra would be removed or relocated  
43 further from coastal streams to allow for enhancement or restoration of the stream areas.  
44 While removal of facilities could have an adverse impact on the experience for some

1 visitors who have relied on those facilities, it could also be beneficial to others who want  
2 to immerse themselves in a more natural environment and participate in opportunities that  
3 are more challenging.

4 Most of the park’s current visitor activities would be maintained; however there may be  
5 more regulations and restrictions on access to better protect resources in this alternative.  
6 Further, visitor opportunities may be relocated or concentrated to reduce the “footprint”  
7 on park lands and create a more sustainable system of recreation facilities. Alternative 2  
8 also recognizes several sensitive resource areas, and accordingly requires limitations on  
9 visitor access to those areas. These restrictions and regulations could have a long-term,  
10 minor to moderate, adverse impact on some visitors in terms of visitor opportunities, with  
11 the greatest effect on local visitors who frequent these areas on a regular basis. Some of  
12 the areas with more substantial changes in visitor access and regulations include Slide  
13 Ranch, Fort Funston, Rancho Corral de Tierra, and the southern portion of Ocean Beach.

14 Visitor activities associated with immersion in and exploration of natural and cultural  
15 landscapes would be enhanced in this alternative, with plentiful opportunities for those  
16 who seek solitude, quiet, and contemplation. Trail connectivity and related improvements  
17 would allow a more diverse visitor population to enjoy trail experiences with less conflict  
18 and more focus on enjoying the setting. Scenic viewing would be enhanced in this  
19 alternative through the removal of some facilities and the addition of new overlooks.  
20 Maintaining low levels of development, removing some facilities, and restoring  
21 landscapes would provide what many members of the public identified as one of the most  
22 highly desired functions of the park: to act as a green retreat from the urban environment  
23 of San Francisco. These actions would have a long-term, minor to moderate, beneficial  
24 impact for visitors seeking these types of settings and opportunities.

25 Park staff and park partners would work towards more diverse, frequent, and better  
26 coordinated natural and cultural resource stewardship and restoration activities in this  
27 alternative. Stewardship programs would allow local residents to better understand and  
28 appreciate the natural settings within the park, and deepen participants’ commitment to  
29 long-term protection of its resources. Further, this alternative would include additional  
30 programming and interpretation regarding the park’s natural and cultural resources and  
31 related stories. These learning opportunities would be enhanced through the extensive  
32 trail system that would further highlight the park’s diverse ecosystems and rich cultural  
33 history, resulting in long-term, moderate, beneficial impacts.

34 Access to some areas would become more difficult by personal vehicle and may  
35 generally be more regulated; however, associated public transportation services and non-  
36 vehicular access options would be improved. Improved public transportation  
37 opportunities would help connect a larger audience to park sites, better connect visits  
38 between sites, and reduce use conflicts. Further, some of the improvements would allow  
39 for easier access to busy sites, reducing visitor frustration and improving the quality of  
40 park visits. These actions contribute to a long-term, moderate, beneficial impact. In  
41 alternative 2, if a slide impacts State Route 1 near Slide Ranch in Marin County, the  
42 National Park Service could encourage Caltran to stabilize and abandon this section of  
43 road. This action could inconvenience local residents and park visitors traveling along  
44 this route and would result in a long-term, moderate, adverse impact.

45 Visitor safety would increase due to several actions in this alternative, resulting in long-  
46 term, moderate beneficial impacts. If successful in promoting access improvements to

1 State Route 1 and Panoramic Highway, visitors would benefit from better wayfinding,  
2 safer overlooks for scenic viewing, and better separation between auto and bicycle use.  
3 Other safety improvements include enhancements to multimodal transportation options to  
4 ease use conflicts and road congestion during peak times. Finally, increased ranger  
5 presence throughout the park lands, particularly in San Mateo County, would improve  
6 response capabilities for park staff.

7 On Alcatraz Island, alternative 2 would highlight the concept of isolation on the island,  
8 which is a recurrent theme in the island's cultural and natural history. Visitors would  
9 have opportunities to experience first-hand the island's isolation, natural systems, and  
10 layers of history. Ecotourism, outdoor learning, and natural and cultural resource  
11 stewardship programs would be the focus of this alternative, deepening the visitor's  
12 understanding of these topics as they relate to the island. This would benefit those visitors  
13 with interest in these topics and would encourage all visitors to take away more than just  
14 the federal penitentiary story. The diversity of activities available on the island would be  
15 increased given the additional emphasis on increasing visitors' understanding of the  
16 natural resources on the island. This would include programming, stewardship, and  
17 related overnight opportunities that would be new options for visitors to the island. There  
18 would also be increased opportunities for wildlife and scenic viewing, and hiking around  
19 the perimeter of the island. Expanding the visitor opportunities could have a long-term,  
20 moderate, beneficial impact to the visitor experience.

21 It is likely these actions would appeal to a different audience than those who primarily  
22 visit the island for its historic resources. However, the emphasis on promoting the natural  
23 values of the island would also potentially increase the conflict between visitors and birds  
24 in core visitor use areas, resulting in a long-term, moderate, adverse impact on the visitor  
25 experience during the nesting season. Further, there has been public interest in accessing  
26 many of the closed buildings on the island; this alternative would increase visitor access  
27 to some while continuing to limit access to others. This would result in a long-term,  
28 minor, adverse impact.

29 This alternative proposes additional visitor access restrictions in the waters surrounding  
30 the island to protect coastal resources and seabird colonies. These regulations would have  
31 an adverse impact on some visitors who enjoy navigating the waters in this area (via  
32 private boats and harbor tours), and enjoy the views of the island from close-up, resulting  
33 in a long-term, minor, adverse impact to water-based recreation.

34 Preservation of the buildings and spaces where visitors would be allowed would result in  
35 greater levels of visitor safety. There may be additional conflicts associated with visitors  
36 and birds, but it is unlikely that these conflicts would result in any significant concerns  
37 related to visitors' health and safety.

38 **Conclusion**

39 The actions proposed in alternative 2 for Golden Gate National Recreation Area would  
40 result in long term, minor to moderate, beneficial impacts to the visitor experience. The  
41 visitor experience would be improved regarding the depth and content of educational  
42 programming, interpretation, and resource stewardship; along with the preservation and  
43 promotion of visitor activities focused on immersion in the natural and cultural settings  
44 unique to the park. Visitors would gain a better understanding of park resources and  
45 values. However, the regulation and restrictions on some visitor activities and access to

1 some areas might not encourage as much connection to the diverse local and regional  
2 population, and may have a long-term, moderate, adverse impact on repeat visitors who  
3 have a long-standing attachment to certain locations or activities that may be regulated or  
4 restricted.

5 On Alcatraz Island, alternative 2 would result in long-term, minor to moderate, beneficial  
6 impacts to the visitor experience given the actions that would increase understanding and  
7 appreciation of the island's important role in the marine ecosystem and related activities  
8 and programming. However, there would be long-term, moderate, adverse impacts to the  
9 visitor experience in this alternative due to the increased interaction and related conflicts  
10 between visitors and birds during the nesting season, and the restricted access to desired  
11 locations and structures on the island.

12

### 13 **Alternative 3: Focusing on National Treasures (The NPS preferred** 14 **alternative for Alcatraz Island)**

15 Alternative 3 proposes a visitor experience that is focused on the nationally significant  
16 sites and resources found throughout the park. Visitors would have a diversity of  
17 recreational and educational opportunities centered on the park's iconic sights, structures,  
18 and stories. There would be many opportunities for first-hand learning. Visitors would  
19 have the opportunity to immerse themselves in a historic setting, and participate in  
20 stewardship activities at key sites. The natural and cultural resources would be preserved  
21 to their highest level of quality, providing the best opportunity for visitors to understand  
22 and forge a connection with the resources and values of the park, as well as the larger  
23 national park system. Since the large expanse of undeveloped open space is one of the  
24 park's fundamental resources and values, the park would still provide many opportunities  
25 for those visitors who enjoy solitude, natural quiet, and some challenge during their visit.

26 Much of the visitor facility improvements in this alternative focus on rehabilitation of and  
27 upgrades to existing facilities that would support visitor understanding and access to key  
28 sites throughout the park. In Marin County, one of the most substantial differences in this  
29 alternative occurs in the area within and around Forts Barry and Cronkhite where the  
30 structures and landscapes would be restored to showcase the stories of military history  
31 and the transition from Army post to national park. To facilitate visitors' visits and  
32 understanding of this part of the park, a new visitor center would replace the housing  
33 infrastructure at the Capehart housing area. In addition, trails and roads in the area would  
34 be managed to connect visitors to the important historic and natural resource stories.

35 In San Francisco County, facility improvements include dedication of more structures at  
36 Fort Mason to visitor services,; the area would serve as the primary visitor entrance to the  
37 park with improved orientation and educational services. In San Mateo County, the  
38 National Park Service would work in cooperation with surrounding cities, the county, and  
39 Caltrans to encourage a more unifying character to the State Route 1 road corridor, along  
40 with a coordinated approach to visitor access and services. This would include  
41 transitioning the Shelldance Nursery facilities to visitor support facilities, with improved  
42 access to Highway 1, providing a convenient and accessible location for coordinated  
43 information services at the entrance to San Mateo County. Further, facility improvements  
44 would include the identification and development of recreation portals with trailheads  
45 and other visitor support services in Rancho Corral de Tierra, which would better support

1 access to a diversity of recreation opportunities, and help connect visitors with the  
2 information and services they need for a visit to this area of the park. The above actions  
3 would expand visitor opportunities and access to park resources and therefore contribute  
4 to a long-term, minor to moderate, beneficial impact to the park visitor.

5 Most of the existing recreation activities within the park would continue and be better  
6 supported through the facilities and access improvements already mentioned. Activities  
7 that would be expanded in this alternative include educational and stewardship  
8 opportunities at key park sites. These activities would allow the park staff to engage a  
9 wider audience and better demonstrate the park's fundamental resources and values,  
10 particularly its coastal military defense structures and stories. Connected and improved  
11 trails are also proposed in this alternative, along with more multiuse trails. The expansion  
12 and enhancement of the park's already extensive trail system would allow for greater  
13 opportunities to explore the park. Given the importance of trail opportunities to the  
14 public, these improvements would result in a long-term, moderate, beneficial impact. In  
15 addition, this alternative provides for an increase in the diversity of overnight  
16 opportunities, including primitive camping. These actions would increase the diversity of  
17 recreational opportunities and were supported by the public during scoping for this plan.  
18 Additional public equestrian programs and expanded equestrian trailhead facilities are  
19 proposed in San Mateo County, allowing equestrian uses to expand in the park, which  
20 was encouraged by some members of the public. The above actions would result in long-  
21 term, moderate, beneficial impacts.

22 Alternative 3 designates a few sensitive resource areas, and accordingly requires  
23 limitations on visitor access to those areas. In addition, this alternative proposes changes  
24 in the access and regulations for some key visitor use sites including Slide Ranch, Fort  
25 Funston, and the southern portion of Ocean Beach. These restrictions and regulations  
26 could have long-term, moderate, adverse, impacts on some visitors in terms of visitor  
27 opportunities, with the greatest effect on visitors who frequent these areas on a regular  
28 basis.

29 As already noted, this alternative includes proposals for enhanced understanding and  
30 exposure to the park's most important resources and stories. In particular, the military  
31 history and coastal fortifications at several sites along the coast and bay would be  
32 highlighted using the latest technological and multimedia advances and associated  
33 programming, giving visitors a deeper understanding of these nationally significant  
34 structures. Stewardship centers located in the park would enhance community pride and  
35 commitment in the park, and serve as places to teach the next generation of park  
36 stewards, resulting in long-term, moderate, beneficial impacts.

37 Access and orientation to the park would generally be improved, resulting in a long-term,  
38 moderate, beneficial impact. In particular, there would be an increased focus on linking  
39 key park sites via multiple modes of transportation, which would help connect a larger  
40 audience to park sites, better connect visits between sites, and reduce use conflicts. Trail  
41 improvements and connections would be a primary element of this alternative. Trail  
42 access improvements allow visitors more convenient and safe access to and between  
43 areas within the park as well as surrounding communities and other public lands. Further,  
44 this alternative proposes visitor hubs or portals, which would provide centralized  
45 orientation and services, improving visitors' ability to access sites throughout the park.

1 Visitor safety would be better due to several actions in this alternative. If successful in  
2 promoting access improvements to State Route 1 and Panoramic Highway, visitors would  
3 benefit from better wayfinding, safer overlooks for scenic viewing, and more separation  
4 between auto and bicycle use. Other safety improvements include enhancements to  
5 multimodal transportation options to ease use conflicts and road congestion during peak  
6 times. Finally, increased ranger presence throughout the park, particularly in San  
7 Mateo County, would improve response capabilities for park staff. However, the addition  
8 of new multiuse trails may cause a small amount of increased conflicts for some visitors.  
9 Overall, these safety changes, including access improvements, would provide a long-  
10 term, minor, beneficial impact.

11 Alternative 3 is the NPS preferred alternative for managing the resources and visitors on  
12 Alcatraz Island. This alternative would immerse visitors extensively in all of the island's  
13 historic periods, providing the best opportunity for visitors to understand and forge a  
14 connection with the resources and values of the island. The visitor's immersion in the  
15 history of Alcatraz Island could be extended to the historic embarkation site at Fort  
16 Mason's Pier 4. Visitors would have access to restored portions of historic structures that  
17 would better tell the story of the various aspects of life on "the Rock." Other special  
18 events, classes, and stewardship opportunities focused around the resources and stories of  
19 the island's period of significance would also increase the diversity of opportunities  
20 available to visitors. Visitors to Alcatraz Island already highly value the interpretive and  
21 educational programming of the island's historic resources, and this alternative would  
22 expand those opportunities to include more immersive experiences, a setting that is more  
23 reflective of the period of significance, and more direct access to the island's historic  
24 structures; this would result in a long-term, moderate, beneficial impact. This increase in  
25 options would likely appeal to a wider audience of participants and would also likely  
26 encourage an increase in repeat visitation.

27 This alternative proposes additional visitor access restrictions in the waters surrounding  
28 the island to replicate the historic no-trespass zone as well as to protect coastal resources  
29 and seabird colonies. These regulations would have an adverse impact on some visitors  
30 who enjoy navigating the waters in this area (via private boats and harbor tours), and  
31 enjoying the close-up views of the island from the water, resulting in long-term, minor,  
32 adverse impacts to water-based recreation.

33 Visitor understanding, education, and interpretation would be greatly enhanced in this  
34 alternative, given the higher level of preservation of the buildings, increased access to the  
35 structures and surrounding landscapes, and more diverse programming options. In  
36 addition, stewardship activities would provide increased visitors understanding and  
37 appreciation of the island's natural and cultural resources. Visitor safety would benefit  
38 through the preservation of the buildings as well as through increased bird management.

### 39 **Conclusion**

40 The actions proposed in alternative 3 for Golden Gate National Recreation Area would  
41 result in long term, moderate, beneficial impacts to the visitor experience. The most  
42 significant beneficial effect of this alternative would be the increased opportunities for  
43 visitors to understand, appreciate, and take part in the preservation of the park's most  
44 fundamental resources and values. In addition, this alternative would improve access and  
45 connectivity to and between key sites in the park, facilitate the visitor experience, and  
46 reduce use conflicts and visitor frustration. However, this alternative would change

1 visitor opportunities at a few existing use areas, leading to long-term, minor to moderate,  
2 adverse impacts on visitors who currently frequent these locations for various recreation  
3 activities.

4 Alternative 3 is the NPS preferred alternative for managing Alcatraz Island and would  
5 result in long term, moderate to major, beneficial impacts to the visitor experience. This  
6 is primarily due to the opportunities to immerse oneself in the historic periods of Alcatraz  
7 Island, have access to more of the island's settings and buildings in improved condition,  
8 and to participate in stewardship and education activities supported by expanded  
9 overnight programs and facilities. The island's history, particularly as related to the  
10 military and the federal penitentiary, is of primary interest to most visitors to the island.  
11 This alternative would bring the experience alive, illustrating more aspects of life on "the  
12 Rock" for a greater diversity of visitors. The number of visitors who could be  
13 accommodated on the island may also be slightly increased upon implementation of this  
14 alternative given the increased number of opportunities and the ability to better disperse  
15 visitors; this would result in long-term, minor to moderate, beneficial impacts on visitor  
16 use and experience.

17

18

## 19 **SOCIAL AND ECONOMIC ENVIRONMENT**

### 20 **Introduction**

21 The analysis of impacts to the social and economic environment of the gateway  
22 communities and overall Bay Area that surrounds Golden Gate National Recreation Area  
23 and Muir Woods National Monument is based on the topic research and professional  
24 judgment of planners who have experience with similar plans. To help identify the  
25 impacts of the various alternatives, the social and economic environment is described by  
26 three primary contributing factors: quality of life, population demographics, and local  
27 economy. These three factors reflect the three main areas of discussion in the Social and  
28 Economic Affected Environment section. The impact analyses in this section primarily  
29 focus on the quality of life and local economy topics since the park management actions  
30 in the various alternatives may affect these attributes of the social and economic  
31 environment. Also, in terms of geographic scope, the impact analyses in this section  
32 primarily focus on the social and economic conditions of the local gateway communities  
33 around the park and monument and the three adjacent counties of Marin, San Francisco,  
34 and San Mateo since this is where the majority of impacts would be most noticeable.

35 In the discussion of impacts to the social and economic environment, an analysis section  
36 and conclusion section are included for each alternative for Golden Gate National  
37 Recreation Area, including Alcatraz Island. The impacts from actions associated with the  
38 Muir Woods National Monument are discussed later in this chapter.

39

1 **No Action Alternative**

2 **Analysis**

3 By continuing to provide and potentially expanding open space preservation, outdoor  
4 recreation opportunities, natural and cultural resource preservation, interpretation,  
5 education, and stewardship opportunities the park would continue to strengthen its  
6 contribution to the Bay Area's high quality of life. As detailed in the Social and  
7 Economic Affected Environment section, public access to parklands is integral in  
8 sustaining a high quality of life in a highly urbanized region such as the Bay Area. The  
9 Golden Gate National Recreation Area's location at an urban-wildland interface make it  
10 particularly important for physiological health (i.e., from exercise), psychological health,  
11 community-building, community identity, and landscape aesthetics (e.g., open space  
12 backdrop to a densely-populated urban area). Under the no-action alternative, the NPS  
13 would continue working cooperatively with other neighboring local governments and  
14 land managers to further enhance the area's quality of life by preserving a vast network  
15 of open lands in the Bay Area. In addition, with a few exceptions, existing education and  
16 stewardship opportunities for the residents would be maintained at the park, and possibly  
17 improved as financial and staffing resources become available. As other private land  
18 continues to be developed and urbanized into the future, Golden Gate National  
19 Recreation Area will become exponentially more valuable to the community and the  
20 quality of life of the residents. Its preservation would result in an impact that is long-  
21 term, moderate, and beneficial in the context of the local gateway communities and three  
22 adjacent counties.

23 In a general sense, the park's overall intrinsic contribution to the local economy of the  
24 gateway counties and the Bay Area would be maintained and/or enhanced by the no-  
25 action alternative. By continuing to provide open space preservation, numerous recreation  
26 opportunities, facilities, and park settings for organized group activities, the park would  
27 continue to help make the Bay Area a place for companies and talented professionals to  
28 call home. In other words, the Bay Area's quality of life becomes a draw for business and  
29 economic growth with the help from places like Golden Gate National Recreation Area.  
30 The no-action alternative will sustain and enhance this economic value to the Bay Area.  
31 The economic growth and success of Silicon Valley is a prime example of how economic  
32 growth can feed off of a quality business location and natural landscape backdrop. This  
33 results in an impact that would be long-term, moderate, and beneficial in the context of  
34 the local gateway communities and three adjacent counties.

35 In terms of direct effects on the local economy, the no-action alternative would generally  
36 maintain the current levels of NPS jobs; concession operations; NPS operations spending  
37 and contract work; and park partner activities. There would be occasional site-specific or  
38 program-specific improvements. The value of these attributes to the local economy is  
39 discussed in the "Social and Economic Environment" section of Part 8. The overall value  
40 of the park's contribution to the local economy would continue to have significant  
41 positive effects on the local economy in the gateway communities and three adjacent  
42 counties. In addition, Alcatraz Island remains a major attraction that directly contributes  
43 to the tourism industry through increased length of stay in local accommodations,  
44 business opportunities related to the Alcatraz theme, bay tours, and other guided  
45 commercial opportunities. These commercial activities contribute to sustaining  
46 employment within the tourism industry. The continuation of the current management

1 direction would have a long-term, minor to moderate beneficial impacts on the gateway  
2 communities and adjacent three counties.

3 **Conclusion**

4 The overall impact to the social and economic environment from the no-action alternative  
5 could be long-term, minor to moderate, and beneficial for the local gateway communities  
6 and the three adjacent counties. The beneficial impacts would result from maintaining the  
7 park's contribution to the local economy and quality of life, existing education and  
8 stewardship programs, as well as maintaining existing relationships with other local  
9 governments and land managers.

10

11 **Alternative 1: Connecting People with the Parks**

12 (This is the NPS preferred alternative for park sites in Marin, San Francisco, and San  
13 Mateo counties)

14 **Analysis**

15 Alternative 1 would maintain the inherent quality of life and economic values of the  
16 Golden Gate National Recreation Area, as noted in the analysis for the no-action  
17 alternative. It would continue to provide open space preservation, outdoor recreation  
18 opportunities, natural and cultural resource preservation, as well as education and  
19 stewardship opportunities. The park's location at an urban-wildland interface make it  
20 particularly important for physiological health, psychological health, community-  
21 building, community identity, and landscape aesthetics, which all contribute to quality of  
22 life in a highly urbanized region. This value will only increase as more private land in the  
23 region develops in the future. As in the no-action alternative, its continued preservation  
24 would result in an impact to quality of life that is long-term, moderate, and beneficial in  
25 the context of the local gateway communities and three adjacent counties. Also,  
26 alternative 1 would maintain the park's overall intrinsic contribution to the local  
27 economy, as mentioned in the no-action alternative analysis. Given its significant  
28 contribution to quality of life at the urban-wildland interface of a large urban area, the  
29 park would continue to help attract businesses and talented professionals to the Bay Area.  
30 This results in an impact that would be long-term, moderate, and beneficial in the context  
31 of the local gateway communities and three adjacent counties.

32 In addition to continuing these attributes of the no-action alternative, alternative 1 would  
33 guide park staff to make stronger efforts at reaching out to the diverse populations of the  
34 Bay Area and welcoming them to Golden Gate National Recreation Area. Actions would  
35 include community outreach programs, adding group facilities, new park programs, and  
36 establishing new welcome/orientation facilities in key locations in the park. These  
37 outreach and welcoming efforts would include collaborative community building and  
38 would help foster a new relationship with Bay Area residents. A community that  
39 develops a strong relationship with its parks can contribute to quality of life of its  
40 residents. Under alternative 1, new and/or improved welcoming and orientation centers,  
41 some in collaboration with local communities, would be provided at multiple locations.  
42 New and varied interpretive, educational, and stewardship programs would evolve to  
43 better connect diverse communities with the park's resources. These facility and program  
44 enhancements under alternative 1 would provide new opportunities for many school

1 groups and residents throughout the Bay Area. Under alternative 1, the National Park  
2 Service would also work closely with local communities to improve accessibility to the  
3 park sites by improving the public transit network and connecting the park and  
4 communities with numerous trails. Collectively, these actions would contribute to the  
5 quality of life for Bay Area residents. This could result in an impact that is long-term,  
6 minor to moderate, and beneficial to the local gateway communities and three adjacent  
7 counties.

8 With the exception of the minor relocation of one small equestrian facility in Marin  
9 County (relocating the facility at the Golden Gate Dairy to the Lower Redwood Creek  
10 area), alternative 1 would support the continuation of all other existing equestrian  
11 facilities in the park. Some minor expansions may also take place at the facility in  
12 Tennessee Valley, while the existing equestrian facilities at Picardo Ranch and Rancho  
13 Corral de Tierra in San Mateo County will be maintained and enhanced with more  
14 programming under alternative 1. These facilities are important recreational assets to  
15 many members of the surrounding communities and contribute to the quality of life of  
16 these residents. Sustaining and/or expanding these equestrian facilities could yield  
17 impacts that are long-term, minor to moderate and beneficial for the local gateway  
18 communities and the three adjacent counties. Conversely, the removal and relocation of  
19 the small equestrian facility at Golden Gate Dairy may have a negative effect on some  
20 residents, which may result in an impact that is long-term, negligible to minor, and  
21 adverse in the context of local gateway communities.

22 Alternative 1 includes a variety of actions that would help foster or improve relationships  
23 between the National Park Service and local communities, park partners, and other  
24 adjacent land management agencies. These actions would include community outreach  
25 and education programs that help introduce the community to the national park system.  
26 Alternative 1 places an emphasis on preserving and enhancing opportunities for local  
27 community residents to experience nature, learn local history, and enjoy open lands with  
28 other community residents. By providing opportunities and a venue for community  
29 interaction, this would enhance the quality of life for residents of the gateway counties.  
30 This alternative would also emphasize building community connections by collaborating  
31 with local governments, park partners, and other local land managers via multi-agency  
32 projects. Community-building efforts such as these could result in impacts that are long-  
33 term, moderate, and beneficial for local gateway communities. Impacts to the three  
34 adjacent counties could be long-term, minor to moderate, and beneficial.

35 A key component of alternative 1 is providing new and upgraded visitor facilities that  
36 would complement the park staff's efforts at welcoming and orienting people to the park.  
37 Given this priority, alternative 1 would include many new and expanded facilities  
38 throughout the park in all three gateway counties. The projects would include the  
39 construction, relocation, redevelopment, and/or restoration of visitor centers, historic  
40 structures, restrooms, showers, picnic areas, parking lots, warming huts, interpretive  
41 exhibits, roadway viewpoints, campsites, trailheads, and other modest overnight  
42 accommodations. Alcatraz Island would also have numerous historic structure restoration  
43 projects. Many of these projects would generate new work for local and regional  
44 companies in the Bay Area, including engineering consultants, construction contractors,  
45 and environmental consultants. These projects would not only support these businesses  
46 and their employees directly, but the economic multiplier effect would circulate this

1 contract money through the local economy. The collective result of these actions would  
2 be an economic contribution that is short-term, minor to moderate, and beneficial for  
3 local gateway communities and three adjacent counties.

4 In addition to the economic contributions as described in the no-action alternative,  
5 Alternative 1 would also create new and expanded economic opportunities for some park  
6 partners and local organizations by providing expanded visitor programs, amenities, and  
7 facilities that could help grow these organizations and partners. This could empower or  
8 leverage partners to provide more educational, stewardship programming, and visitor  
9 service opportunities. These types of collaborations with park partners and other local  
10 agencies would result in an economic impact that is long term, minor to moderate, and  
11 beneficial for local gateway communities and the three adjacent counties.

12 Lastly, to meet the “Connecting People with the Parks” objective of alternative 1, several  
13 park facilities and amenities would be upgraded to provide more guest services to better-  
14 accommodate the visitors (e.g., visitor orientation, food services, meeting/program space,  
15 rustic cabins, hostels, camping, and special event or conference hosting). These new or  
16 expanded services could generate additional employment for park partners, concessions,  
17 and local businesses. In addition, the local economy would benefit from the various  
18 equestrian facilities being retained under alternative 1, as the equestrian facilities generate  
19 jobs and other local business. The visitor service improvements, and associated jobs,  
20 under alternative 1 would occur at several sites throughout all three gateway counties.  
21 The creation of jobs is important for economic growth, as it provides sustained direct and  
22 secondary spending (i.e., economic multiplier effect) in local spending in the community.  
23 Thus, these proposed visitor services in alternative 1 would have an impact that is long-  
24 term, minor, and beneficial in the context of the local gateway communities and three  
25 adjacent counties.

## 26 **Conclusion**

27 The short-term and long-term beneficial impacts of alternative 1 on the social and  
28 economic environment of the local gateway communities and the three adjacent counties  
29 could range from minor to moderate. These beneficial impacts to quality of life and local  
30 economy could result from: (1) a significant increase in public outreach programs, visitor  
31 orientation, and educational or stewardship opportunities, (2) significant improvements in  
32 public accessibility, transportation options, and community trail connections, (3)  
33 sustaining and/or enhancing the existing equestrian facilities, (4) incorporating several  
34 community-building components, (5) economic growth via many new engineering and  
35 construction contract work for numerous facility improvement projects throughout the  
36 three gateway counties, (6) several new opportunities for park partners to use park  
37 facilities and expand their operations, and (7) a substantial amount of job creation from  
38 the proposed increase in visitor services throughout the park.

39

## 40 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

### 41 **Analysis**

42 Alternative 2 would maintain the inherent quality of life and economic values of the  
43 Golden Gate National Recreation Area, as noted in the analysis for the no-action  
44 alternative. It would continue to provide open space preservation, outdoor recreation

1 opportunities, natural and cultural resource preservation, as well as education and  
2 stewardship opportunities. The park's location at an urban-wildland interface make it  
3 particularly important for physiological health, psychological health, community-  
4 building, community identity, and landscape aesthetics, which all contribute to quality of  
5 life in a highly urbanized region. This value will only increase as more private land in the  
6 region develops in the future. As in the no-action alternative, its continued preservation  
7 would result in an impact to quality of life that is long-term, moderate, and beneficial in  
8 the context of the local gateway communities and three adjacent counties. Also,  
9 alternative 2 would maintain the park's overall intrinsic contribution to the local  
10 economy, as mentioned in the no-action alternative analysis. Given its significant  
11 contribution to quality of life at the urban-wildland interface of a large urban area, the  
12 park would continue to help attract businesses and talented professionals to the Bay Area.  
13 This results in an impact that would be long-term, moderate, and beneficial in the context  
14 of the local gateway communities and three adjacent counties.

