

Notice of Exemption

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044
County Clerk County of: Marin
Marin Civic Center
3501 Civic Center Dr., Suite 234,
San Rafael, CA 94903

From (Public Agency):
Marin Wildfire Prevention Authority
1600 Los Gamos Drive, Suite 345
Sausalito, CA 94903

FILED

07/19/2024

SHELLY SCOTT

MARIN COUNTY CLERK

By **J. Cruz, Deputy**

21 - 2024 - 128

Project Title: Projects on National Park Service (NPS) Lands in Marin County

Project Applicant: Marin Wildfire Prevention Authority

Project Location – Specific: Treatment activities could be completed on NPS lands throughout Marin County within the following areas subsequent to NPS NEPA adequacy review and approval: Tamalpais Valley/Homestead Fuel Break Project; Sausalito Fuel Break Project; Marin City Fuel Reduction Zone Project; Highway 1 Evacuation Corridor Project. Additionally, the Project work area would include lands up to 100 feet from the edge of evacuation routes that intersect or are adjacent to NPS lands, up to 20 feet from the edge of fire roads that intersect NPS lands, and up to 300 feet from structures located at the periphery of communities adjacent to undeveloped NPS lands.

Project Location – City:

N/A

Project Location – County:

Marin County

Description of Nature, Purpose and Beneficiaries of Project:

The proposed project(s) would reduce the risk of high-severity wildfire on federal lands. The targeted project areas would provide defensible space for homes and structures directly adjacent to NPS lands as well as improve evacuation by residents and visitors and access for emergency responders.

Name of Public Agency Approving Project: Marin Wildfire Prevention Authority

Name of Person or Agency Carrying Out Project: Marin Wildfire Prevention Authority

Exempt Status (check one):

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- Common Sense Exemption (Sec. 15061(b)(3));
- Categorical Exemption. State type and section number:
- Statutory Exemptions. State code number: Senate Bill 901, Public Resources Code Section 4799.05 (d)(1)

POSTED 07/19/2024 TO 08/18/2024

Reasons why project is exempt:

The proposed project is statutorily exempt from the California Environmental Quality Act (CEQA) in accordance with the provisions of Senate Bill (SB) 901. Public Resources Code Section 4799.05 states:

“(d) (1) Division 13 (commencing with Section 21000 [CEQA]) does not apply to prescribed fire, thinning, or fuel reduction projects undertaken on federal lands to reduce the risk of high-severity wildfire that have been reviewed under the federal National Environmental Policy Act of 1969 (42 U.S.C. Sec. 4321) if either of the following is satisfied:

(A) The primary role of a state or local agency is providing funding or staffing for those projects.

(B) A state or local agency is undertaking those projects pursuant to the federal Good Neighbor Authority (Public Law 113-79) or a stewardship agreement with the federal government entered into pursuant to Public Law 113-79.

(2) Division 13 (commencing with Section 21000) does not apply to the issuance of a permit or other project approval by a state or local agency for projects described in paragraph (1).

(3) This section does not alter, affect, or in any way diminish the authority of a state or local agency to impose mitigation measures or conditions on projects described in paragraph (1) pursuant to other laws or regulations.

(4) Commencing December 31, 2019, and annually thereafter, the department shall report to the relevant policy committees of the Legislature the number of times the process in this subdivision was used.

(5) (A) This subdivision shall remain operative only if the Secretary of the Natural Resources Agency certifies on or before January 1 of each year that the National Environmental Policy Act of 1969 or other federal laws that affect the management of federal forest lands in California have not been substantially amended on or after August 31, 2018.

(B) Any CEQA exemption established under this subdivision shall continue in effect for those projects conducted under a National Environmental Policy Act record of decision, finding of no significant impact, or notice of exemption or exclusion that was issued prior to the date by which the Secretary determines that the National Environmental Policy Act or federal forest management laws were substantially amended.

(6) This subdivision shall become inoperative on January 1, 2028.”

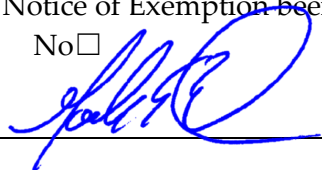
In preparation for each upcoming fiscal year, Marin Wildfire and member agencies will identify targeted project areas that overlap with NPS lands. Based on the priority of targeted project treatment areas, project(s) will be identified to be processed through the NPS annual planning as part of their overall FMP project areas. In accordance with Sections 2.2 and 3.6 of the 2015 NPS NEPA Handbook, individual future projects will be reviewed to determine that the requirements are satisfied for a Memorandum to File. Individual projects will be reviewed by the appropriate NPS Interdisciplinary Team (IDT). The IDT will make a determination whether the proposed project(s) would involve manual and mechanical treatments to reduce fuel loading near developed areas and falls within the annual allowable acres to be treated. The IDT will then determine whether there are substantive differences between the current proposal and the selected action as described in the relevant FMP FEISs/RODs. The approved Memorandum to File will confirm that each targeted project treatment area is within the scope of the FMPs EISs. The project(s) proposed would reduce the risk of high-severity wildfire on federal lands in accordance with the intent of SB 901. Only those projects for which the scope is found to be consistent with a fuel reduction and thinning project on federal land for which review under NEPA was already conducted will be permitted to proceed into implementation through close coordination with NPS staff.

Lead Agency Contact Person:
Mark Brown, Executive Officer

Area Code/Telephone/Extension:
(415) 246-0280

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project?
Yes No

Signature:  Date: 7/19/2024 Title: Executive Officer

Signed by Lead Agency

Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

Date: July 18, 2024

History

Marin County voters passed Measure C in 2020, which established a 17-member Joint Powers Authority (JPA), the Marin Wildfire Prevention Authority (Marin Wildfire), to fund and oversee proactive state-of-the-art wildfire prevention and preparedness efforts within the County. Members include several cities and towns, fire protection districts, and community service districts. The Marin Wildfire was formed to develop and implement a comprehensive wildfire prevention and emergency preparedness plan throughout almost all of Marin County. This proposed project is a Core Project that is funded by and within the purview of the Marin Wildfire. Core Projects include those projects that focus on wildfire detection, notification, and evacuation; vegetation management and fire hazard reduction; grants management; and public education.

Purpose of This Memorandum

Since Marin Wildfire's inception, several Core Projects have been proposed that overlap with National Park Service (NPS) lands. Marin Wildfire has worked closely with the NPS and has been able to prioritize targeted project areas for implementation on NPS lands over the last several years. To date, two statutory exemptions have been applied to targeted portions of two Core Projects that overlapped with NPS lands (portions of Tamalpais Valley/Homestead Fuel Break Project and Highway 1 Evacuation Corridor Project). These Core Projects have other project areas that overlap with NPS lands and at least three other Core Projects have portions of the overall proposed treatment areas that overlap with NPS lands.

The intent of this memorandum is to programmatically include all portions of identified Core Projects and additional Marin County locations that could be included in future Core Projects that overlap with NPS lands in a statutory exemption (refer below for details on programmatic treatment area). This memorandum does not alter the process for NPS coordination, NPS review of targeted project areas to determine NEPA adequacy as outlined below, nor the necessary NPS approval.

Background on Previous NEPA Documentation

NPS certified the Golden Gate National Recreation Area (GGNRA), Muir Woods National Monument, and Fort Point National Historic Site Fire Management Plan (GGNRA FMP) Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) on February 23, 2006, which covers fuel reduction projects on GGNRA land (NPS, 2006). NPS certified the Point Reyes National Seashore and North District of Golden Gate National Recreation Area Fire Management Plan (PRNS FMP) FEIS and ROD on October 29, 2004. NPS may certify updates or revised FMP EISs and RODs in the coming years, which could supersede or replace these EISs. These FMP EISs and RODs are incorporated by reference into this memorandum. The purpose of these FMP FEISs are to provide a framework for fire management activities in a manner that helps achieve resource management objectives consistent with the NPS's cultural and natural resources, and land management plans; reduces risks to developed facilities and adjacent communities; and addresses safety considerations for park visitors, employees, and resources.

Board Report Support Memorandum

July 18, 2024

Page 2

Sets of goals were developed by NPS staff during the FMP EISs planning process. The goals were derived from federal wildland fire management policy, fire-related guidance documents, NPS management policies, the 1980 GGNRA General Management Plan (GMP), and comments and concerns expressed by the public and agencies during the scoping period.

In the GGNRA FMP FEIS, management objectives, detailed in section 1.4, Purpose and Need for Action, were developed for each goal and describe what must be accomplished in order for the fire management program to be considered successful. The goals were then used in the formulation of the alternatives analyzed in the FEIS. In addition to the FMP goals, the planning area's topography, hydrology, the results of fire hazard modeling, analysis of current development patterns, and the locations and types of significant park resources served to inform NPS staff as they developed Fire Management Units (FMU's) for the FMP. The FMUs were then used as a means to evaluate and analyze management alternatives. An FMU is any land management area that can be defined by management goals and constraints, topographic features, access corridors, values at risk or values to be protected, political boundaries, fuel types, or major fire regime groups that set it apart from management characteristics of an adjacent unit. The selected action, Alternative C - Hazard Reduction and Resource Enhancement through Multiple Treatments, is the approved preferred alternative from the GGNRA FMP FEIS. Alternative C will allow for the greatest number of acres to be treated annually to achieve fire management and resource objectives through the use of a broad range of fire management strategies. As documented in the GGNRA FMP FEIS, Alternative C was also deemed to be the "Environmentally Preferred" Alternative. Given favorable weather conditions and adequate project funding, Alternative C would permit up to 595 acres to be treated per year using mechanical treatments and prescribed fire. Refer to the GGNRA FMP EIS for the environmental analysis of Alternative C.

The selected action, Alternative C - Increased Natural Resource Enhancement and Expanded Hazardous Fuel Reduction, is the approved preferred alternative from the PRNS FMP FEIS. Alternative C will permit the highest number of acres treated annually for hazardous fuels reduction concentrating on high priority areas (e.g., along road corridors, around structures, and in strategic areas to create fuel breaks). As documented in the PRNS FMP FEIS, Alternative C was also deemed to be the "Environmentally Preferred" Alternative. Alternative C would permit up to 3,500 acres to be treated per year using prescribed fire and mechanical treatments. Refer to the PRNS FMP EIS for the environmental analysis of Alternative C.

CEQA Exemption Summary

Marin Wildfire has determined that potential project areas on NPS lands are statutorily exempt from the California Environmental Quality Act (CEQA) in accordance with the provisions of Senate Bill (SB) 901. Public Resources Code Section 4799.05 states:

"(d) (1) Division 13 (commencing with Section 21000 [CEQA]) does not apply to prescribed fire, thinning, or fuel reduction projects undertaken on federal lands to reduce the risk of high-severity wildfire that have been reviewed under the federal National Environmental Policy Act of 1969 (42 U.S.C. Sec. 4321) if either of the following is satisfied:

(A) The primary role of a state or local agency is providing funding or staffing for those projects.

Board Report Support Memorandum

July 18, 2024

Page 3

(B) A state or local agency is undertaking those projects pursuant to the federal Good Neighbor Authority (Public Law 113-79) or a stewardship agreement with the federal government entered into pursuant to Public Law 113-79.

(2) Division 13 (commencing with Section 21000) does not apply to the issuance of a permit or other project approval by a state or local agency for projects described in paragraph (1).

(3) This section does not alter, affect, or in any way diminish the authority of a state or local agency to impose mitigation measures or conditions on projects described in paragraph (1) pursuant to other laws or regulations.

(4) Commencing December 31, 2019, and annually thereafter, the department shall report to the relevant policy committees of the Legislature the number of times the process in this subdivision was used.

(5) (A) This subdivision shall remain operative only if the Secretary of the Natural Resources Agency certifies on or before January 1 of each year that the National Environmental Policy Act of 1969 or other federal laws that affect the management of federal forest lands in California have not been substantially amended on or after August 31, 2018.

(B) Any CEQA exemption established under this subdivision shall continue in effect for those projects conducted under a National Environmental Policy Act record of decision, finding of no significant impact, or notice of exemption or exclusion that was issued prior to the date by which the Secretary determines that the National Environmental Policy Act or federal forest management laws were substantially amended.

(6) This subdivision shall become inoperative on January 1, 2028.”

NEPA Adequacy Determinations in Annual Planning

In preparation for each upcoming fiscal year, Marin Wildfire and member agencies will identify targeted project areas that overlap with NPS lands. Based on the priority of targeted project treatment areas, project(s) will be identified to be processed through the NPS annual planning as part of their overall FMP project areas. In accordance with Sections 2.2 and 3.6 of the 2015 NPS NEPA Handbook, individual future projects will be reviewed to determine that the requirements are satisfied for a Memorandum to File. Individual projects will be reviewed by the appropriate NPS Interdisciplinary Team (IDT). The IDT will make a determination whether the proposed project(s) would involve manual and mechanical as well as prescribed fire treatments to reduce fuel loading near developed areas and falls within the annual allowable acres to be treated. The IDT will then determine whether there are substantive differences between the current proposal and the selected action as described in the relevant FMP FEISs/RODs. The approved Memorandum to File will confirm that each targeted project treatment area is within the scope of the FMP EISs. The project(s) proposed would reduce the risk of high-severity wildfire on federal lands in accordance with the intent of SB 901. Only those projects for which the scope is found to be consistent with a fuel reduction and thinning project on federal land for which review under NEPA was already conducted will be permitted to proceed into implementation through close coordination with NPS staff.

Programmatic Treatment Area and Description

Potential Treatment Areas

Board Report Support Memorandum

July 18, 2024

Page 4

The targeted project treatment activities could be completed within the following areas on NPS lands following NPS NEPA adequacy review and approval, as shown in Figure 1 through Figure 6¹:

- The Tamalpais Valley and Homestead Valley residential hillside communities in the Southern Marin Zone (initial treatment and maintenance of the NPS portions of the Tamalpais Valley/Homestead Fuel Break Project);
- The perimeter of the City of Sausalito residential hillside communities between homes and open space area (initial treatment and maintenance of the NPS portions of the Sausalito Fuel Break Project);
- The boundary of the residential communities in Marin City and open space areas adjacent to structures (initial treatment and maintenance of the NPS portions of the Marin City Fuel Reduction Zone Project);
- The perimeter of NPS land directly adjacent to Highway 1 and the residential hillside community in the designated high fire hazard severity zones of Muir Beach (maintenance and potential expansion of the Highway 1 Evacuation Corridor Project);
- Up to 100 feet from the edge of evacuation routes that intersect or are adjacent to NPS lands,
- Up to 20 feet from the edge of fire roads that intersect NPS lands, and
- Up to 300 feet from structures located at the periphery of communities adjacent to undeveloped NPS lands.

Treatment activities could involve vegetation removal within targeted areas typically up to 200 to 300 feet from structures, up to 100 feet from the edge of evacuation routes, and up to 20 feet around fire roads. The targeted project areas would provide defensible space for homes and structures directly adjacent to GGNRA lands as well as improve evacuation by residents and visitors and access for emergency responders. Generally, treatments would target invasive, non-native species, hazardous trees, and fire-hazardous vegetation. Dominant non-native, invasive species in the project area may include, but would not be limited to French and Scotch broom, eucalyptus, and acacia. Treatments would vary depending on the cover type, as indicated by general vegetation community type.

Potential Treatment Methods

Fuel treatment methods vary depending on cover type, condition of vegetation, topography, costs, and efficiency. The treatment methods or activities that could be used typically include:

- **Handheld Treatments:** includes use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous woody species and remove dead woody vegetation and low-lying shrubs, and common coyote brush; typically used where access for larger equipment is not feasible. Invasive species removal can be done manually (or mechanically). The tools that could be used include chainsaws, loppers, and pole pruners.
- **Ground-Based Mechanical Treatments:** includes use of motorized equipment to cut, uproot, crush/compact, or chop existing vegetation on

¹ Note that due to the limitations of the spatial data, some areas may be labeled as a fire road that serve as an evacuation route and vice versa, resulting in inaccurate buffers depicted in the figures. When a project is identified it will be defined more precisely.

Board Report Support Memorandum

July 18, 2024

Page 5

slopes generally less than 30 percent or 50 percent with special equipment. The equipment and tools that could be used include tractor-mounted masticators or mowers. A trailer-mounted chipper or tracked chipper may be brought to work areas, depending upon site access.

- **Herbicides:** Non-native, invasive shrubs, notably broom, eucalyptus, and acacia species, may be treated with herbicides after cutting, at the discretion of NPS staff. The vegetation would be cut with tools and then herbicide painted on immediately after treatment using spot treatments such as the painted cut-stump or other painted application methods.

Board Report Support Memorandum

July 18, 2024

Page 6

Figure 1 Potential Project Areas (Map 1 of 6)

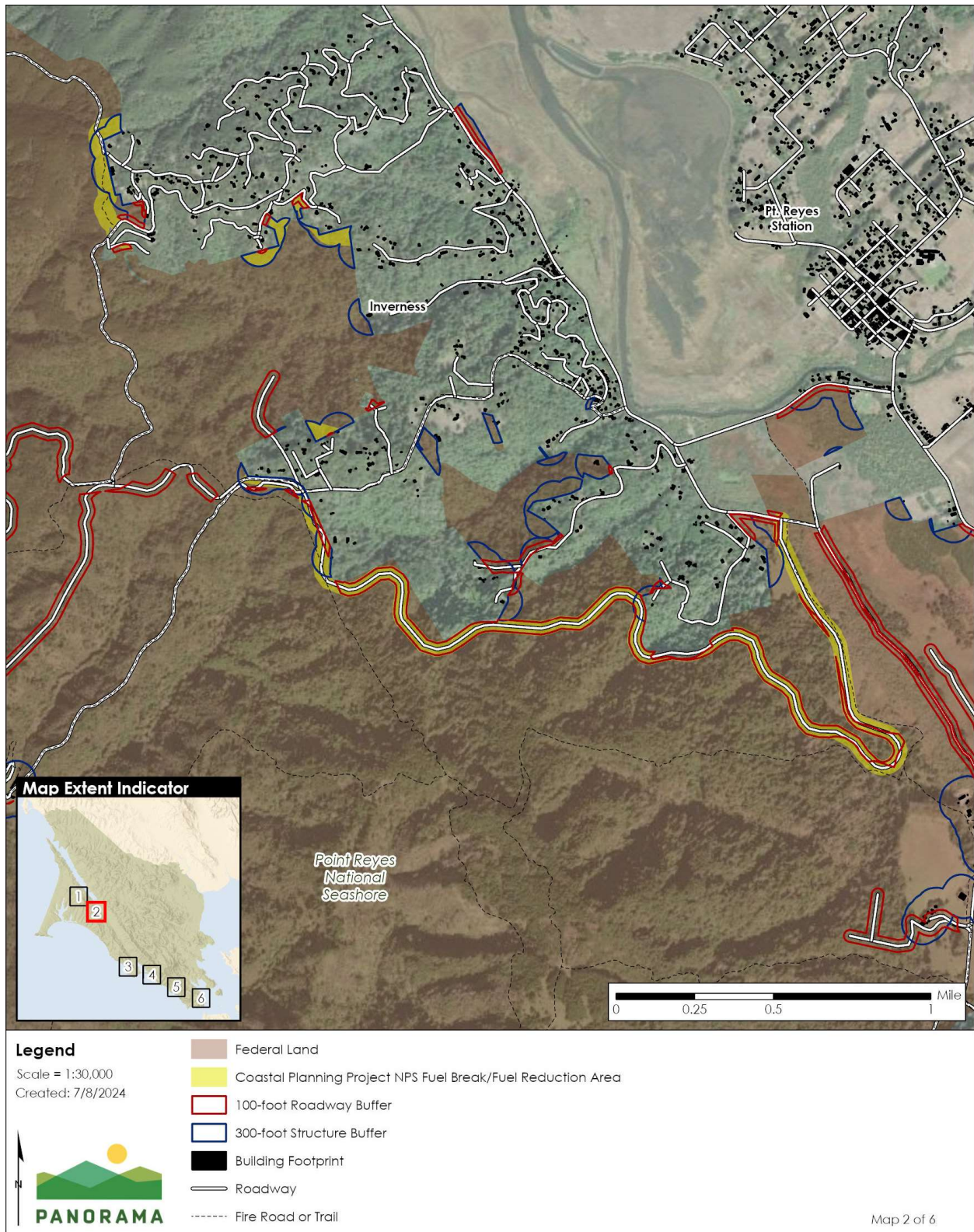


Board Report Support Memorandum

July 18, 2024

Page 7

Figure 2 Potential Project Areas (Map 2 of 6)

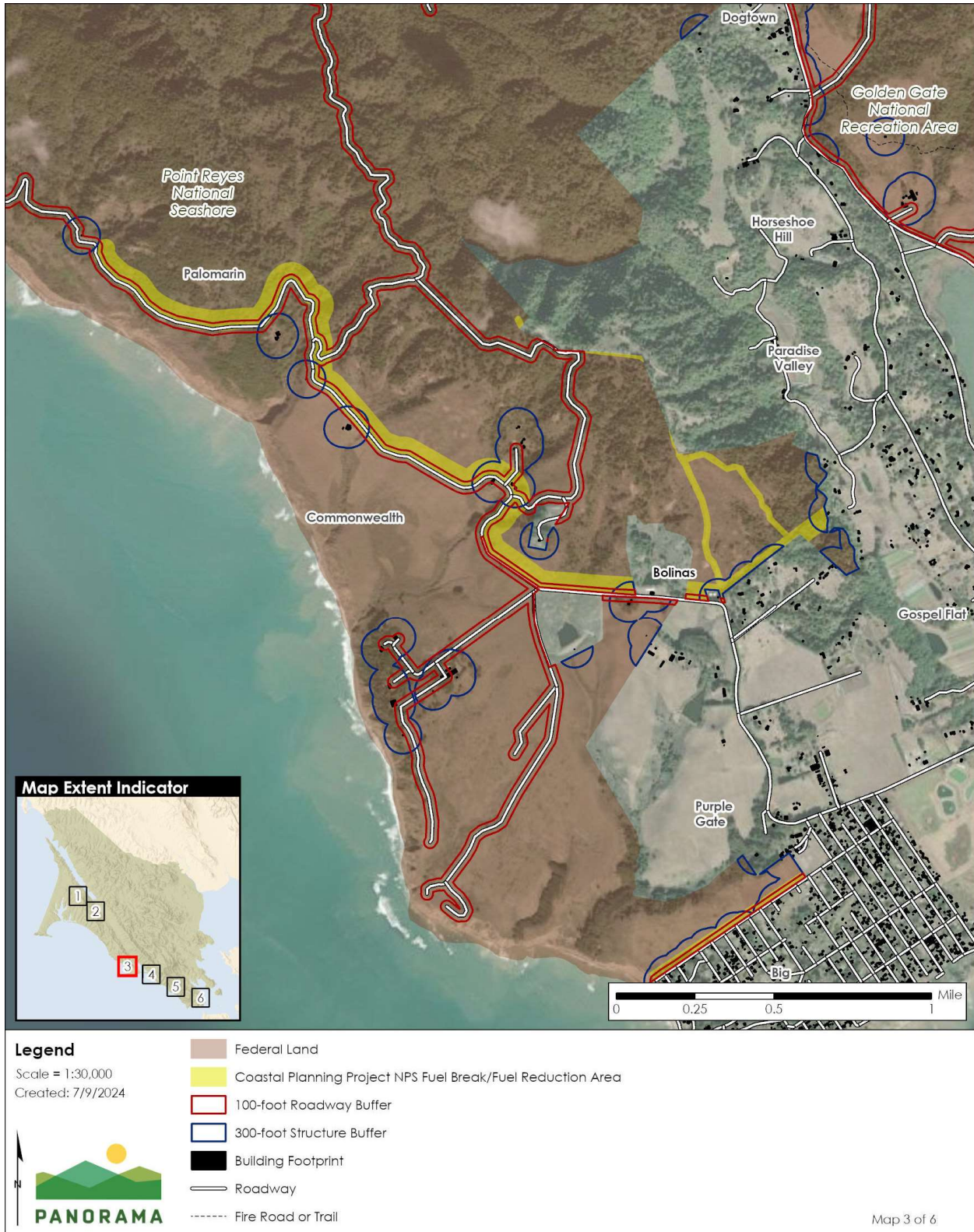


Board Report Support Memorandum

July 18, 2024

Page 8

Figure 3 Potential Project Areas (Map 3 of 6)

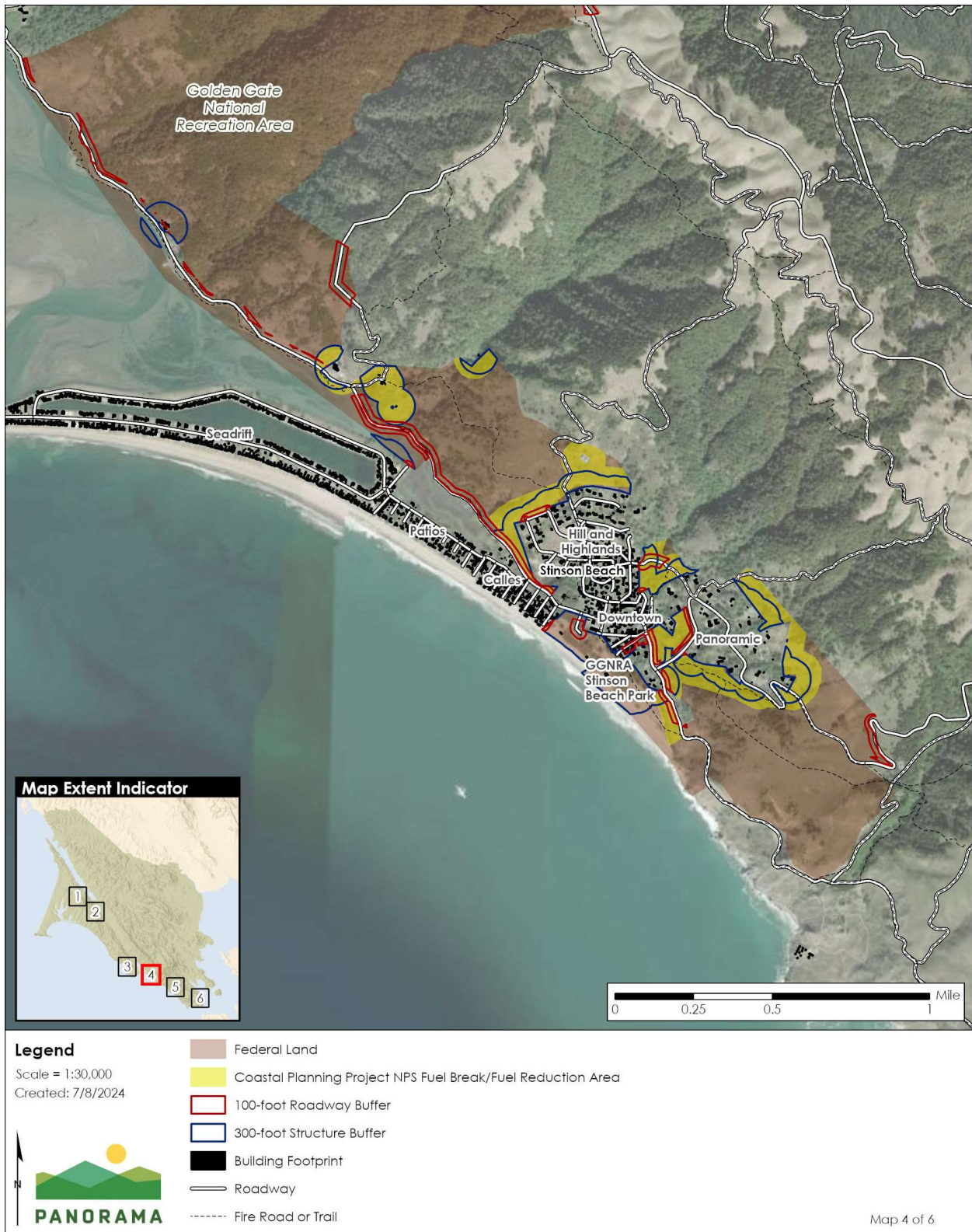


Board Report Support Memorandum

July 18, 2024

Page 9

Figure 4 Potential Project Areas (Map 4 of 6)

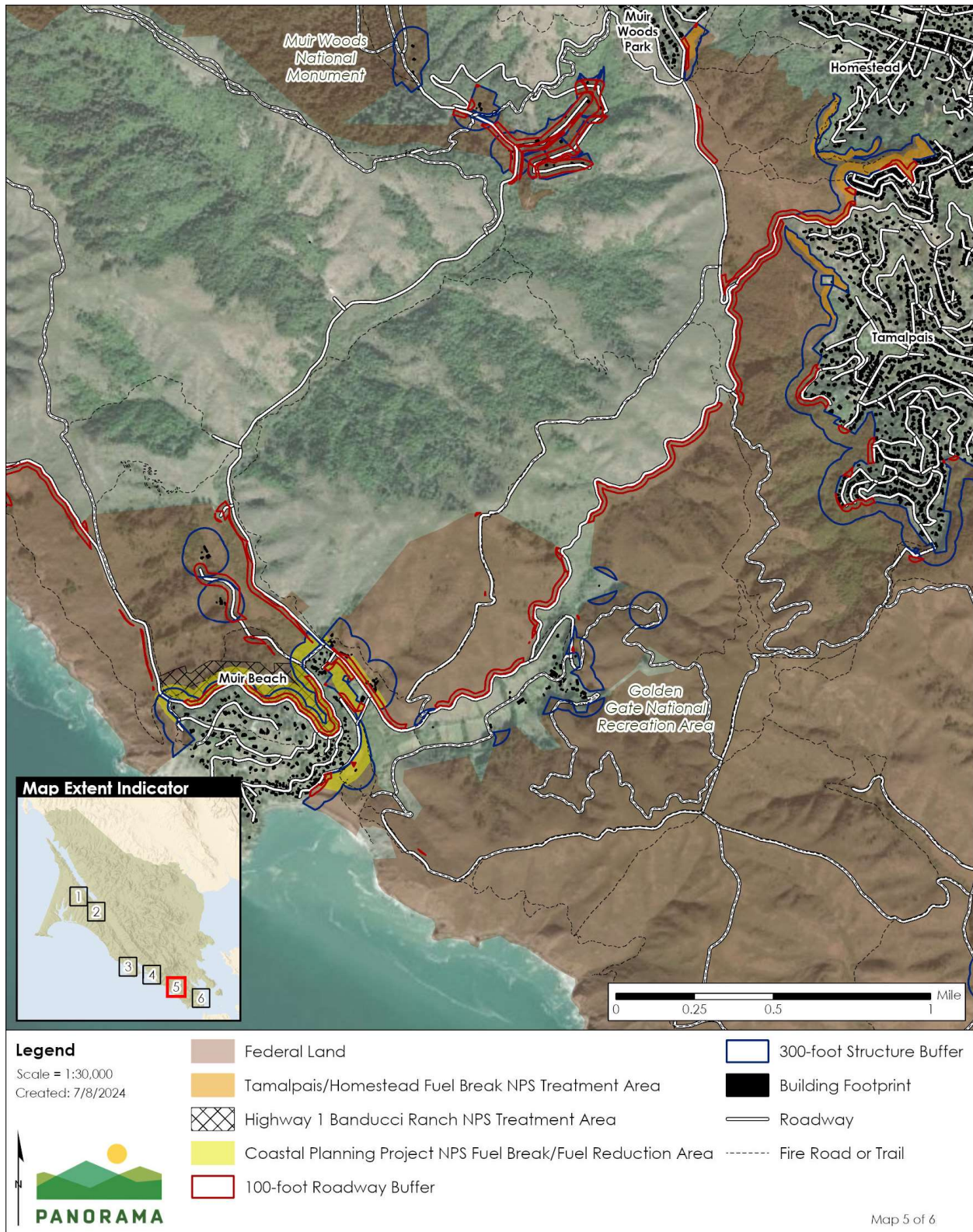


Board Report Support Memorandum

July 18, 2024

Page 10

Figure 5 Potential Project Areas (Map 5 of 6)

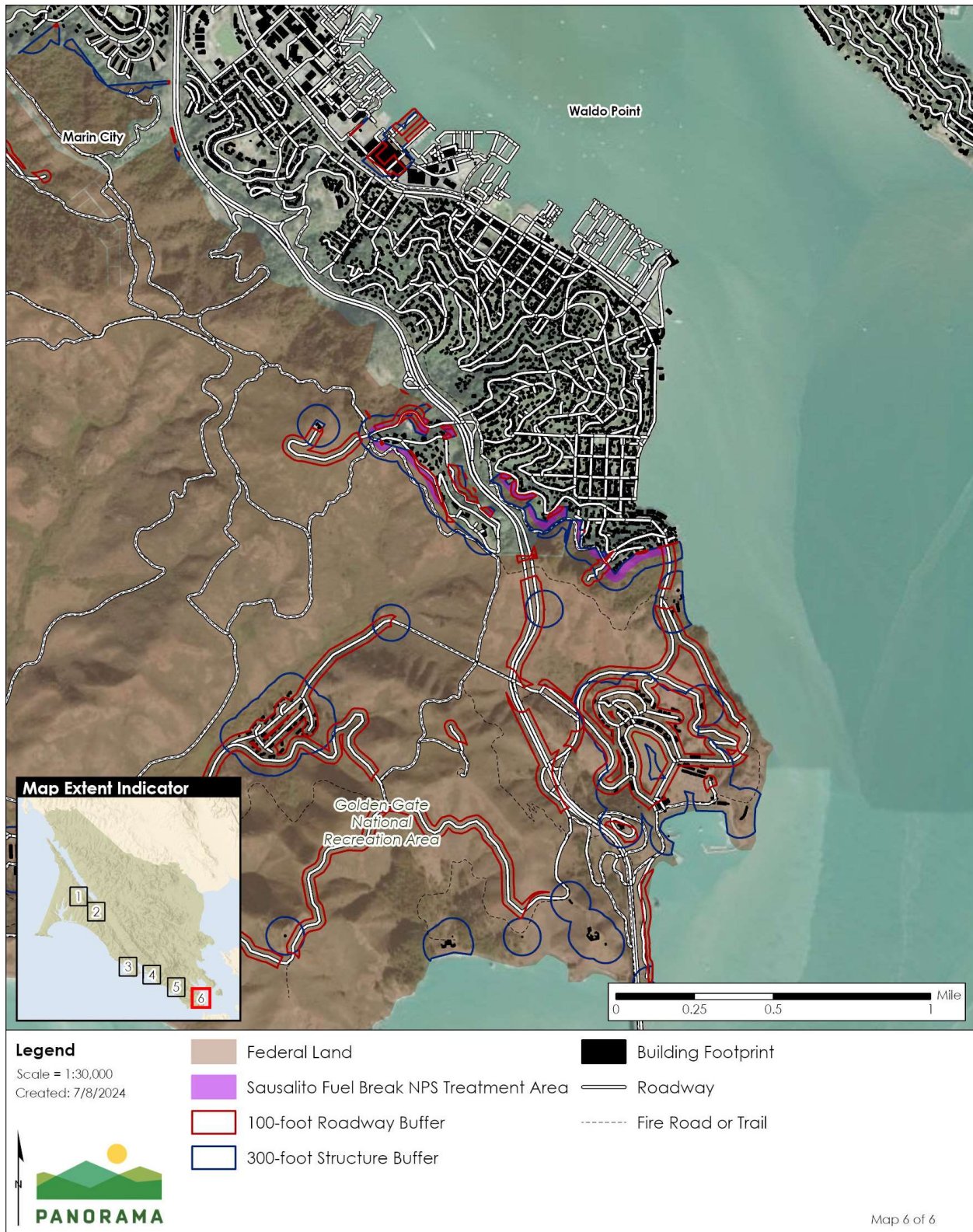


Board Report Support Memorandum

July 18, 2024

Page 11

Figure 6 Potential Project Areas (Map 6 of 6)



Board Report Support Memorandum

July 18, 2024

Page 12

Treatment Prescriptions

Targeted portions of Core Projects that fall on NPS lands would be inspected by NPS specialists to verify compliance with the existing FMP EIS, as part of the GGNRA lands fuel reduction program activities. Each targeted project area would have a specific treatment prescription developed by the NPS in coordination with the relevant Marin Wildfire member agency.

Disposal

Project debris could be disposed of through pile burning, chipping and broadcasting, chipping and hauling, or by loping and scattering depending on the location and condition of the work area.

Cut material may be pile burned depending upon the conditions of the work area. Suitable treatment areas are typically flat or have gentle slopes and have open areas away from tree canopies and power lines. Areas selected for pile burning would be away from waterways. Piles would generally be 5 to 10 feet in diameter and 4 to 6 feet in height, but pile dimensions may vary. Multiple piles may be burned on a single day. Pile burning would be conducted in compliance with Bay Area Air Quality Management District (BAAQMD) Regulation 5 for open burning and burn day restrictions. Burning would be conducted in areas approved by NPS staff.

Material may also be chipped. The vegetative material would be fed through the chipper and broadcast at treatment areas or hauled away for disposal. Chipped material spread on site would be chipped to under 3 inches in size and would be applied 2 to 4 inches in depth at most to minimize wildfire risk.

Workers

A single contractor crew would typically consist of 3 to 7 workers at a single location. The Marin County Fire Tamalpais Crew or inmate/CAL FIRE crew could conduct treatments and would consist of 10 to 12 workers per crew. Multiple crews may operate at any one time.

Anticipated Schedule and Duration

All work would be performed on weekdays between 8:00 am and 5:00 pm. Treatments in targeted project areas are anticipated to start after the nesting season each year, assuming the NPS determines NEPA adequacy per the process outlined above. Following project implementation, the condition of the project areas would be monitored collaboratively and reassessed by both NPS and fire department staff every year to evaluate if maintenance is needed. Maintenance would occur at the discretion of the NPS, but anticipated to be every 3 to 5 years in chaparral, woodlands, and forest communities and annually in grasslands. Areas of broom removal would initially be monitored and retreated approximately every one to three years. Subsequent treatments are anticipated to be the same as the proposed activities but are subject to change depending on the condition of the project areas and response to initial treatment.

FMP EISs Best Management Practices and Mitigation Measures

The NPS investigated all practical means to avoid or minimize environmental impacts that could result from implementation of the fire management activities approved through certification of the FMP EISs and RODs. A suite of best management practices and mitigation measures were identified in the FMP EISs/RODs to address potential environmental effects from

Board Report Support Memorandum

July 18, 2024

Page 13

implementation of fire management activities. The measures are designed to minimize or avoid the potential environmental impacts of the fire management actions to be implemented under the FMP FEISs or to create a beneficial effect. All relevant best management practices and mitigation measures identified in the RODs will be implemented as part of this project, which was determined to be within the scope of the FMP EISs.

PDIFs

The MWPA has developed specific design and implementation features adapted from several source documents referenced in footnotes after each name. In addition to the relevant best management practices and mitigation measures from the FMP EISs/RODs, the following PDIFs are part of the proposed project:

CUL-1 Training²

For all activities with the potential for ground disturbance (excluding prescribed herbivory, vegetation and tree trimming, and hand pulling smaller vegetation) all contractors and crew will receive training prepared by and/or conducted by a qualified archaeologist (who meets the U.S. Secretary of Interior's professional standards set forth in 48 FR Parts 44738-44739 and Appendix A to 36 CFR Part 61) prior to beginning work. The Tribal Heritage Preservation Officer(s) (THPO) from a local tribe (Federated Indians of Graton Rancheria [Graton Rancheria]) will be notified of the opportunity to attend and/or train crews. The training will address the potential for encountering subsurface cultural resources, recognizing basic signs of a potential resource, understanding required procedures if a potential resource is identified including reporting the resource to a qualified archaeologist and/or THPO, as appropriate, and understanding all procedures required under Health and Safety Code § 7050.5 and PRC §§ 5097.94, 5097.98, and 5097.99 for the discovery of human remains.

CUL-2 Unanticipated Discovery³

In the event that a previously unidentified cultural resource is discovered during implementation of an activity all work within a minimum of 150 feet of the discovery will be halted. The resource will be located, identified, and recorded in the MWPA cultural resources GIS database.

The boundaries around the buffered resource will be temporarily marked, such as with fencing or flagging. A qualified archaeologist will inspect the discovery and determine whether further investigation is required. Data regarding archaeological resources will be kept confidential per law. As appropriate, the qualified archaeologist will inform Graton Rancheria's THPO of the discovery. If the discovery can be avoided and no further impacts will occur, the resource will be documented on California State Department of Parks and Recreation cultural resource record forms and no further effort will be required. If the project proponent wishes to continue work in the area, only work performed using hand tools or powered hand tools is allowed, work cannot

² Adapted from measures in the Marin Municipal Water District, Final Program Environmental Impact Report for the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP EIR), October 2019.

³ Adapted from measures in the Midpeninsula Regional Open Space District, Wildland Fire Resiliency Program Final Environmental Impact Report (WFRP EIR), May 2021.

Board Report Support Memorandum

July 18, 2024

Page 14

include ground disturbance and the work area can only be accessed on foot as determined acceptable by the qualified cultural resource specialist/archaeologist.

Alternatively, the qualified archaeologist and/or THPO or tribal monitor will evaluate the resource and determine whether it is

- Eligible for the CRHR (and a historical resource for purposes of CEQA),
- A unique archaeological resource as defined by CEQA, and/or
- A potential tribal cultural resource (all archaeological resources could be a tribal cultural resource).

If the resource is determined to be neither a unique archaeological, an historical resource, nor a potential tribal cultural resource, work may commence in the area.

If the resource meets the criteria for either a historical resource, unique archaeological resource, and/or tribal cultural resource, work will remain halted in the buffered area around the resource. No work will occur within the buffered area except those methods previously discussed as determined acceptable by the qualified archaeologist and/or THPO or tribal monitor. After work is completed, all cultural resource delineators (e.g., flags or fencing) will be removed in order to avoid potential vandalism, unauthorized excavation(s), etc.

CUL-3 Cultural Resource Investigation³

Prior to implementation of vegetation management activities that have potential for intensive ground disturbance below the ground surface, significant heat from a burn, or use of heavy equipment off established roads and trails, a qualified archaeologist will conduct a records search and/or site-specific survey of the project areas where such disturbances could occur. Monitoring may also be identified by the qualified archaeologist as an appropriate measure to avoid damage or destruction of previously documented or potential resources (e.g., areas with a high sensitivity for buried resources) if conducting activities in the vicinity. Outreach with Graton Rancheria will be conducted as early as feasible to obtain information regarding culturally sensitive areas and/or the location of tribal cultural resources within the project areas. Graton Rancheria will be notified of the opportunity to attend any surveys or monitoring, if there is the known or potential presence for precontact resources. Any information provided by Graton Rancheria and/or tribal monitor(s) is confidential and exempt from public disclosure in accordance with statutory and regulatory requirements (Cal. Gov. Code § 6254(r), 6254.10; PRC § 5097.98(c); Cal. Code Regs. § 15120(d); 40 CFR § 1516.9; PRC § 21082.3 (c)(1)). Records searches, field survey results, and monitoring results will be shared with Graton Rancheria, as appropriate. Resources found during the records search, tribal outreach, survey, and/or monitoring will be flagged for avoidance with an appropriate buffer identified by the qualified archaeologist, or the qualified archaeologist may identify modifications to the prescriptions using only hand tools or powered hand tools and access by foot with no ground disturbance, provided it would avoid all impacts to the resources. Any resource found during the site survey will be documented on California State Department of Parks and Recreation cultural resource record forms and a survey report will be completed for every cultural resource survey completed. The specific requirements will comply with the applicable state or local agency procedures.