15 In addition to continuing these attributes of the no-action alternative, alternative 2 would  
16 emphasize a new priority of "preserving and enjoying coastal ecosystems." The park's  
17 goals would focus on educating the public on the importance of the natural resources  
18 throughout the Bay Area coastal environment and the importance of being good stewards  
19 to these unique resources. Under alternative 2, the National Park Service would increase  
20 educational and stewardship opportunities for local residents and school groups in the  
21 three gateway counties by improving facilities and enhancing education and stewardship  
22 programs at several park sites throughout the region. Raising the level of community  
23 awareness of ecological issues and active stewardship can improve the quality of life for  
24 local residents by getting them more concerned and "invested" in the park and its unique  
25 resources, which could yield a stronger sense of community value and healthy living. In  
26 turn, the open lands and unique resources would stand a better chance at being preserved  
27 into the future if the community residents become more aware and active in stewardship.  
28 In other words, by helping to preserve the resources, the residents are, in effect, also  
29 helping to preserve the qualities that make living the Bay Area wonderful (since much of  
30 the their quality of life relies on the open, preserved lands and resources around them).  
31 Alternative 2 would also enhance community connectivity by guiding the National Park  
32 Service to work with local communities and land managers to pursue improved trail  
33 accessibility and public transit to some park sites. Providing more access opportunities  
34 would allow local residents to access more park programs and amenities, as well as open  
35 areas for exercise and community gathering. Collectively, these actions would contribute  
36 to the quality of life for area residents, resulting in long-term, minor to moderate, and  
37 beneficial impacts for the local gateway communities and the three adjacent counties.

38 However, under alternative 2, converting Montara Lighthouse from a hostel to a facility  
39 dedicated to education and stewardship would have a long-term, minor, adverse impact to  
40 the hostel facility operation and its users. Meanwhile, while the equestrian facilities in  
41 Marin County would be more or less maintained as is, the four equestrian facilities at  
42 Rancho Corral de Tierra in San Mateo County could be removed and/or relocated in an  
43 effort to protect resources near the streams. Similarly, the environmental and farm  
44 education centers at Slide Ranch would be relocated to a more sustainable and  
45 geologically stable area. Although the education programs would be continued in the new  
46 location, the value of the facility to local residents and school children may be negatively  
47 affected due to the location change, especially if relocated away from the Pacific Ocean.

1 These facilities are important assets to many members of the surrounding communities  
2 and contribute to their quality of life. Therefore, if these opportunities are removed, a  
3 long-term, minor to moderate, and adverse impact could result in the context of the local  
4 gateway communities and three adjacent counties.

5 Alternative 2 includes several actions that would help the National Park Service develop  
6 relationships with local communities and local land management agencies of the Bay  
7 Area. Many of these actions are focused on cooperating with other land managers to  
8 jointly solve and address long-term natural resource issues. Other actions are aimed at  
9 creating relationships with gateway county communities to establish a network of natural  
10 resource stewardship programs in the park. Thus, these actions are in line with  
11 alternative 2's dual emphasis of protecting the ecological resources and educating the  
12 community on these resources (and how to be good stewards). In addition, when a  
13 diverse population of residents and agencies work together toward a common goal, such  
14 as climate change awareness, coastal preservation, or land stewardship, an evolving sense  
15 of environmental ethic and community livability develops. This further contributes to the  
16 community's quality of life. Actions like these can result in impacts that are long-term,  
17 moderate, and beneficial for local gateway communities. Impacts to the three adjacent  
18 counties could be long-term, minor to moderate, and beneficial.

19 Under alternative 2, several natural resources restoration projects would contribute to the  
20 local economy in the three gateway counties, and possibly beyond. The projects would  
21 include restoration of habitats, stream corridors, marine ecosystems, and removal of  
22 invasive species over large areas of the park. In addition, alternative 2 would improve  
23 some park facilities and infrastructure in order to continue these visitor services while  
24 working to minimize impacts on the natural resources of the park. Many of these projects  
25 would generate new work for local and regional companies in the Bay Area, including  
26 engineering consultants, construction contractors, and environmental consultants. These  
27 projects would not only support these businesses and their employees directly, but the  
28 economic multiplier effect would circulate this contract money through the local  
29 economy. These actions could result in impacts that are short-term, minor, and beneficial  
30 for local gateway communities and three adjacent counties.

31 Alternative 2 would have some beneficial impacts on the park partners and other  
32 community organizations in the area. The most notable new impacts on park partners  
33 under alternative 2 would be at Alcatraz Island and in the City and County of San  
34 Francisco. Such collaborations between the park and partners would increase  
35 opportunities for the partners to grow their programs and organizations. This would also  
36 strengthen working relationships with the communities and raise community awareness  
37 of climate change and coastal preservation. These actions could result in impacts that are  
38 long-term, minor, and beneficial for local gateway communities and three adjacent  
39 counties.

40 However, the removal of the facilities at Slide Ranch would have negative economic  
41 effects on the park partner that currently manages Slide Ranch. Also, alternative 2 would  
42 include the removal of work force housing units at Capehart Housing Area in Marin  
43 County to allow for ecological restoration. This would affect park partners who utilize  
44 these facilities. The above two impacts to the local economy would be long-term, minor  
45 and adverse in the context of the local gateway communities. Impacts to the three  
46 adjacent counties would be negligible.

1 Alternative 2 includes a proposal that, in event of catastrophic coastal landslide on U.S.  
2 State Route 1 (south of Stinson Beach) in Marin County, the National Park Service would  
3 recommend to Caltrans that it abandon this segment of road. However, since the highway  
4 is not under the jurisdiction of the National Park Service, the decision and environmental  
5 analysis regarding any State Route 1 reroute or segment closure would be administered  
6 by Caltrans. If this would occur, the closure of this segment of State Route 1 would alter  
7 the transportation system for local communities (and regionally, for Caltrans), which  
8 would be inconvenient to local residents. This closure could have an impact that is long-  
9 term, moderate, and adverse to the local gateway communities. Impacts to the three  
10 adjacent counties could be long-term, minor, and adverse.

11 On Alcatraz Island, alternative 2 would include visitor orientation, some food services,  
12 office/classroom space, day use programming facilities, and hostel accommodations for  
13 visitors and volunteer stewards. These new and expanded services could generate  
14 additional jobs for NPS employees and/or private concessioners and result in long-term,  
15 minor, beneficial impacts to the local gateway communities and negligible impacts to the  
16 three adjacent counties.

17 Overall, this alternative does not appreciably add new levels of visitor services and  
18 facilities, and emphasizes a more primitive visitor experience. The above actions would  
19 result in negligible increase in park-related employment opportunities. Therefore,  
20 alternative 2 could have a minimal added contribution to the local economy resulting in  
21 long-term, minor, beneficial impact to the gateway communities and negligible impacts  
22 to the three counties adjacent counties.

23

## 24 **Conclusion**

25 In summary, the short-term and long-term beneficial impacts of alternative 2 on the local  
26 gateway communities and the three adjacent counties would range from minor to  
27 moderate. Collectively, the beneficial impacts to quality of life and local economy could  
28 result from (1) some site-specific increase in public outreach programs and visitor  
29 orientation, (2) a significant increase in educational and stewardship opportunities, (3)  
30 some additional community trail connections, (4) NPS collaborations with several other  
31 community governments and land management agencies, (5) some new engineering and  
32 construction contract work for several restoration projects throughout the three gateway  
33 counties, (6) a limited number of new park partners opportunities, and (7) a limited  
34 amount of job creation from the proposed increase in visitor services throughout the park.

35 The long-term adverse impacts to the social and economic conditions of the local  
36 gateway communities and three adjacent counties could range from minor to moderate.  
37 The adverse impacts from alternative 2 could result from (1) a possible reduction in NPS  
38 and concession jobs at certain park sites due to area closures and some facility removal,  
39 (2) a possible reduction in opportunities for a limited number of park partners, (3) the  
40 recommended closure of a segment of State Route 1 (though Caltrans has jurisdiction and  
41 decision authority), and (4) removing or relocating equestrian facilities (at Rancho Corral  
42 de Tierra) and an environmental and farm education facility (at Slide Ranch).

43

1 **Alternative 3: Focusing on National Treasures (the NPS Preferred**  
2 **Alternative for Alcatraz Island)**

3 ***Analysis***

4 Alternative 3 would maintain the inherent quality of life and economic values of the  
5 Golden Gate National Recreation Area, as noted in the analysis for the no-action  
6 alternative. It would continue to provide open space preservation, outdoor recreation  
7 opportunities, natural and cultural resource preservation, as well as education and  
8 stewardship opportunities. The park's location at an urban-wildland interface make it  
9 particularly important for physiological health, psychological health, community-  
10 building, community identity, and landscape aesthetics, which all contribute to quality of  
11 life in a highly urbanized region. This value will only increase as more private land in the  
12 region develops in the future. As in the no-action alternative, its continued preservation  
13 would result in an impact to quality of life that is long-term, moderate, and beneficial in  
14 the context of the local gateway communities and three adjacent counties. Also,  
15 alternative 3 would maintain the park's overall intrinsic contribution to the local  
16 economy, as mentioned in the no-action alternative analysis. Given its significant  
17 contribution to quality of life at the urban-wildland interface of a large urban area, the  
18 park would continue to help attract businesses and talented professionals to the Bay Area.  
19 This results in an impact that would be long-term, moderate, and beneficial in the context  
20 of the local gateway communities and three adjacent counties.

21 In addition to continuing these attributes of the no-action alternative, alternative 3 would  
22 guide the expansion and/or enhancement of several park site facilities and services in a  
23 way that offers improved information and orientation to the National Park Service and to  
24 Golden Gate National Recreation Area. By providing improved orientation services, new  
25 visitor welcoming centers, and an understanding of park-related opportunities to the  
26 diverse populations via new facilities and programs, the National Park Service could  
27 improve the quality of life for many residents of the area. In addition, compared to the  
28 no-action alternative, alternative 3 includes a substantial increase in educational and  
29 stewardship opportunities for local residents and school groups at several park sites. This  
30 alternative focuses on education and stewardship of both ecological education and  
31 historic and cultural sites. By offering local residents education about the ecological and  
32 historic significance and national uniqueness of the many sites around them, the NPS  
33 could generate community interest in resource stewardship of these sites, as well as  
34 provide the residents with a comprehensive understanding of the Bay Area history. Also,  
35 under alternative 3, the National Park Service would improve a park-wide expansion of  
36 trail connections to adjacent community parks and trail networks by collaborating with  
37 many local governments. These trail connections should provide community residents  
38 with several additional ways to access Golden Gate National Recreation Area park sites  
39 to benefit from park programs and amenities. Collectively, these facility enhancements  
40 and program improvements could improve the quality of life for local residents. This  
41 would result in an impact that is long-term, minor to moderate, and beneficial in the  
42 context of the local gateway communities and three adjacent counties.

43 Also, all existing equestrian facilities in the park would be maintained and enhanced with  
44 additional programming. These equestrian facilities San Mateo and Marin counties would  
45 continue to be important assets to many residents of the surrounding communities by  
46 contributing to their quality of life. The maintenance or enhancement of the existing

1 equestrian facilities could yield impacts that are long-term, minor, and beneficial for the  
2 local gateway communities and the three adjacent counties.

3 Alternative 3 includes several actions that would help the National Park Service develop  
4 relationships with local communities and local land management agencies of the Bay  
5 Area. The aim of these cooperative efforts would be to educate the Bay Area community  
6 on the national significance and uniqueness of the significant park sites (both in the park  
7 and on other public lands in the area). This heightened public awareness of the history  
8 and national significance of the many park sites in all three gateway counties would  
9 likely generate a sense of community pride throughout the area. The cooperative efforts  
10 would also attempt to inform the local residents on how the “quilt” of undeveloped land  
11 has been preserved by the National Park Service, various land trusts, several local  
12 governments, and individuals. Understanding and awareness of a resource can lead to  
13 community appreciation, awareness, and pride. These community values can contribute  
14 to the quality of life in the area. These community-building actions could result in  
15 impacts that are long-term, moderate, and beneficial for local gateway communities.  
16 Impacts to the three adjacent counties could be long-term, minor to moderate, and  
17 beneficial.

18 In terms of impacts to the local economy, alternative 3 would include major construction  
19 and restoration projects at park sites in all three gateway counties. The projects under  
20 alternative 3 would include the construction, relocation, redevelopment, and/or  
21 restoration of visitor centers, a stewardship/education center, several historic structures,  
22 restrooms, showers, picnic areas, parking lots, warming huts, interpretive exhibits,  
23 roadway pull-offs, rustic overnight accommodations, and natural landscapes. Many of  
24 these projects would generate new contract work for private firms in the Bay Area,  
25 including engineering consultants, construction contractors, and environmental  
26 consultants. These projects would not only support these contracting businesses and their  
27 employees directly, but the economic multiplier effect would circulate this contract  
28 money through the local economy. This phenomenon is explained in the Social and  
29 Economic Affected Environment section. The collective result of these contracted  
30 projects would be impacts that are short-term, minor to moderate, and beneficial for local  
31 gateway communities and three adjacent counties.

32 The proposed expansion of facilities and services at Alcatraz Island and other historic  
33 park sites would be some examples where park partners would benefit by NPS  
34 programming. Alternative 3 would provide expanded visitor programs, amenities, and  
35 facilities that could help grow these organizations and partners. This could empower or  
36 leverage partners to provide more educational, stewardship programming, and visitor  
37 service opportunities. This collaboration with park partners and other local organizations  
38 and agencies would result in impacts that are long-term, minor to moderate, and  
39 beneficial for local gateway communities and the three adjacent counties.

40 Alternative 3 would include the removal of some work force housing units at Capehart  
41 Housing Area in Marin County. These units would be replaced with a new visitor center.  
42 This could affect park partners who benefit from this housing unless it is provided  
43 elsewhere. This could result in an impact that is long-term, minor, and adverse in the  
44 context of local gateway communities. Impacts to the three adjacent counties would be  
45 negligible.

1 To fulfill the “Focusing on National Treasures” objective of alternative 3, park facilities  
2 and amenities would be restored and new park programs developed. These new or  
3 expanded services could generate additional jobs for NPS employees and/or private  
4 concessioners. These improved services would include: a new ferry service (Fort Mason  
5 to Alcatraz Island), improved visitor orientation and additional park programs, facilities  
6 and services and special event hosting. The creation of jobs is important for economic  
7 growth, as it provides sustained direct and secondary spending (i.e., multiplier effect) in  
8 local spending in the community. Thus, these proposed service expansion actions in  
9 alternative 3 would have an impact that is long-term, minor, and beneficial in the context  
10 of the local gateway communities. The impact in the context of the three adjacent  
11 counties would be negligible.

12 However, a possible negative impact to tour boat operators may occur with alternative 3.  
13 Although the visitor ferry access will be accommodated along the eastern shoreline, the  
14 historic no trespass zone around the Island will place limitations on tour boat operators  
15 that currently use the area, thus negatively affecting jobs and reducing economic  
16 multiplier effect of this tourism industry. This impact would be long-term, minor, and  
17 adverse to the local gateway communities.

### 18 **Conclusion**

19 The short-term and long-term beneficial impacts of alternative 3 on the social and  
20 economic environment of the local gateway communities and three adjacent counties  
21 could range from minor to moderate. The beneficial impacts to quality of life and  
22 economy could result from: (1) an increase in public outreach programs, visitor  
23 orientation, educational/stewardship opportunities and additional park programs, (2)  
24 improvements in public accessibility and community trail connections, (3) sustaining  
25 and/or enhancing existing equestrian facilities, (4) incorporating several community-  
26 building components, (5) a moderate amount of new engineering and construction  
27 contract work for numerous facility improvement and restoration projects, (6) limited  
28 new opportunities for park partners to use park facilities and expand their operations, and  
29 (7) a small amount of job creation from the proposed increase in visitor services at  
30 various park sites.

31 The adverse impacts could result from removal of work force housing units at Capehart  
32 Housing Area and possible restrictions on tour boat operators with implementing the  
33 historic no trespass zone around the Island. These impacts would be long-term, minor,  
34 and adverse to the local gateway communities.

35

36

### 37 **TRANSPORTATION**

38 This section describes the potential impacts to transportation at Golden Gate National  
39 Recreation Area park sites, including Alcatraz Island. The impacts are described for the  
40 counties of Marin, San Francisco, and San Mateo, and for Alcatraz Island.

41

42

1 **No Action Alternative**

2 **Analysis**

3 **Marin County**

4 (See figure for a map of areas discussed in this section.) In general, park areas in  
5 Marin have good pedestrian access, with some transit access to the Marin Headlands  
6 from San Francisco, and transit to other park sites via the West Marin Stagecoach and the  
7 Muir Woods Shuttle. Traffic congestion is a current and worsening problem in specific  
8 areas as noted below. In many cases traffic congestion is related to the rural roadway  
9 system with limited options and limited capacity. In rural Marin County, roadway  
10 capacity is unlikely to increase substantially.

11 In the southeast coastal area (Rodeo Valley / McCullough and Conzelman Road),  
12 existing planned road, trail, and transit projects are likely to improve access for visitors  
13 from all parts of the Bay Area as well as for park partners and reduce congestion at scenic  
14 overlooks. This area is served by transit on Sundays by MUNI bus service from San  
15 Francisco, with plans to expand service to Saturdays when funding is available. Traffic  
16 congestion would continue to be problematic during peak periods on roads connecting the  
17 Golden Gate Bridge with the Marin Headlands.

18 Along the southwest coast, (Muir Beach to Point Bonita), small roads serving Tennessee  
19 Valley, Muir Beach, and Muir Woods National Monument experience traffic congestion  
20 ranging from moderate on warm weekends to severe during peak periods. Neither  
21 Tennessee Valley nor Muir Beach is served by transit.

22 For a recent report, *Transportation Planning to Address Access and Congestion Issues –*  
23 *Muir Woods National Monument*, HDR, Inc. collected detailed data on seven weekday  
24 and weekend days from August 7 through August 16, 2009, along State Route 1 between  
25 Highway 101 and Muir Woods. Intersections experiencing Levels of Service (LOS) E or  
26 F on weekends were: Muir Woods Road at Panoramic Highway, State Route 1 at  
27 Panoramic Highway, State Route 1 at Tennessee Valley Road, State Route 1 at Pohono  
28 Street, and State Route 1 at Flamingo Road (unsignalized). The last three of these  
29 intersections saw LOS of E or F on weekdays as well.

30 In the Stinson area, access to Stinson Beach along State Route 1 and the Panoramic  
31 Highway is congested on good weather weekends, approaching gridlock at times on  
32 summer weekends. Stinson Beach is served by the West Marin Stagecoach.

33 The absence of any measures taken to improve transportation access to park sites in  
34 Marin (beyond those already planned) would have a long-term, minor to moderate  
35 adverse impact. While projects described in the Cumulative Impacts section would help  
36 mitigate transportation shortcomings in the Marin Headlands, other areas such as Muir  
37 Beach, Muir Woods National Monument, and Stinson Beach would all continue to  
38 experience long-term, moderate, adverse impacts on accessibility to visitors during peak  
39 periods.

40 **San Francisco**

41 San Francisco park areas are well served by transit, and well-connected with bicycle and  
42 pedestrian paths. Exceptions to this are Lands End, Sutro Heights, and Fort Miley, which  
43 are not well served by transit. Aside from any actions taken by the park, transit to the Fort  
44 Mason area is likely to be improved with the development of the Van Ness Bus Rapid

1 Transit system, and further enhanced with the proposed extension of the streetcar along  
2 the northern waterfront. Either of these measures would provide a long-term, moderate to  
3 major, beneficial impact in connectivity and availability of public transit to Fort Mason,  
4 Crissy Field, and the Presidio. In addition, the implementation of the *Northern*  
5 *Embarcadero Waterfront Plan*, which calls for bicycle lanes along Jefferson Street, will  
6 enhance transportation to Fort Mason. Independent of these external projects, the absence  
7 of further transportation measures would have a negligible impact on access to park lands  
8 in San Francisco.

9 ***San Mateo County***

10 Under the no-action alternative, access to park lands in San Mateo County would  
11 continue to be less accessible by all modes of transportation because of unimproved  
12 trailheads, limited parking, minimal signage, and very limited transit access. Visitation  
13 would continue to increase without additional transportation improvements to direct and  
14 accommodate new visitors, or to promote or provide non-auto access options. Informal or  
15 “social” trails would continue to be a significant way to enter parklands from adjacent  
16 neighborhoods; such trails, created by visitors, can lead to deterioration of natural  
17 resources. Accessibility for people with disabilities would continue to be limited. Auto  
18 access would improve in 2011 when the Devil’s Slide tunnels are opened. The County of  
19 San Mateo is required to install bus stops at the north and south pullouts near the tunnels;  
20 thus transit options in this particular area will improve, as well. Taking no further  
21 transportation improvement actions in San Mateo County would have a long-term, minor  
22 to moderate, adverse effect on access to these park sites, limiting access for many  
23 potential visitors.

24 ***Alcatraz Island***

25 In the no-action alternative, transportation to and within Alcatraz Island is limited to  
26 concession-operated water transport only; visitors board the ferry at Pier 33 on San  
27 Francisco’s Embarcadero, and leave the ferry at the Alcatraz arrival area. Ferry access  
28 would remain limited to the concessioner from Pier 33. Private boats cannot land on the  
29 island, although tour boats can come within the 1,000 foot perimeter which defines the  
30 area managed by the National Park Service.

31 ***Conclusion***

32 In Marin County, auto access to the most popular destinations is likely to continue to be  
33 difficult during peak periods, while bicycle and pedestrian access would improve,  
34 particularly in the Marin Headlands, because of projects outside of this planning process.  
35 Existing transit service would continue to enable access to park lands in Marin County  
36 for visitors without cars. The no-action alternative would have a long-term, minor to  
37 moderate to major, adverse impact on the access to most popular sites, and a long-term,  
38 minor, adverse effect on transportation in other areas, such as the Marin Headlands.

39 Park sites in San Francisco County in the north part of the city would see long-term,  
40 moderate, beneficial impact to access by land via improved transit implemented by the  
41 San Francisco Municipal Transportation Agency.

42 Park lands in San Mateo County would see a long-term minor improvement in access by  
43 land because of the Devil’s Slide project and accompanying transit stops. Taking no other  
44 transportation improvement actions in San Mateo would have a long-term, minor to  
45 moderate, adverse effect on access to these park sites.

1 The no-action alternative would have negligible impacts on transportation to or within  
2 Alcatraz.

3

#### 4 **Alternative 1: Connecting People with the Parks**

##### 5 ***Analysis***

6 Alternative 1 proposes to improve and expand connectivity and access to the park and  
7 monument through new and improved transit (land or water), bicycle, and pedestrian  
8 access to and within the park.

##### 9 ***Marin County***

10 In addition to the actions common to all alternatives, transportation-related measures in  
11 alternative 1 would improve public transportation and multi-modal access to all park sites  
12 in Marin County. Trails would be improved in all areas, increasing access and  
13 connectivity to sites.

14 In the southeast coastal area (Rodeo Valley / McCullough and Conzelman Road), safe  
15 pedestrian, bicycle, and motor vehicle access to overlooks and to interpretive and  
16 recreational opportunities would be provided. This would have a long-term, moderate,  
17 beneficial impact for visitors to this area. In the southwest coast area (*Muir Beach to*  
18 *Point Bonita*) a trailhead and transit stop would be added to the Golden Gate Dairy. The  
19 National Park Service would continue to work with Caltrans to improve the safety of  
20 State Route 1, including exploring regularly scheduled transit. Increased transit access  
21 would have a long-term, minor, beneficial impact for visitors in this area. Trails in the  
22 Lower Redwood Creek area would be improved to connect Muir Woods Road to the  
23 equestrian facilities at Santos Meadow. This may have a long-term, negligible effect on  
24 connections for visitors to this area.

25 The Diverse Opportunities zone in Rodeo Valley could include visitor amenities such as  
26 improved trailheads and accessible trails, as well as camping, picnicking, and orientation.  
27 These facilities would welcome visitors and give access to the adjacent natural areas.  
28 Improved and accessible trails would provide a long-term, minor, beneficial effect on  
29 circulation in this area. Housing for staff, interns and volunteers would be provided  
30 within and adjacent to this management zone. A transit stop would be added at Fort  
31 Barry. Increased transit access would have a long-term, minor, beneficial impact for park  
32 and park partner's employees as well as visitors in this area.

33 The National Park Service would collaborate with other agencies to develop a community  
34 trailhead in Marin City. This would have a long-term, moderate, beneficial effect for  
35 hikers accessing the Marin Headlands from Marin City.

36 In Tennessee Valley, in collaboration with Marin County and the local community, park  
37 managers would explore transit to the trailheads on peak season weekends, extend a  
38 multi-use trail to connect with the Mill Valley Bike Path (and the San Francisco Bay  
39 Trail), and manage traffic congestion. This may enable more people to visit on peak  
40 weekends, since currently, some visitors are unable to find parking, and leave without  
41 visiting the valley. These measures would have a long-term, moderate, beneficial impact  
42 for Tennessee Valley, affecting most visitors by reducing traffic congestion on peak  
43 weekends and providing other ways to access this popular location besides driving.

1 Some additional parking would be added at the trailhead in Oakwood Valley. This would  
2 have a long-term, minor, beneficial impact in reducing crowded parking conditions on  
3 Tennessee Valley Road.

4 At Stinson Beach and along the State Route 1/Panoramic park, the park staff would  
5 collaborate with Caltrans, Marin County, and other land management agencies to  
6 improve roadways and trail crossings for the safety and enjoyment of park visitors. New  
7 facilities could include overlooks and trailheads with parking, enhanced trail and transit  
8 connections, and a unified wayfinding system. A small trailhead parking area could be  
9 developed in the vicinity of the former White Gate Ranch. These transportation  
10 improvements would have a long-term, minor to moderate, beneficial impact on access  
11 by land, parking availability, and improved public safety. Improvements east of  
12 Panoramic Highway in the vicinity of Homestead Hill would enhance trail and transit  
13 access in this area. Improvements would fit with the rural character of the area. Increased  
14 trail and transit access would have a long-term, minor, beneficial impact in this area. Park  
15 management would continue to seek increased transit to the Beach on peak-season  
16 weekends. Increased transit access would have a long-term, moderate, beneficial impact  
17 for visitors in this area.

18

19

20 ***San Francisco***

21 In addition to the actions common to all alternatives, alternative 1 provides greater  
22 connectivity to San Francisco parks through improved transit, trails, and signage. This  
23 alternative anticipates development of a water shuttle system connecting bay front parks.

24 The park would continue to improve trails and trailheads throughout its San Francisco  
25 park lands to make the park accessible to the broadest array of visitors. Sites would be  
26 connected to each other and to communities by the trail system and the city's transit and  
27 multi-modal access systems. These projects would have a long-term, minor to moderate,  
28 beneficial effect on visitor connections.

29 Visitor access to the historic Alcatraz pier (Pier 4) for interpretive programs and ferry  
30 access to Alcatraz Island would also be considered. If this access is in addition to that  
31 from Pier 33, this would represent a long-term, moderate to major, beneficial impact on  
32 connectivity to Alcatraz Island. Visitor circulation and wayfinding improvements would  
33 be implemented in response to new adjacent bus, streetcar and ferry connections. These  
34 projects would have a long-term, minor, beneficial effect on visitor connections.

35 The park would improve the California Coastal Trail and other trail connections linking  
36 Ocean Beach to Lands End, Fort Funston, city neighborhoods, and other park lands  
37 including Golden Gate Park and Lake Merced. This would have a long-term, minor to  
38 moderate, beneficial effect on connectivity between the park and neighborhoods for the  
39 southwest San Francisco park sites.

40

1 ***San Mateo County***

2 In addition to the actions common to all alternatives, alternative 1 attempts to mitigate the  
3 remoteness and lack of access to the San Mateo park lands by focusing on providing  
4 more trail access to and between all park areas, as well as increasing parking and  
5 improving transit connections. A comprehensive trail plan would be prepared to create a  
6 sustainable regional trail network, providing greater opportunities to access park sites and  
7 connect with local communities. The California Coastal Trail is already built on Mori  
8 Point, allowing increased access north and south; it is partially built across the Pedro  
9 Point Headlands, Once the property is acquired and the trail is completed, it will  
10 significantly increase access to these areas.

11 Park managers would work with county transit providers to improve transit connections  
12 to local trailheads and east–west transit between bayside communities and State Route 1.  
13 In cooperation with Caltrans and at the request of the town of Pacifica, signs along State  
14 Route 1 would be improved to make the park and monument more visible. The  
15 significant increase in trail and transit access is likely to have a long- term, moderate,  
16 beneficial impact on all park lands in San Mateo County.

17 Connections to the regional trail network at the Shelldance Nursery and the surrounding  
18 public lands (SFPUC, San Pedro Valley County Park, McNee Ranch State Park, and  
19 Rancho Corral de Tierra) would be developed in coordination with other land managers.  
20 Additional connections to the Bay Area Ridge Trail and the Sawyer Camp Trail in the  
21 SFPUC Watershed would be enhanced. These projects would have a long-term, minor to  
22 moderate, beneficial effect on connecting Golden Gate National Recreation Area sites in  
23 San Mateo County to other local and state park sites, regional trails, and surrounding  
24 communities. Limited vehicular access to the San Francisco Bay Discovery Site National  
25 Historical Landmark would be available by permit. Together, these actions would have a  
26 long-term, minor, beneficial impact for visitors accessing these park lands.