CUL-4 Native American Project Notification

For core projects subject to a CEQA determination or compliance and requiring MWPA Board of Directors' approval, Graton Rancheria will be notified and project maps and/or spatial data

Board Report Support Memorandum

July 18, 2024

Page 15

provided for projects that will potentially entail ground disturbance. Any input from Graton Rancheria regarding specific resources that could be affected will be considered during project implementation through the methods of avoidance as described in CUL-3.

CUL-5 Cultural Resources Monitoring

Based on the results of CUL-3 and -4, cultural resources monitoring may be conducted in order to avoid impacts to known resources. In addition to flagging the resource for avoidance (as described in CUL-3) if monitoring is conducted, a qualified archaeologist will be present during ground disturbance work to ensure the known resources are avoided and protected during project implementation, and if the resource is identified to be pre-contact archaeological and/or a tribal cultural resource, a tribal monitor will be invited to attend during the ground disturbance work.

ET-1 Environmental Training for Biological Resources^{4,5}

All crew members and contractors will receive training from a qualified registered professional forester (RPF) or biologist prior to beginning a treatment project where sensitive biological resources could occur in the work areas. The training will describe the appropriate work practices necessary to effectively implement the appropriate project design and implementation features and to comply with the applicable environmental laws and regulations. The training will include the identification, relevant life history information, and avoidance of potentially present special-status species with potential to occur; identification and avoidance of sensitive natural communities and habitats with the potential to occur in the treatment area; best management practices; and reporting requirements. As appropriate, the training will include protocols for work, such as specific trimming methods, where applicable. The training will instruct workers when it is appropriate to stop work and allow wildlife encountered during treatment activities to leave the area unharmed and when it is necessary to report encounters to a qualified RPF or biologist. The qualified RPF or biologist will immediately contact the California Department of Fish and Wildlife (CDFW) or United States Fish and Wildlife Service (USFWS), as appropriate, if any wildlife protected by the CE Species Act (CESA) or Federal Endangered Species Act (ESA) is encountered and cannot leave the site on its own (without being handled).

ES-1 Environmental Surveys for Rare Plants

Within areas where rare and special-status plants have a moderate to high potential to occur, based on desktop data of habitat types, known site-specific information, and the professional judgment of qualified biologists, surveys will be conducted prior to any activity that has the potential to damage perennial plants or is proposed to occur during the flowering season for the specific annual plant species that has the potential to damage the flowering body and seeds of these plant species. Activities that have the potential to damage the flowering body may include but may not be limited to mowing, weed whacking, off-road vehicle and heavy equipment use, discing, and prescribed burning.

⁴ Adapted from the measures in the East Bay Municipal Utility District (EBMUD) Practices and Procedures Monitoring and Reporting Plan Section 01 35 44 Environmental Requirements, August 2018.

⁵ Adapted from measures in the California Board of Forestry and Fire Protection California Vegetation Treatment Program Final Environmental Impact Report (CalVTP EIR), November 2019.

Board Report Support Memorandum

July 18, 2024

Page 16

Surveys for rare plants will occur for these species across the entire project footprint. Surveys will occur during the blooming period, if feasible, and will occur prior to work for the specified special-status plant. If blooming period surveys are not feasible and the sensitive plant in question can be keyed to genus outside of the blooming period, surveys will be conducted for all members of the genus. Individuals will be flagged for avoidance or modified methods. Physical avoidance will include flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway) to delineate the boundary of the avoidance area around the suitable habitat and removal after completion. For physical avoidance, a buffer may be implemented as determined necessary by the biologist. Sensitive species damage or loss avoidance may include implementation of appropriate species-specific no-activity buffers around sensitive resources. Temporary fencing will also be implemented, as and where determined necessary based on the species tolerance, if grazing is prescribed in the area of flagged individuals for avoidance or modified methods (WILD-1).

IP-1 Clean Equipment^{5,6}

All crew members, surveyors, and other personnel on site related to project activities will clean clothing, footwear, and equipment used during treatments of soil, seeds, vegetative matter, other debris or seed-bearing material, or water (e.g., rivers, streams, creeks, lakes) before entering the treatment area or when leaving an area with infestations of invasive plants, noxious weeds, known plant pathogens, or invasive wildlife.

IP-2 Prevent the Spread of Invasive Species and Plant Pathogens^{5,6}

Segregate and treat soils and vegetation contaminated with invasive plant seeds and propagules. Treat, as appropriate, to prevent the spread of invasive plants. Treatment may include disposal on site within already infested areas, chipping or pile burning and mulching to eliminate viable seeds, or disposal at an approved cogeneration plant or green waste facility.

Minimize soil disturbance to the greatest extent possible to reduce the potential for introducing or spreading invasive plants or plant pathogens, to protect topsoil resources, and to reduce available habitat for the establishment of new invasive plants.

IP-3 Treat Invasive Plants Prior to Seeding^{5,6}

Schedule activities to maximize the effectiveness of control efforts and minimize introduction and spread of invasive plants as feasible, with consideration for project objectives and location (e.g., install and maintain fuel breaks, disc lines, and other work before non-native plants set seeds).

IP-4 Retain Native Plants^{5,6}

When removing vegetation, focus first on removing invasive and highly flammable species, and dead or diseased vegetation. Retain beneficial, low-fire risk, healthy native plant species whenever possible, except where the historic disturbance regime for the vegetation community has not been maintained or the vegetation poses a hazard to the public.

⁶ Adapted from measures in the draft Ecologically Sound Practices Partnership, Ecologically Sound Practices for Vegetation Management (ESP) report, May 2021.

Board Report Support Memorandum

July 18, 2024

Page 17

GEO-1 Erosion and Soils Loss Stabilization Measures³

Soils will be stabilized if a vegetation management activity may leave less than 70 percent groundcover or native mulch/organic material.

For areas between 50 percent and 70 percent ground cover left:

- Sow native grasses and other suitable native vegetation on denuded areas where natural colonization or other replanting will not occur rapidly; use slash or chips to prevent erosion on such areas.
- Use surface mounds, depressions, logs, rocks, trees and stumps, slash and brush, the litter layer, and native herbaceous vegetation downslope of denuded areas to reduce sedimentation and erosion, as necessary to prevent erosion or slope destabilization.
- Install approved, biodegradable erosion-control measures and non-filament-based geotextiles (e.g., coir, jute) when:
 - Conducting substantial ground-disturbing work (e.g., use of heavy equipment, pulling large vegetation) within 100 feet and upslope of currently flowing or wet wetlands, streams, lakes, and riparian areas;
 - Causing soil disturbance on moderate to steep (10 percent slope and greater) slopes; and
 - Removing invasive plants from stream banks to prevent sediment movement into watercourses and to protect bank stability.
- Sediment-control devices, if installed, will be certified weed-free, as appropriate. Sediment control devices will be inspected daily during active work to ensure that they are repaired and working as needed to prevent sediment transport into the waterbodies.

For areas with less than 50 percent ground cover:

- Any of the above measures
- Stabilize with mulch or equivalent immediately after project activities, to the maximum extent practicable.
- If project activities could result in substantial sediment discharge from soil disturbance, as determined by the qualified personnel (e.g., RPF), organic material from mastication or mulch will be incorporated onto at least 75 percent of the disturbed soil surface where the soil erosion hazard is moderate or high, and 50 percent of the disturbed soil surface where soil erosion hazard is low to help prevent erosion.
- Where slash mulch is used, it will be packed into the ground surface with heavy equipment so that it is sufficiently in contact with the soil surface.

Once work is completed, the areas will be inspected at least annually if accessible, until groundcover exceeds 70 percent or slopes have stabilized, as determined by a qualified professional. At that time, erosion-control and slope-stability devices may be removed.

GEO-2 Prescribed Herbivory Erosion and Trail Control Measures³

Methods will be implemented to reduce the potential creation of prescribed herbivory trails and erosional features, including the following:

Board Report Support Memorandum

July 18, 2024

Page 18

- Implement methods, which could include rotating or providing multiple feeding areas and providing multiple watering stations to minimize excessive congregation of animals in any one location for too long, as determined by a qualified professional.
- If prescribed herbivory trails or damaged areas form, the bare area will be remediated by decompacting the soil and discontinuing prescribed herbivory in the area until the trails are revegetated, as determined by a qualified professional.
- Manage livestock grazing on steep slopes (generally slopes with more than 35 percent grade) to reduce potential for erosion. Management can include (but is not limited to) reducing or limiting the number of animals or duration on slopes above 35% (using stocking equation) to avoid erosion and avoid placing water and feeding troughs on steep slopes.
- Grazing will not occur during a storm event or under muddy conditions, when hooves may sink into the ground.

GEO-3 Soil Saturation and Rain Event Measures^{2,3,5}

The following measures will be implemented to prevent soil loss and erosion during rain events and following rain events:

- Shut down use of off-road heavy equipment, skidding, and truck traffic when soils become saturated (from rain event) and unable to support the machines. Saturated soil means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur.
- Off-road heavy equipment work will be suspended if the National Weather Service forecast is a “chance” (30 percent or more) of rain within the next 24 hours
- Ground disturbing work (e.g., use of heavy equipment, pulling large vegetation) will not occur during rain events (i.e., 0.5 inch of rain within a 48-hour or greater period \geq 1.5 inches in 24 hours) and may resume when precipitation stops and soils are no longer saturated. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.
- For activities that involve ground disturbing work and have not been stabilized, inspect for evidence of erosion after the first rain event (i.e., 0.5 inch of rain within a 48-hour or greater period) as soon as is feasible after the event. Any area of erosion that will result in substantial sediment discharge will be remediated within 48 hours.
- For activities that involve ground disturbing work, inspect project areas for the proper implementation of erosion control, as necessary and determined by the qualified personnel (e.g., RPF), prior to the rainy season. If erosion control measures are not properly implemented, the measures will be remediated prior to the first rainfall event.

GEO-4 Mulch Application

Board Report Support Memorandum

July 18, 2024

Page 19

When applying mulch, limit the depth of the chips to 2 to 4 inches to the extent feasible to minimize risk of increasing smoldering in the event of a wildfire. Chips should not be piled up around the base of trees

HAZ-1 Leak Prevention and Spill Cleanup^{2,5}

The project proponent will, at a minimum, implement measures that address the following procedures related to the use of hazardous materials during work:

- Proper disposal or management of contaminated soils and materials (i.e., clean up materials)
- Daily inspection of vehicles and equipment for leaks and spill containment procedures
- Emergency response and reporting procedures to address hazardous material releases
- Emergency spill supplies and equipment will be available to respond in a timely manner if an incident should occur
- Response materials such as oil-absorbent material, tarps, and storage drums will be available in the plan area at all times during management activities and will be used as needed to contain and control any minor releases
- The absorbent material will be removed promptly and disposed of properly
- Use of secondary containment and spill rags when fueling
- Discourage “topping-off” fuel tanks
- Workers using fuels or other hazardous materials must be knowledgeable of the specific procedures necessary for hazardous materials cleanup and emergency response
- All diesel and gasoline powered equipment will be maintained per manufacturer's specification, and in compliance with all state and federal emission requirements

HAZ-2 Wildfire Risk Reduction^{2,4,5}

The following measures will be implemented during activities that involve the use of equipment that can generate sparks or heat:

- Maintain fire suppression equipment (e.g., shovel, extinguisher) in work vehicles and ensure workers are trained in use
- Closely monitor for ignited vegetation from equipment and tool use
- Train workers to properly handle and store flammable materials to minimize potential ignition sources
- Prohibit smoking in vegetated areas
- Avoid use of spark- and/or heat-generating equipment during high fire danger days (e.g., Red Flag Days and Fire Weather Watch)
- Outfit off-road diesel vehicles and equipment with spark arrestors
- Avoid metal string or blade weed trimmers
- Maintain one fire extinguisher for each chainsaw

HAZ-3 Pile Burning⁴

The following measures will be implemented to reduce hazards associated with pile burning:

Board Report Support Memorandum

July 18, 2024

Page 20

- Pile burning will only be allowed on days when fire is less likely to spread (e.g., wind speeds are less than 15 mph).
- Piles will only be constructed in areas where burning can be safely controlled, for example, on the flattest area possible. Bottoms of steep, vegetated hills will be avoided.
- Piles should be constructed with 10 feet of clearance around them.
- Piles will be set back from public roads and trails at a distance to minimize risk to the public or cordoned off from the public.
- All requirements of CAL FIRE, the local fire department, and/or the BAAQMD will be met, including any permit, notification, burn bans, and reporting requirements.
- Have fire suppression crews on-site during the fire season determined by CAL FIRE or the local fire department (typically mid-May to mid-November) during curtain and pile burns.
- Pile burning will adhere to BAAQMD criteria pollutant thresholds and Regulation 5 for open burning.

HAZ-4 Application of Herbicides⁵

Projects will comply with all herbicide application regulations and ecologically sound integrated pest management principles.

- Herbicide containers will be triple rinsed with clean water at an approved site, and rinsate will be disposed of by placing it in the batch tank for application.
- Herbicide drift to public areas or sensitive areas will be minimized through the following measures:
 - Application will cease when weather parameters exceed label specifications or when sustained winds at the site of application exceeds 7 miles per hour (whichever is more conservative).
 - No herbicide will be applied during precipitation events or if precipitation is forecast 24 hours before or after project activities.
 - Spray nozzles will be configured to produce the largest appropriate droplet size to minimize drift.
 - Low nozzle pressures will be utilized.
 - Spray nozzles will be kept within 24 inches of vegetation, if spraying.
- For herbicide applications occurring within or adjacent to public recreation areas, residential areas, schools, or any other public areas within 500 feet, signs will be posted at each end of herbicide application areas and any intersecting trails notifying the public of the use of herbicides at a minimum 1 day before and 1 day after herbicide use.

HAZ-5 Protect Vegetation and Special-Status Species from Herbicides⁵

The project proponent will implement their approved integrated pest management (IPM) procedures when utilizing herbicides, or the following measures if no IPM is in place that addresses herbicide use in sensitive areas:

- Locate herbicide mixing sites in areas devoid of vegetation and where there is no potential of a spill reaching non-target vegetation or a waterway.

Board Report Support Memorandum

July 18, 2024

Page 21

- Use only herbicides labeled for use in aquatic environments when working in riparian habitats or other areas where there is a possibility the herbicide could come into direct contact with water. Only hand application of herbicides will be allowed in riparian habitats and only during low-flow periods or when seasonal streams are dry.
- No terrestrial or aquatic herbicides will be applied within Watercourse and Lake Protection Zones (WLPZs) of Class I⁷ and II⁸ watercourses, if feasible. If this is not feasible, hand application of herbicides labeled for use in aquatic environments may be used within the WLPZ.
- No herbicides will be applied within a 50-foot buffer of federal Endangered Species Act (ESA) or California ESA listed plant species or within 50 feet of dry vernal pools.
- For spray applications in and adjacent to habitats suitable for special-status species, use herbicides containing dye (registered for aquatic use by California Department of Pesticide Regulation, if warranted) to prevent overspray.

HYD-1 Prescribed Herbivory Treatments⁵

The following water quality protections will apply for all prescribed herbivory treatments:

- Limit the duration of prescribed herbivory within 50 feet of lakes/reservoirs, creeks, streams, riparian corridors, and wetlands to prevent soil erosion that could affect water quality (see SH-1)
- Water will be provided for grazing animals in the form of an on-site stock pond or a portable water source located outside of environmentally sensitive areas.
- Treatment prescriptions will be designed to protect soil stability. Grazing animals will be herded out of an area if accelerated soil erosion is observed.

NOI-1 Minimization of Noise Disruption to Nearby Neighbors and Sensitive Receptors^{5,9}

All projects will comply with applicable local noise ordinances. All powered equipment and power tools will be used and maintained according to manufacturer specifications. All diesel- and gasoline-powered treatment equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.

⁷ A Class I watercourse includes any domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area, and/or fish are always or seasonally present onsite, and includes habitat to sustain fish migration and spawning.

⁸ A Class II watercourse has fish always or seasonally present offsite within 100 feet downstream, and or aquatic habitat for nonfish aquatic species. Class II watercourses excludes Class III waters that are tributaries to Class I waters.

⁹ Adapted from San Francisco Public Utilities Commission (SFPUC), Standard Construction Measures, July 2015.

Board Report Support Memorandum

July 18, 2024

Page 22

Measures to minimize noise disruption to nearby neighbors and sensitive receptors will be implemented as needed. These measures may include but are not limited to:

- Using noise control technologies on equipment (e.g., mufflers, ducts, and acoustically attenuating shields)
- Locating stationary noise sources (e.g., pumps and generators) away from sensitive receptors
- Closing engine shrouds during equipment operations
- Shutting down equipment when not in use. Equipment will not be idled unnecessarily.
- Operating heavy equipment during daytime hours if such noise would be audible to receptors (e.g., residential land uses, schools, hospitals, places of worship)
- Locating project activities, equipment, and equipment staging areas away from nearby noise-sensitive land uses (e.g., residential land uses, schools, hospitals, places of worship), to the extent feasible

NSO-1 Northern Spotted Owl Nesting Season Avoidance²

Each project will be reviewed by a qualified biologist to determine if northern spotted owls have potential to occur near proposed project activities. Within areas where northern spotted owl have the potential to occur, work, including mowing with heavy equipment, the mechanical removal of vegetation, or prescribed burning, including pile and broadcast burning, will occur outside of the northern spotted owl nesting season to the extent feasible (February 1 to July 31).

If work must occur during the northern spotted owl nesting season, either NSO-2 or NSO-3 will apply.

NSO-2 Work During Northern Spotted Owl Nesting Season – Surveys²

Within an area where northern spotted owl has the potential to occur, when work will occur during the northern spotted owl nesting season (February 1 through July 31), and work is not considered low-impact by a qualified biologist the following measure will apply. Low impact type activities include, but are not limited to, goat grazing, hand pulling of weeds, hand trimming of trees and vegetation with non-mechanized equipment, chipping from existing roadways in residential areas, and use of mechanized equipment adjacent to roads or in residential areas that is a typical noise for the environment. In contrast, high-impact activities may include operation of heavy machinery in wildlands with lower baseline environmental noise, or work which produces noise disturbance for a longer duration than is typical in the environment.

The biologists will determine if a known breeding pair is found within 0.25 mile of the proposed activity (i.e., from existing surveys that season or historic data) and perform a nest check to confirm presence. If no survey data for the season has been completed for the areas, two surveys will be conducted by a qualified biologist (whose qualifications have been approved by the MWPA or lead public agency) for nesting northern spotted owls during the months of April and May preceding the commencement of these activities. At a minimum, the survey area will include all suitable nesting habitats within 0.25 mile of any planned activity sites, and then one of the two options listed below will be implemented. If access cannot be secured for surveys, then work should be delayed until after the nesting season, unless it can be shown that noise generation from the activities and the activities proposed would be below noise and visual disturbance levels for northern spotted owls (refer to USFWS Revised Transmittal of Guidance:

Board Report Support Memorandum

July 18, 2024

Page 23

Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California) at the nest site, if known.

- If it is conclusively determined that there are nesting northern spotted owls, planned activities that generate noise (e.g., mowing, heavy equipment usage, crews with hand tools that generate noise) in areas without regular human disturbances from human residency (e.g., leaf blowers, home construction and remodeling, roadways), that are within 0.25-mile of an identified active nest will not begin prior to September 1 unless the young have fledged, at which time work may begin no earlier than July 10. Prescribed burns may only occur within suitable northern spotted owl habitat (as determined by a qualified biologist) during the nesting season if protocol surveys have determined that northern spotted owl nesting is not occurring in the area of planned activity.
- If work must occur within 0.25 mile, and work has been determined to have the potential to impact an active northern spotted owl nest, CDFW and USFWS would be consulted to determine if take could occur and whether further permits are required.

NSO-3 Northern Spotted Owl Habitat Alteration²

For projects involving removal of large trees (10-inches DBH or greater) in potential northern spotted owl roosting, or nesting habitat (as identified during the desktop review) in areas without regular human disturbances from human residency, habitat alteration within core use areas (nesting and roosting habitat) will be planned in consultation with a qualified northern spotted owl biologist.

NSO-4 Retain Dusky-footed Woodrat Nests^{2,6}

Dusky-footed woodrats are important prey for northern spotted owls. Wherever feasible, project activities will leave dusky-footed wood rat nests intact. If possible, maintain a 3-foot buffer of vegetation around dusky-footed woodrat middens.

NB-1 Nesting Bird Season Avoidance^{2,5,6,10}

Whenever possible, schedule work outside of the bird nesting season, which is generally from February 1 through July 31st¹¹. Not all species nest between the regulatory season, and active nests that are encountered year-round are protected.

NB-2 Nesting Bird Surveys^{2,5,6}

If work that has the potential to impact nesting birds commences between February 1 and July 31 (during the nesting season), a qualified biologist (whose qualifications have been approved by the MWPA or lead public agency) will conduct a pre-activity survey for nesting birds.