27 Access to Mori Point would be enhanced with an ADA-accessible trailhead and parking  
28 improvements, providing a long-term, moderate, beneficial impact.

29 Visitors would access the coastal areas through an enhanced and sustainable system of  
30 multi-use trails. The trail network would connect local communities to the park and link  
31 the ridges of Montara Mountain to the Pacific Ocean. Opportunities for a trail connection  
32 to Sweeney Ridge through the SFPUC Watershed’s northwest corner would be explored.  
33 Unnecessary roads could be converted to trails or removed. These projects would have a  
34 long-term, moderate, beneficial impact on visitor access, connecting the coastal areas to  
35 each other and to surrounding communities.

36 ***Alcatraz Island***

37 Alternative 1 includes the following transportation-related actions for Alcatraz. Some  
38 indoor and outdoor areas on Alcatraz Island that are currently inaccessible would be re-  
39 opened, while sensitive wildlife areas would remain protected. Parts of the perimeter trail  
40 would be made accessible year-round. This action would have a long-term, minor,  
41 beneficial impact on making currently inaccessible areas available to the public. The  
42 National Park Service would prohibit boat tours and small boat landing in the Sensitive  
43 Resources management zone (extending 100 feet from the island’s western shore). This  
44 action would have a long-term, minor, adverse effect on water access to this side of the  
45 island. The Scenic Corridor zone (extending beyond the Sensitive Resources zone and

1 along the island’s eastern shore) would be managed to accommodate ferry service to the  
2 island. Boat tours around the island and some types of water-based recreation, such as  
3 fishing, could be permitted. These actions would have a long-term, minor, beneficial  
4 effect on access to the island.

5 The area adjacent to the entry pier would be managed to expand the capacity and range of  
6 uses that may occur. This would enable Alcatraz Island to be part of the San Francisco  
7 Bay Water Trail, welcoming nonmotorized boats via permits or reservations. This would  
8 have a long-term, minor, beneficial effect on access to the island for those arriving in  
9 private nonmotorized boats.

### 10 **Conclusion**

11 In alternative 1, access by land to park sites in Marin County—including improved trails,  
12 increased transit services, and wayfinding—would see a long-term, moderate, beneficial  
13 effect, particularly during peak and shoulder seasons, and on holiday weekends  
14 throughout the year. Increased transit service and stops would have a moderately  
15 beneficial impact on both the functionality of the land-based transportation system and on  
16 connectivity. It would not only provide more ways for people to get to the park sites, but  
17 would also relieve congestion on the roads for both transit and motorists.

18 In San Francisco County, alternative 1 would have a long-term, moderate, beneficial  
19 impact on both visitor connections and the functioning of the transportation system  
20 through increased land and water transit and improved trails.

21 In San Mateo County, enhanced trail systems would provide a long-term, moderate to  
22 major, beneficial effect on connections by land; there would be a long-term, moderate,  
23 beneficial effect on transportation functionality through more transit availability and a  
24 minor beneficial impact on parking.

25 At Alcatraz Island, the slight increase in boat and ferry traffic in the Scenic Corridor zone  
26 as well as the entry pier area could result in a long-term, minor, beneficial impact by  
27 increasing access by water to the island. Re-opening improved areas of the park and  
28 increasing currently limited trail access to year-round access would have a long-term,  
29 minor, beneficial impact on pedestrian access to park features and circulation on the  
30 island.

31

## 32 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

### 33 **Analysis**

34 Alternative 2 focuses on preserving the natural resources of the park and monument by  
35 carefully controlling access and removing deteriorated or unused human-made structures,  
36 and has the least impacts on transportation.

### 37 **Marin County**

38 In addition to the measures under “Actions Common to all Alternatives,” described  
39 above, there are few actions in alternative 2 which would significantly improve or detract  
40 from visitor access and connectivity. Little-used roads would be converted to trails. The  
41 main Tennessee Valley trail which is currently open to hikers and equestrians would be  
42 converted to a multi-use trail, opening the trail to bicycles as well. These actions would

1 provide a long-term, negligible to minor, beneficial impact in access and in modes of  
2 travel.

3 Alternative 2 recommends that the South parking lot at Stinson Beach be removed and  
4 the wetland restored. Since this lot comprises about 50% of the parking spaces at Stinson  
5 Beach, removing the south parking lot would have to be carefully coordinated with the  
6 town of Stinson Beach, the County of Marin, and Marin Transit in order to prevent major  
7 adverse effects on the local community. Data from the *Comprehensive Transportation*  
8 *Management Plan for Park lands in Southwest Marin, 2002*, shown in Table 21 below,  
9 indicates that at present, the parking capacity at Stinson (approximately 840 cars) does  
10 not meet demand on peak weekends for 1,050 spaces (2002). The projected peak-season  
11 parking demand for 2023 is 1335 spaces, an increase of 285 spaces over the current  
12 capacity. The following figure shows the parking demand for Stinson Beach in 2002 and  
13 estimated demand for 2023.

14

15 **Table 20: Parking Capacity at Stinson Beach, 2002 & 2023**

Parking Demand at Stinson Beach – 2002					
Peak Season		Shoulder Season		Off Season	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
365	1050	260	450	155	270

16

Estimated Parking Demand at Stinson Beach – 2023					
Peak Season		Shoulder Season		Off Season	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
465	1335	315	540	180	310

17 NOTE: 2009 Parking Capacity: 839; with south lot removed: approximately 420

18

19 Parking overflow might only be a problem during peak weekends for the next few years,  
20 with longer term excess demand on peak and shoulder weekends. As shown in Table 21,  
21 reducing the parking to approximately 420 spaces is likely not to be a problem during the  
22 off season (October through April). However, even during the off season, Stinson Beach  
23 does see increased visitors on sunny weekends, particularly those with holiday Mondays,  
24 so the off-season weekend estimates may be lower than actual demand.

25 The effects of inadequate parking on the town include spillover parking in  
26 neighborhoods, and illegal parking. Enforcement of parking restrictions in Stinson Beach  
27 is under the jurisdiction of the Marin County Sheriff. Since all of West Marin is  
28 currently served by two law enforcement officers, consistent enforcement of parking  
29 restrictions is unlikely to occur; enforcement and towing may have to be managed and  
30 could involve support from the NPS. Parking tickets alone are ineffective in controlling  
31 where people park in Stinson Beach; according to some residents, some visitors appear to  
32 consider the cost of a parking ticket simply the price one pays to go to the beach. In a

1 community already experiencing severe levels of congestion on peak weekends, parking  
2 reduction could lead to even greater traffic congestion as well as increased air pollution  
3 as cars circle the parking lot and neighborhoods looking for parking spaces.

4 As demonstrated in community meetings held in May 2009, residents of Stinson Beach  
5 are extremely concerned about the effects of traffic and of parking overflow problems in  
6 neighborhoods adjacent to the beach. Any reduction in peak-season parking would have  
7 to include as part of the measure significant proven mitigations in order to get local  
8 support and to prevent the town from being inundated with vehicles. One such mitigation  
9 might be increased transit service and greatly expanded marketing of transit and  
10 alternative modes, including signs on Highway 101 warning of the lack of parking in  
11 Stinson Beach. Currently Stinson Beach is served by Marin Transit’s Stagecoach service.  
12 Were parking to be reduced, the park staff may wish to partner with Marin Transit on  
13 increased service frequency, earlier and later hours, and joint marketing efforts to reduce  
14 the number of cars entering Stinson Beach. Closing the south parking lot may have long-  
15 term, major, adverse impacts, since it could substantially restrict access to Stinson Beach  
16 and lower the quality of the visitor experience because of increased traffic congestion.  
17 Alternatively, with substantially increased transit service, along with aggressive  
18 marketing and consistent parking enforcement, this may have a long-term, moderate,  
19 beneficial impact on the Stinson Beach area by reducing the number of cars on local  
20 roads.

21 Alternative 2 also includes a recommendation that, in the event of a catastrophic landslide  
22 on State Route 1 (Shoreline Highway), park managers would encourage abandonment of  
23 State Route 1 between Muir Beach and Stinson Beach in the affected segment. State  
24 Route 1 is ultimately controlled by Caltrans. If State Route 1 between Muir Beach and  
25 Stinson Beach were damaged and then abandoned at the affected segment, the coastal  
26 communities would sustain a long-term, moderate, adverse impact to connectivity. This  
27 would more than double the driving distance between Muir Beach and Stinson Beach  
28 from 5 miles to 13 miles, and lengthen the driving time from approximately 8 minutes to  
29 30 minutes. This would have implications for residents of both communities and for  
30 emergency access to those areas.

31 ***San Francisco County***

32 With its focus on preserving the natural environment, this alternative has no  
33 transportation-related measures affecting San Francisco other than those common to all  
34 alternatives.

35 ***San Mateo County***

36 In addition to the measures described in the “Actions Common to all Alternatives”  
37 section cited above, the following narrative describes the transportation measures for San  
38 Mateo County. At Sweeney Ridge, Sneath Lane could be converted to a trail and connect  
39 to the Bay Area Ridge Trail in the SFPUC Watershed. Unnecessary fire roads could also  
40 be converted to trails or removed if not historic, and natural resources restored. If  
41 acquired, a trailhead would be located at Picardo Ranch with modest visitor support  
42 facilities (restroom, picnic tables, parking). These measures are likely to result in a long-  
43 term, minor, beneficial impact at Sweeney Ridge. In the SFPUC Watershed easement,  
44 park managers would promote access along the existing multiuse trail and the  
45 implementation of trail improvements proposed in the *San Francisco Watershed*  
46 *Management Plan* (2002), including completion of the north–south corridor through the

1 watershed in areas of low sensitivity. Completion of these actions could have a long-  
2 term, minor to moderate, beneficial effect on access to these areas.

### 3 ***Alcatraz Island***

4 In alternative 2, visitor access to now-closed sites would be opened. Visitor access to the  
5 north end of the island would be expanded to provide wildlife viewing and research while  
6 carefully managing impacts to prevent disruption of natural resources. This would result  
7 in a long-term, minor, beneficial impact on visitor circulation on Alcatraz.

8 The Scenic Corridor zone (extending beyond the Sensitive Resources zone and along the  
9 island's eastern shore) would be managed to accommodate ferry access to the island.  
10 Some other types of water-based recreation could also be permitted. This would result in  
11 a long-term, minor, beneficial impact on visitor access to Alcatraz Island via water.

### 12 ***Conclusion***

13 For park lands in Marin County, impacts on access and connectivity for alternative 2 are  
14 negligible, with two exceptions. A 50% reduction in parking at Stinson Beach could have  
15 either a long-term, major, adverse impact on accessibility and user experience in Stinson  
16 Beach during peak periods and holiday weekends by exacerbating an already difficult  
17 traffic congestion situation, or a long-term, moderate, beneficial effect if combined  
18 effectively with other efforts such as provision of transit, marketing of transit, and  
19 enforcement of parking restrictions.

20 Closing a segment of State Route 1 between Muir Beach and Stinson Beach may have a  
21 moderate to major, adverse impact on connectivity between these two communities.

22 There are no transportation actions for San Francisco for alternative 2.

23 In San Mateo, the transportation actions in alternative 2 may result in a minor to  
24 moderate, beneficial effect on connections by land through enhanced trail systems.

25 The improved access on Alcatraz Island to previously closed areas could result in a long-  
26 term, minor, beneficial impact to connectivity by water transit, and access to sites on  
27 Alcatraz Island via enhanced trails.

28

## 29 **Alternative 3: Focusing on National Treasures**

### 30 ***Analysis***

31 In addition to the impacts highlighter below, the transportation impacts that are described  
32 above in alternative 1 also apply to this alternative for park lands in Marin, San  
33 Francisco, and San Mateo counties.

34 At Fort Funston, alternative 3 proposes relocating both access and parking to the edge of  
35 Fort Funston, allowing restoration of dunes. This measure has long-term, minor, impacts  
36 that could be considered either beneficial (for the restoration of the dunes) or adverse  
37 (because visitors would have a longer walk to reach the beach). This action does not  
38 appreciably limit or enhance visitors' ability to visit Fort Funston.

39 Alternative 3 envisions that visitors would be able to go to a larger number of locations  
40 on Alcatraz Island than is currently available. The barriers to visitor access and  
41 circulation includes rubble that would be removed, buildings stabilized, and new and

1 upgraded trails, including the perimeter trail. Pedestrian circulation would be improved  
2 for many visitors, with more sites accessible. This could have a long-term, moderate,  
3 beneficial impact on the visitor experience at Alcatraz Island, enhancing public safety by  
4 stabilizing structures.

5 This alternative also includes consideration of additional ferry service from San  
6 Francisco. Multiple ferry embarkation points could include the original Alcatraz dock  
7 (Pier 4) at Fort Mason, with primary embarkation still from Pier 33. This added  
8 embarkation would provide a historic program tours to Alcatraz Island that would leave  
9 from the restored Pier 4 west of Muni Pier. This would likely have a long-term, moderate,  
10 beneficial impact on visitor access to the island by providing more than one place to  
11 board the ferry in San Francisco.

### 12 **Conclusion**

13 In alternative 3, the relocation of parking and access to Fort Funston in San Francisco has  
14 a long-term, minor effect that is both slightly beneficial for preservation of the natural  
15 environment with a slightly adverse impact on visitor access.

16 For Alcatraz Island, this alternative could result in a long-term, moderate, beneficial  
17 increase in connectivity through additional ferry embarkation points; and a long-term,  
18 moderate, beneficial increase in access to additional historic features over an expanded  
19 area of the island because of trail expansion and improvement.

20

21

## 22 **PARK MANAGEMENT, OPERATIONS, AND FACILITIES**

### 23 **No-Action Alternative**

#### 24 **Analysis**

25 The no-action alternative would generally call for the continuation of current  
26 management, programs, operations, funded construction projects, and current levels of  
27 annual operating funds.

28 Staffing levels would continue at current levels. While some divisions are staffed  
29 adequately, others have the need for additional staff. For example, despite creative  
30 approaches in supplementing the work of park maintenance staff, the required workload  
31 needed to maintain and support the park assets exceeds available staff resources, resulting  
32 in a significant maintenance backlog. The aging infrastructure within the park requires  
33 increasing resources to maintain. A majority of the maintenance needs annually go unmet  
34 due to funding, which results in an expanding backlog of deferred maintenance.

35 The demand for educational and interpretive programs exceeds what the interpretive staff  
36 is able to provide. Other divisions, such as the Cultural Resources Division, are  
37 supplemented by volunteer staff. The Natural Resources Division's staffing levels  
38 prevent the park from completing the baseline studies and monitoring necessary to guide  
39 the park's natural resources preservation efforts in the future. A lack of sufficient patrol  
40 units has resulted in adverse impacts to resources. Additionally, due to staff limitations,  
41 the management of volunteers is very limited; and therefore the volunteer program does  
42 not have the capacity to grow and provide additional benefit to the park and monument.

1 While staff at Golden Gate National Recreation Area and Muir Woods National  
2 Monument lead the field in many of the programs they spearhead—such as development  
3 of partnerships, community based stewardship, and increased sustainability in many areas  
4 of park operations—the continued impact of low staffing levels on park operations is  
5 long-term, moderate, and adverse.

6 Facilities continue to deteriorate given minimal additional project funding and the current  
7 inadequate annual base funding for maintenance. Even given the direction of the park  
8 asset management plan for prioritizing funds, a large gap in maintenance funding would  
9 result in an increase in the deferred maintenance backlog. Inadequate project and  
10 operational funding would result in long-term, moderate, adverse impacts to park  
11 facilities.

12 Facilities at Alcatraz Island are in an advanced stage of deterioration. Infrastructure for  
13 utilities is another constraint on the island. For example, potable and wastewater must be  
14 transported to and from the island by ferry. Water storage constraints also place limits on  
15 the visitation and operations presence on the island. Fire system water storage and  
16 distribution is an issue on the island. Power utilization and energy demands are also an  
17 issue; power is generated by diesel engines, which pollute and also constrain operations  
18 on the island. Each of these systems requires improvement for continued use at current  
19 levels. A lack of future project funding would result in long-term, major, adverse impacts  
20 to mission critical facilities on the island.

21 Facility location, condition, and available use also impact park operations. Maintenance  
22 facilities do not meet the needs of the park; currently, long distances from storage and  
23 maintenance facilities to job sites, and inappropriate storage facilities for equipment  
24 affect the operations adversely and result in equipment deterioration. Park public safety is  
25 also impacted negatively by the current location of facilities; currently, law enforcement  
26 staff has limited facilities in the Headlands and no base of operations in the San Mateo  
27 County area. The operations would continue to have long-term, moderate, adverse  
28 impacts due to current maintenance and public safety facility locations, size, and lack of  
29 modern and secure features.

30 Park partners are vital to the continued operation of the park, as they provide generous  
31 funds, organize volunteers, and provide interpretive and educational programs. The  
32 park's continued efforts at developing and maintaining partnerships would continue to  
33 provide long-term, moderate, beneficial impacts to park operations.

34 The Volunteer-In-Parks Program is critical to the ongoing operation of Golden Gate  
35 National Recreation Area and Muir Woods National Monument. In a typical year,  
36 between 10,000 and 14,000 volunteers provide an excess of 300,000 volunteer hours to  
37 various programs and efforts within the park and monument. The continued management  
38 of volunteer programs at the park and monument contribute a continuing long-term,  
39 moderate, beneficial impact to park operations.

#### 40 **Conclusion**

41 Inadequate staffing levels would result in continued long-term, moderate, and adverse  
42 impacts to operations. Continued partner and volunteer efforts would result in long-term,  
43 moderate, beneficial impacts to park operations, although these efforts would be limited  
44 by current staffing levels. Inadequate project and operational funding would result in  
45 long-term, major, adverse impacts to park facilities throughout the Golden Gate National

1 Recreation Area including Alcatraz Island. The inadequate maintenance and public safety  
2 facilities and their locations would result in continued long-term, moderate, and adverse  
3 impacts to operations.

4

## 5 **Alternative 1: Connecting People with the Parks**

### 6 **Analysis**

7 While designed to contribute to the protection of resources and the enhancement of  
8 visitor opportunities, the proposals of alternative 1 will achieve these ends only if staffing  
9 and operating funds are increased in accordance with the cost estimates identified for this  
10 alternative. If funding and needed staffing levels are not made available when these  
11 actions are implemented, then the proposed actions would have long-term, moderate,  
12 adverse effects on park operations.

13 Additional staff needs projected under this alternative would supplement many of the  
14 divisions with the people needed to achieve the resource and visitor experience objectives  
15 of the alternative. Expanding operations into San Mateo County requires increasing  
16 employees and support facilities in order to manage the existing and newly acquired  
17 lands. In addition, some staff would be responsible for organizing and managing  
18 volunteer groups—thus leveraging park resources with the expertise and enthusiasm of  
19 willing community members and youth groups. While the park would be better able to  
20 meet resource protection goals as well as visitor experience and safety through the  
21 addition of these full-time equivalent employees (FTEs), salaries for these FTEs would  
22 appreciably increase the operating budget and the need to develop additional  
23 partnerships. Increased staff would result in long-term, moderate, beneficial impacts to  
24 operations if appropriate funding is available, otherwise the actions of this alternatives  
25 would continue the adverse impacts identified in the no-action alternative.

26 The proposed new or reconstructed facilities in this alternative would require additional  
27 capital investments. If funded, the improvements would result in a decrease in the park's  
28 deferred maintenance. Unless the cyclic maintenance budget is collaborated to maintain  
29 the park's facilities as identified in this alternative, the deferred maintenance will  
30 increase, even with an initial investment in that asset. Adjusting the operations and  
31 maintenance budget to realistically reflect the true costs of a facility will have a long-  
32 term, moderate, beneficial impact on park operations; otherwise, the impact would be  
33 adverse and result in an increase of deferred maintenance.

34 Fundraising through park partners to support specific programs to improve park facilities  
35 has often been successful, although maintenance funding is typically more difficult to  
36 come by. The investment in facilities would improve facility conditions, reduce the  
37 deferred maintenance backlog, meet sustainability goals, and improve the ability of the  
38 park to meet its goals for natural and cultural resource protection and improve the visitor  
39 experience. Construction, rehabilitation, restoration, and demolition projects proposed in  
40 the alternative would result in long-term, major, beneficial impacts to park operations if  
41 funding could be obtained. Construction activities would impact park operations in the  
42 short term and would be minor and adverse, as some inefficiency would be caused by the  
43 closure of buildings during construction.

1 Enhancing park operations at Fort Funston would improve maintenance and public safety  
2 functions in that area. The proposed “portals” at Rancho Corral de Tierra, Upper Fort  
3 Mason, and Tennessee Valley would improve interpretation and public safety operations  
4 with opportunities for visitors to access park staff. These changes would result in long-  
5 term, moderate, beneficial impacts to park operations.

6 At Alcatraz Island, increases in staff would allow for increased levels of maintenance,  
7 public safety, resource protection, and visitor services. These increases in staff would  
8 result in long-term, moderate, beneficial impacts to operations, if the positions are  
9 adequately funded.

10 Alternative 1 proposes extensive restoration and rehabilitation of facilities on Alcatraz  
11 Island. These actions would result in long-term, moderate, beneficial impacts to the  
12 operations of Alcatraz Island. Construction activities would result in minor, short-term,  
13 adverse impacts due to the closure of facilities.

#### 14 **Conclusion**

15 Increased number of park staff would result in long-term, moderate, beneficial impacts to  
16 operations if appropriate, annual base funding is available. Construction, rehabilitation,  
17 restoration, and demolition projects proposed in the alternative would result in long-term,  
18 moderate, beneficial impacts to park operations by addressing deferred maintenance.  
19 Construction activities would result in short term, minor, adverse impacts on park  
20 operations, because of closures during the work. An expanded maintenance facility at  
21 Fort Funston and the addition of three “portals” would result in long-term, moderate,  
22 beneficial impacts to park operations.

23

### 24 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

#### 25 **Analysis**

26 While designed to contribute to the protection of resources and the enhancement of  
27 visitor opportunities, the proposals of alternative 2 will achieve these ends only if staffing  
28 and operating funds are increased in accordance with the cost estimates identified for this  
29 alternative. If funding and needed staffing levels are not made available when these  
30 actions are implemented, then the proposed actions would have long-term, moderate,  
31 adverse effects on park operations.

32 This alternative would require significant increases in park staffing to manage the new  
33 park lands in San Mateo County; educate visitors about the coastal ecosystems of the  
34 area; gather baseline natural and cultural resource information, and use this information  
35 to guide the future of these programs; maintain facilities and landscapes; and provide for  
36 effective public safety in areas where visitors are concentrated as well as in more  
37 primitive areas. Increases in staffing levels would result in long-term, moderate,  
38 beneficial impact in the ability of the park to meet its operating and mission goals while  
39 leveraging the support of partners and volunteers. However, salaries for these FTEs  
40 would appreciably increase the operating budget and the need to develop additional  
41 partnerships. Increased staffing would result in long-term, moderate, beneficial impacts  
42 to operations if adequate funding accompanied the staffing increases.

1 The remove of noncritical facilities and the restoration of those landscapes would result  
2 in fewer maintenance needs, the remove the deferred maintenance associated with those  
3 structures, and the redistribution of park personnel and funds to remaining facilities.

4 Capital investment in facilities would improve facility conditions, help to reduce the  
5 deferred maintenance backlog, and help to meet sustainability goals. If adequately  
6 funded, construction, rehabilitation, restoration, and demolition projects proposed in the  
7 alternative would result in long-term, moderate, beneficial impacts to park operations.  
8 Construction and landscape restoration activities would result in short term, minor,  
9 adverse impacts, caused by the closure of buildings and lands during construction or  
10 restoration.

11 On Alcatraz Island, increases in staff would allow for improved maintenance as well as  
12 increased resource protection and public safety, especially if visitor use extends into the  
13 late evenings. Such increases in staff and work would result in long-term moderate,  
14 beneficial impacts to operations if positions are adequately funded. The increased  
15 difficulty for public safety to reach the more primitive areas of the island that would  
16 become open in this alternative would result in long-term, negligible to minor, adverse  
17 impacts to operations.

18 On Alcatraz Island, alternative 2 proposes wilding of many areas on the island and  
19 stabilizing some structures as ruins. In addition, alternative 2 provides for various  
20 treatments for each historic structure (e.g. stabilization, restoration, or rehabilitation).  
21 Actions in this alternative will address structures that are in poor condition and pose  
22 threat of injury to visitors and staff. The improved facility conditions would result in  
23 long-term, moderate, beneficial impacts to the operations of Alcatraz Island and would  
24 address the deferred maintenance issues. Construction activities would result in minor,  
25 short-term, adverse impacts due to the closure of facilities. Increases in law enforcement  
26 staff would allow for overnight experiences on the island.

### 27 **Conclusion**

28 Increased staff would result in long-term, moderate, beneficial impacts to operations if  
29 accompanying funding is appropriate. Construction, stabilization, rehabilitation,  
30 restoration, and demolition projects proposed in the alternative would result in long-term,  
31 moderate, beneficial impacts to park operations and address deferred maintenance issues.  
32 Construction and landscape restoration activities would result in minor, adverse impact in  
33 the short term, as some inefficiency would be caused by closure of buildings and lands  
34 during construction or restoration. The increased difficulty for public safety personnel to  
35 reach the more primitive areas would result in long-term, minor, adverse impacts to  
36 operations.

37

### 38 **Alternative 3: Focusing on National Treasures**

#### 39 **Analysis**

40 While designed to contribute to the protection of resources and the enhancement of  
41 visitor opportunities, the proposals of alternative 3 will achieve these ends only if staffing  
42 and operating funds are increased in accordance with the cost estimates identified for this  
43 alternative. If funding and needed staffing levels are not made available when these

1 actions are implemented, then the proposed actions would have long-term, moderate.  
2 adverse effects on park operations.

3 In addition to the impacts outlined in alternative 1, alternative 3 would require additional  
4 park staff and park partners to support visitor programs and services throughout the park,  
5 significant new interpretive and educational programs at Alcatraz Island, expanded  
6 natural and cultural stewardship centers, and visitor programs associated with the park  
7 collections. These additional park staff would enable the park to provide interpretive and  
8 educational programs that are especially tied to cultural and natural resources associated  
9 with the Historic Immersion management zone. Additionally, maintenance and public  
10 safety staff would require expanded hours at Alcatraz Island and to manage the park  
11 lands in San Mateo County. Increased staff would result in long-term, moderate,  
12 beneficial impacts to operations if appropriate funding is available; otherwise, the actions  
13 of this alternatives would continue the adverse impacts identified in the no-action  
14 alternative.

15 Increased restoration of nationally significant resources would benefit operations by  
16 reducing deferred maintenance, improving facility conditions, and helping the park to  
17 reach its sustainability goals. The construction, stabilization, rehabilitation, restoration,  
18 and demolition projects proposed in the alternative would result in long-term, moderate,  
19 beneficial impacts to park operations if funding could be obtained. Some construction  
20 and landscape restoration activities would result in minor, adverse impacts on park  
21 operations in the short term, because of the closure of buildings and lands during  
22 construction or restoration. Costs to implement this alternative would be somewhat  
23 greater than historic capital project fund amounts. The ability of the park and partners to  
24 raise needed funds would dramatically affect the ability to achieve the goals of  
25 alternative 3.

26 Changes in facility use and location would result in moderate, long-term, beneficial  
27 impacts to park operations. The establishment of a visitor center at Capehart, a hub at  
28 Rancho Corral de Tierra, and additional visitor services at Fort Mason would make it  
29 easier for park staff to provide educational and interpretive information to visitors  
30 throughout the park. An operations area at Fort Miley would improve efficiencies in  
31 public safety and maintenance in that area.

32 At Alcatraz Island, increases in staff would allow for improved maintenance as well as  
33 for increased levels of public safety and resource protection. As this alternative proposes  
34 a high level of restoration to nationally significant resources, these areas would need to  
35 be staffed and managed accordingly. If adequately funded, these increases in staff would  
36 result in long-term, moderate, beneficial impacts to park operations.

37 Also at Alcatraz Island, national treasure facilities would be stabilized, restored, or  
38 rehabilitated. Currently, many of the facilities are in poor condition and pose the threat of  
39 injury to visitors and staff. The improved facility conditions would result in long-term,  
40 moderate, beneficial impacts to park operations at Alcatraz Island and help to address the  
41 deferred maintenance issues. Construction activities would result in minor, short-term,  
42 adverse impacts due to the closure of facilities. The funding needed to complete the  
43 projects in this alternative is significant.

44

1 **Conclusion**

2 Increased staff would result in long-term, moderate, beneficial impacts to operations if  
3 adequate funding accompanies the increase in park staffing. Construction, stabilization,  
4 rehabilitation, restoration, and demolition projects proposed in the alternative would  
5 result in long-term, moderate, beneficial impacts to park operations, but would also result  
6 in short-term, minor, adverse impacts while the activities are underway. Facility use and  
7 location changes would result in long-term, moderate, and beneficial impacts to park  
8 operations.

9

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# POTENTIAL ENVIRONMENTAL IMPACTS AT MUIR WOODS NATIONAL MONUMENT

3

## 4 NATURAL RESOURCES – PHYSICAL RESOURCES

### 5 Carbon Footprint and Air Quality

#### 6 *No Action Alternative*

##### 7 *Analysis*

8 The continuation of current conditions and management would continue to result in  
9 adverse impacts to air quality/carbon footprint. Baseline greenhouse gas (GHG)  
10 emissions (2008) for Muir Woods National Monument are estimated at 2,257 metric tons  
11 of carbon equivalent (MTCE).