¹⁰ Adapted from Marin County Parks (MCP), Bird Nesting Survey Training Manual, 2017.

¹¹ Note that the general nesting season between February 1 and July 31 is a guideline, and that birds may begin nesting beforehand, and complete nesting after these dates. Regardless, active nests are protected year-round. Avian nesting season may begin as early as January 1.

Board Report Support Memorandum

July 18, 2024

Page 24

Nesting bird surveys are recommended during the nesting season for work involving mowing with heavy equipment, other vegetation (including tree) removal or limbing and trimming activities, and prescribed (broadcast and pile) burning. Low-impact activities including goat grazing, hand-pulling weeds, and herbicide application do not generally require nesting bird surveys. Determination of need for surveys for low-impact activities should be evaluated on a case-by-case basis in consultation with a qualified biologist or RPF.

Nesting bird surveys will occur within no more than 7 days prior to work to ensure that no nests will be disturbed during vegetation management work. If work pauses for more than 7 days, a follow-up survey will be conducted prior to the restarting of work. Appropriate survey areas will be determined by the qualified biologist depending on the project footprint, type of activity proposed, and suitable habitat for nesting birds. Surveys will be conducted during periods of high bird activity (i.e., 1-3 hours after sunrise and 1-3 hours before sunset). If the qualified biologist determines that visibility is significantly obstructed due to on-site conditions (such as access issues, rain, fog, smoke, or sound disturbance [including high wind]), surveys will be deferred until conditions are suitable for nest detection.

NB-3 Nesting Birds: Active Nest Avoidance^{2,5,6,7}

If active nests (i.e., presence of eggs and/or chicks) are observed in areas that could be directly or indirectly disturbed (including noise disturbance), a temporary, species-appropriate no-disturbance buffer zone will be created around the nest sufficient to reasonably expect that breeding would not be disrupted. No work will occur inside the buffer zone.

The size of the buffer zone will be determined by the biologist, by taking into account factors including but not limited to the following:

- Noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work;
- Distance and amount of vegetation or other screening between the site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds, taking into account factors such as topography, visibility to source of disturbance, noise/vibration, nesting phase, and other case-by-case specifics.

Buffer sizes may be altered during the course of work at the recommendation of the biologist. Raptor nests are subject to additional protections, including during the “branching” phase, when fledglings begin to fly but do not fully leave the nest. Buffers will be maintained until young fledge or the nest becomes inactive, as determined by the qualified biologist.

If work must occur within the buffer, proceed to NB-4.

NB-4 Nesting Birds - Active Nest Monitoring^{2,5,6,7}

If an avoidance buffer is not achievable, a qualified biologist may monitor the nest(s) during work activities within the recommended nest buffer to document that no take of the nest (nest failure) has occurred related to work activities. If it is determined that work activity is resulting in nest disturbance, work should cease immediately.

Board Report Support Memorandum

July 18, 2024

Page 25

WILD-1 Temporary Fencing ⁴

If temporary fencing is required for prescribed herbivory treatment, a wildlife-friendly recyclable fencing design will be used. The design should consider the following:

- Minimize the chance of wildlife entanglement by minimizing barbed wire, loose or broken wires.
- If feasible, keep electric netting-type fencing electrified at all times or laid down while not in use.
- Charge temporary electric fencing with intermittent pulse energizers.
- Allow wildlife to jump over easily without injury by installing fencing that can flex as non-target animals pass over it and installing the top wire low enough (no more than approximately 40 inches high on flat ground) to allow adult ungulates to jump over it, while keeping grazing animals safely within the fence. The determination of appropriate fence height will consider slope, as steep slopes are more difficult for wildlife to pass.
- Fences should be highly visible to birds and mammals by using high-visibility tape or wire, flagging, or other markers.

RB-1 Pework Survey^{4,5}

If vegetation management activities would (1) occur in trees with potential for roosting bat species (e.g., trees with a diameter at breast height of 10 inches or greater), (2) would include removal trees where a bat could be roosting and (3) the work would commence between March 1 and July 31, during the bat maternity period, a pre-activity survey will be conducted for roosting bats within 2 weeks prior to work to ensure that no maternity roosting bats will be disturbed during work. This survey can be conducted concurrent with other surveys for other sensitive species. Potentially suitable bat roosting habitat within the work footprint that have been determined to be unoccupied by roosting bats, or that are located outside the avoidance buffer for active roosting sites may be removed. Roosting initiated during work is presumed to be unaffected, and no buffer would be necessary.

RB-2 Avoidance of Maternity Roosts and Day Roosts⁴

If active maternity roosts or day roosts are found within the project site, or in areas subject to disturbance from work activities, avoidance buffers will be implemented. The buffer size will be determined in consultation with the qualified biologist or RPF.

RB-3 Bat Roosting Tree Removal – Seasonal Restrictions⁴

If it is determined that a colonial maternity roost is potentially present, the roost will be avoided and will not be removed during the breeding season (March 1 through July 31) unless removal is necessary to address an imminent safety hazard.

Operation of mechanical equipment producing high noise levels (e.g., chainsaws, heavy equipment) in proximity to buildings/structures supporting or potentially supporting a colonial bat roost will be restricted to periods of seasonal bat activity (as defined above), when possible.

RB-4 Bat Roosting Tree Removal – Emergency Removals⁴

Potential non-colonial roosts that must be removed in order to address a safety hazard, can be removed after consultation with a biologist. Removal will occur on warm days in late morning to

Board Report Support Memorandum

July 18, 2024

Page 26

afternoon when any bats present are likely to be warm and able to fly. Appropriate methods will be used to minimize the potential of harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed, to not return to the roost that night. The remainder of the tree is removed on Day 2.

SH-1 Riparian Resources – Project Design^{5,6}

In riparian areas, treatments will be limited to removal of uncharacteristic fuel loads (e.g., removing dead or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are representative of healthy stands of the riparian vegetation types that are characteristic of the region. Allowable activities include hand removal (or mechanized removal where topography allows) of dead or dying riparian trees and shrubs, invasive plant removal, selective thinning, and removal of encroaching upland species. Mature, healthy trees will not be removed from a riparian corridor. Any activities conducted within a riparian corridor will be conducted so as to avoid alteration to a bed, channel, or bank of a waterway and all debris, including sawdust, chips, or other vegetative material, will be prevented from entering the bed, channel, or bank of a waterway, unless a permit from the California Department of Fish and Game under Section 1600 is obtained.

SH-2 Grazing and Sensitive Habitats⁴

Avoid grazing in sensitive habitats including serpentine-associated communities, chaparral, and across waterways and within a 50 foot buffer if there is a need for protection of riparian vegetation from grazing. Limited grazing may be allowed if it would be beneficial to plant and wetland communities, including serpentine-associated communities, without causing harm (e.g., removal of invasive species) and would not result in erosion.

SH-3 Minimization of Pile Burning Disturbance^{12,13}

Pile burning will not be performed in sensitive habitats, such as serpentine-associated communities, wetlands, or riparian areas. If piles are burned on a different day than piled, the piles should be moved prior to burning to ensure wildlife is not present, such as by re-piling by hand, or a qualified biologist will inspect the pile prior to burning to ensure wildlife are not present. If moving or inspection of the piles is not feasible, the pile will be lit from one side and allowed to burn slowly to the other side, in order to allow any wildlife to relocate, rather than lighting the entire pile at once.

¹² Adapted from Marin County Open Space District (MCOSD). (2015, April). Vegetation and Biodiversity Management Plan. *Best Management Practices*.

¹³ Adapted from California Department of Fish and Wildlife (CDFW). (2011). California Endangered Species Act Incidental Take Permit No. 2081-2011-046-03. *Wildfire Hazard Reduction and Resource Management Plan*. East Bay Regional Parks District

Board Report Support Memorandum

July 18, 2024

Page 27

TR-1 Emergency Access to Project Areas^{2,3}

The following measures will be implemented to maintain emergency access:

- At least one week prior to temporary lane or full closure of a public road for vegetation management-related work, the appropriate emergency response agency/agencies will be contacted with jurisdiction to ensure that each agency is notified of the closure and any temporary detours in advance and obtain all required encroachment permits
- In the event of any emergency, roads blocked or obstructed for maintenance activities will be cleared to allow the vehicles to pass.
- During temporary lane or road closures on public roads, flaggers equipped with two-way radios will be utilized where needed to control traffic. During an emergency, flaggers will radio to the crew to cease operations and reopen the public road to emergency vehicles.
- All authorized vehicles at the treatment site will be parked to not block roads when no operator is present to move the vehicle.

TR-2 Traffic Control Measures⁴

Traffic control measures will be implemented to maintain traffic and pedestrian circulation on streets affected by project activities. The following measures may include:

- All traffic control devices will conform to the latest edition of the MUTCD, and as amended by the latest edition of the MUTCD California supplement.
- Any work that disturbs normal traffic signal operations and ensure proper temporary traffic control (lane shifts, lane closures, detours etc.) will be coordinated with the agency having jurisdiction, at least 72 hours prior to commencing worker.
- Flaggers and/or warning signage of work ahead.
- A minimum of twelve (12) foot travel lanes on public roads must be maintained unless otherwise approved.
- Maintaining access to driveways and private roads at all times unless other arrangements have been made.
- Traffic control devices will be removed from view or covered when not in use.
- Sidewalks for pedestrians will remain open if safe for pedestrians. Alternate routes and signing will be provided if pedestrian routes are to be closed.
- Scheduling truck trips during non-peak hours to the extent feasible.

Attachment A: FMP EIS RODs

U. S. DEPARTMENT OF THE INTERIOR

National Park Service

Final Environmental Impact Statement / Fire Management Plan

Golden Gate National Recreation Area

Marin, San Francisco and San Mateo Counties, California

RECORD OF DECISION

The Department of Interior, National Park Service has prepared this Record of Decision on the *Fire Management Plan/Final Environmental Impact Statement* (FMP FEIS) for Golden Gate National Recreation Area (GGNRA), Muir Woods National Monument, and Fort Point National Historic Site (collectively known as “the park” for purposes of this document). This document includes a description of the background for the project, a statement of the decision made, synopses of other alternatives considered, a description of the environmentally preferable alternative, the basis for the decision, findings on impairment of park resources and values, an appendix detailing measures to minimize environmental harm, and an overview of public involvement and agency consultation in the decision-making process.

Background of the Project

The legislated boundary of GGNRA consists of 74,816 acres in San Mateo, San Francisco, and Marin counties in California within which 15,700 acres are directly managed by GGNRA and comprise the planning area for the FMP FEIS. The planning area does not include the northern lands of GGNRA (approximately 18,000 acres) which are managed by Point Reyes National Seashore, or lands within the jurisdictional boundary of GGNRA that are not directly managed by the NPS.

The National Park Service (NPS) managed lands of GGNRA contain more than 1.7 million square feet of building space in both historic and non-historic structures. The park has roughly 59 miles of Pacific coast and San Francisco Bay shoreline and an estimated 40-mile long interface with developed lands, primarily residential communities. The parklands, part of the Golden Gate Biosphere Reserve, support 19 separate ecosystems and 12 distinct plant communities which together provide habitat for 25 federally-listed endangered or threatened plant and animal species and 52 additional species of concern. Within GGNRA are five National Historic Landmark Districts, 667 historic structures, and more than 350 known archeological sites. Each year, more than 16 million visitors come to the park from all over the world.

Fire management is an essential component of NPS operations and the GGNRA has been operating under a 1993 Fire Management Plan (FMP). Concerns about fire management in GGNRA are due to the fire hazards created from fuel buildup within parklands as a result of fire suppression efforts over the past century, the extension of residential development along much of the park boundary, and the spread of more flammable, non-native invasive plants within park lands, particularly along the boundary.

This revision of the GGNRA FMP was initiated in August 2003 in response to recent changes to NPS and federal fire management policies and the need to update the existing plan. The 1993 FMP focused primarily on fire ecology and natural resource management issues. The Federal Wildland Fire Management Policy (1995, 2000) reflects lessons learned from a catastrophic fire season in 2000.

Updated policies stress the need for land managers to reintroduce the role of fire into fire adaptive natural

systems, to use fire management principals to protect sensitive park resources, and to reduce fire risk along the wildland urban interface through the implementation of cooperative fuel reduction strategies with neighboring communities and agencies.

The purpose of this FMP FEIS is to provide a framework for fire management activities in a manner that helps achieve resource management objectives consistent with the park's cultural and natural resources, and land management plans; reduces risks to developed facilities and adjacent communities; and addresses safety considerations for park visitors, employees, and resources. The specific purposes of this FMP FEIS are:

- To prepare a new FMP that is consistent with Federal Wildland Fire Management Policy and conforms to agency guidelines for fire management plans and programs; and
- To help achieve resource management objectives consistent with the park's cultural, natural resource, and land management plans and be responsive to safety considerations for park visitors, employees, and resources.

A set of goals were developed by NPS staff during this FMP EIS planning process. The goals were derived from federal wildland fire management policy, NPS management policies, the 1980 GGNRA General Management Plan (GMP), and comments and concerns expressed by the public and agencies during the scoping period. Management objectives, detailed in section 1.4 Purpose and Need for Action of the FMP FEIS, were developed for each goal and describe what must be accomplished in order for the fire management program to be considered successful. The goals were then used in the formulation of the alternatives analyzed in the FEIS.

In addition to the FMP goals, the planning area's topography, hydrology, the results of fire hazard modeling, analysis of current development patterns, and the locations and types of significant park resources served to inform NPS staff as they developed Fire Management Units (FMU's) for the FMP. The FMU's were then used as a means to evaluate and analyze management alternatives. An FMU is any land management area that can be defined by management goals and constraints, topographic features, access corridors, values at risk or values to be protected, political boundaries, fuel types, or major fire regime groups that set it apart from management characteristics of an adjacent unit.

The 1993 FMP FMU's were based upon vegetation communities and are used in the current FMP FEIS in *Alternative A – 1993 FMP, No Action*. The FMU's used in the action alternatives (Alternative B and Alternative C) were based upon different inputs to conform to current federal wildland fire management policy. The new FMU's consist of the Wildland Urban Interface FMU for areas of the park adjacent to relatively dense suburban neighborhoods; the Park Interior FMU comprised of open, largely undisturbed lands that are relatively remote from developed areas whether on the park perimeter or interior; and the Muir Woods FMU for Muir Woods National Monument, reflecting the important natural resources combined with high visitor use in this special park unit.

Three alternatives are analyzed in the FMP FEIS. The alternatives meet the park's goals and objectives to an acceptably large degree, and are within constraints imposed by regulations and policies, by risks associated with the wildland urban interface, and by technical and funding limitations. The three alternatives involve different combinations of prescribed burning and mechanical treatments for achieving fire risk reduction and resource protection and rehabilitation objectives. In each alternative, an upper limit

has been set on the number of acres that would be treated in any one year. Then, the alternatives are differentiated by the annual maximum acreages allowed for each treatment type (mechanical treatment or prescribed burning) within the FMU's in the three counties. The variations in annual, permissible acreages are one means of distinguishing differences among the alternatives. Potential impacts and appropriate mitigation measures are assessed for each of the alternatives.

Decision (Selected Action)

The selected action, *Alternative C - Hazard Reduction and Resource Enhancement through Multiple Treatments*, is the preferred alternative from the FMP FEIS. Alternative C will allow for the greatest number of acres to be treated annually to achieve fire management and resource objectives through the use of a broad range of fire management strategies. As documented in the FEIS, Alternative C is also deemed to be the "Environmentally Preferred" Alternative.

Given favorable weather conditions and adequate project funding, Alternative C would permit up to 595 acres be treated per year using mechanical treatments and prescribed fire. If project funding is not optimum, the park would seek other funding from other divisions such as maintenance and natural resources for projects that would result in benefit meeting the objectives of those divisions as well as fire management. Approved projects that lack funding would roll over to the next fiscal year. Low funding for prescribed burning projects can be supplemented in Marin County by sharing staff and equipment resources with other fire and land management agencies. The acreage limit for annual treatments of 275 acres by mechanical treatment and 320 acres of prescribed burning were developed as reasonable targets that could be achieved annually rather than absolutes that must be achieved. The plan acknowledges that the level of funding available for fire management projects has varied from year to year; in addition, heavy fogs in late summer/early fall can shift the park's focus to achieving the mechanical treatment acreages and away from prescribed burning.

Under Alternative C, mechanical treatment and prescribed burning will be used to reduce fuel loading near developed areas and achieve resource enhancement goals. Mechanical treatments, complemented by prescribed fire, will be employed to assist with the restoration and maintenance of the park's natural and cultural resources. An expanded research program will examine the role of fire and mechanical treatments in enhancing natural resources and the specific impacts of fire on these resources. Research will also be used to adaptively guide the fire management program and help maximize the benefits to park resources. Natural and cultural resource goals and objectives will be integrated into the design and implementation of fuel reduction projects.

Several actions that are part of the current GGNRA fire management program will continue under Alternative C. Some of these current activities are considered "best management practices" and are used by many land management agencies and fire districts. These actions include roadside fuel reduction; maintenance of defensible space around structures; the provision of fire education materials and public outreach; the continued implementation of successful fire management programs such as the Wildland Urban Interface Initiative coordinated with neighboring fire departments and homeowners' associations; fire effects monitoring; suppression of all wildland fires; centralizing the park's fire cache in a new structure; fire management actions for GGNRA lands within the City and County of San Francisco; and the fire management approach for Muir Woods National Monument. The NPS has been implementing the 1993 FMP strategy for Muir Woods National Monument for over a decade and would continue to do

so. The strategy uses prescribed fire and mechanical fuel treatments to reduce invasive species and fuel loading, and to restore the role of fire in the old growth coast redwood forest.

Based on the FMP, an implementation plan will be developed by the park's fire and resource management staff. The implementation plan will outline fire management actions that would occur over a 5-year planning period. This plan would be updated and reviewed annually for consistency with the FMP.

Other Alternatives Considered

In addition to the Selected Action, the FMP FEIS analyzes two alternatives for managing fire in the park, including a No Action Alternative. Similar to Alternative C (Selected Action), these alternatives are based upon park values, effective fire management strategies, NPS policy, and applicable law. Two other alternatives which focused on fuel reduction rather than a combination of resource and fuel reduction benefits were considered but dismissed.

Alternative A (No Action) – 1993 FMP, No Action

This alternative would be an update to the park's 1993 FMP only to reflect changes to the park's boundary (e.g., addition of new lands since 1993) and current national fire management policies. The focus of the 1993 FMP program is on ecosystem management through the application of prescribed fire to perpetuate fire-adaptive natural systems. This alternative would rely on the continued implementation of the 1993 FMP and recent emphasis on mechanical fuel reduction along with prescribed fire.

The six FMU's for Alternative A, derived from the 1993 FMP, are based upon vegetation communities. As shown in Table 1 below, a total of 210 acres could be treated by mechanical means and prescribed fire each year under this alternative. Nearly all of the projects would be in Marin County and account for 175 of the total 210 acres. An annual maximum of 110 acres for prescribed burning would be allowed; this total reflects what had been accomplished while the 1993 FMP was in full implementation in the 1990's. In practice, many fire management actions approved in recent years for GGNRA have been mechanical fuel reduction projects (e.g., mowing, cutting to remove nonnative shrubs and trees, and selective thinning in forested stands) as a result of the establishment of the Wildland Urban Interface Initiative. A combination of staff shortages, the requirement to develop a new FMP, and a year-long moratorium on prescribed burning has resulted in limited prescribed burning over the past five years.

Current research projects would continue and would focus on the role of fire to enhance natural resources and the effects of fire on key natural resources to determine the effectiveness of various fuel treatments. Prescribed burning would focus on resource management and research objectives with half of the annual acreage accounted for in projects within Muir Woods National Monument. Mechanical fuel reduction projects would focus on the park interface area in Marin County, consistent with projects funded in the past five years.

Alternative B – Hazard Reduction and Restricted Fire Use for Research and Resource Enhancement.

Under Alternative B, fire management actions would emphasize the use of mechanical methods to reduce fire hazards and fuel loads in areas with the highest risks. A total of 350 acres could be treated each year under this alternative – a maximum of 230 acres by mechanical means and a maximum of 120 acres through prescribed fire. Compared to Alternative A, Alternative B represents an increase in the number of acres mechanically treated each year. There would be a focus on the reduction of high fuel loads in the

Wildland Urban Interface FMU. Alternative B would permit the treatment of 50% fewer acres annually by mechanical treatment than the Selected Alternative. Limited use of prescribed fire could occur for research purposes within the park interior. Under Alternative B, prescribed burning is restricted to the Park Interior FMU in Marin County and Muir Woods FMU. No prescribed burning would occur in the San Mateo parklands. Research projects in Marin and San Mateo counties would examine the role of fire to enhance natural resources and the effects of fire on key natural resources to determine the effectiveness of various fuel treatments.

Table 1: Summary of Alternatives by Fire Management Unit (FMU) and Treatment Type

| Treatment Type | County | Alternative A | | Alternative B | | | | Alternative C | | | |
|---------------------------------|---------------|------------------------|-------|---------------|-------------------|----------------|-------|---------------|-------------------|----------------|-------|
| | | All Fmu's ¹ | Total | WUI FMU | Park Interior FMU | Muir Woods FMU | Total | WUI FMU | Park Interior FMU | Muir Woods FMU | Total |
| Mechanical Treatment (acres/yr) | Marin | 75 | 100 | 130 | 45 | 5 | 230 | 130 | 90 | 5 | 275 |
| | San Francisco | 5 | | 10 | 0 | 0 | | 10 | 0 | 0 | |
| | San Mateo | 20 | | 30 | 10 | 0 | | 30 | 10 | 0 | |
| | Total Acres | 100 | | 170 | 55 | 5 | | 170 | 100 | 5 | |
| Prescribed Burning (acres/yr) | Marin | 100 ² | 110 | 0 | 70 | 50 | 120 | 50 | 185 | 50 | 320 |
| | San Francisco | <1 | | <1 | NA | NA | | <1 | NA | NA | |
| | San Mateo | 10 | | 0 | 0 | 0 | | 5 | 30 | 0 | |
| | Total Acres | 110 | | 0 | 70 | 50 | | 55 | 215 | 50 | |

Source: GGNRA Fire Management Office Data 2004.

Notes:

¹ Since 1993 FMP did not give number of acres per year for treatments by FMU, and since FMU's are by vegetation type and dispersed throughout park, total acreage is given by county only based upon projects cited in 1993 FMP and current practice.

² Includes 50 acres of prescribed burning in Muir Woods National Monument annually.

WUI = Wildland Urban Interface

NA = not applicable

Alternatives Considered for Inclusion in the EIS But Rejected

Two additional alternatives were considered for the GGNRA FMP but rejected as not meeting the purpose and need of the FMP. Developed in response to a suggestion during scoping, of the two alternatives proposed, one included no use of fire as a management tool and the second permitted fire to be used only in pile burning. Both alternatives focused on mechanical treatments to reduce fuels and fire hazard. The strategy for fire management at Muir Woods, which involves the reintroduction of fire into the ecosystem, could not be implemented under these alternatives. The first alternative, which did not permit pile burning, removed a very sustainable solution for disposing of cut vegetation. Often only part, and sometimes none, of the vegetation cut at a site can be chipped and broadcast in place; under this alternative all debris which could be chipped would have to be trucked to a legal disposal site. Chipping and broadcasting debris at a project site may be prohibited because it could alter favorable conditions for sensitive plant or animal species, involve the spread of invasive plant seeds or viable parts, suppress the native seed bank, or increase fire risk when if deposited overly thick. Pile burning is an important solution for vegetation harboring SOD, pitch pine canker, or other infectious diseases or pests that should neither be left onsite nor moved to another location.

After consideration, the alternatives were rejected as so many important FMP goals could not be achieved without some level of prescribed burning. Without the option of prescribed burning, there would be less opportunity to contribute to the enhancement and rehabilitation of cultural and natural resources through the use of prescribed burning. The park fire ecology and monitoring staff would not be able to build upon research and data derived first hand experience in the actual environment of GGNRA. The park fire staff would not expand their experience by planning and executing prescribed burns and the preferred strategy for reducing the potential for a high intensity wildland fire at Muir Woods could not be implemented being based on the reintroduction of fire into the Muir Woods ecosystem.

Environmentally Preferred Alternative

The analysis in the Final EIS determined that Alternative C is the environmentally preferred alternative. As described in the Final EIS, NPS and Section 101 NEPA criteria were used to make this determination. A summary of this analysis is as follows:

Alternative C will best achieve the purposes and goals of the plan by allowing for the use of a variety of management tools in order to achieve resource goals in balance with protection of visitors, life, and property. In comparison to Alternatives A and B, Alternative C's fire management treatment options provide the park with the flexibility to achieve, in a timely manner, a reduction in fire hazards that aid in the protection of human health, life, and property while also maximizing opportunities for restoring and maintaining ecological integrity, and protecting and enhancing the park's natural and cultural resources. Under Alternative C, the park's expedited implementation of fuel reduction projects in the urban interface areas would afford the greatest protection for park neighbors as well as the most sustainable approach to fire management. Alternative C presents the greatest potential for the control of stands of non-native evergreen forests within all of the FMU's which, once controlled, will require limited maintenance to discourage resprouting. With active restoration efforts from park staff and volunteer stewards, the areas that support stands of non-native evergreens should convert to native vegetation and require little maintenance in the long-term to maintain low fuel loading.

Alternatives A and B conform to FMP goals but would accrue benefits at much lower rates than Alternative C. Alternative A would achieve only one third the number of acreage for both prescribed burning and mechanical treatment than Alternative C. Alternative A, which continues the current resource-based FMP, would have a natural resource focus park-wide split into FMUs defined by vegetation type. Alternative A is not as closely allied to the life safety goal that is primary to current federal wildland fire policy. With the exception of specific WUI projects funding by the National Fire Plan, all project planning would continue to be natural resource based. Alternative B permits mechanical treatment at nearly the same level as Alternative C and would be nearly as effective in reducing excessive fuel loading as Alternative C. However, the amount of acreage of prescribed burning permitted annually is a third of that allowed in Alternative C and then only within the Interior FMU. No prescribed burning would occur in San Mateo County and no burns would be within the WUI FMU which often has the larger concentrations of escaped, invasive, non-native plants. Alternative B and C would permit similar annual achievements for mechanical treatment projects and both allow the greatest range of techniques to be used to treat cut vegetation based on environmental conditions. However, the higher annual acreage limits in Alternative C (at least 45 acres more annually of mechanical treatment and an additional 200 acres more of prescribed burning), with the ability to use prescribed burning throughout the park where warranted, results in a more proactive program that has the greatest potential to effectively reduce high fuel loading that currently threatens natural and built resources and public safety on both sides of the wildland urban interface.

Basis for Decision

After careful consideration of the alternatives presented, their environmental impacts, planning goals, and public comments received throughout the planning process, including comments on the Draft Fire Management Plan/Environmental Impact Statement, Alternative C has been selected for implementation. This alternative best accomplishes NPS and federal fire management policies, the legislated purpose of GGNRA, and the statutory mission of the NPS to provide long-term protection of park resources. The selected action best accomplishes the stated purposes of the Fire Management Plan as described in section 1.4, Purpose and Need for Action of the FMP FEIS. Alternative C offers the best combination of benefits with a high level of protection of life and property, and greater long- and short-term natural and cultural resource benefits than either Alternatives A or B.

A set of goals, developed and used in this planning process, were derived from guidance of the NPS Management Policies 2001 (NPS 2000) and NPS Director's Order and Resource Handbook 18, Wildland Fire Management (NPS 1999), in addition to federal policy and scoping input. The goals and subsequent management objectives describe what must be accomplished in order for the fire management program to be successful and were used to formulate the alternatives analyzed in this FMP FEIS. Of these goals, the first four are the criteria that were predominantly used to select Alternative C for implementation. Alternative C is the alternative which most successfully fulfills these goals, though each of the alternatives achieves the goals to a varying degree.

- 1. Ensure that firefighter and public safety is the highest priority for all fire management activities.*

This alternative would permit the broadest use of fire management strategies throughout the park (mechanical treatment, pile burns, and prescribed burning) to reduce fuel loading near developed areas

and resources. Alternative C permits a larger number of acres to be treated annually than the other alternatives considered and it will thus accelerate the reduction of fuels in areas that present wildland fire hazards to adjacent communities and to sensitive park resources. Under Alternative C, a greater amount of fuel reduction (total 595 acres) could be achieved by both mechanical treatment and prescribed burning in the planning area than either under Alternative A (total 210 acres) or Alternative B (total 350 acres).

Under Alternative C, a maximum of 320 acres of prescribed burns and 275 acres of mechanical treatments could occur annually. This acreage cap grants the park the flexibility to take advantage of years with favorable weather conditions and funding availability. Though all of the alternatives depend on a range of variables for success, risks to firefighters and the public would be reduced at a more rapid rate under Alternative C.

The flexibility in treatment options provided under Alternative C, particularly in the Park Interior FMU, will allow the park to link together areas treated by prescribed burning or mowing with other areas of naturally-occurring light fuels. These linked zones of reduced fuels will then serve to slow the rate of fire spread in the event of a wildland fire, resulting in additional time for evacuation and response, and will provide relatively safe areas from which to stage firefighting efforts.

2. Reduce wildland fire risk to private and public property.

Full implementation of this alternative would allow for the greatest number of acres to be treated annually to achieve fire management objectives. Compared to Alternative A, Alternative C permits nearly three times as much mechanical fuel reduction and prescribed burning each year. The higher amount of acreage allowed to be treated annually produces the most accelerated progress towards reducing fuels in critical areas around the park; almost 1,375 acres could be mechanically treated over a five year implementation plan based on the annual allowable acreages. The greater acreage and full range of fuel management techniques permitted in the WUI FMU under Alternative C provides more opportunities to plan and annually implement joint projects with other agencies to strategically reduce fuels across jurisdictional boundaries. Similar to the other alternatives, the objective of fuel reduction projects under Alternative C would be to establish areas of reduced fuels to slow the rate of fire spread and facilitate fire suppression. However, given the flexibility in management tactics and the number of acres that could be treated annually, more could be accomplished in a shorter amount of time to reduce fire risk to private and public property under Alternative C.

3. Protect natural resources from adverse effects of fire and fire management activities, and use fire management wherever appropriate to sustain and restore natural resources.

Alternative C is the least constrained alternative in terms of the types of treatments that can be applied in individual areas. Treatments under Alternative C would pursue the enhancement of natural resources (e.g., increasing abundance or distribution of habitat for threatened and endangered species; reducing infestations of nonnative plants; increasing native plant cover; managing the rate of vegetation conversion, etc.) in addition to other management goals. The focus for prescribed burns under Alternative C would be in areas where NPS ecologists believe ecosystem health would be enhanced by burning and in areas where fuel accumulations create fire hazards. To the extent possible, prescribed burns would be conducted to approximate natural fire intensity and fire intervals. The intent would be to allow the process of fire to act on the landscape as it has for thousands of years, to the greatest extent possible, while

ensuring human safety and protecting property. Prescribed fire would be used to reduce infestations of highly nonnative plant species, restore native habitat, and rehabilitate cultural landscape settings. Only Alternative C would permit prescribed burning to be used in conjunction with mechanical treatments in the Wildland Urban Interface FMU, thus providing a range of strategies to effectively control infestations of invasive, non-native plants. In addition, only Alternative C permits mechanical treatment in combination with prescribed burning to be used in the Park Interior FMU's of both Marin and San Mateo counties. As such, Alternative C will provide more opportunities for vegetation management projects which focus on native plant community rehabilitation and the control of isolated, invasive plant populations in areas where fuel reduction may be a low priority.

4. Preserve historic structures, landscapes, and archeological resources from adverse effects of fire and fire management activities, and use fire management wherever appropriate to rehabilitate or restore these cultural resources.

Alternative C proposes use of a broad range of fire management strategies throughout the park – mechanical treatment, pile burning, and prescribed burning – as a means to reduce fuel loading near developed areas and achieve resource enhancement goals. Projects would focus on the protection and/or enhancement of cultural resource elements and values (e.g., burning would be used to reduce vegetation in areas that are identified as important historic viewsapes). Fire management activities, especially carefully applied prescribed fire and mechanical fuel reduction treatments, will be used to stabilize, preserve, maintain, and restore cultural resources. For example, mechanical thinning can effectively remove hazardous fuels from cultural resources and their vicinity, as well as restore, enhance, or maintain ethnographic resources and cultural landscapes in cases where the risk of direct effect from the application of fire is too high. Fire management activities will help to maintain and protect historic buildings by reducing fuels around these structures, both through prescribed burns and mechanical treatment. Historic field patterns may be restored in pastoral ranching landscapes where former grassland is being succeeded by scrub. In addition, the removal of dense ground cover may lead to the revelation of previously unknown archeological sites. Since this alternative allows for the greatest number of acres to be treated on an annual basis to achieve fire management objectives, it will therefore afford the greatest level of protection and enhancement of cultural resources.

Findings on Impairment of Park Resources and Values

The NPS has determined that implementation of Alternative C (Selected Action) will not constitute impairment to park resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the FEIS, the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS Management Policy. While the plan has some negative impacts, in all cases these adverse impacts are the result of actions to preserve and restore park resources and values. Overall, the Selected Action results in major benefits to park resources and values and it does not result in their impairment.

In determining whether impairment may occur, park managers consider the duration, severity, and magnitude of the impact; the resources and values affected; and direct, indirect, and cumulative effects of the action. According to NPS policy, “An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is: necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity

of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant NPS planning documents" (NPS Management Policies, 2001).

The non-impairment policy does not prohibit impacts to park resources and values. The NPS has the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of the park, so long as the impacts do not constitute impairment. Moreover, an impact is less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values.

The actions comprising Alternative C will achieve the goals of the Fire Management Plan in a comprehensive, integrated manner that reduces fire-related risks while also allowing fire to be used to achieve resource management objectives. The potential for high-intensity catastrophic fire that would put high-value resources at risk would be greatly reduced under the Selected Alternative. The combined use of mechanical treatment and prescribed burning throughout the park would allow NPS to reduce fuel loading and also achieve resource enhancement goals in a more timely and efficient manner than the other alternatives. Under Alternative C, the FMP goals would be achieved in a productive, effective, and sustainable manner through a broad scope of treatments and treatment areas. Strategic areas of high fuel loading on the park's urban interface would be treated and maintained over a shorter period of time than under Alternatives A and B. Likewise, areas of nonnative plants would be treated earlier in the implementation of Alternative C and would therefore be treated before populations of nonnative species could expand to affect larger areas.

In conclusion, the NPS has determined that the implementation of Alternative C will not result in impairment of resources and values in GGNRA. This conclusion is documented in the FMP FEIS.

Measures to Minimize Environmental Harm

The NPS has investigated all practical means to avoid or minimize environmental impacts that could result from implementation of the selected action. The measures have been incorporated into Alternative C and are presented in detail in the FMP FEIS. A set of mitigation measures will be applied consistently to actions to implement this plan through the park's internal compliance processes. (See Attachment 1 – Mitigation Measures). Fire effects monitoring by the fire management staff and the GGNRA cultural and natural resource management programs will be implemented to detect deleterious results. The results from this program will guide and assure compliance monitoring, biological and cultural resource protection, noxious weed control, visitor safety and fire education, endangered, threatened and special status species protection, and other mitigation. In addition, the NPS will prepare appropriate compliance reviews under the NEPA, the National Historic Preservation Act, and other relevant legislation for future actions not covered by this EIS.

Public and Interagency Involvement

Scoping for EIS

Public scoping for the FMP EIS was formally initiated on August 8, 2003, with publication in the Federal Register of the Notice of Intent to Prepare an Environmental Impact Statement for the GGNRA FMP. In addition to the Federal Register notice, the scoping period was publicized through a mailing to the public that included background information on the FMP and a notice of scoping workshops. Scoping

comments were solicited from August 8, 2003, to December 5, 2003. Three open house meetings were held for the scoping of the GGNRA FMP. These meetings featured displays and offered attendees the opportunity to discuss the planning process with staff. In addition, internal NPS scoping sessions were conducted to identify staff issues and concerns.

Among the major issues raised during the scoping meetings were the need for monitoring fire management activities and the use of wildland fire and pesticides as fire management tools. In addition, the development of an education component for fire hazard reduction in adjacent communities was mentioned. Other concerns raised at the meetings included ongoing changes in land use as they relate to fire; the potential for changes in wind patterns and wind strength due to tree removal; public access limitations; use of native plant species to restore habitat; potential changes to visitor experience and aesthetics; increased fire risk and life safety; and effects on cultural resources, vegetation, wildlife, hydrology, water quality, soils, and air quality.

Review of EIS

A Notice of Availability for the Draft EIS (FMP DEIS) was published by the NPS in the Federal Register on March 21, 2005. The NPS also provided the notice of availability of the FMP DEIS through a direct mailing and posting on the park's web site. The FMP DEIS was made available for review at park headquarters, park visitor centers, local and regional libraries, and on the park's website. The EPA's Federal Register March 18 notice of filing initiated a 60-day public comment period ending on May 17, 2005 which was extended to May 27, 2005 to ensure adequate review time. The NPS conducted two public presentations and workshops on the FMP DEIS. The first workshop was held in San Mateo County as part of a regularly scheduled Pacifica City Council meeting on April 11, 2005. The second workshop was on April 19, 2005 in Marin County at the San Francisco Bay Model in Sausalito and was part of the regularly-scheduled, GGNRA bi-monthly public meeting. The public was encouraged to submit comments on the DEIS via email, fax, or regular mail.

Twelve comment letters were received (see Appendix H of the FEIS). Agencies commenting were the US Environmental Protection Agency, the State Clearinghouse, the State Department of Forestry and Fire Protection, the Marin County Community Development Agency, the San Mateo County Department Parks and Recreation, the Land and the Resources Division of the San Francisco PUC. Two members of the Pacifica City Council submitted comments as well as 3 members of the public. The EPA provided comments as required in their role of statutory administrator of NEPA, the Council on Environmental Quality implementing regulations and the Clean Air Act.

All comment letters are reprinted in Appendix H to the FMP FEIS and each letter is followed by the NPS response to the letter's comments. The major issues raised during the public comment period included: smoke management, clarification of the text on conformance with air quality regulations and the State Implementation Plan, herbicide use, protection of riparian and wetland areas, range of alternatives considered, effects on Monarch butterfly habitat, and the need and benefits from interagency cooperation. On February 10, 2006 the EPA published their notice that the FEIS is "complete and fully adequate" in the Federal Register.

The NPS's Notice of Availability for the FMP FEIS was published in the Federal Register on December 28, 2005. Following the EPA's notice of filing published in the FR on December 23, 2005 the waiting period for preparation of the Record of Decision ended on January 23, 2006. The FMP FEIS was posted on the NPS park planning website and a postcard notification of its availability was mailed to 1,400 interested parties, including agencies and organizations which had requested information on the FMP FEIS or were on the park's planning office mailing list. Forty-seven individuals, organizations, and agencies that had received a copy of the FMP DEIS in either printed or CD format or had since requested a copy were sent the FMP FEIS in the format requested. The FMP FEIS was distributed to the GGNRA Visitor Centers and twenty-four libraries in Marin, San Francisco, San Mateo and Alameda counties.

Following distribution of the FEIS, the park received several requests from the public and agencies for copies of the document, and a private citizen request for additional information on the use of herbicides and fire retardant chemicals in the Muir Beach and Redwood Creek vicinity. The park responded that the park's preference is to use no retardants for suppression wherever possible and particularly in the vicinity of Redwood Creek, which provides habitat for listed salmonids. The Marin County Fire Department, as a CDF contract agency, has agreed to consult with the NPS before using retardants in the Redwood Creek drainage. It is mutually agreed that the protection of life and safety is the number one priority in any fire suppression effort and the use of retardants may be necessary where these threats are present. No herbicides have been used at the Golden Gate Dairy in conjunction with eucalyptus removal nor is any planned for this area or for work along Muir Woods Road. In conformance with the Endangered Species Act consultations undertaken for the FMP, direct applications to the cut stumps of eucalyptus, acacias or other readily resprouting non-native trees, is allowed in riparian or wetland habitats supporting special status species during the dry season (roughly July 1 through November 15), never within the wetted channel of the drainage and only when conditions meet the requirements of mitigation measures VEG-8 to prevent wind drift of herbicide.

Agency Consultation and Coordination

Advisory Council on Historic Preservation. The National Historic Preservation Act (NHPA) requires agencies to take into account the effects of their actions on properties listed in or eligible for listing in the National Register of Historic Places. The Advisory Council on Historic Preservation has developed implementing regulations (36 CFR 800) that allow agencies to develop agreements for consideration of these historic properties. The NPS, in consultation with the California State Historic Preservation Officer (SHPO), developed a Programmatic Agreement for the FMP based upon an existing draft Department of the Interior Fire Management Plan Programmatic Agreement. The NPS invited the participation of the Advisory Council, affected American Indian tribes, and the public in this consultation process. This Programmatic Agreement provides a process for compliance with the NHPA and includes stipulations for identification, evaluation, treatment, and mitigation of adverse effects for actions affecting historic properties. The NPS initiated consultation on the GGNRA FMP by letter to the SHPO dated May 23, 2003. Consultation was completed with the signing of the Programmatic Agreement on September 30, 2005. The Programmatic Agreement for Fire Management Activities is included as Appendix J in the FMP FEIS.

U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS). The Endangered Species Act (ESA) protects threatened and endangered species, as listed by the U.S. Fish and Wildlife Service (USFWS), from unauthorized take, and directs federal agencies to ensure that their actions do not

jeopardize the continued existence of listed species. Section 7 of the ESA defines federal agency responsibilities for consultation with the USFWS and National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) and requires preparation of a Biological Assessment to identify any threatened or endangered species that are likely to be affected by the proposed action.

The NPS initiated informal consultation with the USFWS on June 18, 2003. Upon request, the USFWS sent the NPS a species list for the GGNRA FMP EIS covering Marin, San Francisco, and San Mateo counties, as well as for the specific United States Geological Survey (USGS) quads within those counties in which NPS fire management activities will take place.

The NPS sent a biological assessment to the USFWS on March 16, 2005 to determine if formal consultation under Section 7 of the Endangered Species Act would be required for the GGNRA FMP. The NPS requested formal consultation with NMFS Fisheries Service on potential effects on listed salmonids and Essential Fish Habitat in a letter dated March 21, 2005.