12 Mobile combustion associated with visitor travel in personal automobiles and the pilot  
13 shuttle would continue to be the largest contributor of GHG emissions (2,179 MTCE),  
14 representing about 96% of gross emissions at the monument.

15 Greenhouse gas emissions from visitors and NPS operations do contribute to elevated  
16 ozone and other air quality concerns. The National Park Service would continue to reduce  
17 greenhouse gas emissions by reducing energy consumption and replacing high-emitting  
18 apparatus with green technology—resulting in a beneficial impact.

19 Overall, when compared to background levels of air pollution and GHG emissions in the  
20 region or the nation (estimated at 6 billion in 2007), impacts to air quality from the no-  
21 action alternative would be long-term, adverse, and negligible.

#### 22 *Conclusion*

23 Total gross emissions for Muir Woods National Monument would be estimated at 2,257  
24 MTCE, resulting in long-term, minor, adverse impacts to the monument’s carbon  
25 footprint. Overall, when compared to background levels of air pollution and GHG  
26 emissions in the region or the nation (estimated at 6 billion in 2007), impacts to air  
27 quality from the no-action alternative would be long-term, adverse, and negligible.

28 No impairment of air resources would result from this alternative.

#### 29 *Alternative 1: Connecting People with the Parks*

##### 30 *Analysis*

31 Under alternative 1 visitor travel to the monument would be altered so that dependency  
32 on personal automobiles would be reduced. About 25% of parking would be removed and  
33 the Muir Woods shuttle would be expanded and could run on compressed natural gas, a  
34 lower emissions fuel. As a result, mobile combustion is estimated to be reduced by 20%  
35 to 1,740 MTCE. When compared to the no-action alternative, impacts to air  
36 quality/carbon footprint would be reduced—resulting in a beneficial impact.

37 Emissions from stationary combustion and purchased electricity would be slightly  
38 reduced when compared to the no-action alternative as result of facility removal and

1 corresponding reductions in energy usage. Emissions associated with wastewater  
2 treatment and solid waste would be the same as under the no-action alternative.

3 Short-term adverse impacts to air quality would occur as a result of the construction  
4 activities needed to remove facilities (buildings and parking areas) and reclaim the  
5 disturbed sites.

6 Long-term, adverse impacts on air quality/carbon footprint would also be expected due to  
7 increases in energy consumption and related emissions attributed to the new welcome  
8 center / shuttle parking located on Highway 101.

9 The combined effect of the actions included in alternative 1 is estimated to decrease the  
10 gross emissions of Muir Woods National Monument by 20% to 1,812 MTCE. This would  
11 result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As  
12 in the no-action alternative, impacts to air quality (when compared to background levels  
13 of air pollution in the region and nation) would be negligible.

#### 14 ***Conclusion***

15 The combined effect of the actions included in alternative 1 is estimated to decrease the  
16 gross emissions of Muir Woods National Monument by 20% to 1,812 MTCE. This would  
17 result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As  
18 in the no-action alternative, impacts to air quality (when compared to background levels  
19 of air pollution in the region and nation) would be negligible.

20 No impairment of air resources would result from this alternative.

### 21 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

#### 22 ***Analysis***

23 Under alternative 2 visitor travel to the monument would be altered so that dependency  
24 on personal automobiles would be significantly reduced. Most of the parking at the  
25 monument would be removed and the Muir Woods shuttle would be expanded to a year-  
26 round operation and could run on compressed natural gas, a lower emissions fuel. As a  
27 result, mobile combustion is estimated to be reduced by 85% to 333 MTCE. When  
28 compared to the no-action alternative, impacts to air quality/carbon footprint would be  
29 reduced—resulting in a beneficial impact.

30 Emissions from stationary combustion and purchased electricity would be slightly  
31 reduced when compared to the no-action alternative as result of facility removal and  
32 corresponding reductions in energy usage. Emissions associated with wastewater  
33 treatment and solid waste would be the same as under the no-action alternative.

34 Short-term adverse impacts to air quality would occur as a result of the construction  
35 activities needed to remove facilities (buildings and parking areas) and reclaim the  
36 disturbed sites as well as from the restoration of Redwood Creek.

37 Long-term, adverse impacts on air quality/carbon footprint would also be expected due to  
38 increases in energy consumption and related emissions attributed to the new welcome  
39 center / shuttle parking located on Highway 101.

40 The combined effect of the actions included in alternative 1 is estimated to decrease the  
41 gross emissions of Muir Woods National Monument by 82% to 401 MTCE. This would  
42 result in long-term, major, beneficial impacts on the Park Service's carbon footprint. As

1 in the no-action alternative, impacts to air quality (when compared to background levels  
2 of air pollution in the region and nation) would be negligible.

3 **Conclusion**

4 The combined effect of the actions included in alternative 2 is estimated to decrease the  
5 gross emissions of Muir Woods National Monument by 82% to 401 MTCE. This would  
6 result in long-term, major, beneficial impacts on the Park Service's carbon footprint. As  
7 in the no-action alternative, impacts to air quality (when compared to background levels  
8 of air pollution in the region and nation) would be negligible.

9 No impairment of air resources would result from this alternative.

10 **Alternative 3: Focusing on National Treasures (NPS Preferred**  
11 **Alternative for Muir Woods National Monument)**

12 **Analysis**

13 Under alternative 3 visitor travel to the monument would be altered so that dependency  
14 on personal automobiles would be reduced. About 25% of parking would be removed and  
15 the Muir Woods shuttle would be expanded and could run on compressed natural gas, a  
16 lower emissions fuel. As a result, mobile combustion is estimated to be reduced by 20%  
17 to 1,740 MTCE. When compared to the no-action alternative, impacts to air  
18 quality/carbon footprint would be reduced—resulting in a beneficial impact.

19 Emissions from stationary combustion and purchased electricity would be slightly  
20 reduced when compared to the no-action alternative as result of facility removal and  
21 corresponding reductions in energy usage. Emissions associated with wastewater  
22 treatment and solid waste would be the same as under the no-action alternative.

23 Short-term adverse impacts to air quality would occur as a result of the construction  
24 activities needed to remove facilities (buildings and parking areas) and reclaim the  
25 disturbed sites as well as from targeted restoration of Redwood Creek.

26 Long-term, adverse impacts on air quality/carbon footprint would also be expected due to  
27 increases in energy consumption and related emissions attributed to the new welcome  
28 center / shuttle parking located on Highway 101.

29 The combined effect of the actions included in alternative 3 is estimated to decrease the  
30 gross emissions of Muir Woods National Monument by 20% to 1,813 MTCE. This would  
31 result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As  
32 in the no-action alternative, impacts to air quality (when compared to background levels  
33 of air pollution in the region and nation) would be negligible.

34 **Conclusion**

35 The combined effect of the actions included in alternative 1 is estimated to decrease the  
36 gross emissions of Muir Woods National Monument by 20% to 1,813 MTCE. This would  
37 result in long-term, minor, beneficial impacts on the Park Service's carbon footprint. As  
38 in the no-action alternative, impacts to air quality (when compared to background levels  
39 of air pollution in the region and nation) would be negligible.

40 No impairment of air resources would result from this alternative.

41

42

1 **Soils and Geologic Resources and Processes**

2 ***No Action Alternative***

3 ***Analysis***

4 Under the no-action alternative, the presence and maintenance of existing facilities  
5 (including structures, parking lots, roads, and trails) would continue to cause parkwide  
6 impacts to soils and geologic resources due to the permanent loss and function of these  
7 resources and from erosion associated with unsustainable trails and roads. The impact of  
8 these activities would be long-term, minor to moderate, adverse, and localized, but would  
9 occur throughout Muir Woods National Monument.

10 Projects to improve natural habitat values and ecosystem function, such as the  
11 modification of trails and roads, would have beneficial effects on soils and geologic  
12 resources and processes because they would improve or restore the functionality of  
13 natural processes—the impact would be long-term, minor, beneficial, and localized.

14 Recreational use would continue to cause compaction and erosion of soils, resulting in  
15 long-term, minor, adverse, localized impacts throughout the monument.

16 Park Service efforts to provide educational and participatory stewardship programs would  
17 continue to have a beneficial effect on geologic resources and soils due to increased  
18 public understanding and support for resource protection and management—the impact  
19 would be long term, minor, beneficial, and monumentwide.

20 ***Conclusion***

21 Overall, the impact to geologic resources and soils from the no-action alternative would  
22 be long-term, range from minor to moderate adverse to minor beneficial, and be localized  
23 and monument-wide. Adverse impacts would occur from the presence and maintenance  
24 of existing facilities and visitor use. Beneficial impacts would occur from restoration and  
25 education and stewardship activities.

26 No impairment of geologic resources would result from this alternative.

27 ***Alternative 1: Connecting People with the Parks***

28 ***Analysis***

29 Under alternative 1, a variety of management zones would be used that would assist in  
30 the protection of soils and geologic resources and processes. Approximately 91% of the  
31 monument would be zoned using the Natural and Sensitive Resources zones.

32 The removal of facilities/structures and the reclamation of disturbed building sites in the  
33 Camino del Canyon and Druid Heights area and the current entrance to Muir Woods  
34 National Monument, as well as the removal of the upper parking lot, would improve soil  
35 function and integrity and restore natural geologic processes. The impact of these  
36 activities would be long-term, minor, beneficial, and localized. Short-term, minor,  
37 adverse impacts (such as increased erosion or compaction in adjacent areas) would occur  
38 during construction activities.

39 Visitor access and use would be expanded under alternative 1, resulting in increased soil  
40 compaction and erosion; however, compared to use patterns under the no-action  
41 alternative, only slight adverse impacts would be expected. Most impacts would be  
42 contained within defined visitor use areas and on trails. The impact, especially in areas

1 off-trail, would be long term, minor, adverse, and localized. This impact would occur in  
2 areas throughout the monument.

3 New recreational development (new facilities at Bridge 4 and welcome center / shuttle  
4 parking at Highway 101) would have long-term, adverse, localized impacts on soils and  
5 geologic resources due to the permanent loss of soil function and integrity resulting from  
6 new development and increased erosion from facility construction and maintenance. The  
7 intensity of the impact would range from negligible to minor because in some cases the  
8 impact would be confined to previously developed or disturbed sites.

9 Impacts from an expanded NPS educational and stewardship programs would enhance  
10 the beneficial effect on soils and geologic processes due to increased public  
11 understanding and support for resource protection and management—the impact would  
12 be long term, minor, beneficial, and monumentwide.

### 13 ***Conclusion***

14 Overall, the impact to soils and geologic resources and processes from alternative 1  
15 would be short- and long-term, range from negligible adverse to minor beneficial, and be  
16 localized. Adverse impacts would occur from new recreational development and  
17 expanded visitor use. Beneficial impacts would occur from trail relocation, the restoration  
18 of disturbed sites, and improved resource understanding and public support.

19 No impairment of geologic resources would result from this alternative.

### 20 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

#### 21 ***Analysis***

22 Under alternative 2, a variety of management zones would be used that would assist in  
23 the protection of soils and geologic resources and processes. Approximately 99% of the  
24 park would be zoned using the Natural and Sensitive Resources zones —the greatest of  
25 all the alternatives.

26 Nearly all of the built environment would be removed from Muir Woods National  
27 Monument . These include facilities and structures in the Camino del Canyon and Druid  
28 Heights area as well as at the current entrance and within the primeval redwood forest of  
29 the monument, the upper and lower parking areas, unneeded management roads, and  
30 several miles of trails. In addition, Redwood Creek would be restored. Restoration of  
31 these areas would reduce soil erosion, improve soil function and integrity, and restore  
32 natural geologic processes. The impact of these activities would be long term, moderate,  
33 beneficial, and localized. Short-term, minor, adverse impacts (such as increased erosion  
34 or compaction in adjacent areas) would occur during demolition and restoration activities.

35 Impacts from visitor access and use would be less than those described in the no-action  
36 alternative because it would be limited and highly controlled, resulting in long-term,  
37 minor, beneficial, localized impacts.

38 Impacts from an expanded NPS educational and stewardship programs would enhance  
39 the beneficial effect on soil and geologic resources due to increased public understanding  
40 and support for resource protection and management—the impact would be long-term,  
41 minor, beneficial, and monumentwide.

42

1 ***Conclusion***

2 Overall, the impact to soils and geologic resources and processes from alternative 2  
3 would be short- and long-term, range from minor adverse to moderate beneficial, and  
4 localized. Adverse impacts would occur from visitor use and construction. Beneficial  
5 impacts would occur from the removal of facilities and structures and restoration of  
6 disturbed sites.

7 No impairment of geologic resources would result from this alternative.

8 ***Alternative 3: Focusing on National Treasures***

9 ***Analysis***

10 Under alternative 3, a variety of management zones would be used that would assist in  
11 the protection of soils and geologic resources and processes. Approximately 85% of the  
12 monument would be zoned using the Natural and Sensitive Resources zones.

13 The impacts to geologic resources and soils from the continued maintenance of existing  
14 facilities and structures under alternative 3 would be the less than the no-action  
15 alternative. New recreational development (including a new welcome center/shuttle  
16 parking at Highway 1, new recreational amenities near Bridge 4, new trails in the  
17 monument, and picnicking facilities) would have long-term, minor, adverse, localized  
18 impacts on geologic resources and soils due to the permanent loss of soil function and  
19 integrity resulting from new development and increased erosion from facility  
20 construction and maintenance.

21 Beneficial effects on geologic resources and soils would occur from the removal of  
22 facilities and structures and the restoration of disturbed sites throughout the monument  
23 (such as the removal of the upper parking area; a number of structures in the Camino del  
24 Canyon and Druid Heights; and targeted removal of rip rap along Redwood Creek)—a  
25 total of about 28 acres of built environment would be removed and restored to natural  
26 conditions. The impact of these activities would be long term, moderate, beneficial, and  
27 localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in  
28 adjacent areas) would occur during construction activities.

29 Visitor access and use would continue to cause adverse impacts to geologic resources and  
30 soils due to the effects compaction and erosion. However, the impact would be less than  
31 under the no-action alternative because primary use areas and trails would be moved  
32 away from the creek (where soils may be more prone to compaction and erosion) and  
33 new boardwalks would be developed that reduce these impacts—resulting in a beneficial  
34 impact. The impacts to geologic resources and soils from visitor use under alternative 3  
35 would be negligible.

36 Impacts from NPS educational and stewardship programs would generally be the same as  
37 those described in the no-action alternative.

38 The expanded NPS interpretive, educational and stewardship programs would engage  
39 many more visitors and could have a long-term, moderate, beneficial effect on soils and  
40 geologic resources and processes due to increased public understanding and support for  
41 resource protection and management—the impact would be long-term, moderate,  
42 beneficial, and monumentwide.

43

1 **Conclusion**

2 Overall, the impact to soils and geologic resources and processes from alternative 3  
3 would be short and long term, range from negligible adverse to moderate beneficial, and  
4 be localized. Adverse impacts would occur from new recreational development and  
5 visitor use. Beneficial impacts would occur from the removal of facilities and structures  
6 and restoration of the upper parking lot and disturbed sites, as well as creek restoration  
7 activities.

8 No impairment of geologic resources would result from this alternative.

9

10 **Water Resources and Hydrologic Processes**

11 **No Action Alternative**

12 **Analysis**

13 Under the no-action alternative, the presence and maintenance (or lack of maintenance in  
14 some cases) of existing facilities (including structures, roads, and trails) would continue  
15 to cause localized impacts to water quality due to pollution from urban runoff and  
16 turbidity from soil erosion. The impact of these activities would be long term, minor to  
17 moderate, adverse, and localized, but would occur throughout the monument.

18 Structures would remain in the 100-year floodplain of Redwood Creek resulting in  
19 adverse impacts. Trails, bridges, administrative/concession buildings, the gift shop,  
20 restrooms are located in the floodplain. Retention of these facilities would continue to  
21 affect floodplain function. The structures themselves could affect the flow of water  
22 during floods and paved surfaces such as the parking area and portions of the trail system  
23 could affect the capacity of the floodplain to store floodwaters. Furthermore, the existing  
24 rock revetment that lines portions of Redwood Creek would continue to adversely affect  
25 natural hydrologic processes and floodplain function. Riparian wetland expansion would  
26 continue to be adversely affected by the presence of the parking area. The impact of these  
27 activities would be long term, moderate, adverse, and localized.

28 Recreational use would continue to cause erosion of soils resulting in turbidity. Vehicle  
29 use at parking areas and on roadways in the vicinity of the monument would continue to  
30 affect water quality from runoff that contains chemical contaminants. These activities  
31 would result in long-term, minor, adverse, localized impacts to water quality.

32 Park Service efforts to provide educational and participatory stewardship programs would  
33 continue to have a beneficial effect on water resources and hydrologic processes due to  
34 increased public understanding and support for resource protection and management—  
35 the impact would be long term, minor, beneficial, and monumentwide.

36 **Conclusion**

37 Overall, the impact to water resources and hydrologic processes from the no-action  
38 alternative would be long-term, range from minor adverse to minor beneficial, and be  
39 localized and monumentwide. Adverse impacts would occur from the presence and  
40 maintenance of existing facilities (including rock revetment), visitor use. Beneficial  
41 impacts would occur from education and stewardship activities.

42 No impairment of water resources would result from this alternative.

1 ***Alternative 1: Connecting People with the Parks (NPS Preferred***  
2 ***Alternative for park sites in Marin, San Francisco, and San Mateo***  
3 ***counties)***

4 ***Analysis***

5 Under alternative 1, a variety of management zones would be used that would assist in  
6 the protection of water resources and hydrologic processes. Approximately 91% of the  
7 park would be zoned using the Natural and Sensitive Resources zones.

8 The removal of some facilities and structures and the reclamation of disturbed building  
9 sites and roads in the Camino del Canyon and Druid Heights area and the main part of  
10 Muir Woods National Monument, including removal of the upper parking lot, would  
11 improve natural hydrologic processes. The impact would be long-term, minor, beneficial,  
12 and localized. Short-term, minor, adverse impacts to water quality could occur from  
13 sedimentation and runoff during construction and restoration activities.

14 Impacts to floodplains would be the same as described under the no-action alternative,  
15 except for those associated with the removal of the upper parking area and restoration of  
16 the site to a natural area. The removal of the upper parking area would eliminate the  
17 impervious surface at the site, restoring floodwater capacity and natural floodplain  
18 function—resulting in a long-term, minor, beneficial impact.

19 Visitor access and use would be expanded under alternative 1, potentially resulting in  
20 some increase in erosion along trails and at primary visitor use areas that could have  
21 impacts on water quality—the impact would be long term, negligible to minor, adverse,  
22 and localized.

23 New recreational development (new facilities at Bridge 4 and welcome center/shuttle  
24 parking at Highway 101) could have short-term, negligible to minor, adverse, localized  
25 impacts on water quality from increased erosion and sedimentation, and the potential for  
26 chemical contamination resulting from inadvertent chemical spills from heavy equipment  
27 at construction sites. Similar impacts to water quality could occur over the long-term due  
28 to the increased potential for fecal coliform contamination and urban pollutants. Impacts  
29 from these activities would result in long-term, minor, adverse, localized impacts to water  
30 quality. However, on the other hand, the new restroom facility may reduce the presence  
31 of human waste in Muir Woods National Monument and the associated water quality  
32 impacts.

33 Impacts from an expanded NPS educational and stewardship programs would enhance  
34 the beneficial effect on water resources and hydrologic processes due to increased public  
35 understanding and support for resource protection and management—the impact would  
36 be long term, minor, beneficial, and monument wide.

37 ***Conclusion***

38 Overall, the impact to water-related resources from alternative 1 would be short- and  
39 long-term, range from negligible adverse to minor beneficial, and be localized and  
40 parkwide. Adverse impacts would occur from the presence and maintenance of existing  
41 facilities (including rock revetment), new recreational development and expanded visitor  
42 use. Beneficial impacts would occur from trail and road maintenance and the restoration  
43 of disturbed sites and removal of the upper parking area.

44 No impairment of water resources would result from this alternative.

1 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

2 **Analysis**

3 Under alternative 2, a variety of management zones would be used that would assist in  
4 the protection of water resources and hydrologic processes. Approximately 99% of the  
5 park would be zoned using the Natural and Sensitive Resources zones.

6 Alternative 2 would reduce impacts to water quality by eliminating erosion from  
7 unsustainable trails and unneeded management roads, resulting in long-term, minor to  
8 moderate, beneficial, localized impacts. Short-term, minor, adverse impacts to water  
9 quality could occur from sedimentation and runoff during construction and restoration  
10 activities.

11 The substantial removal of facilities and structures and the reclamation of disturbed  
12 building sites and road in the Camino del Canyon and Druid Heights area and the main  
13 part of Muir Woods National Monument, as well as the removal of the upper and lower  
14 parking areas, would improve the natural hydrologic processes. The impact would be  
15 long-term, moderate, beneficial, and localized. Short-term, minor, adverse impacts to  
16 water quality could occur from sedimentation and runoff during construction and  
17 restoration activities.

18 Impacts to floodplains would include the removal of the upper and lower asphalt parking  
19 areas and the restoration of about 6,700 linear feet of Redwood Creek (including rock  
20 revetment) and its floodplain. This would restore floodwater capacity and natural  
21 floodplain function and improve riparian wetlands and hydrologic processes. Water flow  
22 and floodplain function would also be restored by removing or re-designing bridges.  
23 These activities would result in long-term, moderate to major, beneficial impacts on  
24 floodplains and related water resources.

25 Impacts from an expanded NPS educational and stewardship programs would enhance  
26 the beneficial effect on water resources and hydrologic processes due to increased public  
27 understanding and support for resource protection and management—the impact would  
28 be long term, minor, beneficial, and monumentwide.

29 **Conclusion**

30 Overall, the impact to water-related resources from alternative 2 would be short and long  
31 term, range from minor adverse to moderate-major beneficial, and be localized. Adverse  
32 impacts would occur from expanded visitor use and restoration activities. Beneficial  
33 impacts would occur from the restoration of disturbed sites, removal of structures,  
34 facilities, roads, and asphalt parking areas and substantial creek and floodplain  
35 restoration.

36 No impairment of water resources would result from this alternative.

37 **Alternative 3: Focusing on National Treasures (NPS Preferred**  
38 **Alternative for Muir Woods National Monument)**

39 **Analysis**

40 Under alternative 3, a variety of management zones would be used that would assist in  
41 the protection of water resources and hydrologic processes. Approximately 85% of the  
42 park would be zoned using the Natural and Sensitive Resources zones.

## PART 9: POTENTIAL ENVIRONMENTAL CONSEQUENCES

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1 Alternative 3 would reduce impacts to water quality by reducing erosion from  
2 unsustainable trails and roads, resulting in long-term, minor, beneficial, localized  
3 impacts. Short-term, minor, adverse impacts to water quality could occur from  
4 sedimentation and runoff during construction and restoration activities.

5 The removal of facilities, structures, roads, and the reclamation of disturbed building sites  
6 in the Camino del Canyon and Druid Heights area and the main part of Muir Woods  
7 National Monument, as well as the removal of the upper parking area, would improve  
8 would improve natural hydrologic processes. The impact would be long term, minor,  
9 beneficial, and localized. Short-term, minor, adverse impacts to water quality could occur  
10 from sedimentation and runoff during construction activities.

11 Impacts to floodplains would include the removal of the upper parking area and  
12 conversion of the remaining asphalt surface to a more pervious surface, as well as  
13 targeted restoration of Redwood Creek (including rock revetment) and its floodplain.  
14 This would restore flood water capacity and natural floodplain function and improve  
15 riparian wetlands and hydrologic processes. Water flow and floodplain function would  
16 also be restored by removing or re-designing bridges. These activities would result in  
17 long-term, moderate, beneficial impacts on floodplains and related water resources.

18 Visitor access and use would be expanded under alternative 3, potentially resulting in  
19 some increase in erosion along trails and at primary visitor use areas that could have  
20 impacts on water quality – the impact would be long term, negligible to minor, adverse,  
21 and localized.

22 The expanded NPS interpretive, educational and stewardship programs would engage  
23 many more visitors and could have a long-term, moderate, beneficial effect on water  
24 resources and hydrologic processes due to increased public understanding and support for  
25 resource protection and management—the impact would be long term, moderate,  
26 beneficial, and monument-wide.

### 27 ***Conclusion***

28 Overall, the impact to water-related resources from alternative 3 would be short and long  
29 term, range from negligible adverse to moderate beneficial, and be localized. Adverse  
30 impacts would occur from the presence and maintenance of existing facilities (including  
31 rock revetment), new recreational development and expanded visitor use and construction  
32 and restoration activities. Beneficial impacts would occur from the restoration of  
33 disturbed sites, removal of the upper parking area, improvements to Redwood Creek and  
34 restoration of in the Camino del Canyon and Druid Heights area.

35 No impairment of water resources would result from this alternative.

36

37

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1 **NATURAL RESOURCES - BIOLOGICAL RESOURCES**

2 **Habitat (Vegetation and Wildlife)**

3 ***No Action Alternative***

4 ***Analysis***

5 Under the no-action alternative, the presence and maintenance (or lack of maintenance in  
6 some cases) of existing facilities (including structures, parking lots, roads, and trails)  
7 would continue to cause localized impacts to vegetation and wildlife habitat by  
8 fragmenting natural areas and increasing the potential for exotic plant species to displace  
9 native species and affect native habitat. The rock revetment that lines Redwood Creek,  
10 and the trails in the floodplain, are affecting vegetation and wildlife habitat by limiting  
11 natural hydrologic process that support natural conditions. Furthermore, the developed  
12 and hardened trails (such as boardwalks) themselves act as barriers to wildlife movement  
13 on the ground and in the forest canopy. The impact of these activities would be long term,  
14 moderate, adverse, and localized, but would occur throughout the monument.

15 Rehabilitating disturbed sites would continue to improve the integrity and diversity of  
16 habitats available to aquatic and terrestrial organisms. Ongoing vegetation management,  
17 including the use of prescribed fire, and monitoring of plants and wildlife allows the  
18 National Park Service to improve native habitat conditions. The impact of these activities  
19 would be long term, minor, beneficial, and localized.

20 Recreational use would continue to reduce habitat integrity by trampling plants,  
21 introducing and increasing the spread of exotic species, causing disturbance (flushing and  
22 displacement) to animals, and increasing the potential for human-wildlife conflict  
23 resulting from habituation due to the presence of humans and the introduction of  
24 unnatural food sources. Recreational use also generates noise and unnatural light sources  
25 that affect wildlife. These activities would result in long-term, minor to moderate,  
26 adverse, localized impacts throughout the monument.

27 Park Service efforts to provide educational and participatory stewardship programs would  
28 continue to have a beneficial effect on water resources and hydrologic processes due to  
29 increased public understanding and support for resource protection and management –  
30 the impact would be long term, minor, beneficial, and monument-wide.

31 ***Conclusion***

32 Overall, the impact to vegetation and wildlife habitat from the no-action alternative  
33 would be long-term, range from minor-moderate adverse to minor beneficial, and be  
34 localized and monumentwide. Adverse impacts would occur from the presence and  
35 maintenance of existing facilities and visitor use. Beneficial impacts would occur from  
36 restoration and ongoing management and monitoring activities.

37 No impairment of vegetation or wildlife resources would result from this alternative.

38

1 **Alternative 1: Connecting People With The Parks) NPS Preferred**  
2 **Alternative For Park Sites In Marin, San Francisco, And San Mateo**  
3 **Counties**

4 **Analysis**

5 Under alternative 1, a variety of management zones would be used that would assist in  
6 the protection of vegetation and wildlife habitat. Approximately 91% of the park would  
7 be zoned using the Natural and Sensitive Resources zones.

8 The removal of facilities/structures and the reclamation of disturbed building sites in the  
9 Addition area and the main part of Muir Woods, as well as the removal of the upper  
10 parking lot, would improve would improve vegetation and wildlife habitat by improving  
11 habitat structure and the diversity of habitats available to support various species' needs.  
12 Human-wildlife conflicts would be reduced because the food concession in the  
13 monument would be eliminated, resulting in less wildlife habituation—resulting in a  
14 beneficial impact. These kinds of activities would reduce environmental stressors and  
15 increase the resiliency of species and systems to the effects of climate change. The  
16 impact would be long term, minor to moderate, beneficial, and localized. Short-term,  
17 minor, adverse impacts to habitat could occur during construction activities.

18 Visitor access and use would be expanded under alternative 1, potentially resulting in  
19 additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at  
20 primary visitor use areas—the impact would be long term, minor, adverse, and localized.

21 New recreational development (new facilities at Bridge 4 and welcome center at  
22 Highway 101) would have long-term, negligible, adverse, localized impacts on  
23 vegetation and wildlife due to the permanent loss of plants and wildlife habitat within the  
24 construction footprint. Short-term, minor, adverse impacts to vegetation would also occur  
25 from injury or loss of plants during construction activities; however, the area would be  
26 re-planted with native plants and the natural habitat would be reclaimed. Similarly, short-  
27 term adverse impacts to wildlife, such as disturbance, would occur during construction.

28 Impacts from an expanded NPS educational and stewardship programs would enhance  
29 the beneficial effect on impacts to habitats due to increased public understanding and  
30 support for resource protection and management – the impact would be long term, minor,  
31 beneficial, and monumentwide.

32 **Conclusion**

33 Overall, the impact to vegetation and wildlife habitat from alternative 1 would be short-  
34 and long-term, range from negligible adverse to minor-moderate beneficial, and be  
35 localized and parkwide. Adverse impacts would occur from new recreational  
36 development and expanded visitor use. Beneficial impacts would occur from the  
37 restoration of disturbed sites.

38 No impairment of water resources would result from this alternative.

39

1 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

2 **Analysis**

3 Under alternative 2, a variety of management zones would be used that would assist in  
4 the protection of vegetation and wildlife habitat. Approximately 99% of the park would  
5 be zoned using the Natural and Sensitive Resources zones.