USFWS issued a Final Biological Opinion on the GGNRA FMP EIS on October 7, 2005 (see Appendix K of the FMP FEIS). The Final Biological Opinion lays out the USFWS conclusions regarding the numerous listed wildlife and plant species within the FMP FEIS planning area and proposes several mitigation measures to assure protection of the species. All recommendations of the USFWS have been incorporated into the listing of mitigation measures included in Chapter 2 of the FMP FEIS and Attachment 1 to this ROD. The USFWS conclusions regarding implementation of Alternative C, the Preferred Alternative are:

1. Implementation of the FMP is not likely to jeopardize the continued existence of the mission blue butterfly, California red-legged frog, the San Francisco garter snake, Raven's manzanita, San Francisco lessingia, Presidio clarkia, and the Marin dwarf flax nor is it likely to destroy or adversely modify proposed California red-legged frog critical habitat. Critical habitat has not been designated or proposed for mission blue butterfly, San Francisco garter snake, Raven's manzanita, San Francisco lessingia, Presidio clarkia, and the Marin dwarf flax, therefore, none will be affected.
2. Implementation of the FMP is anticipated to result in incidental take of the mission blue butterfly, California red-legged frog, and the San Francisco garter snake. The nondiscretionary conservation measures proposed by the NPS and described in the FEIS and ROD will substantially reduce but do not eliminate the potential for incidental taking of these listed species. The USFWS has determined that the level of anticipated take is not likely to result in jeopardy to the three listed wildlife species and proposed critical habitat of the red-legged frog.
3. Implementation of the FMP is not likely to adversely affect the San Bruno elfin butterfly, the salt marsh harvest mouse, tidewater goby, California brown pelican and the Pacific Coast population of the western snowy plover because of the avoidance measures included in the proposed project, actions proposed are either outside the range of the listed species or the action area does not contain suitable habitat for the taxa.
4. The USFWS concurs that Alternative C is not likely to adversely affect the northern spotted owl because of the specific measures for owl protection that will be implemented with the FMP regarding the siting and timing of project actions in relation to owl activity sites, limits on tree

and understory canopy modification near owl activity sites, avoiding disturbance of woodrat nests, limiting removal of larger diameter trees, and conducting post-project monitoring.

5. The USFWS concurs with the determination that the proposed project is not likely to adversely affect the marbled murrelet because of specific avoidance measures that will be implemented with the FMP regarding timing and siting of project actions, and avoidance the felling trees of larger diameter trees.

NMFS issued a Biological Opinion on the FMP FEIS on February 8, 2006 addressing potential effects of the FMP on the Central California Coast coho salmon (*Oncorhynchus kisutch*), an Evolutionary Significant Unit (ESU) and the Central California Coast steelhead (*Oncorhynchus mykiss*), designated a Distinct Population Segment.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (PL 104-267), requires all federal agencies to consult with NMFS Fisheries on all actions or proposed actions permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH). NMFS provides recommendations to agencies through the Section 7 Consultation process to conserve EFH when agency activities may adversely affect EFH. Critical habitat has been designated for coho salmon and steelhead and includes streams and riparian areas within the FMP action area, triggering conformance with the Magnuson-Stevens Act.

After review of the biological assessment, best available scientific and commercial information, current status of the listed species, information on the environmental baseline of the action area, the anticipated effects of implementation of the FMP and cumulative actions, NMFS concluded that the FMP is unlikely to jeopardize the continued existence of the Central California Coast coho salmon or steelhead and unlikely to adversely modify their designated critical habitats. After review of the mitigation measures proposed for the control of erosion and protection of salmonids, NMFS recommended an additional conservation measure, taken directly from wording within the FEIS, be included to protect salmonid habitat from effects of herbicide use (see VEG-8 in Attachment 1). Modifications to two FMP mitigation measures (SS-12 and SS-13) were also requested. The issuance of an incidental take statement for the programmatic FMP was not required by NMFS.

As a condition supporting the issuance of their findings on the FMP, NMFS requires that the NPS provide them annually with information on the proposed implementation efforts for the upcoming fiscal year. Information will include a map of the project area, a project description and an assessment of potential effect on coho salmon and steelhead. NMFS will respond to the annual project report in writing within set time periods and inform the park whether the proposals may be appended or tiered from the programmatic biological opinion or whether project modifications, additional information or a separate consultation will be required.

California Coastal Commission. The Coastal Zone Management Act protects coastal environments. While the act transferred regulatory authority to the states and excluded federal installations from the definition of the “coastal zone,” it requires that federal actions be consistent with state coastal management plans. Activities taking place within the coastal zone under the definition established by the California Coastal Management Plan (CCMP) require a federal consistency determination. The FMP FEIS was submitted to the California Coastal Commission for federal consistency determination. In a letter dated February 10, 2006, the Coastal Commission determined that the programmatic FEIS would

2/22/2006

not adversely impact coastal resources and would meet the requirements for a negative determination with the adoption of a requirement for the NPS to provide the CCC Executive Director annually with an implementation plan. The Executive Director requested that NPS staff meeting annually with CCC staff to discuss how implementation of the annual work plan and mitigation measures will ensure protection of sensitive coastal resources. The NPS will submit additional consistency and/or negative determinations to the Commission for any future FMP projects within GGNRA that hold the potential to adversely affect resources within the coastal zone.

Changes Made for the Final EIS

A number of minor changes were made in the FEIS based on public comment received during the review period for the DEIS.

- A tenth FMP goal, accompanied by two objectives, to address smoke management and protection of air quality was added to the list of FMP goals in Chapter 1
- Figures 2-7, Fire Roads North Lands, and 2-8, Fire Roads South Lands were removed from the document and text edits were made to clarify which road-related functions at GGNRA are the responsibility of fire management staff (and are within the scope of the FMP FEIS) and which are the responsibility of other NPS divisions.
- Additional information was provided on herbicide use in conjunction with mechanical fuel removal as requested by the U.S. Environmental Protection Agency (EPA). This includes information on the park's common herbicide used, the review and approval process, regulatory conformance, protections for sensitive resources, the public and firefighters.
- Changes were made to the Mitigation Measures for Air Quality and Special Status Species in response to a comment from the EPA. As a result of the consultation between the NPS and the U.S. Fish and Wildlife Service (USFWS), two new Special Status Species mitigation measures were added. NMFS requested that a paragraph from FEIS Chapter 4 regarding herbicide application be added to the list of mitigation measures and that text modifications be made to two Special Status Species mitigation measures addressing protection of salmonids.
- On the recommendation of the EPA, changes were made to the Impacts on Air Quality section to clarify the relationship between BAAQMD's smoke management plan (SMP) and the State Implementation Plan (SIP). Text was added to address whether the three FMP alternatives would trigger a conformity analysis with the SIP; new text and a new table were also added to explain and state the *de minimus* levels for criteria pollutants with which the Air Basin is in nonattainment or maintenance status; and Table 3-4 was updated to reflect the current attainment status of criteria pollutants for the Bay Area Air Basin.
- In response to the EPA's request for more information regarding smoke management practice, a new appendix was added that lists smoke management techniques and non-burning alternatives that GGNRA could incorporate into a smoke management plan and/or that BAAQMD could require as part of the smoke management plan approval process. The referenced appendix is Appendix I – Non-burning Alternatives and Air Emissions Reduction Techniques for Fuel Reduction and Resource Benefiting Prescribed Burns in GGNRA.

Conclusion

Alternative C provides the most comprehensive and effective method among the alternatives considered for meeting the NPS purposes, goals, and objectives for managing fire and fire risks in GGNRA and for meeting national environmental and fire policy goals. The selection of Alternative C, as reflected in the *Final Fire Management Plan/Environmental Impact Statement* would not result in the impairment of park resources and would allow the NPS to conserve park resources and provide for their enjoyment by visitors.

Approved:

[Signed by Jon Jarvis on 2/23/06]

Jonathan B. Jarvis, Regional Director

Date

Pacific West Region, National Park Service

Attachment 1 – FMP Mitigation Measures

The NPS will implement the following mitigation measures in implementing the Selected Alternative of the FMP FEIS. The measures are designed to minimize or avoid the potential environmental impacts of the actions to be implemented under the FMP FEIS or to create a beneficial effect. These measures would not be fully applicable in the event of a catastrophic fire. The NPS will regularly evaluate and monitor the mitigation measures during implementation to determine their continued effectiveness in reducing impacts. The NPS, as Lead Agency, will have primary and full responsibility for coordinating the specific elements of each mitigation measure and will be responsible for ensuring that each mitigation measure has been implemented as specified in this document.

General FMP Mitigation Measures

- FMP-1(a)** To ensure that GGNRA fire management actions are in conformance with NEPA, the Record of Decision on the Final EIS, and NPS policy, individual fire management projects and modifications to the GGNRA five-year implementation plan will be subject to the GGNRA project review. Through the project review process, an interdisciplinary team will evaluate whether the potential effects of a proposed action or five-year plan, including appropriate mitigation measures, are adequately addressed by the Final EIS and reflect NPS management policies. If it is determined that the project has the potential for new environmental effects not addressed in this EIS or effects greater than those described in this EIS, a separate environmental process will be conducted.
- FMP-1(b)** To ensure compliance with 36 CFR 800, the regulations for implementing the NHPA, the Programmatic Agreement that will be developed specific to this park's fire management program will stipulate that each five-year implementation plan will be made available to the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the public for comment.
- FMP-2** GGNRA staff will meet with representatives of local fire agencies that could respond to wildfires in GGNRA lands in Marin, San Francisco, and San Mateo counties. The purpose of the meeting will be to provide information to fire agencies on the location and preferred strategies for suppression actions that will minimize damage or afford protection to important park resources in the event of a wildfire. The information exchanged between the NPS and local fire agencies will include notification procedures, new or modified facilities in the park, updated information on cultural and natural resources, low-impact suppression techniques, or potential protection techniques for certain locales in GGNRA.
- FMP-3** GGNRA cultural and natural resources staff will work with the fire management staff in preparing and updating maps and other data sources showing areas of the park with sensitive resources such as National Register properties; archaeological sensitivity; cultural landscapes; plant communities of special management concern (e.g., wetlands, riparian areas, dunes, and Special Ecological Areas identified in the park's Natural Resource Management Plan); habitat of federal, state, and locally listed species; and other important natural and cultural resources.

- FMP-4** GGNRA staff will conduct a training session for all contractor crews at the beginning of new fuel reduction projects to familiarize the crews with sensitive resources at the project site and review project conditions. Training sessions may include identification of NPS staff resource contacts; special status plants, wildlife, or other sensitive resources in the work area; identification and specific removal techniques to protect cultural resources from disturbance or prevent resprouting of nonnative plants; markings for the limit line of disturbance; thresholds that trigger a change in implementation techniques or require a halt in project implementation; proper disposal of food waste and garbage to discourage feeding by vectors and corvids; daily close-up of the project site to assure public safety; and information for public contacts during project implementation.
- FMP-5** An education program for field personnel involved with implementation of FMP projects will be conducted prior to the initiation of field activities. The program may include a brief presentation on any listed species at the work area, including a description of the species and its ecology, habitat needs, legal status, and protection afforded to the species. Cultural resource issues may include the type of artifacts or soils that could indicate the presence of subsurface cultural resources, the presence of known resources at the site, and important elements of the cultural landscape that must be left undisturbed, among other issues.
- FMP-6** The superintendent of GGNRA will appoint members of GGNRA staff to act as resource specialists to consult with operations crews in the event of wildland fire and during planning and execution of prescribed fire. The resource specialists will meet with local fire agencies likely to command wildland fire suppression actions on GGNRA lands and develop strategies for implementing flexible suppression to protect important resources.
- FMP-7** Natural and cultural resources staff will be notified of wildland fires as soon as possible so that appropriate staff can advise the lead fire agency on the location of sensitive resources and preferred suppression techniques and begin planning for rehabilitation of the burned area. Natural and cultural resource advisors will be assigned to the incident as needed.
- FMP-8** For any multi-day fire suppression event, a local or regional Burned Area Emergency Response team will be requested to facilitate development, in conjunction with park staff, of the emergency suppression stabilization and rehabilitation proposals.

Air Quality Mitigation Measures

- AIR-1** If recommended by BAAQMD, smoke management plans submitted by the NPS for BAAQMD review can be modified to reduce production of pollutants by reducing the amount of fuels available for burning. Options for reducing the amount of fuels available and emissions produced include reducing the area to be burned, reducing fuel loading (e.g., mowing and understory thinning), managing the rate of fuel consumption, and redistributing the emissions. Treatments to reduce overall air emissions from prescribed burns will be based on current smoke management techniques such as those listed in the Western Regional Air Partnership publication “Non-burning Alternatives to Prescribed Fire on Wildlands” (Jones and Stokes, 2004) and those listed in Appendix I of this FEIS.

- AIR-2** The NPS will develop a Smoke Communication Strategy to guide management of smoke events during prescribed fires, managed wildland fires, suppression actions, and fires occurring outside the park. Notification of proposed burns will be disseminated locally to provide adequate advance notice to persons with sensitivities to smoke.
- AIR-3** To reduce smoke and pollutant generation during the prescribed burning season, efforts will be made to burn fuel concentrations, piles, landings, and jackpots at other times of the year.
- AIR-4** To reduce impacts on visibility in the national park, burning will be avoided on holidays or other periods when recreational visitation is typically high.
- AIR-5** To avoid public health and nuisance impacts on neighboring communities, information about upcoming prescribed burns, including guidance for those who are sensitive to smoke, will be provided to park visitors, park employees, and park partners. Prescribed burns will be conducted under meteorological conditions that best avoid smoke drift into nearby residential areas and roadways.
- AIR-6** The NPS will arrange in advance with other parks that routinely monitor air quality (i.e., Yosemite National Park or Sequoia National Park) to monitor particulate levels during larger prescribed burns in GGNRA provided the necessary staff and equipment can be made available for GGNRA use.

Soils and Water Quality Mitigation Measures

- SW-1** Planned and unplanned fire actions will include strategies to minimize impacts from erosion, such as avoiding steep slopes and highly erosive soils, timing burns to minimize erosion potential, avoiding scraping or burning to bare mineral soil (layer below duff), or using erosion control techniques during or after burns. Subject matter experts will ensure that the erosion control plan for each action is sufficient to prevent long-term moderate or major impacts on the rate of soil erosion. Sites with identified high potential for soil erosion will be monitored.
- SW-2** Following a prescribed fire or wildland fire, visual monitoring will be conducted downslope of the area burned and at down-gradient water bodies (including ditches, streams, and wetlands) for evidence of increased soil erosion or increased sedimentation. Additional erosion control/sediment control measures will be applied where warranted.
- SW-3** Following wildland fires or prescribed burning, all fire lines (both hand and dozer lines) or other areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the spread of nonnative plants and address soil compaction. Burned area rehabilitation techniques, including recontouring, soil stabilization, and removal and monitoring of nonnative plants, will be used for rehabilitation efforts.
- SW-4** Unless no feasible alternative is available, heavy equipment working on fire management actions (excluding suppression) will not be used in areas with soils that are undisturbed, saturated, or subject to extensive compaction. Where staging of heavy equipment, vehicles, or stockpiling is unavoidable, the limit of allowable disturbance will be clearly demarcated by

- staking, flagging, or fencing. Following the end of work, surface soils will be scarified to retard runoff and promote revegetation.
- SW-5** During implementation of prescribed burns, some of the available coarse, woody debris will be left on the site to foster nutrient recycling and mycorrhizal function and other natural resource benefits.
- SW-6** Mechanical regrading and rehabilitation of fire roads will be conducted to specifications identified in the GGNRA Trails Inventory and Condition Assessment and the Memorandum of Understanding for Maintenance and Management of Dirt Roads with adjacent land management agencies.
- SW-7** After tree felling, stumps will be left in place in areas with highly erosive soils or on steep slopes.
- SW-8** Where surface soils supporting native vegetation will be disturbed as part of fire management actions, the topsoil layer will be excavated and stockpiled separately from other fill and replaced as topsoil at the end of the action.
- SW-9** Erosion and sediment control measures will be implemented as prescribed where project actions could leave soils exposed to runoff prior to revegetation.
- SW-10** Where multiple burn piles are created on undisturbed soils, the size of the piles will be kept small with sufficient distance between piles to minimize impacts on soils from high-intensity fires and to facilitate reestablishment of mycorrhizal fungi and soil microorganisms from adjacent unburned land.
- SW-11** A post-project site stabilization plan will be developed and implemented for all fire management projects.

Wetland Mitigation Measures

- WET-1** Fires will be allowed to back into, around, or through wetlands and meadows to avoid suppression damage. Wetlands will be avoided to the greatest extent possible while constructing fire lines and breaks during wildfire suppression. Where wetlands are used as a natural boundary to help contain a fire, the control line will be sited outside the wetland area. Trample lines (rather than dug lines) may be used if it is necessary to site the control line in the wetland.
- WET-2** Foams, saltwater or other fire retardants will not be used on or near wetlands to the greatest extent possible.

Vegetation Mitigation Measures

- VEG-1** Prescribed burns will be conducted at a time of year when introduction or spread of nonnative plants will be minimized and mortality of nonnative plant species will be maximized.

- VEG-2** Soil disturbance during mechanical treatments, prescribed burns, and suppression fires will be minimized to the greatest extent possible to reduce the potential for introduction or spread of nonnative plant species, to protect topsoil resources, and to reduce available habitat for new nonnative plant species.
- VEG-3** Areas subject to fire management treatments will be monitored periodically for the presence of nonnative plant species; if such species become established or spread as a result of such activities, the nonnative, nonhistoric plants will be removed.
- VEG-4** All vegetation management actions under the FMP will conform to federal and state regulations governing interstate and intrastate restrictions (respectively) adopted to prevent the artificial spread of Sudden Oak Death (*Phytophthora ramorum*) beyond the currently affected area. It will be the responsibility of the natural resources division chief to ensure that current guidelines and regulations are circulated to GGNRA staff involved in fire management actions. Relevant regulations are the Code of Federal Regulations, Title 7, Section 301.92 (updated 9/27/04) and California Code of Regulations, Title 3, Section 3700 (updated 9/2/04). Current regulations do not permit the movement of plant species and associated material listed in 3700(c) outside of the regulated quarantine area (defined in 3700(b)), which includes all three GGNRA counties.
- VEG-5** All FMP projects will incorporate techniques that control existing populations of weed species at the project site and incorporate practices to reduce the potential spread of weed species to noninfested areas of the park. Practices to reduce the spread of weed species include the following:
- Movement or deposition of fill, rock, or other materials containing weed seed or viable plant cuttings to areas relatively free of weeds will be restricted.
 - Where feasible based on the density of the weed population present, the fire management project manager will survey the road shoulders of the routes that provide project access for nonnative plant species and coordinate removal of those plants that could be disturbed by passing vehicles.
 - When project vehicles are required to move from off-road use in weed-infested areas to relatively weed-free areas, and water lines and water tenders are available for use, the tires and body of heavy equipment and vehicles will be hosed down before each transit to the relatively weed-free area.
- VEG-6** All herbicide use will be administered through the park's integrated pest management (IPM) coordinator, and only licensed personnel will be allowed to apply pesticides. All herbicide use for fire management actions will be reported monthly to the IPM coordinator.
- VEG-7** No herbicide foliar spraying or direct stump applications will be allowed in riparian or wetland habitats supporting special status species except in the dry season (roughly July 1 through November 15 of each year).

VEG-8 In addition to restrictions for riparian and wetland areas, foliar herbicide will not be applied where saturated soils are present, at wind speeds over 5 miles per hour, or when weather conditions facilitate herbicide movement toward drainages. To limit the potential for wind drift, herbicide application will be limited to backpack sprayers.

Special Status Species Mitigation Measures

SS-1 When emergency actions must be taken to prevent imminent loss of human life or property and these actions would result in a taking of listed species or adverse modification of critical habitat not covered under existing FMP biological opinion, the NPS will respond to the situation in an expedient manner to protect human health and safety. After the incident is under control, the NPS will initiate emergency consultation procedures with the appropriate agency(ies).

SS-2 The fire management project manager will ensure that contractor crews working in areas designated as habitat of listed species are monitored by a qualified biological monitor to ensure that project actions conform to restrictions developed for species protection.

SS-3 All fire management actions will operate under a policy of No Net Loss of Endangered Species Habitat, which applies to all species federally listed as threatened or endangered or proposed for listing. The project review process will be used to document the no net loss finding through the conformance assessment conducted for each FMP action proposed for listed species habitat.

SS-4 To avoid the spread of highly nonnative animal species (e.g., bullfrogs) and protect the habitat of federally listed threatened or endangered species, GGNRA resource advisors and fire management staff will advise local fire agencies responding to wildland fires in the park and vicinity of the following guidance:

- Drawing water from freshwater bodies in GGNRA and Rodeo Lagoon should be avoided unless there are no alternative sources available. If freshwater is drawn or scooped from water bodies in the park, it should be used on wildfires within the same watershed whenever possible.
- Ocean and bay waters are preferred water sources for fighting wildfires in the park and vicinity. Habitats of sensitive aquatic species and mission blue butterflies should be avoided when saltwater is used.

SS-5 An education program for the field personnel involved with the FMP shall be conducted prior to the initiation of field activities. The program shall consist of a brief presentation by a person(s) knowledgeable in the California red-legged frog, San Francisco garter snake, mission blue butterfly, and other appropriate listed species. The program shall include the following: a description of these species, their ecology, and habitat needs; an explanation of their legal status and their protection under the Act; and an explanation of the measures being taken to avoid or reduce effects to these species during implementation of the FMP. The

education may be conducted in an informal manner (e.g., ranger and field personnel in a field setting).

- SS-6** If a California red-legged frog(s), San Francisco garter snake, or early stages of the mission blue butterfly are observed in the work/burn areas, a qualified biologist or an individual trained in the biology and ecology of these listed animals and designated by the NPS shall capture it and move the animal(s) to an appropriate aquatic or upland location outside of the work area.

Special Status Plants

- SS-7** Potential impacts associated with tree removal in the vicinity of the Raven's manzanita, San Francisco lessingia, and Marin dwarf-flax will be evaluated in consultation with the USFWS.
- SS-8** To address fire actions occurring within special status plant species populations, site- and/or species-specific rehabilitation plans will be developed to minimize or avoid impacts on the greatest extent possible.
- SS-9** When FMP actions disturb the habitat of special status plant species, revegetation and weeding plans will be developed in conjunction with project planning.
- SS-10** The potential for research burning and/or mechanical fuel treatments to enhance federally listed threatened or endangered plant habitat will be investigated. Burning in these habitats will be limited to carefully prescribed research burns, designed in conjunction with USFWS staff consultation and in accordance with established recovery plan objectives. Experimental treatments will be scientifically designed with replicate controls and a commitment to post-treatment monitoring.

Salmonids

- SS-11** Except in emergency situations, water drafting from park streams and creeks that support salmonids must be halted when water levels drop to a level that could result in disconnected pools of water in the channel. Any water pumping from salmonid streams will require measures to prevent injury to fish, such as using offstream sumps, restricting approach velocities to less than 0.8 foot per second, and screening at intake with openings no greater than 0.25 inch.
- SS-12** A buffer will be maintained around riparian areas where fire management activities will be restricted. Staging, fire line construction, and vehicle and heavy equipment use will occur outside the buffer area, and any activities such as nonnative vegetation removal and limited prescribed burning will occur under tightly controlled conditions. Any impacts that occur in the buffer area must be correctable by site-specific actions, and must be confined to short-term, minor (or less) adverse effects. In riparian areas directly adjacent to salmonids streams, mechanical FMP projects will be limited to an annual treatment of less than 10 acres and prescribed burning will require additional consultation.

SS-13 The fire management officer will consult with natural resources subject matter experts to identify rehabilitation and revegetation strategies where fuel reduction projects require bank stabilization in riparian areas. Rehabilitation in riparian areas will be accomplished by hand treatment techniques, using erosion control materials if treatment areas are bare prior to rains, revegetating where needed, and where possible, returning native woody material (large woody debris) to stream banks. If removal of vegetation critical to channel shading is planned or work is proposed for the wetted channel of salmonids streams, additional consultation will be needed.

Northern Spotted Owl

SS-14 Treatment activities described in the FMP or any noise generation above ambient noise levels will not occur within 0.40 kilometer (0.25 mile) of a known occupied or previously used northern spotted owl nest site, or within potential spotted owl habitat between February 1 and July 31 (breeding season), or until such date as surveys conforming to accepted protocol have determined that the site is unoccupied or nonnesting or nest failure is confirmed.

SS-15 Mechanical fuel reduction activities in suitable spotted owl habitat, known or potential, will not substantially alter the percent cover of canopy overstory and will preserve multilayered structure. When shaded fuel break features in suitable northern spotted owl habitat are constructed, the resulting multilayered canopy will only be reduced to a height of 6 to 8 feet, or along roadways as needed for emergency vehicle clearance.

SS-16 Prior to fire management activities, project areas will be surveyed for the presence of dusky footed woodrat nests. If feasible, woodrat nests will be protected.

SS-17 Within northern spotted owl habitat, the cutting of native trees greater than 10 inches diameter at breast height (dbh) will be avoided unless a determination is made that the native tree presents a clear hazard in the event of a fire or cutting is the only option to reduce high fuel loading.

SS-18 The fire management officer will arrange for qualified biologists to conduct post-project monitoring to determine short- and long-term effects of fire management actions on spotted owl activity centers if resources are available.

San Francisco Garter Snake

SS-19 No heavy equipment will be used off of existing fire roads or developed features in areas of known San Francisco garter snake habitat. If use of heavy equipment and trucks is required during emergency situations or for work that would improve San Francisco garter snake habitat, mitigation measures to avoid mortality will be incorporated into the project schedule. Measures to avoid mortality include hand-clearing areas prior to fire management activities, hand-excavating all burrows, trapping snakes out of the excavation area, using monitors to prevent equipment from injuring listed species, and training workers on identification and avoidance of listed species. Work will be conducted by biologists with a valid 10(a)(1)(A) permit and any collected San Francisco garter snakes will be relocated outside affected areas.

Marbled Murrelet

- SS-20** Where marbled murrelet habitat overlaps northern spotted owl habitat, the restrictions on noise generation in spotted owl habitat above the level of ambient noise will be to August 5. Further, from August 6 through September 30, noise generation will be limited to ambient noise levels from two hours before sunset to two hours after sunrise to protect any nesting marbled murrelets that have not been noted during surveys (USFWS letter to NPS dated April 13, 1994).
- SS-21** In marbled murrelet habitat, felling of very large Douglas-fir or coast redwood trees will be avoided and the fire perimeter will be established at a distance that will preclude the need to fell large trees.

Mission Blue Butterfly

See also Mitigation Measure SS-4 regarding use of ocean and bay waters for suppression actions.

- SS-22** Fire management activities will not occur within or immediately adjacent to existing or potential mission blue butterfly habitat during the flight period of the butterfly from February 15 through July 4.
- SS-23** Pile burning will only be permitted on barren, disturbed soils in mission blue butterfly habitat.
- SS-24** During the information meeting with local fire agencies, the location of mission blue butterfly habitat will be identified. During this meeting and when providing information at an active wildland fire as a resource advisor, natural resources staff will advise the local fire agency of the following guidelines:
- Avoid staging fire suppression actions in or directly adjacent to mission blue butterfly habitat;
 - Construct fire lines outside of mission blue butterfly habitat to the greatest extent possible;
 - Use wet lines wherever feasible, or narrow, hand-constructed fire lines where water is not available to help contain the spread of the fire; and
 - Avoid using saltwater or retardant on habitat of the mission blue butterfly.
- SS-25** The potential for research burning and/or mechanical fuel treatments to enhance butterfly habitat will be investigated. Burning in mission blue butterfly habitat will be limited to carefully prescribed research burns. Experimental treatments will be scientifically designed with replicate controls and a commitment to post-treatment monitoring. No more than five percent of existing mission blue butterfly habitat in each county will be treated experimentally each year.

- SS-26** Where possible, maintain a 100-foot-wide buffer between fire management activities and mission blue butterfly habitat except when fires are being conducted for research purposes. For habitat enhancement projects, additional measures will include establishment of buffer areas, flagging of *Lupinus albifrons* in the vicinity of activities, installation of temporary fencing, dust control, and worker education (USFWS Biological Opinion for the Fort Baker Plan/EIS, September 29, 1999).
- SS-27** The fire management officer will arrange for the removal of nonnative plants within and adjacent to mission blue butterfly habitat following fire management actions, including fire suppression.

San Bruno Elfin Butterfly

- SS-28** No planned fire management actions will occur in San Bruno elfin butterfly habitat. Proposed project areas in San Mateo County will be assessed to determine the potential for occurrence of San Bruno elfin butterfly habitat.
- SS-29** A 100-foot-wide buffer will be maintained between fire management activities and potential San Bruno elfin butterfly habitat.
- SS-30** During the information meeting with local fire agencies, the location of San Bruno elfin butterfly habitat will be identified. During the meeting and when advisors are called to provide information at an active wildland fire, natural resources staff will advise the local fire agency of the following guidelines:
- Avoid staging fire suppression actions in or directly adjacent to San Bruno elfin butterfly habitat;
 - Construct fire lines outside of San Bruno elfin butterfly habitat to the greatest extent possible;
 - Use wet lines wherever feasible, or narrow, hand-constructed fire lines where water is not available to help contain the spread of the fire; and
 - Avoid the use of saltwater or retardant drops on San Bruno elfin butterfly habitat.
- SS-31** Conduct fire management activities in areas directly adjacent to San Bruno elfin butterfly habitat outside the flight period of the butterfly, which is from February 1 through May 15.

Tidewater Goby

See also Mitigation Measure SS-4 regarding scooping of Rodeo Lagoon water for use in suppression actions.

- SS-32** During information meetings with local fire agencies (see Mitigation Measure NR-1), and on the scene of active suppression actions, natural resource advisors will inform responding fire agencies that Rodeo Lagoon shall not be used for water drafting unless needed to protect life and property and no other feasible water source is available.

California Red-Legged Frog

See also Mitigation Measure SS-4 regarding use of freshwater ponds as a water source for suppression actions and areas of the park sensitive to the use of ocean and bay waters for suppression actions.

- SS-33** All suitable habitat within areas proposed for fire management activities will be surveyed and flagged by a qualified biologist to determine whether the site supports suitable breeding or nonbreeding areas for the California red-legged frog.
- SS-34** To prevent direct injury to California red-legged frogs, removal of vegetation within suitable frog habitat will be accomplished by a progressive cutting of vegetation from the overstory level to ground level to allow frogs to move out of the treatment area.
- SS-35** If likely habitat is identified at the project site, a qualified and permitted biologist will follow accepted protocol and collect and relocate any individual red-legged frogs to nearby suitable habitat, in accordance with the biological opinion from the USFWS.

Western Snowy Plover

- SS-35** Where fire management actions involve operation of vehicles or heavy equipment on the beach, the fire management officer or the resource advisor (in the case of a wildfire) will ensure that vehicles will be driven at slow speeds (15 miles per hour maximum) over the wet sand portion of the beach and that natural wave-cast debris will be left on the beach to provide foraging habitat for the western snowy plover.
- SS-37** To avoid disturbance of western snowy plovers, aircraft assisting the NPS in the implementation of FMP projects will avoid flying directly over and parallel to the beach to the greatest extent possible.

California Brown Pelican

- SS-38** To avoid disturbance to the California brown pelican from late spring to early winter:
- Avoid operating aircraft below and within 500 feet of Rodeo Lagoon, Bird Island, and Bolinas Lagoon to the greatest extent possible.
 - Avoid drafting water from Rodeo Lagoon, the ocean near Bird Island, or Bolinas Lagoon.

Monarch Butterfly

- SS-39** All known clustering sites of monarch butterflies will be considered for protection from fire management actions.

Wildlife and Important Habitat Mitigation Measures

- WIL-1** Prescribed burns, mechanical treatments, and mowing of shrubs and grasses taller than 8 inches will not be conducted during the bird-nesting season, from March 1 through July 31, unless a qualified biologist conducts a pre-project survey for nesting birds and determines that birds are not nesting within the project area. To the greatest extent possible, these activities will be planned and conducted outside bird-nesting season. In intensively managed landscapes where mowing is justified for fuel reduction, vegetation will be maintained at a

height of less than 8 inches throughout the nesting season (March 1 through July 31) to discourage the nesting of ground-dwelling bird species.

- WIL-2** In addition to WIL-1, in order to protect nesting raptors, trees shall not be removed between January 1 and March 1 unless qualified personnel conduct a pre-project survey for nesting birds and determine that birds are not nesting within the project area. If nesting raptors are detected, a qualified biologist will delineate a suitable buffer.
- WIL-3** Subject to project review conditions, fire management actions proposed for areas of the park that provide only limited habitat (such as areas dominated by broom or ivy species) may be conducted at any time
- WIL-4** Since older burn piles could provide wildlife habitat, the piles will be spread out (to move out animals) as much as possible before burning. If moving the piles is not feasible, the fire management project manager will ensure that piles are lit from one side only (with firefighters on the ignition side), so that any wildlife in the pile can run out.
- WIL-5** For prescribed fire projects proposed in the Muir Woods FMU, the fire management officer will arrange for a qualified biologist to conduct bat surveys of the tree hollows within the burn unit to identify potential maternity colonies. Measures will be implemented to protect active maternity roosts.

Cultural Resources Mitigation Measures

- CUL-1** *Project Preparation Phase.* To assure that cultural resources are considered early in the fire management planning process and afforded the utmost protection, the following preparatory actions will be undertaken:
- Computer and other databases containing cultural resources data will be maintained by cultural resource staff in coordination with the needs of fire management activities.
 - Appropriate cultural resources monitoring protocols will be established by cultural resources staff and applied to fire management practices as warranted.
 - Potential research opportunities to study the effects of fire management actions on cultural resources will be identified by cultural resources staff.
 - Cultural resources specialists from adjacent land management agencies will be consulted by NPS staff, as appropriate, in order to coordinate mitigation efforts prior to fire management actions.
 - Indigenous archeological sites, spiritual sites, and important plant communities will be identified and appropriately managed for preservation, maintenance, and/or enhancement by park cultural resources staff. Consultation with local Native American communities will, where pertinent, continue to occur in the context of fire management actions.

- Fire management personnel and other staff will receive annual training in cultural resources in relation to fire management activities.

CUL-2 *Project Planning Phase.* All areas slated for fire management activities will be considered for pre-action field surveys, based on the recommendations of cultural resource specialists and the need to identify cultural resources in proposed project areas. This includes areas likely to be disturbed during future wildfire suppression activity, such as helispots, staging areas, and spike camps. Site-specific information gathering may include the following:

1. In cultural landscape areas, parameters for identifying vegetation for removal or retention will be incorporated into project planning.
2. Evaluation of the relative hazards of fuel loads in proposed project areas will address the protection of cultural resource values, including:
 - 2(a) Maintenance of light fuel loads on and in close proximity to cultural resources;
 - 2(b) Benefits gained from reduced fuel loads in relation to the need to avoid or minimize adverse effects on cultural resources;
 - 2(c) Opportunities to restore or enhance the historic character of cultural landscapes;
 - 2(d) In developing burn plans, assessment of the potential effects of heat intensity and duration above, at, and below the surface in relation to cultural resources; and
 - 2(e) For projects with the potential for accelerating the rates of erosion, potential effects of erosion on cultural resources.

CUL-3 *Project Implementation.* Adverse effects on known and unknown cultural resources will be avoided or minimized during the implementation of fire management projects. A variety of treatments and techniques, as detailed in the project planning and preparation phase for individual projects, will be used for the protection of cultural landscape features during implementation of both prescribed fire and mechanical treatment activities, as follows:

1. A cultural resource specialist or resource advisor will:
 - 1(a) Be present during fire management actions, as stipulated, where recorded and suspected but not-yet-recorded historic or prehistoric resources are considered at risk;
 - 1(b) Deliver a pre-project briefing to fire management staff as necessary; and
 - 1(c) Share data with fire management personnel as needed to avoid or minimize adverse effects.

2. Vegetation will be flagged, or otherwise identified, in order to properly carry out project planning stipulations for:
 - 2(a) Retention, based upon age determination or diameter thresholds as previously agreed upon;
 - 2(b) Raising the skirts on landmark trees and other tree pruning;
 - 2(c) Flush-cutting trees removed from cultural resource areas unless otherwise stipulated; and
 - 2(d) Brush removal within agreed-upon boundaries.
3. Fences may be a character-defining feature of historic properties. In such cases:
 - 3(a) Avoid fences with heavy equipment;
 - 3(b) Remove brush and scrub only by hand or with hand-tools in a 10-foot-wide buffer zone along fence lines;
 - 3(c) Provide vehicle access at gates where necessary; and
 - 3(d) Cut other openings, if necessary, between fence posts.
4. Field patterns may be a character-defining feature of historic properties. In such cases:
 - 4(a) Use prescribed burn to restore field patterns;
 - 4(b) Protect fences by not using heavy equipment within a 10-foot-wide buffer zone, and instead using less damaging methods to lessen fire danger, such as watering, hand removal, and hand tools; and
 - 4(c) Use hand removal of noncontributing vegetation near or in historic vegetation.
5. Structures and small-scale features may contribute, or be themselves, historic properties. In such cases:
 - 5(a) Remove brush approximately 30 feet from burnable structures, depending on slope, with hand tools being the default method; and
 - 5(b) If there are foundation plantings, create defensible space outside ornamental edge plantings wherever possible.
6. Some areas may be sensitive for archeological resources on or near the surface. In such cases:
 - 6(a) Do not drag cut vegetation;
 - 6(b) Do not use rakes;

- 6(c) Use no burning when surface or subsurface resources are sensitive to heat; and
- 6(d) Avoid using surface scarification to retard runoff in archeological sites.
- 7. Erosion will be minimized to the extent possible, by methods such as:
 - 7(a) Constructing control lines perpendicular to the slope;
 - 7(b) Using the existing road network;
 - 7(c) Keeping heavy equipment off paths and trails;
 - 7(d) Keeping heavy equipment away from areas adjacent to ponds and riparian corridors; and
 - 7(e) Avoiding these and other areas marked by flagging.

CUL-4 *Post-Project Phase.* Adverse effects on known and suspected cultural resources will continue to be avoided or minimized through careful consideration of actions during the post-action phase of mechanical treatment, prescribed fire, and fire suppression activities.

- 1. The post-action condition of all recorded cultural resources will be assessed, as necessary.
 - 1(a) Post-action surveys may be conducted both in previously surveyed areas and in unsurveyed areas.
 - 1(b) Previously unrecorded cultural resources will be assessed for condition, and stabilization and other protection needs.
- 2. Stabilization and other treatment needs of cultural resources will be addressed in the development and implementation of Emergency Stabilization Plans and Burned Area Restoration Plans, and in the development of funding requests for these and other post-fire programs as needed.
- 3. Monitoring and research data will be compiled, evaluated, and used to help refine cultural resource compliance for future fire management actions and objectives.

Visitor Use and Visitor Experience Mitigation Measures

VUE-1 Project work hours will normally be limited to normal work hours (8 A.M. to 5 P.M.) to minimize potential noise impacts on nearby residents and park visitors. Exceptions may occur outside of normal work hours where warranted, for example to take advantage of windows of favorable weather or to allow for project completion before wildlife breeding period restrictions begin.

VUE-2 Where noise levels from project operations could be intrusive to adjacent residents or park trail users, all efforts will be made during project planning to site project staging areas in order to optimize the noise level reduction gained from natural barriers and screening

vegetation. Staging areas will be sited to minimize noise levels for sensitive receptors to the extent feasible without causing adverse environmental effects on park resources, values, or public access.

- VUE-3** Park fire staff will avoid temporary closures of areas of the park during fuel reduction projects if spotters can be available to escort the public safely through the work area.
- VUE-4** To the extent feasible while protecting public health and safety, fire management officer will instruct contractors or NPS crews to secure work sites at the end of the work day so that closures around a project site can be lifted prior to and after working hours during weekdays and all day on weekends.
- VUE-5** The fire management office will develop and implement an education and communication plan for all site-specific fire management implementation projects. For large scale fuel reduction projects (more than 1 acre) that could affect mid- to close-range viewsheds for residents on the park boundary, park staff will arrange a meeting with the community to present the scope of work and provide an opportunity for public comment. Communication plans for projects may include information such as the project scope, schedule, and alternative trail routes, where needed, to be posted in the project vicinity.

Public Health and Safety Mitigation Measures

- PHS-1** Site plans for tree removal projects will be reviewed by the project review committee for potential safety hazards from windthrow and wind pattern change as a result of implementation.

**UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE**

RECORD OF DECISION

**FINAL POINT REYES NATIONAL SEASHORE FIRE MANAGEMENT PLAN/
ENVIRONMENTAL IMPACT STATEMENT**

**Point Reyes National Seashore
Marin County, California**

The Department of Interior, National Park Service (NPS) has prepared this Record of Decision on the *Final Fire Management Plan/EIS* for Point Reyes National Seashore (PRNS) and North District of Golden Gate National Recreation Area (GGNRA). The North District of GGNRA is administered by Point Reyes National Seashore. This Record of Decision includes a description of the background for the project, a statement of the decision made, synopses of other alternatives considered, the basis for the decision, findings on impairment of park resources and values, a description of the environmentally preferable alternative, a listing of measures to minimize environmental harm, and an overview of public and agency involvement in the decision-making process.

BACKGROUND OF THE PROJECT

This revision of the Fire Management Plan (FMP) was initiated in 2000 because of changes to NPS and federal fire management policy and to bring about needed refinements to the program, as indicated by research and monitoring that has been ongoing since the earliest days of fire program implementation.

Fire management planning and programs have been ongoing since 1970, when NPS fire management policy was changed to allow natural processes to occur when possible. Refinements have been made to the PRNS fire management program, and will continue to be made as knowledge of fire ecology and fire behavior increases. The previous revision to the FMP was completed in 1993. Fire management is an integral part of the park's natural and cultural resources management program. The FMP will assist in achieving land management objectives that are defined in the 1993 Resources Management Plan.

The planning area for the FMP includes NPS lands located approximately 40 miles northwest of San Francisco in Marin County, California. These lands include the 70,046-acre Point Reyes National Seashore, comprised primarily of beaches, coastal headlands, extensive freshwater and estuarine wetlands, marine terraces, and forests, as well as 18,000 acres of the Northern District of GGNRA, primarily supporting annual grasslands, coastal scrub, and Douglas-fir and coast redwood forests.

The purpose of the FMP is to provide a framework for all fire management activities for the Seashore and the North District of GGNRA, including suppression of unplanned ignitions, prescribed fire, and mechanical fuels treatments. It is intended to guide the fire management

program for approximately the next 10-15 years. The plan would include concise program objectives, details on staffing and equipment, and comprehensive information, guidelines, and protocols relating to the management of unplanned wildfire, prescribed burning, and mechanical fuels treatment.

Fire management is an essential component of NPS operations in PRNS and the Northern District lands of GGNRA. The need for a well-planned and effective fire management program is threefold. First, the project area's ecosystems have evolved through time with the periodic occurrence of fires, both natural and human-ignited, and many components of these systems require the continuation of periodic fire. As is typical of many national parks and other federal lands, however, active and effective fire suppression efforts for the past 150 years have dramatically changed native ecosystems. Ecosystem changes from the lack of fire include forest and shrub encroachment on grasslands, decadence and death of fire-adapted species, and extremely dense forests.