6 Nearly all of the built environment would be removed from Muir Woods -  
7 facilities/structures in the Addition area as well as in the main part of Muir Woods, the  
8 upper and lower parking areas, unneeded management roads, and several miles of trails.  
9 Restoration of about 6,700 linear feet of Redwood Creek would improve habitat structure  
10 and the diversity of habitats available to support various species' needs—an enhancement  
11 for aquatic and terrestrial organisms. Restoring the creek and its floodplain function  
12 would result in increased soil deposition that would assist in the recruitment of redwood  
13 trees. Human-wildlife conflicts would be reduced because the food concession in the  
14 monument would be eliminated, resulting in less wildlife habituation—a beneficial  
15 impact. These kinds of activities would reduce environmental stressors and increase the  
16 resiliency of species and systems to the effects of climate change. The impact would be  
17 long term, moderate to major, beneficial, and localized.

18 Short-term, minor, adverse impacts to vegetation would also occur from injury or loss of  
19 plants during construction activities; however, the area would be re-planted with native  
20 plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts  
21 to wildlife, such as disturbance, would occur during construction.

22 Impacts from visitor access and use would be less than those described in the no-action  
23 alternative because it would be limited and highly controlled, resulting in long-term,  
24 minor, beneficial, localized impacts. Some impacts to vegetation (trampling) and wildlife  
25 (disturbance) along trails and at primary visitor use areas would still occur.

26 Impacts from an expanded NPS educational and stewardship programs would enhance  
27 the beneficial effect on habitats due to increased public understanding and support for  
28 resource protection and management. In addition, partnering with other agencies to  
29 manage visitor access and promote restoration and habitat management as part of the  
30 UNESCO Biosphere Reserve would elevate this issue and could result in benefits to  
31 vegetation and wildlife habitat. The above actions would result in long-term, minor,  
32 beneficial, and monumentwide impacts.

33 **Conclusion**

34 Overall, the impact to vegetation and wildlife habitat from alternative 2 would be short-  
35 and long-term, range from minor adverse to moderate-major beneficial, and be localized  
36 and monumentwide. Adverse impacts would occur from visitor use and construction  
37 activities. Beneficial impacts would occur from the restoration of disturbed sites and  
38 creeks.

39 No impairment of water resources would result from this alternative.

40

1 **Alternative 3: Focusing on National Treasures (NPS Preferred**  
2 **Alternative For Muir Woods National Monument)**

3 **Analysis**

4 Under alternative 3, a variety of management zones would be used that would assist in  
5 the protection of vegetation and wildlife habitat. Approximately 85% of the park would  
6 be zoned using the Natural and Sensitive Resources zones.

7 The removal of facilities/structures and the reclamation of disturbed building sites in the  
8 Addition area and the main part of Muir Woods, as well as the removal of the upper  
9 parking lot, would improve would improve vegetation and wildlife habitat by improving  
10 habitat structure and the diversity of habitats available to support various species' needs.  
11 Targeted restoration of Redwood Creek and its floodplain would improve habitat  
12 structure and the diversity of habitats available to support various species' needs—an  
13 enhancement for aquatic and terrestrial organisms. Human-wildlife conflicts would be  
14 reduced because the food concession in the monument would be eliminated, resulting in  
15 less wildlife habituation—resulting in a beneficial impact. These kinds of activities would  
16 reduce environmental stressors and increase the resiliency of species and systems to the  
17 effects of climate change. The impact would be long term, moderate, beneficial, and  
18 localized.

19 Short-term, minor, adverse impacts to vegetation would also occur from injury or loss of  
20 plants during construction activities; however, the area would be re-planted with native  
21 plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts  
22 to wildlife, such as disturbance, would occur during construction.

23 New recreational development (new trails and additional visitor amenities) would cause  
24 increased habitat fragmentation and loss, resulting in long-term, minor to moderate,  
25 adverse, localized impacts.

26 Visitor access and use would be expanded under alternative 3, potentially resulting in  
27 additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at  
28 primary visitor use areas—the impact would be long term, minor, adverse, and localized.

29 The expanded NPS interpretive, educational and stewardship programs would engage  
30 many more visitors and could have a long-term, moderate, beneficial effect on habitats  
31 due to increased public understanding and support for resource protection and  
32 management—the impact would be long term, moderate, beneficial, and monumentwide.

33 **Conclusion**

34 Overall, the impact to vegetation and wildlife habitat from alternative 3 would be short  
35 and long term, range from minor adverse to moderate beneficial, and be localized and  
36 monumentwide. Adverse impacts would occur from visitor use and construction  
37 activities. Beneficial impacts would occur from the restoration of disturbed sites and  
38 creeks.

39 No impairment of water resources would result from this alternative.

40

41

1 **Special Status Species (Federal and State Threatened and**  
2 **Endangered Species)**

3 ***No Action Alternative***

4 ***Introduction***

5 In general, many of the impacts to vegetation and wildlife described in the habitat section  
6 of this chapter would apply to special status species. For example, visitor use and new  
7 development would result in changes that would be adverse impacts to listed species and  
8 their habitats. Likewise, vegetation management and creek restoration would result in  
9 beneficial impacts to listed species and their habitats. Keeping this in mind, the analysis  
10 provided below generalizes about the effects of land management priorities and, where  
11 possible, focuses on the impacts that specific actions included in the alternatives may  
12 have on listed species and their habitats.

13 ***Federal Threatened and Endangered***

14 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
15 **Central California Coast (*O. mykiss*).** These two listed salmonid species are analyzed  
16 together because of the similarities in their life characteristics, habitat requirements, and  
17 the effects of impacts on the two species.

18 Within the vicinity of Muir Woods National Monument, coho salmon are restricted to  
19 Redwood Creek and Eastkoot Creek in Marin County. Steelhead trout are restricted to  
20 Redwood Creek and the drainages to Bolinas Lagoon and Rodeo Lagoon in Marin  
21 County. Therefore, impacts would be restricted to these locations.

22 NPS activities, such as vegetation management, creek restoration, and efforts to improve  
23 water quantity and quality within the Redwood Creek watershed, would have beneficial  
24 impacts on maintaining habitat characteristics that support anadromous fish. Projects at  
25 Muir Woods National Monument (vegetation management and creek restoration) would  
26 have beneficial impacts on habitat parameters required by the two species. These projects  
27 would improve riparian vegetation and in-stream habitat complexity—resulting in  
28 improvements to spawning, rearing, and migratory habitats. Critical habitat would be  
29 affected by restoration activities. Within the immediate project area, short-term, minor,  
30 adverse, localized impacts to nearly all essential features of critical habitat (substrate,  
31 water quality, water quantity, water temperature, water velocity, cover/shelter, food,  
32 riparian vegetation, space, and safe passage conditions) would be expected. However,  
33 these short-term impacts would be outweighed by the beneficial impacts expected to  
34 occur over the long term. The National Park Service would continue to monitor coho and  
35 steelhead populations and habitat and inventory potential habitat.

36 Controlling and managing visitor use would reduce impacts to coho and steelhead, such  
37 as habitat alteration and direct impacts from recreational use and development; however,  
38 some adverse impacts would continue. The upper and lower parking areas, as well as the  
39 rock revetment that lines sections of Redwood Creek, would continue to adversely affect  
40 the integrity of fish habitat by impacting natural floodplain function and therefore habitat  
41 integrity—resulting in an adverse impact.

42 The primary threats to coho and steelhead would continue to be loss and modification of  
43 habitat, water diversions, habitat channelization, sedimentation, and degraded water  
44 quality—adverse impacts associated with increased urbanization of the region.

1 Collectively, impacts to coho salmon and steelhead trout resulting from NPS actions that  
2 are part of the no-action alternative (the continuation of current management and trends)  
3 would be long term, beneficial, minor, and localized. The determination of effect under  
4 Section 7 of the Endangered Species Act would be “*may affect, likely to adversely affect*”  
5 for project specific actions in the short-term, and “*may affect, not likely to adversely*  
6 *affect*” for land use and monument management over the long term. Consultation for  
7 specific projects would occur as necessary.

8 **Northern spotted owl (*Strix occidentalis caurina*).** Suitable habitat for northern spotted  
9 owls include all evergreen forested habitat north of State Route 1 in Marin County.  
10 Within the planning area, known spotted owl populations are currently limited to Muir  
11 Woods National Monument, Homestead Valley, and the Stinson Gulch area. Therefore,  
12 impacts would be restricted to these locations.

13 Vegetation management actions designed to protect and enhance coniferous forest,  
14 including old-growth, second growth and remnant stands, would provide potential  
15 roosting, feeding, and nesting habitat for the owl—a beneficial impact. The National Park  
16 Service would continue to monitor owl populations and survey potential habitat. Visitor  
17 use in the area would continue to disturb owls. Barred owls would also likely continue to  
18 invade preferred spotted owl habitats—an adverse impact. Ongoing actions to reduce  
19 human-created noise and light at Muir Woods National Monument would result in  
20 improvements to habitat conditions. Current actions to reduce barred owl use and nesting  
21 would help reduce adverse impacts to spotted owls. The primary threat to the northern  
22 spotted owl in the region would continue to be the loss of habitat—an adverse impact  
23 associated with increased urbanization of the region. Other threats include expansion in  
24 the range of the barred owl (*Strix varia*), West Nile virus, changes in habitat due to  
25 Sudden Oak Death, and recreational pressure. Locally, in Muir Woods National  
26 Monument, the primary threat is from barred owls. Collectively, impacts to the northern  
27 spotted owl resulting from NPS actions that are part of the no-action alternative (the  
28 continuation of current management and trends) would be long term, minor, beneficial  
29 and localized. The determination of effect under Section 7 of the Endangered Species Act  
30 would be “*may affect, not likely to adversely affect.*”

31 **Marbled murrelet (*Brachyramphus marmoratus marmoratus*).** Marbled murrelet  
32 surveys of Muir Woods National Monument have been completed but no murrelets have  
33 been observed. Vegetation management actions designed to protect and enhance old-  
34 growth redwood forest at the monument would continue to provide suitable nesting  
35 locations for the murrelet – a beneficial impact. The primary threat to the marbled  
36 murrelet would continue to be the loss of nesting habitat and increased nest predation due  
37 to high corvid (i.e., crows and jays) densities—this would result in an adverse impact  
38 associated with increased urbanization of the region. Collectively, impacts to the marbled  
39 murrelet resulting from NPS actions that are part of the no-action alternative (the  
40 continuation of current management and trends) would be long term, minor, beneficial  
41 and localized. The determination of effect under Section 7 of the Endangered Species Act  
42 would be “*may affect, not likely to adversely affect.*”

43

1 **Conclusion**

2 **Table 21: Potential Impacts to Special Status Species of Muir Woods National Monument,**  
3 **No-action Alternative**

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	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
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	“may affect, not likely to adversely affect”
Marbled murrelet ( <i>Brachyramphus marmoratus marmoratus</i> )	Federal threatened	“may affect, not likely to adversely affect”

4

5 No impairment of listed species would result from this alternative.

6 **Alternative 1: Connecting People with the Parks**

7 **Introduction**

8 Under alternative 1, a variety of management zones would be used that would assist in  
9 the protection of soils and geologic resources and processes. Approximately 91% of the  
10 monument would be zoned using the Natural and Sensitive Resources zones.

11 **Federal Threatened and Endangered**

12 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
13 **Central California Coast (*O. mykiss*).** In addition to the impacts described under the no-  
14 action alternative, restoration activities (removal of some buildings and reclamation of  
15 native habitat in the Camino del Canyon and Druid Heights area, removal of the upper  
16 asphalt parking lot at the entrance, and relocation of trails) under alternative 1 would  
17 improve water quality and habitat conditions – a beneficial impact. The construction of  
18 new facilities at Bridge 4 would affect water quality and instream habitat causing short-  
19 term, minor, adverse, localized impacts to salmonids due to construction and restoration  
20 activities. Collectively, impacts to coho salmon and steelhead trout resulting from  
21 alternative 1 would be long term, beneficial, minor, and localized. The determination of  
22 effect under Section 7 of the Endangered Species Act would be “may affect, likely to  
23 adversely affect” for project specific actions in the short-term, and “may affect, not likely  
24 to adversely affect” for land use and monument management over the long-term.  
25 Consultation for specific projects would occur as necessary.

26 **Northern spotted owl (*Strix occidentalis caurina*).** In addition to the impacts described  
27 under the no-action alternative, restoration activities (removal of some buildings and  
28 reclamation of native habitat in the Camino del Canyon and Druid Heights area and  
29 removal of the upper parking lot at the entrance) under alternative 1 would improve

1 resource conditions and integrity, which could result in an increase of suitable nesting  
 2 habitat for spotted owls at Muir Woods National Monument. Impacts to the northern  
 3 spotted owl would be long term, minor, beneficial, and localized. The determination of  
 4 effect under Section 7 of the Endangered Species Act would be “*may affect, not likely to*  
 5 *adversely affect.*”

6 **Marbled murrelet (*Brachyramphus marmoratus marmoratus*).** In addition to the  
 7 impacts described under the no-action alternative, restoration activities (removal of some  
 8 buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights  
 9 area and removal of the upper parking lot at the entrance) under alternative 1 would  
 10 improve resource conditions and integrity, which could result in an increase of suitable  
 11 nesting habitat for the marbled murrelet at Muir Woods National Monument. Impacts to  
 12 the marble murrelet would be long term, minor, beneficial, and localized. The  
 13 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
 14 *affect, not likely to adversely affect.*”

15 **Conclusion**

16 **Table 22: Potential Impacts to Special Status Species of Muir Woods National Monument,**  
 17 **Alternative 1**

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	Federal threatened	“ <i>may affect, likely to adversely affect</i> ” for project specific actions in the short-term, and “ <i>may affect, not likely to adversely affect</i> ” for land use and monument management over the long-term
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	“ <i>may affect, not likely to adversely affect</i> ”
Marbled murrelet ( <i>Brachyramphus marmoratus marmoratus</i> )	Federal threatened	“ <i>may affect, not likely to adversely affect</i> ”

18

19 No impairment of listed species would result from this alternative.

20 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

21 **Introduction**

22 Under alternative 2, a variety of management zones would be used that would assist in  
 23 the protection of soils and geologic resources and processes. Approximately 99% of the  
 24 monument would be zoned using the Natural and Sensitive Resources zones.

25 **Federal Threatened and Endangered**

26 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
 27 **Central California Coast (*O. mykiss*).** In addition to the impacts described under the no-  
 28 action alternative, restoration activities (removal of buildings and reclamation of native  
 29 habitat throughout the monument, removal of the upper and most of the lower asphalt

1 parking area, and the restoration of about 6,700 linear feet of Redwood Creek, including  
2 removal of the rock rip rap, and its floodplain) under alternative 2 would improve water  
3 quality and habitat conditions. Water flow and floodplain function would be improved by  
4 removing or re-designing bridges that constrain floodplain function. Woody debris in the  
5 creek would increase as a result of restoring natural processes and would improve habitat  
6 structure and available nutrients to coho and steelhead. All of these activities would result  
7 in improvements to spawning and rearing habitat—resulting in a beneficial impact. There  
8 would be short-term adverse impacts from construction that would be outweighed by  
9 long-term habitat improvements. Collectively, impacts to coho salmon and steelhead  
10 trout resulting from alternative 2 would be long term, beneficial, moderate, and localized.  
11 The determination of effect under Section 7 of the Endangered Species Act would be  
12 “*may affect, likely to adversely affect*” for project specific actions in the short term, and  
13 “*may affect, not likely to adversely affect*” for land use and monument management over  
14 the long term. Consultation for specific projects would occur as necessary.

15 **Northern spotted owl (*Strix occidentalis caurina*).** In addition to the impacts described  
16 under the no-action alternative, restoration activities (removal of buildings and  
17 reclamation of native habitat throughout the monument, removal of the upper and most of  
18 the lower parking lot at the entrance, and the restoration of the Redwood Creek and its  
19 floodplain) under alternative 2 would improve resource conditions and integrity, which  
20 could result in an increase of suitable nesting habitat for spotted owls at Muir Woods  
21 National Monument. Forage opportunities would likely improve as a result of these  
22 activities. The scale of beneficial impacts under alternative 2 is greater than no-action  
23 alternative. Impacts to the northern spotted owl under alternative 2 would be long term,  
24 minor to moderate, beneficial, and localized. The determination of effect under Section 7  
25 of the Endangered Species Act would be “*may affect, not likely to adversely affect.*”

26 **Marbled murrelet (*Brachyramphus marmoratus marmoratus*).** In addition to the  
27 impacts described under the no-action alternative, restoration activities (removal of  
28 buildings and reclamation of native habitat throughout the monument, removal of the  
29 upper and most of the lower parking lot at the entrance, and the restoration of the  
30 Redwood Creek and its floodplain) under alternative 2 would improve resource  
31 conditions and integrity, which could result in an increase of suitable nesting habitat for  
32 the marbled murrelet at Muir Woods National Monument. Forage opportunities would  
33 likely improve as a result of these activities. The scale of beneficial impacts under  
34 alternative 2 is greater than the no-action alternative. Impacts to the marbled murrelet  
35 under alternative 2 would be long term, minor to moderate, beneficial, and localized. The  
36 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
37 *affect, not likely to adversely affect.*”

38

1 **Conclusion**2 **Table 23: Potential Impacts to Special Status Species of Muir Woods National Monument,**  
3 **Alternative 2**

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	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
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	"may affect, not likely to adversely affect"
Marbled murrelet ( <i>Brachyramphus marmoratus marmoratus</i> )	Federal threatened	"may affect, not likely to adversely affect"

4 No impairment of listed species would result from this alternative.

5

6 **Alternative 3: Focusing on National Treasures (NPS Preferred**  
7 **Alternative for Muir Woods National Monument)**8 **Introduction**9 Under alternative 3, a variety of management zones would be used that would assist in  
10 the protection of soils and geologic resources and processes. Approximately 85% of the  
11 monument would be zoned using the Natural and Sensitive Resources zones.12 **Federal Threatened and Endangered**13 **Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and Steelhead trout,**  
14 **Central California Coast (*O. mykiss*).** In addition to the impacts described under the no-  
15 action alternative, restoration activities (removal of buildings and reclamation of native  
16 habitat in the Camino del Canyon and Druid Heights area, removal of the upper asphalt  
17 parking lot at the entrance, and relocation of trails) under alternative 3 would improve  
18 water quality and habitat conditions—a beneficial impact. Targeted, but limited,  
19 restoration of Redwood Creek would improve resource conditions and integrity, resulting  
20 in improvements to spawning and rearing habitat. Water flow and floodplain function  
21 would be improved by removing or re-designing bridges that constrain floodplain  
22 function. There would be short-term adverse impacts from construction and restoration  
23 that would be outweighed by long-term habitat improvements. Collectively, impacts to  
24 coho salmon and steelhead trout resulting from alternative 3 would be long term,  
25 beneficial, minor to moderate, and localized. The determination of effect under Section 7  
26 of the Endangered Species Act would be "may affect, likely to adversely affect" for  
27 project specific actions in the short-term, and "may affect, not likely to adversely affect"

1 for land use and monument management over the long term. Consultation for specific  
2 projects would occur as necessary.

3 **Northern spotted owl (*Strix occidentalis caurina*).** In addition to the impacts described  
4 under the no-action alternative, restoration activities (removal of buildings and  
5 reclamation of native habitat in the Camino del Canyon and Druid Heights area and  
6 removal of the upper parking lot at the entrance) under alternative 3 would improve  
7 resource conditions and integrity, which could result in an increase of suitable nesting  
8 habitat for spotted owls at Muir Wood National Monument . Realignment of the Old  
9 Muir Woods road would reclaim some of the owl’s mapped foraging habitat. Targeted,  
10 but limited, restoration of Redwood Creek would improve resource conditions and  
11 integrity, resulting in potential improvements to nesting and foraging habitats. Visitor use  
12 would affect more areas of the monument under alternative 3 potentially increasing  
13 disturbance to individuals and potential owl nesting habitat—resulting in a long-term,  
14 minor, adverse, localized impact.

15 Collectively, impacts to the northern spotted owl from alternative 3 would be long term,  
16 minor, beneficial, and localized. The determination of effect under Section 7 of the  
17 Endangered Species Act would be “*may affect, not likely to adversely affect.*”

18 **Marbled murrelet (*Brachyramphus marmoratus marmoratus*).** In addition to the  
19 impacts described under the no-action alternative, restoration activities (removal of  
20 buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights  
21 area and removal of the upper parking lot at the entrance) under alternative 3 would  
22 improve resource conditions and integrity, which could result in an increase of suitable  
23 nesting habitat for the marbled murrelet at Muir Woods National Monument. Targeted,  
24 but limited, restoration of Redwood Creek would improve resource conditions and  
25 integrity, resulting in potential improvements to nesting and foraging habitats. Impacts to  
26 the marble murrelet would be long term, minor, beneficial, and localized. The  
27 determination of effect under Section 7 of the Endangered Species Act would be “*may*  
28 *affect, not likely to adversely affect.*”

29 **Conclusion**

30 **Table 24: Potential Impacts to Special Status Species of Muir Woods National Monument,**  
31 **Alternative 3**

Species	Status	ESA Determination
Coho salmon, Central California Coast ( <i>Oncorhynchus kisutch</i> ) and Steelhead trout, Central California Coast ( <i>O. mykiss</i> )	Federal threatened	“ <i>may affect, likely to adversely affect</i> ” for project specific actions in the short-term, and “ <i>may affect, not likely to adversely affect</i> ” for land use and monument management over the long-term
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Federal threatened	“ <i>may affect, not likely to adversely affect</i> ”
Marbled murrelet ( <i>Brachyramphus marmoratus marmoratus</i> )	Federal threatened	“ <i>may affect, not likely to adversely affect</i> ”

1 No impairment of listed species would result from this alternative.

2

3

## 4 **CULTURAL RESOURCES**

### 5 **Archeological Resources**

#### 6 ***No Action Alternative***

##### 7 ***Analysis***

8 Currently, there is little information available concerning prehistoric and historic  
9 archeological resources at Muir Woods National Monument. Comprehensive  
10 archeological surveys and consultation with American Indian tribes regarding  
11 archeological sites with ethnographic significance are needed. However, those known  
12 archeological resources, which include eight archeological sites associated with the Muir  
13 Woods National Monument Historic District as well as two isolated sites, are protected  
14 and preserved. Any additional sites identified through future inventories would also be  
15 protected. Without a comprehensive approach to archeological surveys and preservation,  
16 however, archeological resources may be subject to potential deterioration, lack of  
17 adequate protection in some cases, and possible loss of integrity from natural processes  
18 and/or inadvertent visitor activity. Actions under this alternative could have long-term to  
19 permanent, minor to moderate, adverse impacts on archeological resources.

##### 20 ***Conclusion***

21 Little information is available concerning prehistoric and historic archeological resources  
22 at Muir Woods National Monument and a comprehensive archeological survey and  
23 consultation with American Indian tribes are needed. Known archeological resources are  
24 protected and preserved as they become identified. Until a comprehensive survey is  
25 implemented, there is a potential for deterioration and lack of protection as a result of  
26 natural process and/or inadvertent visitor activity. Actions under this alternative could  
27 have long-term to permanent, minor to moderate, adverse impacts on archeological  
28 resources.

29 Under this alternative, the Section 106 determination of effect on archeological resources  
30 would be *adverse effect*.

31 Because there would be no major adverse impacts to a resource or value whose  
32 conservation is (1) necessary to fulfill specific purposes identified in the establishing  
33 legislation or proclamation of Muir Woods National Monument; (2) key to the natural or  
34 cultural integrity of the national monument; or (3) identified as a goal in the monument's  
35 general management plan or other relevant National Park Service planning documents,  
36 there would be no impairment of the national monument's archeological resources or  
37 values.

#### 38 ***Alternative 1: Connecting People with the Parks***

##### 39 ***Analysis***

40 Under this alternative, identified archeological resources, such as the eight archeological  
41 sites associated with the Muir Woods National Monument Historic District and two  
42 isolated sites, would be protected from unauthorized removal or other destructive

1 activities. Modification or relocation of trails and existing facilities could affect the  
2 integrity of some archeological resources, but every effort would be undertaken to avoid  
3 known or discovered archeological sites. If such sites could not be avoided, mitigation  
4 procedures would be undertaken in consultation with the California State Historic  
5 Preservation Office.

6 This alternative would result in more opportunities to identify, evaluate, and provide  
7 stabilization, security, or other protection to archeological resources commensurate with  
8 their significance and sensitivity since the majority of the monument would be in the  
9 Natural zone. In the Diverse Opportunities and Scenic Corridor management zones  
10 archeological resources would be stabilized and/or rehabilitated and incorporated into  
11 visitor opportunities, thus enhancing their protection through increased awareness and  
12 understanding.

13 Although some archeological resources in the national monument could be lost (resulting  
14 in permanent adverse impacts of minor intensity), these actions would generally result in  
15 long-term, beneficial impacts on archeological resources.

#### 16 ***Conclusion***

17 Identified archeological resources would continue to be protected and preserved under  
18 this alternative. Generally, this alternative would result in more opportunities to identify,  
19 evaluate, and provide stabilization, security, or other protection to archeological  
20 resources since the majority of the monument would be in the Natural zone.

21 Archeological resources in the Scenic Corridor and Diverse Opportunities zones would  
22 be stabilized or rehabilitated and incorporated into visitor opportunities. Although some  
23 archeological resources could be lost (resulting in permanent adverse impacts of minor  
24 intensity), these actions would generally result in long-term, beneficial impacts on  
25 archeological resources.

26 Under this alternative, the Section 106 determination of effect on archeological resources  
27 in Muir Woods National Monument would be *no adverse effect*.

28 No impairment of archeological resources would result from this alternative.

#### 29 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

##### 30 ***Analysis***

31 Identified archeological resources, such as the eight archeological sites associated with  
32 the Muir Woods National Monument Historic District and two isolated sites, would be  
33 protected from unauthorized removal or other destructive activities. Removal of much of  
34 the built environment, redesign of the monument's trail system, and restoration of natural  
35 processes could affect the integrity of some archeological resources, but every effort  
36 would be undertaken to avoid known or discovered archeological sites. If such sites could  
37 not be avoided, mitigation procedures would be undertaken in consultation with the  
38 California state historic preservation office.

39 Since much of the monument would be in the Sensitive Resources zone under this  
40 alternative, archeological resources would be identified, evaluated, and provided  
41 stabilization, security, or other protection commensurate with their significance and  
42 sensitivity.

1 Although some archeological resources could be lost (resulting in permanent adverse  
2 impacts of minor intensity), these actions would generally result in long-term, beneficial  
3 impacts on archeological resources.

4 ***Conclusion***

5 Identified archeological resources would continue to be protected and preserved under  
6 this alternative. Removal of much of the built environment, redesign of the monument's  
7 trail system, and restoration of natural processes could affect the integrity of some  
8 archeological resources. Since much of the monument would be in the Sensitive  
9 Resources zone under this alternative, archeological resources would be identified,  
10 evaluated, and provided stabilization, security, or other protection commensurate with  
11 their significance and sensitivity.

12 Although some archeological resources could be lost (resulting permanent adverse  
13 impacts of minor intensity), these actions would generally result in long-term, beneficial  
14 impacts on archeological resources.

15 Under this alternative, the Section 106 determination of effect on archeological resources  
16 in Muir Woods National Monument would be *no adverse effect*.

17 No impairment of archeological resources would result from this alternative.

18 ***Alternative 3: Focusing on National Treasures***

19 ***Analysis***

20 Identified archeological resources, such as the eight archeological sites associated with  
21 the Muir Woods National Monument Historic District and the two isolated sites, would  
22 be protected from unauthorized removal or other destructive activities. Construction of  
23 new trails and relocation/redesign of others and restoration of some natural processes  
24 could affect the integrity of some archeological resources, but every effort would be  
25 undertaken to avoid known or discovered archeological sites. If such sites could not be  
26 avoided, mitigation procedures would be undertaken in consultation with the California  
27 state historic preservation office.

28 In the Interpretive Corridor management zone, which embraces the redwood groves and  
29 Redwood Creek area in this alternative, archeological resources might be incorporated  
30 into interpretive opportunities for visitors. Archeological resources in much of the rest of  
31 the monument (managed under the Sensitive Resources management none) would be  
32 identified, evaluated, and provided stabilization, security, or other protection  
33 commensurate with their significance and sensitivity.

34 Although some archeological resources could be lost in the national monument (resulting  
35 in permanent adverse impacts of minor intensity), these actions would generally result in  
36 long-term, beneficial impacts on archeological resources.

37 ***Conclusion***

38 Identified archeological resources would be protected and preserved. In the Interpretive  
39 Corridor zone, which embraces the redwood groves and Redwood Creek area,  
40 archeological resources might be incorporated into interpretive opportunities for visitors.  
41 Archeological resources in much of the rest of the monument (within the Sensitive  
42 Resources zone) would be identified, evaluated, and provided stabilization, security, or  
43 other protection commensurate with their significance and sensitivity.

1 Although some archeological resources could be lost in the national monument (resulting  
2 in permanent adverse impacts of minor intensity), these actions would generally result in  
3 long-term ,beneficial impacts on archeological resources.

4 Under this alternative, the Section 106 determination of effect on archeological resources  
5 in Muir Woods National Monument would be *no adverse effect*.

6 No impairment of archeological resources would result from this alternative.

7

## 8 **Ethnographic Resources/Traditional Cultural Properties**

### 9 ***No Action Alternative***

#### 10 ***Analysis***

11 There are no identified ethnographic resources or traditional cultural properties in Muir  
12 Woods National Monument.

#### 13 ***Conclusion***

14 There are no identified ethnographic resources or traditional cultural properties in Muir  
15 Woods National Monument.

16 Under this alternative, the Section 106 determination of effect on ethnographic resources  
17 or traditional cultural properties would be *no resources or properties affected*.

18 No impairment of ethnographic resources or traditional cultural properties would result  
19 from this alternative.

### 20 ***Alternative 1: Connecting People with the Parks***

#### 21 ***Analysis***

22 There are no identified ethnographic resources or traditional cultural properties in Muir  
23 Woods National Monument.

#### 24 ***Conclusion***

25 There are no identified ethnographic resources or traditional cultural properties in Muir  
26 Woods National Monument.

27 Under this alternative, the Section 106 determination of effect on ethnographic resources  
28 or traditional cultural properties would be *no resources or properties affected*.

29 No impairment of ethnographic resources or traditional cultural properties would result  
30 from this alternative.

### 31 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

#### 32 ***Analysis***

33 There are no identified ethnographic resources or traditional cultural properties in Muir  
34 Woods National Monument.

#### 35 ***Conclusion***

36 There are no identified ethnographic resources or traditional cultural properties in Muir  
37 Woods National Monument.

1 Under this alternative, the Section 106 determination of effect on ethnographic resources  
2 or traditional cultural properties would be *no resources or properties affected*.

3 No impairment of ethnographic resources or traditional cultural properties would result  
4 from this alternative.

5 ***Alternative 3: Focusing on National Treasures***

6 ***Analysis***

7 There are no identified ethnographic resources or traditional cultural properties in Muir  
8 Woods National Monument.

9 ***Conclusion***

10 There are no identified ethnographic resources or traditional cultural properties in Muir  
11 Woods National Monument.

12 Under this alternative, the Section 106 determination of effect on ethnographic  
13 resources/traditional cultural properties would be *no resources or properties affected*.

14 No impairment of ethnographic resources or traditional cultural properties would result  
15 from this alternative.

16

17 **Historic Buildings and Structures**

18 ***No Action Alternative***

19 ***Analysis***

20 Historically significant rustic buildings in Muir Woods National Monument Historic  
21 District, such as the Administrative-Concession Building, and the collection of buildings  
22 in the utility area (i.e., Superintendent's Residence, Garage, and Equipment Shed), have  
23 been maintained and afforded preservation treatment. As financial resources and  
24 opportunities become available, they have been adaptively used for visitor/administrative  
25 services and park operations. Although the historic district's buildings have generally  
26 retained their integrity, the incremental and piecemeal approach to their preservation and  
27 maintenance, and their adaptive uses, have resulted in long-term, minor, adverse impacts  
28 because historic fabric and integrity have been lost.

29 The historic rustic buildings at Camp Hillwood have received preservation treatment and  
30 have been maintained for various adaptive uses as financial resources and opportunities  
31 become available. However, the incremental and piecemeal approach to their  
32 preservation and maintenance, as well as their adaptive uses, have resulted in long-term  
33 minor adverse impacts because historic fabric and integrity have been lost.

34 Plans for evaluating historic buildings in the Muir Woods Addition (including the  
35 Camino del Canyon, Conlan Avenue, and Druid Heights areas) under National Register  
36 of Historic Places criteria are currently underway. Buildings determined eligible for  
37 listing in the national register would be afforded appropriate preservation treatment, thus  
38 resulting in long-term, beneficial impacts because their deterioration would be halted. As  
39 the national monument's information database for historic buildings increases, the  
40 significance and preservation treatment of some buildings may also increase, resulting in  
41 a long-term, beneficial impact.

1 **Conclusion**

2 Although the historic buildings in the Muir Woods National Monument Historic District  
3 and the historic rustic buildings at Camp Hillwood have been afforded preservation  
4 treatment and have generally retained their integrity, the incremental and piecemeal  
5 approach to their preservation and maintenance, as well as their adaptive uses, has  
6 resulted in long-term, minor, adverse impacts because historic fabric and integrity has  
7 been lost.

8 Plans for evaluating historic buildings in the Muir Woods Addition (including the  
9 Camino del Canyon, Conlan Avenue, and Druid Heights areas) under National Register  
10 of Historic Places criteria are currently underway. Buildings determined eligible for  
11 listing in the national register would be afforded appropriate preservation treatment,  
12 resulting in long-term, beneficial impacts because their deterioration would be halted.

13 As the national monument's information database increases for historic buildings, the  
14 significance and preservation treatment of some buildings may also increase, resulting in  
15 a long-term, beneficial impact.

16 Under this alternative, the Section 106 determination of effect on historic buildings in  
17 Muir Woods National Monument would be *no adverse effect*.

18 No impairment of historic buildings and structures would result from this alternative.

19 **Alternative 1: Connecting People with the Parks**

20 **Analysis**

21 Under alternative 1, the Administrative-Concession Building would be rehabilitated and  
22 adaptively used to support interpretive, educational, and stewardship activities, while the  
23 Superintendent's Residence, Garage, and Equipment Shed would be rehabilitated and  
24 adaptively used for administrative purposes. These actions would result in long-term  
25 beneficial impacts because the historical and architectural values of the buildings would  
26 be preserved.

27 The Camp Hillwood rustic buildings would be rehabilitated and adaptively used for day  
28 use or overnight educational opportunities, resulting in long-term beneficial impacts  
29 because the historical and architectural values of the buildings would be preserved. Plans  
30 for evaluating the historic buildings in the Muir Woods Addition area under National  
31 Register of Historic Places criteria are currently underway. Buildings determined eligible  
32 for listing in the national register would be afforded appropriate preservation treatment  
33 and adaptively used, resulting in long-term beneficial impacts because their deterioration  
34 would be halted. Nonhistoric buildings determined to be nonessential in the Muir Woods  
35 Addition would be removed.

36 **Conclusion**

37 Historically significant rustic buildings in the Muir Woods National Monument Historic  
38 District, such as the Administrative-Concession Building, Superintendent's Residence,  
39 Garage, and Equipment Shed, and buildings at Camp Hillwood would be rehabilitated  
40 and adaptively used for interpretive, educational, recreational, administrative, and  
41 stewardship activities/purposes, thus resulting in long-term, beneficial impacts because  
42 their historical and architectural values would be preserved.

1 Plans for evaluating other historic buildings under National Register of Historic Places  
2 criteria in the Muir Woods Addition (including the Camino del Canyon, Conlan Avenue,  
3 and Druid Heights areas) are currently underway. Buildings determined eligible for  
4 listing in the national register would be afforded appropriate preservation treatment,  
5 resulting in long-term, beneficial impacts because their deterioration would be halted.

6 Historic structures in the national monument could suffer wear and tear from increased  
7 visitation and various adaptive uses, but monitoring the carrying capacity of historic  
8 structures could result in the imposition of visitation and use levels or constraints that  
9 would contribute to the stability or integrity of the resources without unduly hindering  
10 interpretation for visitors or appropriate use. Unstaffed or minimally staffed structures  
11 could be more susceptible to vandalism. However, continued ranger patrol and emphasis  
12 on visitor education regarding the significance of such resources and how visitors and  
13 users can reduce their impacts to historic resources, would discourage vandalism and  
14 inadvertent impacts and would minimize adverse impacts. Adverse impacts would be  
15 long-term and negligible to minor in intensity.

16 Under this alternative, the Section 106 determination of effect on historic buildings in  
17 Muir Woods National Monument would be *no adverse effect*.

18 No impairment of historic buildings and structures would result from this alternative.

### 19 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

#### 20 ***Analysis***

21 To more fully restore the primeval character and natural conditions of the old growth  
22 redwood forest, the majority of the built environment in Muir Woods National  
23 Monument, including historic buildings (i.e., the Superintendent's Residence and its  
24 associated buildings and the Administration-Concession Building in the Muir Woods  
25 National Monument Historic District and the buildings at Camp Hillwood) would be  
26 removed. Although the buildings in the Muir Woods Addition area (including the  
27 Camino del Canyon, Conlan Avenue, and Druid Heights areas) would be evaluated under  
28 National Register of Historic Places criteria, all historic buildings in the area would be  
29 removed under this alternative, and the area restored to a more natural setting. All of the  
30 aforementioned actions would result in permanent adverse impacts of major intensity  
31 because historically significant buildings would be lost.

32 No national register – listed or national register – eligible building would be removed  
33 without prior review by park and region cultural resource specialists, including approval  
34 by the regional director and consultation with the California state historic preservation  
35 office. Before a national register – listed or national register – eligible structure is  
36 removed, appropriate recordation of the building would be prepared in accordance with  
37 Section 110 (b) of the National Historic Preservation Act and the documentation  
38 submitted to the HABS/HAER/HALS program.

39 **SHPO narrative** Need to discuss how to describe the impact and impairment.

#### 40 ***Conclusion***

41 To fully restore the primeval character and natural conditions of the monument, all  
42 historic buildings in the monument (including those yet to be evaluated in the Muir  
43 Woods Addition area) would be removed under this alternative. These actions would

1 result in permanent adverse impacts of major intensity because historically significant  
2 buildings would be lost.

3 Under this alternative, the Section 106 determination of effect on historic buildings in  
4 Muir Woods National Monument would be *adverse effect*.

5 **This alternative would result in impairment of historic buildings and structures.**

6 **No impairment of historic buildings and structures would result from this alternative.**

### 7 ***Alternative 3: Focusing on National Treasures***

#### 8 ***Analysis***

9 Under alternative 3, historically-significant buildings in the Muir Woods National  
10 Monument Historic District that are associated with the American conservation  
11 movement, such as the Administration-Concession Building and Superintendent's  
12 Residence and associated buildings, would be rehabilitated and adaptively used to  
13 support visitor programming and services. The historic integrity of the Administration-  
14 Concession Building would be improved by removal of nonhistoric additions. Overall,  
15 actions under this alternative would result in long-term, beneficial impacts to historic  
16 buildings in the Muir Woods Historic District because their historical and architectural  
17 values would be preserved.

18 The majority of the historic rustic Camp Hillwood buildings would be stabilized and  
19 adaptively used, resulting in long-term, beneficial impacts because their deterioration  
20 would be halted. However, some buildings at Camp Hillwood could be removed,  
21 resulting in long-term, adverse impacts of minor intensity.

22 No national register – listed or national register – eligible building would be removed  
23 without prior review by park and region cultural resource specialists, including approval  
24 by the regional director and consultation with the California state historic preservation  
25 office. Before a national register – listed or national register – eligible structure is  
26 removed, appropriate recordation of the building would be prepared in accordance with  
27 Section 110 (b) of the National Historic Preservation Act and the documentation  
28 submitted to the HABS/HAER/HALS program.

29 Under this alternative, the Muir Woods Addition area (including Camino del Canyon,  
30 Conlan Avenue, and Druid Heights areas) would be managed to provide trail  
31 opportunities and restore native habitat and processes. Buildings in the Muir Woods  
32 Addition area would be evaluated under National Register of Historic Places criteria, and  
33 those determined eligible for listing in the national register would be stabilized, resulting  
34 in long-term, beneficial impacts because their deterioration would be halted. Nonhistoric  
35 buildings in the area would be removed.

#### 36 ***Conclusion***

37 Actions under this alternative would result in long-term, beneficial impacts to historic  
38 buildings in the Muir Woods Historic District because their historical and architectural  
39 values would be preserved.

40 The majority of the historic rustic Camp Hillwood buildings would be stabilized and  
41 adaptively used, resulting in long-term beneficial impacts because their deterioration  
42 would be halted. However, some buildings at Camp Hillwood could be removed,  
43 resulting in permanent adverse impacts of minor intensity.

1 Buildings in the Muir Woods Addition area would be evaluated under National Register  
2 of Historic Places criteria, and those determined eligible for listing in the national register  
3 would be stabilized, resulting in long-term beneficial impacts because their deterioration  
4 would be halted.

5 Overall, actions under this alternative would result in impacts to historic buildings  
6 ranging from long-term and beneficial to permanent and adverse of minor intensity.

7 Historic structures in the national monument could suffer wear and tear from increased  
8 visitation and various adaptive uses, but monitoring the carrying capacity of historic  
9 structures could result in the imposition of visitation and use levels or constraints that  
10 would contribute to the stability or integrity of the resources without unduly hindering  
11 interpretation activities or appropriate use. Unstaffed or minimally staffed structures  
12 could be more susceptible to vandalism. However, continued ranger patrol and emphasis  
13 on visitor education regarding the significance of such resources and how visitors and  
14 users can reduce their impacts to historic resources, would discourage vandalism and  
15 inadvertent impacts and would minimize adverse impacts. Adverse impacts would be  
16 long term and negligible to minor in intensity.

17 Under this alternative, the Section 106 determination of effect on historic buildings in  
18 Muir Woods National Monument would be *no adverse effect*.

19 No impairment of historic buildings and structures would result from this alternative.

20

## 21 **Cultural Landscape Resources**

### 22 ***No Action Alternative***

#### 23 ***Analysis***

24 Cultural landscape resources at Muir Woods, such as historic trails and roads (Main Trail  
25 [Bootjack Trail], Service Drive [Old Muir Woods Road], Fern Creek Trail [Fern Canyon  
26 Trail], Camp Alice Eastwood Trail/Wagon Road, Ocean View Trail, Bohemian Grove  
27 Trail, Hillside Trail, Ben Johnson Trail, Dipsea Trail, and Dipsea [Deer Park] Fire Road),  
28 along with five bridges on the Main, Fern Creek, and Ben Johnson trails have been  
29 afforded preservation treatment and maintained for visitor use and enjoyment as financial  
30 resources and opportunities became available; this has resulted in some general long-  
31 term, beneficial impacts. Although some of the historic CCC-constructed erosion-control  
32 structures in Redwood Creek have collapsed or have been broken up to restore salmon  
33 habitat (resulting in permanent adverse impacts of minor intensity), an extensive system  
34 of stone revetments along Redwood Creek has been maintained and remains in place  
35 (resulting in long-term beneficial impacts). Historically significant memorials, including  
36 those for Gifford Pinchot, William Kent, Franklin D. Roosevelt, and Ralph Waldo  
37 Emerson, as well as the Redwood Cross Section Interpretive Pavilion, have been afforded  
38 preservation treatment, resulting in overall long-term and beneficial impacts because their  
39 historical and cultural values have been preserved.

40 Overall the landscape retains its historic natural appearance, including the redwood forest  
41 groves (Redwood Forest, Bohemian Grove, and Cathedral Grove), trails, and stone  
42 revetments. However, the loss of several rustic buildings, most of the log footbridges, and  
43 virtually all of the small-scale features has somewhat altered the monument's historic

1 cultural landscape rustic design. Although preservation treatment of vestiges of the  
2 cultural landscape is ongoing as financial resources and opportunities become available,  
3 such efforts have resulted in incremental and piecemeal preservation, as well as loss of  
4 some resources and deterioration of others during recent decades. Overall, the  
5 aforementioned actions have resulted in impacts to the national monument's cultural  
6 landscape resources ranging from long term and beneficial to permanent and long-range  
7 adverse of minor intensity. .

8 The-national monument staff works to preserve cultural landscapes that have integrity.  
9 As understanding of cultural landscape resources evolve, the park staff would continue to  
10 work in preserving landscape resources that retain their integrity. Although the  
11 significance of cultural landscape values in the immediate area of Druid Heights has not  
12 been evaluated under National Register of Historic Places criteria, as the national  
13 monument staff learns more about these resources, programs may be undertaken to  
14 preserve their significant historical values.

#### 15 **Conclusion**

16 The cultural landscape of Muir Woods National Monument historically illustrated  
17 characteristics of the NPS rustic style. Overall, the cultural landscape at Muir Woods  
18 National Monument retains its historic natural appearance although a number of cultural  
19 landscape resources and features have been lost, and preservation treatment of cultural  
20 landscape features is ongoing as financial resources and opportunities become available.  
21 As understanding of cultural landscape resources increases, he national monument staff  
22 would work to preserve cultural landscapes that have integrity. Thus, actions under this  
23 alternative would result in impacts to cultural landscape resources that range from long  
24 term and beneficial to permanent and permanent adverse of minor intensity. Under this  
25 alternative, the Section 106 determination of effect on cultural resource features is *no*  
26 *adverse effect*.

27 No impairment of Cultural Landscape Resources would result from this alternative.

#### 28 **Conclusion**

29 The cultural landscape of Muir Woods National Monument historically illustrated  
30 characteristics of NPS rustic style. Overall the cultural landscape at Muir Woods National  
31 Monument retains its historic natural appearance, and preservation treatment of cultural  
32 landscape features is ongoing as opportunities arise resulting in mostly long-term,  
33 negligible, and beneficial impacts and some individual impacts that are minor and  
34 adverse.

35 Under this alternative, the Section 106 determination of effect on cultural resource  
36 features is *no adverse effect*.

37 No impairment of Cultural Landscape Resources would result from this alternative.

### 38 **Alternative 1: Connecting People with the Parks**

#### 39 **Analysis**

40 Alternative 1 would retain much of the monument's historic and natural cultural  
41 landscape setting, including the present system of trails through the forest and associated  
42 facilities. Some current activities, however, would be relocated to reduce their impacts on  
43 the ecosystem and to provide a more natural park experience, resulting in general long-  
44 term and beneficial impacts to cultural landscape resources. Actions under this alternative

1 would include preservation treatment of the Ben Johnson, Fern Creek, Main, and Dipsea  
2 trails, which would result in long-term and beneficial impacts because their historical and  
3 cultural values would be preserved. New elements would be introduced to the cultural  
4 landscape, such as new restrooms and drinking water facilities in the Redwood Creek  
5 corridor, resulting in long-term, adverse impacts of minor intensity to the cultural  
6 landscape because its integrity would be diminished.

7 Overall, actions under this alternative would generally result in long-term and beneficial  
8 impacts to cultural landscape resources because much of the monument's historic cultural  
9 landscape setting would be preserved. However, the introduction of new elements into  
10 the cultural landscape, such as restrooms and drinking water facilities, would result in  
11 some long-term, adverse impacts of minor intensity.

12 ***Conclusion***

13 Overall, actions under this alternative would generally result in long-term, beneficial  
14 impacts to cultural landscape resources because much of the monument's historic cultural  
15 landscape, including historic trails and associated facilities, would be preserved.  
16 However, the introduction of new elements into the cultural landscape, such as restrooms  
17 and drinking water facilities, would result in some long-term, adverse impacts of minor  
18 intensity.

19 Under this alternative, the Section 106 determination of effect on cultural landscape  
20 resources in Muir Woods National Monument would be *no adverse effect*.

21 No impairment of Cultural Landscape Resources would result from this alternative.

22 ***Alternative 2: Preserving and Enjoying Coastal Ecosystems***

23 ***Analysis***

24 Under alternative 2, cultural landscape resources in the national monument would be  
25 secondary to natural resource restoration goals and objectives. The majority of the built  
26 environment, including cultural landscape resources and historic structures, such as the  
27 CCC-constructed stone revetment erosion-control structures in Redwood Creek, would be  
28 removed for natural resource and floodplain system restoration. The historic trail system  
29 throughout the monument would be redesigned to a more pristine setting that emphasized  
30 natural resource preservation of the historic redwood groves (including the Redwood  
31 Forest, Bohemian Grove, and Cathedral Grove). Various historic trails and bridges would  
32 be removed, relocated, or redesigned to strengthen the natural conditions. Although  
33 some cultural landscape features would be preserved if not in conflict with natural  
34 resource goals, many would be lost and some would be redesigned. Thus, actions under  
35 this alternative would result in permanent and long-term adverse impacts of major  
36 intensity to the national monument's cultural landscape resources.

37 No national register – listed or national register – eligible cultural landscape resource  
38 would be removed without prior review by park and region cultural resource specialists,  
39 including approval by the regional director and consultation with the California state  
40 historic preservation office. Before a national register – listed or national register –  
41 eligible structure is removed, appropriate documentation recording the building would be  
42 prepared in accordance with Section 110 (b) of the National Historic Preservation Act  
43 and the documentation submitted to the HABS/HAER/HALS program.

44 **SHPO narrative** Need to discuss how to describe the impact and impairment.

1 **Conclusion**

2 To more fully restore the primeval character and natural conditions of the monument  
3 virtually all cultural landscape features and historic structures would be removed under  
4 this alternative. Although some cultural landscape features would be preserved if not in  
5 conflict with natural resource goals, many would be lost and some would be redesigned  
6 or relocated. Thus, actions under this alternative would result in permanent and long-term  
7 adverse impacts of major intensity to the national monument's cultural landscape  
8 resources. SHPO narrative Need to discuss how to describe the impact and impairment.

9 Under this alternative, the Section 106 determination of effect on cultural landscape  
10 resources in Muir Woods National Monument would be *adverse effect*.

11 This alternative would result in impairment of cultural landscape resources.

12 **Alternative 3: Focusing on National Treasures – NPS Preferred**  
13 **Alternative**

14 **Analysis**

15 Of the four alternatives considered in this general management plan, alternative 3 would  
16 provide for the most comprehensive retention, rehabilitation, and preservation of cultural  
17 landscape resources in Muir Woods National Monument. The monument would be  
18 presented to visitors as a contemplative outdoor museum where they would experience  
19 and discover the primeval forest ecosystem (including the preserved Redwood Forest,  
20 Bohemian Grove, and Cathedral Grove) and the monument's place in the history of the  
21 American conservation movement. Accordingly, the majority of historic cultural  
22 landscape resource features associated with those themes would be rehabilitated and  
23 adaptively used to support visitor programming and services, resulting in long-term,  
24 beneficial impacts because the overall integrity and the historical values of the  
25 monument's cultural landscape features would be preserved as part of the greater Muir  
26 Woods natural ecosystem.

27 While construction of some new trails in the national monument would result in long-  
28 term, minor, adverse impacts to the cultural landscape because the historic integrity of the  
29 monument would be diminished by their introduction, rehabilitation of other historic  
30 trails would result in long-term, beneficial impacts to cultural landscape resources  
31 because the historical and cultural values of the trails would be preserved. Relocation or  
32 redesign of a few historic trails would result in long-term, adverse impacts of minor  
33 intensity to cultural landscape resources because features of the historic trails and their  
34 associated facilities could be lost. Removal of selected portions of the CCC-constructed  
35 erosion-control stone revetments in Redwood Creek would result in permanent, adverse  
36 impacts of minor intensity, while rehabilitation and interpretation of other revetment  
37 portions would result in long-term, beneficial impacts because their historical values  
38 would be preserved.

39 **Conclusion**

40 Implementation of this alternative would provide for the most comprehensive retention,  
41 rehabilitation, and preservation of cultural landscape resources in Muir Woods National  
42 Monument, resulting in overall long-term, beneficial impacts because the historical and  
43 cultural values and integrity of the monument's cultural landscape would be preserved.  
44 Construction of new trails and the relocation or redesign of others, as well as the removal  
45 of portions of the CCC-constructed erosion-control stone revetments in Redwood Creek,

1 would result in some permanent and long-term, adverse impacts of minor intensity,  
2 because some cultural landscape resources would be lost and the cultural landscape's  
3 integrity would be diminished. Thus, the overall impacts of this alternative on the  
4 monument's cultural landscape resources would be long term and beneficial, although  
5 there would be some permanent and long-term adverse impacts of minor intensity.

6 Under this alternative, the Section 106 determination of effect on cultural landscape  
7 resources in Muir Woods National Monument would be *no adverse effect*.

8 No impairment of Cultural Landscape Resources would result from this alternative.

9

## 10 **Park Collections**

11 The alternatives for Muir Woods National Monument's park collections are covered  
12 under the environmental consequences in the "Actions Common to All Actions  
13 Alternatives" section and by each alternative for Golden Gate National Recreation Area.

14 No impairment of park collections would result from this alternative.

15

16

## 17 **VISITOR USE AND EXPERIENCE**

### 18 **No Action Alternative**

#### 19 ***Analysis***

20 The primary visitor activities of hiking through the redwood forest and enjoying the  
21 sights and sounds of Muir Woods National Monument would continue in this alternative.  
22 The existing interpretive programs would also continue. In addition, visitors would still  
23 have some opportunities for self-guided exploration, which is a valued characteristic of  
24 visiting the monument. During scoping for the plan, there were some mentions of  
25 additional recreation opportunities that were desired including more trail access to the  
26 Camino del Canyon area and with connections to the surrounding state park lands. In this  
27 alternative, the Camino del Canyon area would remain largely inaccessible to most  
28 visitors and no additional trail connections would be established with adjacent public  
29 lands. Visitors have also expressed interest in more diverse interpretive programs and this  
30 alternative would not include additional programming or educational facilities to support  
31 programming. The lack of some of these desired improvements would be a long-term,  
32 moderate, adverse impact on those visitors seeking these opportunities.

33 The monument continues to provide some opportunities for solitude, quiet and  
34 connection with the primeval forest. These characteristics of the park's visitor  
35 opportunities are highly valued by the public. This alternative would continue to promote  
36 these values, including encouraging modification of visitor behavior through strategies  
37 such as quiet zones and quiet days to minimize impacts on the natural soundscape.  
38 However, a large number of visitors have expressed concerns about the amount of noise  
39 and crowding that still occurs during peak times, especially when groups are present in  
40 the woods.

1 Visitors would continue to have access to the monument via private automobile as well as  
2 the park shuttle during the peak season. The shuttle has improved access options to the  
3 monument and eased some of the congestion on surrounding access roads, a long-term,  
4 moderate, beneficial impact. However, there is still concern about the amount of informal  
5 parking that is occurring at the monument, and the amount of congestion from vehicles,  
6 buses, and pedestrians competing for the same space at the monument entrance. These  
7 issues result in a long-term, moderate, adverse impact on the visitor experience.

8 Visitor safety at the monument is considered to be good in the no action alternative,  
9 except for the safety concerns associated with informal parking along the entrance road  
10 during peak visitation. The real and perceived safety problems associated with informal  
11 parking will continue in this alternative resulting in a long-term, minor, adverse impact.

## 12 **Conclusion**

13 The no-action alternative would result in long-term, minor to moderate, beneficial  
14 impacts from continued opportunities to experience the unique and highly valued  
15 characteristics of the primeval forest via hiking trails and educational programs. These  
16 activities and experiences are highly valued by visitors. However, minor to moderate  
17 adverse impacts on the visitor experience from visitor crowding, noise, and informal  
18 parking during peak times would continue.

19

## 20 **Alternative 1: Connecting People with the Parks**

### 21 **Analysis**

22 Alternative 1 would provide for self-guided exploration in a natural park setting while  
23 making connections to a wider array of opportunities on adjacent public lands. Some  
24 additional programming and enhanced facilities would give visitors new means to  
25 understand the conservation history and primeval forest ecosystem. Additional trail and  
26 overnight opportunities in the Camino del Canyon area would also allow for new visitor  
27 opportunities. All of these actions would expand the range of activities for visitors and  
28 allow them to better understand the important stories of the monument. These actions  
29 would provide visitors with a long-term, minor to moderate, beneficial impact on their  
30 use and experience.

31 The monument would continue to welcome a diversity of visitors and support a range of  
32 recreation activities. New recreation activities would largely be focused on new  
33 interpretive, educational and stewardship activities that would be staged at the  
34 Administration-Concession Building and in the Camino del Canyon area. Also, visitors  
35 would be introduced to ways of accessing adjacent landscapes and recreational  
36 opportunities of surrounding public lands, creating a more seamless connection to the  
37 diversity of day and overnight recreation opportunities in the surrounding area.

38 Visitors would be provided a variety of programs and opportunities in exploring the  
39 natural and conservation themes throughout the monument, appealing to many learning  
40 styles and increasing the breadth of stories being told. Interpretation on the shuttle bus  
41 would orient visitors and allow them to better plan their visit. Expanded structured  
42 educational opportunities by park staff and partners would also add to the learning  
43 opportunities available to visitors. This would include new overnight educational  
44 opportunities in the Camp Hillwood area. Improved learning opportunities were highly

1 desired by some members of the public. These added interpretive and educational  
2 programs would have a long-term, minor to moderate, beneficial effect to the visitor  
3 experience.

4 Alternative 1 would allow visitors improved access to the monument during peak times  
5 by providing increased shuttle service and a more convenient shuttle stops. The increased  
6 shuttle access to the woods would reduce traffic congestion at the park entry, minimizing  
7 visitor frustration and conflicts on arrival. However, some visitors may experience  
8 adverse effects if they are not able to board the shuttle in a timely manner. Visitors who  
9 would prefer to park at the monument to maintain flexibility in their schedule would also  
10 be adversely affected by the proposed reduction in parking at the monument. Within the  
11 monument, visitor access would be improved and congestion reduced through greater  
12 dispersion of visitors, new facilities, and accessible trails. This would include upgrades to  
13 trails for purposes of accessibility and resource protection, along with water and restroom  
14 facilities at Bridge 4. The above actions would result in long-term, moderate, beneficial  
15 impacts.

16 The monument's natural setting and its primary natural resource would be enhanced by  
17 reconfiguring parking away from the entrance to the primeval redwood forest and  
18 restricting parking along the road to the monument. Pulling vehicle circulation away from  
19 the monument would also improve the natural soundscape. Implementation of a quiet  
20 zone would allow visitors to understand the value that is placed on the natural quiet of the  
21 forest and encourage visitors to help provide a quiet and contemplative experience for all.  
22 These actions would have a long-term, moderate, beneficial impact on the visitor  
23 experience at Muir Woods National Monument.

24 Because of the efforts made to improve the safety of the circulation system and parking at  
25 the monument, visitor safety would be improved. The potential for pedestrian and  
26 vehicular conflicts would be reduced as well as conflicts between vehicles.

### 27 **Conclusion**

28 Under alternative 1, impacts to the visitor experience would be long term, minor to  
29 moderate, and beneficial. The improvements to the arrival experience to the park, along  
30 with enhanced educational and interpretive opportunities, directly address the primary  
31 interests and concerns of most visitors to the monument. It is likely that a similar number  
32 of visitors could be accommodate in this alternative while still meeting desired conditions  
33 given the ability to better disperse and manage visitation on the park shuttle and trails, a  
34 long term minor beneficial impact.

## 35 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

### 36 **Analysis**

37 Alternative 2 would restore the primeval character of the old-growth forest and the visitor  
38 experience would be more primitive than it is today. The majority of the built  
39 environment would be removed and only light-on-the-land trails would reach into the  
40 heart of the forest. While the range of activities would be limited, the experience of the  
41 primeval forest would be heightened; benefiting visitors who are interested most in the  
42 natural ecological processes of the forest and creek.

43 Visitors would still have opportunities to enjoy the primary recreation activity of the  
44 monument, hiking through the forest. The experience along the trail setting would be

1 improved with less encounters with others and more emphasis on connection with the  
2 surrounding natural environment. Visitors would also have opportunities for educational  
3 and stewardship programs focused on exploring the redwood forest ecology and the  
4 conservation of Muir Woods National Monument. Participatory programs would  
5 encourage a deeper and more meaningful understanding of the forest. Interpretation on  
6 the shuttle bus would orient visitors and allow them to better plan their visit. This  
7 alternative provides a different visitor experience than the no-action alternative. If  
8 managed well, the alternative 2 could result in a long-term, moderate, beneficial visitor  
9 experience where visitors have a more hands-on interaction with the primeval redwood  
10 forest.

11 The full-time shuttle access to Muir Woods National Monument will reduce traffic  
12 congestion at the park entry, minimizing visitor frustration and conflicts on arrival; a  
13 long-term, moderate, beneficial impact. However, there would be long-term, moderate,  
14 adverse effects for those that cannot get on the shuttle in a timely manner. Some visitors  
15 who would prefer to park at the monument would also be adversely affected by the  
16 substantial reduction in parking. Additionally, the restriction on tour bus access would  
17 make access for tour groups less convenient.

18 The park setting would be restored to a more naturalistic setting, with few indications of  
19 built structures. All structures would be moved out of the woods, giving visitors more  
20 natural viewscales and soundscapes. The removal of all parking except for a small  
21 accessible lot would increase the naturalness of the arrival area to Muir Woods National  
22 Monument. It also would reduce the noise and pollution caused by personal vehicles and  
23 tour buses.

24 Because of the efforts made to improve the safety of the circulation system and parking at  
25 the monument, visitor safety would be improved. The potential for pedestrian and  
26 vehicular conflicts would be reduced as well as conflicts between vehicles. The increased  
27 rustic nature of the trail system may slightly increase the potential for safety incidences, a  
28 potential adverse impact.

## 29 **Conclusion**

30 Alternative 2 would result in long term, minor to moderate, beneficial impacts to the  
31 visitor experience, primarily due to enhancements to the monument's natural setting and  
32 the promotion of a more authentic and connected visitor experience with the primeval  
33 forest. However, long-term, minor to moderate, adverse impacts to the visitor experience  
34 would also occur, since some visitors would likely find it challenging to visit given the  
35 lack of parking and support facilities, and the increased regulation of visitor access. Also,  
36 it is likely that alternative 2 would not further encourage use of the monument by diverse  
37 groups given more limited visitor opportunities and services. It is likely that a smaller  
38 number of visitors could be accommodated in this alternative given more limited  
39 facilities and the emphasis on less visitor encounters in the woods, a long term minor  
40 adverse impact.

## 41 **Alternative 3: Focusing on National Treasures**

### 42 **Analysis**

43 Alternative 3 is the NPS preferred alternative and would present Muir Woods National  
44 Monument as a contemplative outdoor museum where visitors would explore and

1 understand the primeval forest and the monument’s place in American conservation  
2 history. Visitors would have greater diversity of recreational opportunities, along with  
3 multiple types of educational and stewardship opportunities provided to reach a more  
4 diverse audience with various learning styles.

5 Existing recreation activities would largely continue, along with the addition of thematic  
6 trails within the heart of the woods. There would also be new trail opportunities in  
7 Camino del Canyon. Other new opportunities would involve increased stewardship and  
8 educational programs that allow visitors first-hand experience in the “living museum” of  
9 the monument. The use of the administration-concessions building in the woods for  
10 expanded programs and research would allow for a wider range of recreation and  
11 learning opportunities. The park staff would be focused on facilitating improved  
12 understanding of park values to a broad audience. New and diverse learning opportunities  
13 were highly desired by some members of the public. Investment in new and  
14 comprehensive on-site interpretive and educational programs would expand the visitor  
15 opportunities and understanding of the monument’s resources and thereby effect long-  
16 term, moderate, beneficial impacts on the visitor experience.

17 The preferred alternative would allow visitors improved access to the monument during  
18 peak times by providing increased shuttle service and more convenient shuttle stops. The  
19 increased shuttle access to Muir Woods National Monument would reduce traffic  
20 congestion at the park entry, minimizing visitor frustration and conflicts on arrival; a  
21 long-term, moderate, beneficial impact. However, there would be long-term, moderate,  
22 adverse effects for those that cannot get on the shuttle in a timely manner. Some visitors  
23 who would prefer to park at the monument would also be adversely affected by the  
24 partial reduction in parking.

25 Within the monument, visitor access would be improved and congestion reduced through  
26 greater dispersion of visitors on thematic trails and within the newly opened Camino del  
27 Canyon area. However, some areas that would be zoned for sensitive resources would  
28 have reduced or more controlled visitor access. Camp Hillwood would be used for walk-  
29 in day use programs and thereby restrict access for existing overnight group  
30 opportunities.

31 Viewsheds and soundscapes at the monument would be improved in the preferred  
32 alternative. Visitors would experience a more natural setting upon arrival at the  
33 monument as a result of the reconfiguration of the parking lots. Dispersal of visitors  
34 among thematic trails and within the Camino del Canyon area would improve both the  
35 soundscapes and viewsheds, as fewer people would be in any one place at any one time.  
36 Soundscape management practices would also improve the soundscape. Overall, the  
37 above actions would have a long-term, moderate, beneficial impact to the visitor  
38 experience.

39 Because of the efforts made to improve the safety of the circulation system and parking at  
40 the monument, visitor safety would be improved. The potential for pedestrian and  
41 vehicular conflicts would be reduced, as would the potential for conflicts between  
42 vehicles.

43 **Conclusion**

44 Actions proposed in the NPS preferred alternative would result in long term, minor to  
45 moderate, beneficial impacts to the visitor experience. This alternative contributes to the

1 purpose of the monument by providing high quality recreation and education  
2 opportunities that welcome a wide audience to experience and understand the most  
3 important resources and stories of Muir Woods National Monument. It is likely that a  
4 reasonably large number of visitors could be accommodated in this alternative while still  
5 meeting desired conditions, given the ability to better disperse and manage visitation on  
6 the park shuttle and trails, a long-term, minor, beneficial impact.

7

8

## 9 **SOCIAL AND ECONOMIC ENVIRONMENT**

### 10 **No Action Alternative**

#### 11 ***Analysis***

12 As detailed in the “Social and Economic Environment” section of Part 8, parklands such  
13 as Muir Woods National Monument are integral in sustaining a high quality of life in a  
14 highly urbanized community such as the Bay Area. The no-action alternative for the  
15 national monument would continue to provide open space, a wildland experience, and  
16 public access, while maintaining a nationally-significant natural resource. As other Bay  
17 Area private land continues to develop and urbanize into the future, Muir Woods  
18 National Monument will become exponentially more valuable to the community and its  
19 quality of life. The education and stewardship opportunities for the residents would be  
20 maintained, and possibly improved as resources become available, which would continue  
21 to enhance the quality of life for local residents by fostering a conservation ethic among  
22 them. Under the no-action alternative, the NPS would also continue to collaborate with  
23 other local land managers to maintain its “watershed approach” to land management.  
24 This would maintain a communitywide—and perhaps regionwide—effort for wildland  
25 protection, which ultimately would benefit the quality of life for local residents. This  
26 collaboration would also continue to improve community awareness and engagement in  
27 park and regional issues. Collectively, these effects to quality of life result in an impact  
28 that is long term, moderate, and beneficial in the context of the gateway communities in  
29 Marin County, and long term, minor, and beneficial for the three adjacent counties.

30 In terms of effects on the local economy, the no-action alternative for Muir Woods  
31 National Monument would maintain the following: the current level of employment for  
32 the National Park Service and concessioners, NPS spending for park operations and  
33 contracts. The value of these attributes to the local economy is discussed in the Social and  
34 Economic Affected Environment section. The no-action alternative would result in a  
35 negligible change from current conditions in impact to the local economy in the future.  
36 However, as with all other alternatives, the no-action alternative would maintain Muir  
37 Woods National Monument’s overall intrinsic contribution to the local economy in the  
38 Bay Area. By continuing to provide open space preservation, recreation opportunities,  
39 and an aesthetic natural backdrop, the national monument would continue to help make  
40 the Bay Area a place for companies and talented professionals to call home. In other  
41 words, the Bay Area’s quality of life becomes a draw for business and economic growth  
42 with the help from places like Muir Woods National Monument. The no-action  
43 alternative will sustain and enhance this economic value to the Bay Area. This results in  
44 an impact that is long term, moderate, and beneficial in the context of the local gateway

1 communities in Marin County. The impact would be long term, minor to moderate, and  
2 beneficial for the adjacent three counties.

3 **Conclusion**

4 In the context of the local gateway communities and the three adjacent counties, the  
5 beneficial impacts to the social and economic environment from the no-action alternative  
6 would be long term and minor to moderate. The beneficial impacts could result from  
7 maintaining the park's contribution to the local economy and quality of life, existing  
8 education and stewardship programs, as well as maintaining collaborative efforts with  
9 several local governments and land managers to maintain and expand open land  
10 protection in the region.

11

12 **Alternative 1: Connecting People with the Parks**

13 **Analysis**

14 Alternative 1 would maintain the quality of life and economic benefits that the national  
15 monument provides to the local communities and counties, as described in the analysis of  
16 the no-action alternative. By providing open lands adjacent to a large urban center and  
17 continuing education and stewardship programs for local residents, the monument would  
18 continue to improve the quality of life for those in nearby communities. This alternative  
19 would also sustain the monument's intrinsic contribution to the local economy in the Bay  
20 Area (once again, as noted in the no-action alternative analysis above). By continuing to  
21 provide open space preservation, recreation opportunities, and an aesthetic natural  
22 backdrop, the national monument would continue to help make the Bay Area a place for  
23 companies and talented professionals to call home. These contributions to the local  
24 economy and quality of life would result in an impact that is long-term, moderate, and  
25 beneficial in the context of the local gateway communities in Marin County. The impact  
26 would be long term, minor to moderate, and beneficial for the adjacent three counties.

27 In addition to continuing these attributes of the no-action alternative, the public outreach,  
28 welcoming, and orientation focus of alternative 1 would contribute more to the quality of  
29 life of many residents in the area. Improved orientation, outreach, and support facilities  
30 that would be aimed at reaching the diverse populations of the Bay Area could connect  
31 with local residents and promote more awareness of the monument. Also, this alternative  
32 includes an improvement in park accessibility via an expanded shuttle bus service that  
33 would contribute to an improved quality of life in the community by allowing more local  
34 residents to access the park (e.g., those without personal vehicles), and by reducing traffic  
35 congestion on local and regional roads. All of these efforts would improve the quality of  
36 life of more residents by exposing them to the health, education, and recreation benefits  
37 of visiting Muir Woods National Monument and other park sites. This could result in an  
38 impact that is long term, minor to moderate, and beneficial in the context of the local  
39 gateway communities and three adjacent counties.

40 In addition, alternative 1 includes a variety of construction projects that would support  
41 the local economy by offering new contract work for local and regional firms. Most of  
42 these park projects would be associated with the improved visitor welcoming facilities  
43 that would complement the National Park Service effort at welcoming and orienting  
44 people at Muir Woods National Monument. These projects would generate new contract

1 work for private firms in the Bay Area, including engineering consultants, construction  
2 contractors, and environmental consultants. These projects would not only support these  
3 contracting businesses and their employees directly, but the economic multiplier effect  
4 would circulate this contract money through the local economy. This phenomenon is  
5 explained in the Social and Economic Affected Environment section. The collective  
6 result of these actions would be impacts that are short term, minor, and beneficial for  
7 local gateway communities and possibly the three adjacent counties.

8 The need for some new NPS or concession staffing may also be generated at the new  
9 welcome centers to provide new visitor services. The expanded shuttle bus services could  
10 also generate additional concession jobs. These new jobs may result in an impact that is  
11 long-term, minor, and beneficial to the local gateway communities in Marin County.  
12 Impacts to the three adjacent counties would be negligible.

13 Lastly, alternative 1 includes an action that expands the shuttle bus service to the park  
14 and connects the shuttle with local and regional transportation systems. With the  
15 possibility of less park visitors accessing the park via personal vehicles because of this  
16 service, the potential exists for a reduction in local business activity in the Marin County  
17 communities (since those in personal vehicles can more readily access local sites and  
18 business while en route to the park). Therefore, the shuttle bus program could have a  
19 negative effect on the local economy. This loss in business would also have secondary  
20 negative effects on the local economy due to the reduction of the multiplier effect of the  
21 business revenues that would no longer be circulating further through the local economy.  
22 This action may result in an impact that is long term, minor, and adverse to the local  
23 gateway communities in Marin County. Impacts to the adjacent three counties would  
24 likely be negligible.

## 25 **Conclusion**

26 The overall beneficial impact to the quality of life and local economy from alternative 1  
27 would be short term to long term, and range from minor to moderate for the local  
28 gateway communities and the three adjacent counties. The beneficial impacts would  
29 primarily result from: (1) a significant increase in public outreach programs, visitor  
30 orientation, and new welcoming facilities at the park, (2) improved connections to local  
31 and regional transportation systems and less traffic congestion in the community, (3) an  
32 increase in NPS effort at reaching out to the large population of racial minorities and  
33 individuals from lower income brackets in Marin County and beyond, (4) various new  
34 engineering and construction contracts for facility improvement projects, (5) possible  
35 increased park revenues and increased spending at local businesses from an anticipated  
36 increase in park visitation due to active public outreach and welcoming efforts, and (6)  
37 job creation from the proposed increase in visitor services in the park and the shuttle  
38 service expansion.

39 The adverse impacts of alternative 1 could be long term and minor in the context of the  
40 local gateway communities. The adverse impacts could result from the possible reduction  
41 in local business activity from park visitors who opt for public transit and the park  
42 shuttle.

43

44

## 1 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

### 2 ***Analysis***

3 Alternative 2 would maintain many of the quality of life and economic benefits that the  
4 national monument provides to the local communities and counties, as described in the  
5 analysis of the no-action alternative. By providing open lands adjacent to a large urban  
6 center and continuing education and stewardship programs for local residents, the  
7 monument would continue to improve the quality of life for those in nearby communities.  
8 This alternative would also sustain the monument's intrinsic contribution to the local  
9 economy in the Bay Area (once again, as noted in the no-action alternative analysis  
10 above). By continuing to provide open space preservation, recreation opportunities, and  
11 an aesthetic natural backdrop, the national monument would continue to help make the  
12 Bay Area a place for companies and talented professionals to call home. These  
13 contributions to the local economy and quality of life would result in an impact that is  
14 long-term, moderate, and beneficial in the context of the local gateway communities in  
15 Marin County. The impact would be long term, minor to moderate, and beneficial for the  
16 adjacent three counties.

17 Since alternative 2 places a priority on ecological restoration, recreational opportunities  
18 in the park may be somewhat reduced for local residents. This may slightly reduce the  
19 amount of exercising, learning, and/or recreating in the local communities. However,  
20 given the availability of other park sites in the immediate proximity of Marin County, this  
21 adverse impact to quality of life would likely be negligible and very localized.

22 Alternative 2 includes a significant change in park accessibility. The proposed shuttle bus  
23 program will contribute to an improved quality of life by allowing more local residents to  
24 access the park (e.g., those without personal vehicles), and by reducing traffic congestion  
25 on local and regional roads in Marin County. This transportation change may result in an  
26 impact that is long term, minor, and beneficial for the local gateway communities in  
27 Marin County. The impact to the overall three adjacent counties would likely be  
28 negligible.

29 The focus on restoration of habitat connections may increase opportunities and reasons  
30 for local government land managers to preserve land in vicinity of the national monument  
31 (to establish public land connections and reduce further habitat fragmentation). If the  
32 adjacent local land managers pursue additional open space around Muir Woods in Marin  
33 County, the local residents of the area may have additional park sites to visit in the future.  
34 This would enhance the quality of life for residents of the area. The impact would be long  
35 term, minor, and beneficial for the local gateway communities. Impact to the adjacent  
36 three counties would be negligible.

37 As for impacts to the local economy, since alternative 2 focuses on preserving ecological  
38 resources, several actions in this alternative aim at restoring and reclaiming natural  
39 features in and around Muir Woods National Monument. These reclamation efforts  
40 would necessitate various types of construction and restoration projects that would  
41 support the local economy by offering new contract work for local and regional firms  
42 (including engineering consultants, construction contractors, and environmental  
43 consultants). These projects would not only support these contracting businesses and their  
44 employees directly, but the economic multiplier effect would circulate this contract  
45 money through the local economy. This phenomenon is explained in Chapter 3, in the

1 Social and Economic Affected Environment section. The collective result of these actions  
2 would be impacts that are short term, minor, and beneficial for local gateway  
3 communities and possibly the three adjacent counties.

4 Some new NPS or concession staffing may be generated by the significant expansion to  
5 the shuttle service to the park. These new jobs may result in an impact that is long-term,  
6 minor, and beneficial to the local gateway communities in Marin County.

7 Lastly, alternative 2 would require that all national monument visitors access the park via  
8 their own power (e.g., bike, walk) or via an expanded shuttle bus service that connects  
9 with local and regional transportation systems. Thus, this action would reduce the number  
10 of people traveling through Marin County via their personal vehicles. In terms of local  
11 economic impact, this transportation mode shift would result in less business activity for  
12 local business in Marin County since bus passengers cannot easily access local sites and  
13 businesses while en route to the park (unlike those in personal vehicles). This loss in  
14 business would also have secondary negative effects on the local economy due to the  
15 reduction of the multiplier effect of the business revenues that would no longer be  
16 circulating further through the local economy. This action may result in an impact that is  
17 long term, minor to moderate, and adverse to the local gateway communities in Marin  
18 County. Impacts to the adjacent three counties would likely be negligible, or possibly  
19 long-term, minor, and adverse.

## 20 **Conclusion**

21 The beneficial impacts to the quality of life and local economy from alternative 2 would  
22 be short-term to long-term and minor for the local gateway communities and the three  
23 adjacent counties. The beneficial impacts could result from (1) increased cooperation  
24 with other local governments and land managers to pursue the preservation of additional  
25 publicly accessible lands in the area, (2) contract work created by various reclamation  
26 projects, (3) possible new jobs created by the significant expansion in the shuttle service  
27 that serves the park, and (4) the expanded shuttle service that would allow more local  
28 residents to access the park and reduce traffic congestion.

29 The adverse impacts from alternative 2 could be long term, ranging from minor to  
30 moderate for the local gateway communities, the three adjacent counties, as well as the  
31 Bay Area. The adverse impacts could result from the possible reduction in local business  
32 activity from park visitors who would need to take public transit to the park.

33

## 34 **Alternative 3: Focusing on National Treasures**

### 35 **Analysis**

36 Alternative 3 would maintain the quality of life and economic benefits that the national  
37 monument provides to the local communities and counties, as described in the analysis of  
38 the no-action alternative. By providing open lands adjacent to a large urban center and  
39 continuing education and stewardship programs for local residents, the monument would  
40 continue to improve the quality of life for those in nearby communities. This alternative  
41 would also sustain the monument's intrinsic contribution to the local economy in the Bay  
42 Area (once again, as noted in the no-action alternative analysis above). By continuing to  
43 provide open space preservation, recreation opportunities, and an aesthetic natural  
44 backdrop, the national monument would continue to help make the Bay Area a place for

1 companies and talented professionals to call home. These contributions to the local  
2 economy and quality of life would result in an impact that is long-term, moderate, and  
3 beneficial in the context of the local gateway communities in Marin County. The impact  
4 would be long term, minor to moderate, and beneficial for the adjacent three counties.

5 Alternative 3 for Muir Wood National Monument includes actions that provide some new  
6 visitor information and orientation, as well as interpretation programs that would be  
7 aimed at attracting the diverse populations of the Bay Area to the park. The attempts to  
8 connect with local residents would be complemented with improved visitor welcoming  
9 center facilities at Muir Woods National Monument access points. In addition, alternative  
10 3 includes an improvement in park accessibility via an expanded schedule of shuttle bus  
11 connections with local and regional transportation systems. The shuttle bus program  
12 could contribute to an improved quality of life by allowing more local residents to access  
13 the park (e.g., those without personal vehicles), and by reducing traffic congestion on  
14 roads in Marin County. Collectively, the above efforts could improve the quality of life of  
15 more Bay Area residents by exposing them to the health, education, and recreation  
16 benefits of visiting Muir Woods National Monument and other park sites. This could  
17 result in an impact that is long term, minor to moderate, and beneficial in the context of  
18 the local gateway communities and three adjacent counties.

19 Alternative 3 places a strong emphasis on the national significance of Muir Woods  
20 National Monument (natural and historical) and educating the public on this significance.  
21 As the residents of Marin County and the Bay Area as a whole become more aware of the  
22 uniqueness and importance of Muir Woods National Monument, they may develop a  
23 stronger sense of pride or identity in the community in which they live. These personal  
24 appreciation values and sense of community belonging can contribute to one's quality of  
25 life. This identification with the unique resources of the community may yield an impact  
26 that is long term, minor, and beneficial in the context of the local gateway communities  
27 and three adjacent counties.

28 The new welcome centers proposed as part of alternative 3 could generate a need for new  
29 NPS or concession staffing to provide new or expanded visitor services at the national  
30 monument. New concession jobs could also be created by the expanded shuttle bus  
31 services. This potential increase in jobs may result in an impact that is long term, minor,  
32 and beneficial in the context of the local gateway communities. Impacts to the three  
33 adjacent counties would be negligible.

34 Lastly, alternative 3 would expand the shuttle bus service to the park. Since this shuttle  
35 connects with local and regional transportation systems, many park visitors may choose  
36 to leave their car at home and access the park via public transportation. If this happens,  
37 local businesses in Marin County communities would experience a reduction in  
38 customers and business activity since bus passengers cannot easily access local sites and  
39 businesses while en route to the park (unlike those in personal vehicles). Therefore, the  
40 shuttle bus program could have a negative effect on the local economy. This loss in  
41 business would also have secondary negative effects on the local economy due to the  
42 reduction of the multiplier effect of the business revenues that would no longer be  
43 circulating further through the local economy. As a result, the impacts to the local  
44 gateway communities in Marin County could be long term, minor, and adverse. Impacts  
45 to the adjacent three counties would likely be negligible.

46

1 **Conclusion**

2 The beneficial impacts of alternative 3 on the quality of life and local economy could be  
3 long-term, ranging from minor to moderate for local gateway communities and the three  
4 adjacent counties. Overall, the beneficial impacts of alternative 3 could result from (1) a  
5 moderate increase in public outreach, visitor orientation, and new welcoming facilities at  
6 the park, (2) improved connections to local and regional transportation systems and less  
7 traffic congestion in the community, (3) a modest number of possible jobs created by  
8 expanded visitor welcoming services and expanded shuttle service, and (4) the  
9 community's improved awareness, pride, and appreciation of the national significance of  
10 Muir Woods National Monument.

11 The adverse impacts of alternative 3 could be long term and minor for the gateway  
12 communities. The adverse impacts to the social and economic environment could result  
13 from a reduction in local business activity due to a park visitors shifting from using  
14 personal vehicles to using public transportation.

15

16

17 **TRANSPORTATION**

18 The analysis of transportation impacts in this section is based in part on several earlier  
19 studies, including: four years of studies of the Muir Woods Shuttle pilot program  
20 conducted for the County of Marin (Nelson\Nygaard, 2005 – 2008); "Muir Woods Shuttle  
21 Alternatives," a memo to park managers (Nelson\Nygaard 2008); *Comprehensive*  
22 *Transportation Management Plan* (GGNRA 2002); and *Transportation Planning to*  
23 *Address Access and Congestion Issues – Muir Woods National Monument* (HDR 2009) .  
24 See those documents for more details on the Muir Wood Shuttle operations, performance  
25 and cost, analysis of parking changes at Muir Woods National Monument, and traffic  
26 congestion analysis for the Muir Woods National Monument area.

27

28 **All of the Action Alternatives**

29 Recognizing the difficulty of accommodating the large number of visitor vehicles, all  
30 alternatives move toward reducing the number of cars coming to the monument, and  
31 increasing the proportion of visitors coming by transit. This latter objective is  
32 accomplished by both increasing transit service and by intercepting travelers earlier in  
33 their trip so that more, if not all, of the trip is on transit rather than by car. The following  
34 transportation-related measures are incorporated in alternatives 1 through 3 for Muir  
35 Woods National Monument. Although described independently, they should be  
36 considered parts of a whole strategy, to be implemented in conjunction with each other.

37 A new offsite welcome center would be created in the vicinity of State Route 1 and  
38 Highway 101 where visitors would board the shuttle. The center would provide parking,  
39 shelter, restrooms, park information, and snacks, and would be a transfer point between  
40 regional and local transit and national park destinations. The creation of the welcome  
41 center would have a long-term, major, beneficial impact on transit facility capacity,  
42 amenities, conditions, and on unsafe road shoulder parking on Muir Woods Road near the  
43 monument.

1 Express transit service from downtown San Francisco and improved connections with the  
2 regional ferry services would be pursued. This action is likely to result in a long-term,  
3 moderate, beneficial impact to connectivity to Muir Woods, including number and  
4 capacity of connections, and available modes of travel.

5 In alternatives 1 and 3, shuttle service would be provided during shoulder periods (May  
6 and September) and peak periods (Memorial Day through Labor Day weekends), as well  
7 as on holiday weekends throughout the year. This would have a long-term, moderate,  
8 beneficial effect by making transit service available on holidays during the nonpeak  
9 period. In alternative 2, service would run 365 days a year, which is likely to have a long-  
10 term, major, beneficial impact on transit availability and an increase in modes of travel to  
11 Muir Woods National Monument.

12 Parking at the monument would be reduced in alternatives 1 and 3 and eliminated (except  
13 for space needed for those with special accessibility needs) in alternative 2. Impacts of  
14 this are multidimensional and are discussed below.

15 In all action alternatives, a main feature would be a reduction in or elimination of parking  
16 capacity at the monument (including unsafe road shoulder parking), offset by parking at  
17 one or more satellite lots (possibly including Kent Canyon), and increased shuttle service.  
18 Parking at the offsite welcome center would accommodate autos, while other lots in the  
19 vicinity may also be available to accommodate visitors' cars. Some of the satellite  
20 parking lots are also used by commuters during the week, so these may not be available  
21 for shuttle passengers during that time unless other changes increase capacity. By shifting  
22 the majority of visitors to the shuttle and the San Francisco Express service, automobile  
23 congestion on local roads would be expected to be reduced.

24 Taking the place of driving to the Muir Woods National Monument would be increased  
25 shuttle and transit service. The transit service would be the logical primary mode of  
26 access for monument visitors, since potential for increased access by bicycle, on foot, or  
27 by tour bus is limited. Continued reasonably convenient access is essential to maintain  
28 (and if possible, enhance) a high-quality visitor experience.

29 The overall impacts of these measures would likely be long-term, moderate to major,  
30 beneficial on the functionality and safety of the transportation system, with a moderate to  
31 major increase in transit access from San Francisco, the Sausalito Ferry, and other points  
32 in southern Marin County. There would be an increase in access by land- and water-  
33 based regional transit, increased number and capacity of connections, and an increase in  
34 the available modes of travel. These measures could result in a long-term, major,  
35 beneficial impact on connections, transit service availability, and transportation facility  
36 capacity and amenities.

37 There would be a major, adverse impact on parking availability at the monument, offset  
38 to a large degree by parking availability at offsite lots and increased transit. Visitors are  
39 still likely to arrive by car from points west of the monument, which means that they  
40 would have no opportunity to park and take transit. These visitors would be most affected  
41 by the lack of parking, and their ability to visit the monument would be adversely  
42 affected.

43

1 **Conclusion**

2 There would be a major, adverse impact on parking availability at the monument, offset  
3 to a large degree by parking availability at offsite lots and increased shuttle and transit  
4 service. Visitors are still likely to arrive by car from points west of the monument, which  
5 means that they would have no opportunity to park and take transit. These visitors would  
6 be most affected by the lack of parking, and their ability to visit the monument would be  
7 adversely affected.

8 Establishing a visitor's welcome center with an offsite parking area, increasing transit  
9 from both the Sausalito Ferry and San Francisco, to Muir Woods National Monument  
10 would have a long-term, moderate to major, beneficial impact on the transit system  
11 serving the monument. Reducing parking at the monument is also likely to have a long-  
12 term, moderate to major, adverse impact on parking availability for visitors.

13

14 **No-Action Alternative**

15 **Analysis**

16 Currently, about 760,000 visitors per year travel to Muir Woods National Monument.  
17 Visitation peaks during the summer months, particularly on weekends. Managing these  
18 crowds and balancing the impact of the large number of visitors with the preservation of  
19 the park resources has been an ever-increasing challenge for park managers.

20 Muir Woods is reached by narrow two-lane county and state roads that wind through  
21 canyons and over Mount Tamalpais. There is little opportunity for passing, thus the roads  
22 are heavily congested on busy summer weekends, particularly on State Route 1 between  
23 Highway 101 and Panoramic Highway. Marin County is committed to keeping roads in  
24 West Marin at two lanes to preserve the rural character of the area, so reducing  
25 congestion through increased capacity is not a realistic option.

26 Most visitors arrive at Muir Woods National Monument by automobile. The monument  
27 provides 179 parking spaces in three parking lots, supplemented by approximately 175  
28 legal spaces along Muir Woods Road. Estimated demand for parking spaces on peak  
29 season weekends in 2002 was 450 spaces (*Comprehensive Transportation Management  
30 Plan, GGNRA, 2002*), a figure that exceeds the formal and informal parking capacity.  
31 Parking on the roadway often has extended to areas where parking is prohibited, and  
32 there is minimal enforcement. Marin County has recently restricted some of the shoulder  
33 area with fences and signs, slightly reducing the number of available spaces. On busy  
34 weekends, cars can be found parked along the road up to a mile from the monument. This  
35 can create safety issues since people walk in the road to get to the monument, and the  
36 parked cars make the navigable roadway narrower while also obscuring the view of  
37 pedestrians and oncoming traffic.

38 A shuttle system connecting offsite parking lots with Muir Woods National Monument  
39 was introduced in the summer of 2005. Originally, a three-year pilot program the  
40 National Park Service has entered into a three-year partnership with the County of Marin  
41 to jointly fund the service from 2009 through 2011, with the objective of continuing the  
42 service into the future indefinitely. The shuttle runs on weekends and holidays from May  
43 through September, and has gradually increased hours of service each year. Passengers  
44 board the shuttle in Sausalito, in Marin City, or from two Park-and-Ride lots in Mill

1 Valley. These satellite parking lots are more than adequate to accommodate cars of  
2 shuttle riders on the weekends. More than half of shuttle riders choose to take the shuttle  
3 because of changeable message signs on Highway 101 informing them that the lot at  
4 Muir Woods is full, and directing them to a shuttle stop.

5 Data gathered during the 2008 season shows that 14% of visitors to Muir Woods  
6 National Monument took the shuttle on days when the shuttle was available  
7 (Transportation Planning to Address Access and Congestion Issues – Muir Woods  
8 National Monument, 2009, p. 5 Nelson/Nygaard)

9 Ridership has grown substantially each year of service, increasing farebox revenue and  
10 sometimes requiring additional vehicles for the mid-day rush peak use period, and at the  
11 end of the day. Even with this large number of riders, roads continue to be heavily  
12 congested with visitors arriving by auto, such that the shuttle is thrown off schedule  
13 during peak periods as it waits in traffic.

14 In addition to the Muir Woods Shuttle, park staff estimates that 20% of visitors arrive by  
15 tour bus (pers. comm., Mia Monroe, Site Supervisor - Interpretation, Marin Headlands  
16 and Muir Woods).

### 17 **Conclusion**

18 With no further action taken, visitor connections to Muir Woods National Monument and  
19 the functionality of the transportation system to the monument could experience a long-  
20 term, minor to moderate, adverse impact. Access roads and intersections on State Route 1  
21 between Highway 101 and Muir Woods National Monument would continue to be  
22 congested, slowing shuttle service, and making it difficult at peak times for emergency  
23 vehicles to travel in the area. The existing parking lots at the monument are likely to  
24 continue to fill early in the day from May to September, particularly on the weekends,  
25 and the unsafe roadside parking situation could also continue. On a positive note, shuttle  
26 service can be expected to see continued increases in ridership, helping reduce road  
27 congestion.

28

### 29 **Alternative 1: Connecting People with the Parks**

#### 30 **Analysis**

31 In addition to the actions common to all alternatives, alternative 1 includes the following  
32 transportation-related actions for Muir Woods National Monument. It should be noted  
33 that the transportation measures in alternative 3 are identical to those in alternative 1.

34 In addition to the offsite welcome center described above, the monument's existing entry  
35 area would be redesigned. Pedestrian access would be improved by separating  
36 pedestrians from roads and parking. A modest facility would be provided to receive  
37 visitors arriving by different modes of transportation including the shuttle. The entry area  
38 might include such services as restrooms, orientation and information, food service, and  
39 sheltered areas for passengers waiting for buses. This measure may have a long-term,  
40 moderate, beneficial impact on transit facility capacity, amenities, and conditions,  
41 encouraging and supporting use of the shuttle.

1 In order to improve pedestrian safety and protect Redwood Creek, the monument would  
2 collaborate with Marin County to restrict shoulder parking along Muir Woods Road in  
3 non-trailhead areas when sufficient transit is available to meet visitation demand.

4 Parking in the monument lots and on the road shoulders would be reconfigured or  
5 relocated using sustainable design practices to reduce impacts to the creek and other  
6 sensitive resources. Parking would be decreased by an estimated 33%; capacity would  
7 meet demand during the off season. This is likely to have a long-term, minor, adverse  
8 impact on parking availability during those times when the shuttle is not running, and a  
9 long-term, minor, beneficial impact on pedestrian access.

10 Data from the *Comprehensive Transportation Management Plan* for park lands in  
11 Southwestern Marin indicates that off seasons and shoulder season typical weekday  
12 parking demand at the monument ranges between 115 and 155 spaces. By 2023 this is  
13 projected to increase to 135 to 190 spaces. A 33% reduction in parking supply, or  
14 removing 117 spaces, would leave 265 spaces; this would be more than adequate to meet  
15 parking demand during those times when the shuttle would not be operating (weekdays  
16 during the shoulder and off season months). This assumes that the current supply includes  
17 179 spaces in the lots, and an estimated 175 spaces on the shoulders of the road, totaling  
18 354 spaces.

19 The following tables show estimated parking demand for 2002 and 2023 using data from  
20 the *Comprehensive Transportation Management Plan*.

21

22 **Table 25: Parking Demand at Muir Woods National Monument, 2002 & 2023**

23 Existing Parking Demand (2002)

Peak Season (Memorial Day through Labor Day weekends)		Shoulder Season (May and September)		Off Season (October 1 to May 1)	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
380	450	155*	300	115*	250

24

25

26 Projected Parking Demand (2023)

Peak Season (Memorial Day through Labor Day weekends)		Shoulder Season (May and September)		Off Season (October 1 to May 1)	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
485	575	190*	360	135*	285

27 \* Periods when shuttle would not run

28

29 With removal of some parking and an increase in shuttle service, parking demand would  
30 be shifted to offsite lots in the vicinity of State Route 1 and Highway 101. The welcome  
31 center, in all alternatives, would provide parking, shelter, restrooms, park information,

PART 9: POTENTIAL ENVIRONMENTAL CONSEQUENCES

1 snacks, etc. for shuttle riders. In addition, the Manzanita and Pohono Street Park-and-  
 2 Ride lots, currently used as shuttle parking, are the potential future location of the  
 3 welcome center, and could accommodate cars of shuttle riders. These lots, normally used  
 4 by weekday commuters, would not be able to accommodate large numbers of monument  
 5 visitors during the work week without some reconfiguration. Turnover in these lots  
 6 would be slower than turnover in the current monument lots, since the parking duration  
 7 would include both the time visiting the monument and the travel time to and from the  
 8 monument. Detailed analysis of this and other potential locations would be the subject of  
 9 a separate planning effort.

10 Depending on the level of available funding, shuttle service would be increased from its  
 11 current weekends-only schedule to 7 days a week during the peak period, and on  
 12 weekends and holidays during the rest of the year. Service could run on approximately  
 13 15-minute headways during the peak and shoulder seasons and on holidays, with 30-  
 14 minute headways during other times (nonpeak weekends). This is in addition to the  
 15 downtown San Francisco Express Service proposed in all alternatives.

16 Operating costs for the increase in shuttle service required to carry a greater number of  
 17 visitors to the monument are difficult to predict because of the variable costs of  
 18 administration and marketing, as well as the effect the reduction in parking would have  
 19 on the demand for transit. An analysis of the cost of shuttles was performed in the “Muir  
 20 Woods Shuttle Alternatives” memo (Nelson\Nygaard 2008). In that analysis, based on  
 21 the hourly cost of shuttle service, requirements for layovers and other factors, two cost  
 22 estimates were developed for a 75% parking scenario (a 25% reduction); they are  
 23 presented below.

24 Scenarios involving a 25% removal of parking result in substantial shuttle operational  
 25 costs, if the intent is to fully compensate for removed parking. Note that these estimates  
 26 do not include the cost of the vehicles or bus stop amenities necessary to support  
 27 increased service, which would also be substantial.

28

29 **Table 26: Estimated Annual Cost of Shuttle, 75% Parking at Muir Woods National**  
 30 **Monument**

Scenario	Peak offsite parking demand	Peak buses per hour	Fleet require- ment	Annual Cost*	
				\$75/hr.	\$180/hr.
Alternatives 1 and 3 Scenario A: 75% on-site parking	170	9	9	\$500,000	\$1,200,000
Alternatives 1 and 3 Scenario B: 75% on-site parking, S.F. shuttles	130	8	10	\$600,000	\$1,400,000

31 \* Based on low and high hourly rates for transit service providers

1 **Conclusion**

2 The transportation measures included in this alternative are likely to have a long-term,  
3 major, beneficial impact on connections between both ferry and regional bus transit and  
4 Muir Woods National Monument and the Muir Woods Shuttle. The shuttle would  
5 become the primary mode of access to the monument during peak demand periods. A  
6 much larger proportion of visitors could be expected to park remotely and take the shuttle  
7 or express service from San Francisco.

8 The reduction in the number of cars on the roads approaching Muir Woods National  
9 Monument would have a long-term, moderate, beneficial impact on the functionality of  
10 the transportation system by reducing congestion. The reduction in visitor-related  
11 congestion would allow the shuttles to stay on schedule, and would allow emergency  
12 vehicles improved access to the area. This alternative could have a long-term, minor to  
13 moderate, beneficial impact on pedestrian and bicycle access by making the access roads  
14 safer for these visitors due to reduced traffic and congestion and reduction of road  
15 shoulder parking,, and by re-designing the walkways from the entry area to the  
16 monument so they are separated from auto traffic. Even with a 33% reduction in parking,  
17 and a projected increase in demand, there would still be adequate parking during the off  
18 season (October through April) when the shuttle is not running. During the peak season,  
19 the reduction in parking would be offset by an increase in transit service. The reduction in  
20 parking could have a long-term, moderate, adverse impact on parking availability on  
21 those days when the shuttle is not running.

22

23 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

24 **Analysis**

25 In alternative 2, the majority of the built environment—buildings, parking lots, and paved  
26 trails—would be removed, and all visitors would arrive by shuttle, bicycle, or on foot.  
27 Only a small parking area would be available for special needs. The monument entrance  
28 as well as all visitor services would be relocated to the current lower parking lot and the  
29 area would be designed to accommodate a transit stop for the shuttle. Tour buses would  
30 no longer be accommodated.

31 In addition to changes in modes of access to the monument, the trail system would be  
32 redesigned to accommodate fewer visitors. The existing main trail would be relocated out  
33 of the flood plain, paved surfaces would be removed, and other trails and bridges could  
34 be removed or relocated to promote natural processes. These measures could have a long-  
35 term, moderate, adverse impact on visitor’s ability to access areas of the mature Redwood  
36 forest now available to them.

37 Trails in the monument would be designed to connect to other regional trails; the Dipsea  
38 Trail would be realigned where it crosses Redwood Creek. This is likely to have a long-  
39 term, minor, beneficial impact for those visitors connecting to the monument by trail.

40 Most auto access would be eliminated, with all parking, both in-park lots as well as  
41 roadside parking, removed. Only essential parking for park operations and to meet the  
42 needs of visitors with disabilities would be retained. The upper lot and most of the lower  
43 lot in the monument would be restored to their natural condition. This action would have  
44 a long-term, major, adverse impact on parking availability at the monument. However,

1 the lack of parking would be offset by greatly increased transit service and offsite  
2 parking, described below.

3 As discussed above, a welcome center would be created in the vicinity of Highway 101  
4 and State Route 1, which would include parking for visitors and connections to transit,  
5 including the Muir Woods Shuttle. Some additional parking may also be provided in  
6 other lots in the area that are currently used for weekend shuttle service. Park-and-Ride  
7 lots, normally used by commuters, would not be able to accommodate monument visitors  
8 during the work week without some reconfiguration. Recent parking counts on weekdays  
9 show the Manzanita Park-and-Ride lot is filled to slightly over 100% capacity from 8:00  
10 AM to 3:30 PM, and the Pohono parking lot is at 90% of its maximum use by  
11 noon. (HDR p. 30) Turnover in these lots would be slower than those currently in the  
12 monument, since the parking duration would include both the time visiting the monument  
13 and the travel time to and from the monument. Detailed analysis of lot configuration  
14 would take place in future planning efforts.

15 A lack of access to the monument entrance by auto may affect visitation. There remains  
16 the potential for a large number of would-be visitors to not make the trip to Muir Woods  
17 National Monument if they could not drive their cars. This group includes people who are  
18 continuing on to other destinations after their visit at the monument—for example,  
19 Stinson Beach or Mount Tamalpais State Park. Another segment of visitors are travelling  
20 in large groups, have small children, or have members in their party with special needs  
21 requiring them to use a car. Thus it could be assumed that elimination of all parking at the  
22 monument (except for special needs) might depress visitation, although an exact  
23 percentage cannot be modeled.

24 In addition, there will inevitably be those who drive to Muir Woods National Monument  
25 regardless of whether there is any official parking provided. Muir Woods Road is public  
26 and connects to small coastal communities, so access to the monument by road cannot be  
27 prohibited or even limited. Some visitors will arrive from points west and north, and will  
28 not have an opportunity to board transit to get to the monument. Enforcement of parking  
29 regulations at the monument would have to increase significantly for the elimination of  
30 roadside parking to be effective. This cost would likely be borne by the National Park  
31 Service rather than Marin County, since county law enforcement staff is extremely  
32 limited in West Marin.

33 Transit service to the monument would be dramatically increased. The Muir Woods  
34 Shuttle would run every day of the year, and would include express service from and to  
35 downtown San Francisco. Shuttle service originating in Marin County could run every 10  
36 minutes during the peak and shoulder seasons and on holidays; on other days, it would  
37 run every 30 minutes. Providing increased service from Sausalito and express service  
38 from San Francisco could be expected to reduce parking demand by 25% or more. A  
39 significant increase in transit service, including San Francisco Express and Muir Woods  
40 Shuttle service to the Sausalito Ferry, would have a long-term, major, beneficial impact  
41 on the functionality of the transportation system to Muir Woods National Monument by  
42 increasing the number and capacity of connections, increasing the availability and  
43 choices of modes of travel, and reducing congestion.

44 Operating costs for the increase in shuttle service required to carry all visitors to the  
45 monument are difficult to predict because of the unpredictable effect on visitation, and  
46 also the variable costs of administration and marketing. An analysis of the cost of shuttles

1 was performed in the “Muir Woods Shuttle Alternatives” memo (Nelson\Nygaard 2008).  
 2 In that analysis, based on the hourly cost of shuttle service, requirements for layovers and  
 3 other factors, three cost estimates were developed for the zero-parking scenario, and are  
 4 presented below. Scenarios involving complete removal of parking appear to be  
 5 prohibitively expensive—as much as \$9.5 million per year for a package including San  
 6 Francisco service. If tour bus access were removed, costs would increase further, to as  
 7 much as \$11.5 million per year. Note that these estimates do not include the cost of the  
 8 vehicles or bus stop amenities.

9  
 10 **Table 27: Estimated Annual Cost of Shuttle Operations, No Parking at Muir Woods**  
 11 **National Monument**

Scenario	Peak offsite parking demand	Peak buses per hour	Fleet Require- ment	Annual Cost	
				\$75/hr.	\$180/hr.
Alternative 2 Scenario A:  0% on-site parking	690	23	23	\$3,000,000	\$7,300,000
Alternative 2 Scenario B:  0% on-site parking, S.F. shuttles	520	22	28	\$4,000,000	\$9,500,000
Alternative 2 Scenario C:  0% on-site parking, S.F. shuttles no tour buses,	550	25	34	\$4,800,000	\$11,500,000

12  
 13 Managers at the monument estimates that 20% of visitors arrive by tour bus. In this  
 14 alternative, private tour buses would not be allowed in the monument. The elimination of  
 15 tour bus service would significantly reduce access to this site for certain populations.  
 16 People who use this mode are generally from out of the area, are travelling in groups, and  
 17 want to visit multiple destinations on one trip—a significant factor for those choosing not  
 18 to take the shuttle, according to surveys of monument visitors. Tour buses address the  
 19 needs of this group and also allow them to visit the monument without an auto. Without  
 20 tour bus service, this group may not visit the monument at all. This measure could have a  
 21 long-term, moderate, adverse impact on access to the monument.

22

1 **Conclusion**

2 Alternative 2 proposes actions which would significantly alter the transportation system  
3 serving Muir Woods National Monument. Redesign of pedestrian access to the  
4 monument entrance is likely to have a long-term, moderate, beneficial impact on visitor  
5 access and safety.

6 In conjunction with the parking provided at the offsite welcome center and other remote  
7 parking lots, and the greatly increased transit service to the monument, this alternative  
8 would have a long-term, major, beneficial, impact on availability of transit, improved  
9 traffic flow, and number and capacity of transit connections.

10 Removing parking from Muir Woods National Monument is likely to result in a  
11 reduction in the number of cars on the roads in southwest Marin, allowing transit to better  
12 run on schedule and emergency vehicles to have access, and offering less auto congestion  
13 to residents. However, while expanded transportation options may increase visitation,  
14 from the point of view of the visitor who arrives at the monument by car and is unable to  
15 park, the impact would be long-term, moderate, and adverse, limiting the ability of some  
16 visitors to visit the monument.

17 The increase in transit services from San Francisco and the Sausalito Ferry, if fully  
18 funded through points in south Marin, is likely to have long-term, major, beneficial  
19 effects on the transportation system to the monument as well as throughout the southwest  
20 Marin County area, by increasing multimodal opportunities to get to the monument and  
21 increasing connectivity to regional transportation.

22 Auto access may experience a long-term, minor to moderate, beneficial impact since  
23 there may be much less auto traffic on Muir Woods Road, while bus traffic on State  
24 Route 1 would increase significantly.

25

26 **Alternative 3: Focusing on National Treasures**

27 Transportation impacts for alternative 3 for Muir Woods National Monument are  
28 identical to those in alternative 1.

29

30

31 **PARK MANAGEMENT, OPERATIONS, AND FACILITIES**

32 **No action Alternative**

33 **Analysis**

34 Under the no-action alternative, there would be the continuation of current management,  
35 programs, and operations; funded construction projects; and the annual operating funding  
36 needed to continue current operations.

37 Muir Woods maintains high standards of visitor service thanks to a committed team of  
38 NPS staff, partnerships with the Golden Gate National Parks Conservancy and  
39 concessions, and a team approach that also includes close working relationships with the  
40 state parks and neighboring communities. However, there is much operationally that is

1 marginal due to the small staff size; this results in little time for long-term planning,  
2 major project implementation, and training.

3 Staffing levels would continue at current levels, which are inadequate to meet the  
4 responsibilities of the monument. With only 3.5 interpreters and no seasonal interpreters,  
5 there are often periods of time when no ranger is on site, and the NPS presence is loosely  
6 covered by interns or volunteers. The interpreters handle educational programs and  
7 volunteer management, but there is no one to handle media, training, or partner  
8 programming. The law enforcement division operates with one staff member assigned to  
9 the area; which includes the monument as well as Muir Beach, Stinson Beach, Olema  
10 Valley, Slide Ranch, and Tennessee Valley. One seasonal law enforcement officer is  
11 assigned to the monument in the summer as well. This level of staffing is not enough to  
12 provide adequate coverage, and results in delays in response time—often interpreters on  
13 site end up spending time responding to emergency incidents. Traffic congestion and  
14 conflict is one area of needed additional law enforcement staff. A ranger is needed to  
15 provide visitor use assistance for the shuttle and parking. The maintenance division is  
16 also understaffed to adequately maintain the monument in good condition. As a result,  
17 deferred maintenance has accrued at park facilities. Low staffing levels contribute to  
18 continued moderate, long-term, adverse impacts to park operations.

19 Primary monument partners are the Golden Gate National Parks Conservancy and the  
20 Muir Woods Trading Company, the concessions operation. These partners provide a host  
21 of valuable services and products to the monument, such as contact with the visitors,  
22 research, restoration, and messaging. They also provide needed funding from fee  
23 collection and concession sales. Other partners offer educational programs. The Save-the-  
24 Redwoods League is a major funder to enable young people to visit the park and support  
25 research. Marin County is a partner in providing shuttle service to the monument. The  
26 partners offer something invaluable that would not otherwise be provided and their  
27 continued involvement and support is a moderate, long-term, beneficial impact to park  
28 operations.

29 Volunteers are indispensable to the monument. They provide personal interpretive  
30 services, conduct special tours, support educational programs, complete much of the  
31 restoration work, and offer a special approach that the public responds to very favorably.  
32 Thousands of hours per year are logged by volunteers. Volunteer efforts are a continued  
33 long-term, moderate, beneficial impact to park operations.

34 Currently, the condition of many of the buildings is good, but not accessible for persons  
35 with disabilities. However, the monument has significant amounts of deferred  
36 maintenance. Even given the direction of the park asset management plan for prioritizing  
37 funds, a continued gap in maintenance funding (and staff) would result in an increasing  
38 deferred maintenance backlog. Some facilities are better maintained than others are; the  
39 Administration and Concessions building is in good condition. Maintenance facilities,  
40 such as the Old Inn, are generally in much poorer condition. Facilities in the Camino del  
41 Canyon and Conlon Avenue areas are also in poor condition. Infrastructure such as  
42 power, water, and phones need to be upgraded and frequently have lapses in service.  
43 Inadequate project funds and operational funds would result in moderate, long-term,  
44 adverse impacts to mission critical facilities at the monument.

45 Monument buildings are inadequate for their current uses due to small size and their lack  
46 of modern functionality. For example, in the office areas, all desks are shared, and half

1 the computers are not hooked up to the internet. There are no break rooms or meeting  
2 rooms. The maintenance division does not have adequate storage space for equipment, or  
3 appropriate work space. Inadequate operational facilities would have a continued long-  
4 term, minor to moderate, adverse impact on park operations.

5 **Conclusion**

6 The continuation of current management would have both beneficial and adverse impacts  
7 on park operations. Continued long-term, moderate, beneficial impacts to operations  
8 would result from partner and volunteer efforts.

9 The continued impact of low staffing levels on park operations is moderate, long-term,  
10 and adverse. Inadequate project and operational funding would result in major, long-term,  
11 adverse impacts to park facilities. Inappropriate space for staff would also result in  
12 continued long-term, minor to moderate, adverse impacts to monument operations.

13

14 **Alternative 1: Connecting People with the Parks**

15 **Analysis**

16 There are several proposed changes identified in alternative 1 that would influence park  
17 management, operations, and facilities. While designed to contribute to the protection of  
18 resources and the enhancement of visitor opportunities, the proposed changes will  
19 achieve these ends only if staffing, capital funds, and operating funds are increased in  
20 accordance with the cost estimates identified. If funding and needed staffing levels are  
21 not made available when these actions are implemented, the proposed actions would have  
22 long-term, moderate, adverse effects on park operations.

23 Additional law enforcement officers are proposed to cover increased picnicking,  
24 expanded visitor activities, and the potential for a greater number of lost or injured  
25 people. Additional rangers would also assist in parking management at the shuttle station.  
26 New maintenance staff would support trail maintenance, upkeep of interpretive signs,  
27 increased picnicking, and relocated and new visitor facilities. Increased staff would result  
28 in long-term, moderate, beneficial impacts to operations if appropriate funding is  
29 available, otherwise the actions of this alternative would result in adverse impacts such as  
30 an inability to maintain facilities and an inability to ensure public safety and protection of  
31 resources.

32 The proposed new or reconstructed facilities, such as the Highway 101/State Route 1  
33 welcome center and parking area, would require additional capital investments. Unless  
34 the cyclic maintenance budget is collaborated to maintain the park's facilities as  
35 identified in this alternative, the deferred maintenance will increase, even with an initial  
36 investment in that asset. Adjusting the operations and maintenance budget to realistically  
37 reflect the true costs of a facility will have a long-term, moderate, beneficial impact on  
38 park operations; otherwise, the impact would be adverse and result in an increase of  
39 deferred maintenance.

40 Removal of nonessential buildings and parking would reduce associated maintenance and  
41 utility costs. Construction, rehabilitation, restoration, and demolition projects proposed in  
42 the alternative would result in moderate, long-term, beneficial impacts to park operations.

1 These activities would also have short-term, minor, adverse impacts on operations due to  
2 the closure of buildings and lands during construction or restoration.

### 3 **Conclusion**

4 Increased staff would result in moderate, long-term, beneficial impacts, if funded. If  
5 funding is available for construction, rehabilitation, restoration, and demolition projects,  
6 these projects would result in moderate, long-term, beneficial impacts to park operations.  
7 Construction and landscape restoration activities would also result in short-term, minor,  
8 adverse impacts while they are underway. However, if funding and needed staffing levels  
9 are not made available when these actions are implemented, the proposed actions would  
10 have long-term, moderate, adverse effects on park operations.

11

## 12 **Alternative 2: Preserving and Enjoying Coastal Ecosystems**

### 13 **Analysis**

14 If adequate funding is available for additional staff for the public safety division at Muir  
15 Woods National Monument, such increases would result in moderate, long-term,  
16 beneficial impacts to operations. Increased law enforcement staff is recommended to  
17 manage the controlled visitor areas and to protect sensitive resources. Additional rangers  
18 would also assist in parking management at the shuttle station. Maintenance staff would  
19 decrease under this alternative because of the reduced number of facilities.

20 The effort to remove most facilities from the monument would have both positive and  
21 negative impacts to the operations. While demolition and natural resource restoration  
22 would require additional project funding and require staff effort in the short term, over  
23 the long term, staff efforts in maintenance of facilities would be reduced, and deferred  
24 maintenance would be reduced. However, new proposed facilities, such as the Highway  
25 101/State Route 1 welcome center and the Muir Woods National Monument welcome  
26 center would require adjustment of the operations and maintenance budget to realistically  
27 reflect the true costs of the facilities in order to have beneficial impacts on park  
28 operations; otherwise, the impact would be adverse and result in an increase of deferred  
29 maintenance. Construction, rehabilitation, restoration, and demolition projects proposed  
30 in the alternative would result in major, long-term, beneficial impacts to park operations  
31 if funded. Construction and landscape restoration activities would result in short-term,  
32 minor, adverse impacts while they are underway due to area and facility closures.

### 33 **Conclusion**

34 Increased staff would result in moderate, long-term, beneficial impacts. If fully funded,  
35 construction, rehabilitation, restoration, and demolition projects proposed in the  
36 alternative would result in major, long-term, beneficial impacts to park operations.  
37 Construction and landscape restoration activities also would result in short-term, minor,  
38 adverse impacts to park operations. Removal of much of the development from inside the  
39 monument could make public safety responses more difficult, and would result in a minor  
40 to moderate, long-term, adverse impact to park operations. However, if funding and  
41 needed staffing levels are not made available when these actions are implemented, the  
42 proposed actions would have long-term, moderate, adverse effects on park operations.

43

1 **Alternative 3: Focusing on National Treasures**

2 ***Analysis***

3 If adequate funding is available for additional public safety and maintenance staff at Muir  
4 Woods National Monument, such increases would result in moderate, long-term,  
5 beneficial impacts to operations. Additional law enforcement officers are proposed to  
6 cover increased picnicking, expanded visitor activities, and the potential for a greater  
7 number of lost and injured people. Additional rangers would also assist in parking  
8 management at the shuttle station. Additional maintenance staff would support trail  
9 maintenance, upkeep of interpretive signs, increased picnicking, and relocated welcome  
10 centers.

11 The proposed new or reconstructed facilities, such as the Highway 101/State Route 1  
12 welcome center and interpretive trail improvements, would require additional capital  
13 investment. Unless the cyclic maintenance budget is collaborated to maintain the park's  
14 facilities as identified in this alternative, the deferred maintenance will increase, even  
15 with an initial investment in that asset. Adjusting the operations and maintenance budget  
16 to realistically reflect the true costs of facilities would have a long-term, moderate,  
17 beneficial impact on park operations; otherwise, the impact would be adverse and would  
18 result in an increase in deferred maintenance.

19 Removal of nonessential buildings and parking would reduce associated maintenance and  
20 utility costs. If fully funded, construction, rehabilitation, restoration, and demolition  
21 projects proposed in the alternative would result in moderate, long-term, beneficial  
22 impacts to park operations. Construction and landscape restoration activities would result  
23 in short-term, minor, and adverse impacts park operations while the activities are  
24 underway.

25 ***Conclusion***

26 Increased staff would result in moderate, long-term, beneficial impact if adequate funding  
27 is available. If funding is available, construction, rehabilitation, restoration, and  
28 demolition projects proposed in the alternative would result in moderate, long-term,  
29 beneficial impacts to park operations. Construction and landscape restoration activities  
30 also would result in short-term, minor, adverse impacts to park operations while the  
31 activities are underway. However, if funding and needed staffing levels are not made  
32 available when these actions are implemented, the proposed actions would have long-  
33 term, moderate, adverse effects on park operations.

34

35