Second, fire suppression has also resulted in a dangerous accumulation of flammable or hazardous fuels - large quantities of dead and downed trees and branches that have accumulated in overly dense forests and shrublands. Because of these high fuel loads, residences and businesses adjacent to the PRNS and GGNRA are at risk from catastrophic wildfire or a smaller fire spreading from adjacent parklands. Also, a structural fire close to the park could spread into federal lands and develop into a wildland fire that damages park resources.

Third, the park's existing Fire Management Plan (NPS, 1993) needs to be updated. Since the current FMP was published in 1993, the national fire policies have been updated and new guidelines have been issued to park units. In addition, the NPS has conducted fire research and now has a better understanding of the role of fire in ecosystem preservation, resulting in a greater capability of the PRNS to conduct an effective fire program. Updating also allows PRNS to focus more heavily on effectively reducing fire risk along the wildland/urban interface, reducing hazardous fuels, and reestablishing fire in park ecosystems where it is safe to do so.

The following goals have been developed for the updated Fire Management Plan for PRNS and the Northern District lands of GGNRA. These goals were generated from internal staff meetings and public external scoping meetings and presentations, and from review of NPS Policies, Director's Orders, and other fire-related guidance documents listed below.

- Goal 1: Protect firefighters and the public.
- Goal 2: Protect private and public property.
- Goal 3: Maintain or improve conditions of natural resources and protect these resources from adverse impacts of wildland fire and fire management practices.
- Goal 4: Maximize efforts to protect cultural resources from adverse effects of wildland fire and fire management practices.

- Goal 5: Foster and maintain effective community and interagency fire management partnerships.
- Goal 6: Foster a high degree of understanding of fire and fuels management among park employees, neighbors, and visitors.
- Goal 7: Improve knowledge and understanding of fire through research and monitoring and continue to refine fire management practices.

The Final Environmental Impact Statement identifies and evaluates three alternatives for a FMP for Point Reyes National Seashore administered lands. Potential impacts and appropriate mitigation are assessed for each alternative. The Fire Management Plan and Final Environmental Impact Statement (FMP/FEIS) documents the analyses of two action alternatives, and a “no action” alternative.

DECISION (SELECTED ACTION)

Alternative C is the selected action in the final FMP/FEIS and remains unchanged from the draft EIS. Under Alternative C, Increased Natural Resource Enhancement and Expanded Hazardous Fuel Reduction, fire management actions will be used to markedly increase efforts to enhance natural resources and reduce hazardous fuels. This alternative includes objectives for increasing the abundance and distribution of federally listed species, reducing infestations of invasive, non-native plants and increasing native plant cover. Prescribed burning and mechanical treatments will be used to protect or enhance cultural resources, such as reducing vegetation in areas identified as important historic viewsheds.

Alternative C permits the highest number of acres treated annually for hazardous fuels reduction concentrating on high priority areas (e.g., along road corridors, around structures, and in strategic areas to create fuel breaks). Up to 3,500 acres could be treated per year using prescribed fire and mechanical treatments. Under this alternative, research efforts will be expanded to determine the effects of fire on natural resources of concern (e.g., rare and non-native species) and to determine the effectiveness of various treatments for fuel reduction. Research results will be used adaptively to guide the fire management program in maximizing benefits to natural resources, while protecting lives and property.

This alternative will reduce the threat of a catastrophic wildland fire to a more stable fire condition at Year 13 of implementation rather than Year 23 as in Alternative B or indefinite extension of the program under Alternative A, the No Action Alternative. Ten of eleven Fire Management Units (FMUs) will be treated under Alternative C; the eleventh FMU – the Minimum Management FMU – is primarily leased for agriculture and is subject to defensible space and roadside clearing under all three alternatives. As documented in the final EIS, Alternative C was also deemed to be the “Environmentally Preferred” Alternative. This alternative also provides the greatest protection to designated wilderness by ensuring long-term ecological health.

To ensure that implementation of fire management plan actions described in Alternative C conform to findings of this impact assessment, subsequent five-year plans and individual projects when appropriate will be subject to NPS project review. Prior to approval, projects will be submitted through an NPS internal review process wherein an interdisciplinary team

will evaluate if the potential effects of the proposed projects are adequately addressed through the FMP NEPA process. Conformance to the conclusions in the FMP EIS will be documented for the NEPA record. If the team finds that the project has major new environmental effects not addressed in this EIS or effects greater than those described in this EIS, a separate environmental process will be conducted. In addition, as part of the project review process, projects carried out in designated wilderness will be required to go through a minimum requirement process. In this two step process, the park must: 1. make a determination as to whether or not a propose management action is appropriate or necessary for the administration of the park as wilderness; and 2. if the project or activity is appropriate in wilderness, make a selection of the management method/tool that causes the least impact on the physical resource and experiential qualities of wilderness.

OTHER ALTERNATIVES CONSIDERED

The final FMP/FEIS analyzes two other alternatives. Alternative A, Continued Fuel Reduction for Public Safety and Limited Resource Enhancement, is the No Action Alternative representing the current fire management program. The current program uses a limited range of fire management strategies - including prescribed fire, mechanical treatment, and suppression of all wildland fires, including natural ignitions. Alternative A would continue the existing program described in the 1993 Fire Management Plan including mechanical treatments of hazardous fuels of up to 500 acres per year, primarily mowing in grasslands. Up to 500 acres per year would be treated by prescribed burning, primarily for fuel reduction in grasslands and for Scotch and French broom control. Total treatments per year will not exceed 1,000 acres. Research projects already in progress on reducing Scotch broom and velvet grass through prescribed burning would continue under this alternative. In continuing current practices, treatments would occur in four of eleven FMUs sited along the primary roadways. This program does not place emphasis on wildland/urban interface communities.

Alternative B - Expanded Hazardous Fuel Reduction and Additional Natural Resource Enhancement. Alternative B calls for a substantial increase over present levels in the reduction of hazardous fuels through prescribed burning and mechanical treatments (up to a combined total of 2,000 acres treated per year). Efforts would be concentrated where unplanned ignitions will be most likely to occur (e.g., road corridors), and where defensible space could most effectively contain unplanned ignitions and protect lives and property (e.g., around structures and strategically along the park interface zone). Natural resource enhancement would occur as a secondary benefit only. For example, prescribed burning to reduce fuels may have the secondary resource benefit of controlling a flammable, invasive non-native plant. Fire management actions would occur in nine of eleven FMUs with no projects occurring at the low grasslands within the Headlands FMU or in the Minimum Management FMU. Assuming full annual implementation, a stable fire condition with a lowered potential for a catastrophic fire such as the 1995 Vision Fire, could be achieved by Year 23 of plan implementation.

BASIS FOR DECISION

After careful consideration of the alternatives presented, their environmental impacts, planning goals, and public comments received throughout the planning process, including comments on the *Draft Fire Management Plan/Environmental Impact Statement*, Alternative C has been selected for implementation. This alternative best accomplishes National Park Service and Federal fire management policy, the legislated purpose of PRNS and GGNRA, and the statutory mission of the National Park Service to provide long-term protection of park resources. The selected action also best accomplishes the stated purposes of the Fire Management Plan (as described on page 1-5, in the Purpose and Need Chapter, of the *Final Fire Management Plan/EIS*, and the criteria derived from these purposes. An analysis of the selected alternative’s relationship to these goals is presented below.

RANGE OF FMP ALTERNATIVES COMPARED BY FIRE MANAGEMENT GOALS

| Goals | Alt. A | Alt. B | Alt. C |
|---|--------|--------|--------|
| Protect firefighters and the public | 2 | 2 | 3 |
| Protect private and public property | 1 | 2 | 3 |
| Maintain or improve conditions of natural resources and protect these resources from adverse impacts of wildland fire and fire management practices | 2 | 2 | 3 |
| Maximize efforts to protect cultural resources from adverse effects of wildland fire and fire management practices | 2 | 3 | 3 |
| Foster and maintain effective community and interagency fire management partnerships | 3 | 3 | 3 |
| Foster a high degree of understanding of fire and fuels management among park employees, neighbors, and visitors | 2 | 3 | 3 |
| Improve knowledge and understanding of fire through research and monitoring and continue to refine fire management practices | 2 | 2 | 3 |

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- 1 - Partially Meets Goal
 - 2 –Meets Basic Level of Goal
 - 3 –Provides Highest Levels of Goal Achievement

ENVIROMENTALLY PREFERRED ALTERNATIVE

National Park Service policy regarding implementation of the National Environmental Policy Act (NEPA) requires that an environmentally preferred alternative be identified in all NEPA analysis documents. Determination of this alternative takes place after the environmental analysis is complete. The environmentally preferred alternative is the alternative that best

promotes the national environmental policy expressed in Section 101 of NEPA. This includes alternatives that would:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all visitors a safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- achieve a balance of population and resource use which would permit high standards of living and a wide sharing of life's amenities; and
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Essentially, this means the environmentally preferred alternative is the one that causes the least damage to the biological and physical environment or most naturally perpetuates biological or physical process; it also means the alternative which is best suited to protect, preserve, and enhance historic, cultural and natural resources and process. After analyzing the alternatives described in this FEIS, the NPS has determined that Alternative C is environmentally preferred. Alternative C includes fire management treatments that would provide a high level of protection of human health, life and property, while maximizing efforts toward restoring and maintaining ecological integrity, and protecting and enhancing cultural resources (e.g., preserving important historic, cultural and natural aspects of our national heritage). Although Alternative B also would provide a high level of protection of life and property, it would not provide the same benefits to natural and cultural resources. Of the three alternatives, Alternative A (No Action) would provide the lowest degree of protection of lives and property, and minimal benefits to natural and cultural resources.

FINDINGS ON IMPAIRMENT OF PARK RESOURCES AND VALUES

The NPS has determined that implementation of Alternative C from the *Fire Management Plan/Environmental Impact Statement* will not constitute an impairment to park resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the *Final Fire Management Plan/EIS*, the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in Management Policy. While the plan has some negative impacts, in all cases these adverse impacts are the result of actions to preserve and restore park resources and values. Overall, the plan results in major benefits to park resources and values, and it does not result in their impairment.

In determining whether impairment may occur, park managers consider the duration, severity, and magnitude of the impact; the resources and values affected; and direct, indirect, and cumulative effects of the action. According to NPS Policy, "An impact would be more

likely to constitute an impairment to the extent that it affects a resource or value whose conservation is: necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant National Park Service planning documents." (NPS Management Policies, Part 1.4.5, 2001)

The non-impairment policy does not prohibit impacts to park resources and values. The NPS has the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impacts do not constitute impairment. Moreover, an impact is less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values.

This decision is made based on guidance contained in the NPS Management Policies (2001). The decision to implement Alternative C will result in a greater level of accomplishment of the goals of the fire management program, with the potential for reversing the departure from natural fire return intervals. If annual accomplishment rates and funding can be maintained, Alternative C would achieve ecosystem restoration and wildland/urban interface protection, and would do so with lesser on-site impacts than under Alternative B. The potential for high-intensity catastrophic fire that would put high-value at risk would be greatly reduced under the selected alternative.

The combination of the use of mechanical thinning techniques and prescribed fire in the inner wildland urban interface, and the use of prescribed fire in the outer wildland urban interface will provide a defense in depth against unwanted wildland fires. The restoration of wildland fire where this can be safely done will also reduce the extent of unnaturally dense accumulations of wildland fuels which pose a risk to natural and cultural resources, as well as to public safety and communities.

In conclusion, the NPS has determined that the implementation of Alternative C will not result in impairment of resources and values in PRNS and GGNRA North District. This conclusion is documented in the *Final Fire Management Plan/EIS*.

MEASURES TO MINIMIZE ENVIRONMENTAL HARM

The NPS has investigated all practical means to avoid or minimize environmental impacts that could result from implementation of the selected action. The measures have been incorporated into Alternative C, and are presented in detail in the *Final Fire Management Plan/EIS*.

A consistent set of mitigation measures would be applied to actions that result from this plan (see Appendix A). Fire monitoring by the Fire Management Staff and Resource Management programs will be implemented to detect deleterious results. These results from this program will guide and assure compliance monitoring, biological and cultural resource protection,

noxious weed control, visitor safety and fire education, endangered, threatened and special status species protection, and other mitigation.

Mitigation measures will also be applied to future actions that are guided by this plan. In addition, the National Park Service will prepare appropriate compliance reviews, i.e., National Environmental Policy Act, National Historic Preservation, and other relevant legislation for future actions not covered under this EIS, including projects in wilderness involving mechanical treatments or prescribed fire.

PUBLIC AND INTERAGENCY INVOLVEMENT

During a series of scoping meetings, the NPS requested input from the public, from federal, state, and local agencies, and from park resource specialists on fire management concerns, the types of issues that should be addressed in the EIS, and the range of fire management alternative strategies that should be considered.

On January 27, 2000, a “Notice of Scoping for Fire Management Plan at Point Reyes National Seashore” was published in the Federal Register. On January 29, 2000, at a public meeting of the Point Reyes National Seashore Citizen Advisory Commission, a presentation was given announcing the scoping period for the plan. Scoping comments were solicited from January 27, 2000 to March 28, 2000.

On February 14, 2000 and on February 22, 2000, internal scoping sessions were conducted to identify staff issues and concerns. These meetings were attended by an interdisciplinary group of resource and fire specialists from the PRNS and GGNRA staff.

In addition to the Federal Register Notice, the scoping period was publicized through a mass mailing to the public that included background information on the FMP and a notice of a scoping workshop held March 9, 2000. Notices posted in the communities surrounding the park and a notice in the local weekly newspaper, the Point Reyes Light, also advertised the workshop. The two-hour March 9, 2000 public scoping workshop was attended by five citizens.

On March 28, 2000, a two-hour scoping session was held for local fire agencies. In addition to representatives of the NPS Fire Management Office, members of the Marin County Fire Department, Inverness Volunteer Fire Department, California State Parks, and Marin Municipal Water District were in attendance. Also invited, but not attending, were the Marin County Open Space District, Bolinas Fire Protection District, Nicasio Volunteer Fire Department, and Stinson Beach Fire Department.

In spring of 2001, the NPS conducted a two-hour meeting to provide an overview to the Marin County Fire Department of the preliminary alternatives, and consulted on possible changes and/or modifications.

The draft EIS for the Fire Management Plan was released for public comment on February 20, 2004 when EPA filing notice occurred. The Notice of Availability (NOA) was published on February 25, 2004. The draft EIS was placed on the park website during the comment period and notices of its availability were sent to over 200 interested parties including agencies and organizations. Fifteen copies of the draft EIS were sent to the State of California Clearinghouse for state agencies on February 24, 2004 for review. Copies were also distributed to all local libraries, the central Marin County Library and the San Francisco Public Library. Approximately 12 copies of the draft EIS were sent to interested parties. A public meeting was held at Point Reyes National Seashore on March 18, 2004; approximately 15 people attended. The comment period closed April 20, 2004. Seven written comment letters were received; they are addressed below.

The Federated Indians of Graton Rancheria have been consulted for compliance with the Native American Graves Protection and Repatriation Act. A letter was sent to the tribe on February 19, 2004. Consultation will continue for each specific project when appropriate.

The Environmental Protection Agency reviewed the draft FMP/EIS and rated it LO—Lack of Objections and supported the NPS selection of Alternative C with a few minor corrections that were made in the FEIS.

Documentation of NPS compliance with federal and state laws and regulations is incorporated into the text of the FEIS. Compliance with the major federal laws and associated state regulations is summarized here.

Endangered Species Act of 1973, as amended, PL 93-205, 87 Stat. 884, 16 USC §1531 et seq. The Act protects threatened and endangered species, as listed by the U.S. Fish and Wildlife Service (USFWS), from unauthorized take, and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines federal agency responsibilities for consultation with the USFWS and the National Marine Fisheries Service (NMFS) and requires preparation of a Biological Assessment to identify any threatened or endangered species that is likely to be affected by the proposed action. The National Park Service initiated consultation on February 9, 2001 and continued with the USFWS and the NMFS.

The NMFS Biological Assessment, dated May 17, 2004, concurred with the NPS finding of not likely to adversely affect threatened steelhead and threatened coho salmon. The NMFS BA has been incorporated in the *Final Fire Management Plan/EIS*.

The USFWS Biological Opinion, dated May 28, 2004, has been incorporated into the *Final Fire Management Plan/EIS*. The USFWS concurred that the actions in Alternative C will not likely to adversely affect the following federally listed species: western snowy plover, northern spotted owl, Sonoma alopecurus, Sonoma spineflower, Tiburon paintbrush, beach layia, Tidestrom's lupine, Marin dwarf, and California freshwater shrimp. Regarding the federally-listed Myrtle silverspot butterfly and the California red-legged frog, the USFWS did

not concur with the not likely to adversely affect determination, but concluded that the proposed project will result in significant long-term benefits to these two listed species and the proposed critical habitat, and any adverse effects will be minor and temporary in nature. The PRNS has agreed to additional mitigation measures proposed by USFWS and they have been incorporated in the *Final Fire Management Plan/EIS*.

Archeological Resources Protection Act of 1979, PL 96-95, 93 Stat. 712, 16 USC §470aa et seq. and 43 CFR 7, subparts A and B, 36 CFR. This Act secures the protection of archeological resources on public or Indian lands and fosters increased cooperation and exchange of information between private, government, and the professional community in order to facilitate the enforcement and education of present and future generations. It regulates excavation and collection on public and Indian lands. It requires notification of Indian tribes who may consider a site of religious or cultural importance prior to issuing a permit. The NPS will meet its obligations under this Act in all activities conducted in the Fire Management Plan.

National Historic Preservation Act of 1966, as amended, PL 89-665, 80 Stat. 915, 16 USC §470 et seq. and 36 CFR 18, 60, 61, 63, 68, 79, 800. The National Historic Preservation Act requires agencies to take into account the effects of their actions on properties listed in or eligible for listing in the National Register of Historic Places. The Advisory Council on Historic Preservation has developed implementing regulations (36 CFR 800), which allow agencies to develop agreements for consideration of these historic properties. The NPS, in consultation with the Advisory Council, the California State Historic Preservation Officer (SHPO), American Indian tribes, and the public has developed a Programmatic Agreement for operations and maintenance activities on historic structures. This Programmatic Agreement provides a process for compliance with National Historic Preservation Act, and includes stipulations for identification, evaluation, treatment, and mitigation of adverse effects for actions affecting historic properties. The NPS sent a scoping notice and the Draft Fire Management Plan/EIS to the State Historic Preservation Officer and the Advisory Council for Historic Preservation. No response or comments were received from these offices.

American Indian Religious Freedom Act, PL 95-341, 92 Stat. 469, 42 USC §1996. This act declares policy to protect and preserve the inherent and constitutional right of the American Indian, Eskimo, Aleut, and Native Hawaiian people to believe, express, and exercise their traditional religions. It provides that religious concerns should be accommodated or addressed under NEPA or other appropriate statutes. The National Park Service, as a matter of policy, will be as nonrestrictive in permitting Native American access to and use of an identified traditional sacred resource for traditional ceremonies.

Comments Received Following Release of the Final EIS

The Notice of Availability for the Final EIS was published in the Federal Register on August 31, 2004; EPA's Notice of Filing was posted on September 10, 2004 formally initiated the

No Action waiting period, which concluded on October 12, 2004. The Final EIS was placed on the park website during the No Action period and announcements of availability were sent to over 200 interested parties including agencies and organizations. Copies of the Final EIS

were requested by, and distributed to, the San Francisco Main Public Library, California Department of Fish and Game, the Bay Area Air Quality Management District, and various interested individuals and groups. Two individual response letters were received; the respondents expressed general concern about prescribed burning, but did not offer specific comments that could be addressed. In addition, EPA posted its conclusion of satisfactory completion of the Final EIS in the Federal Register on October 1, 2004.

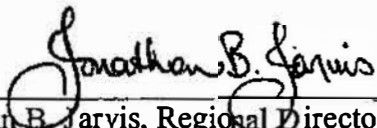
CHANGES MADE FOR THE *FINAL FIRE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT*

A number of minor changes were made in the *Final Fire Management Plan/EIS*, based on public comment period for the draft EIS. During the review of the draft EIS, only seven written comments were received. Four letters were from agencies including Environmental Protection Agency, Bay Area Air Quality Management District (BAAQMD), State of California Clearinghouse and Planning Unit, and National Marine Fisheries Service. Two were from organizations expressing support for the preferred alternative. One expressed concern about various issues related to fire such as visual and smoke impacts on air quality. Based on these letters, minor changes were made in the *Final Fire Management Plan/EIS* as described on pages 420-449. No major changes were made to Alternative C, the selected course of action. Minor text changes were made in response to BAAQMD letter to ensure PRNS was in compliance with regulations and protocol. At the request of EPA, PRNS included the Biological Opinion from USFWS and NOAA Fisheries concurrence that the FMP will not likely have an adversely affect threatened fish species or adversely modify critical fish habitat.

CONCLUSION

Alternative C provides the most comprehensive and effective method among the alternatives considered for meeting the National Park Service's purposes, goals, and criteria for managing fire and fire risks in Point Reyes National Seashore and the North District of GGNRA and for meeting national environmental and fire policy goals. The selection of Alternative C, as reflected by the *Final Fire Management Plan/EIS*, would not result in the impairment of park resources and would allow the National Park Service to conserve park resources and provide for their enjoyment by visitors. Alternative C would also protect the overall long-term ecological health of the park's wilderness area.

Approved:


Jonathan B. Jarvis, Regional Director
Pacific West Region, National Park Service

OCT 29 2004

Date

APPENDIX A

Mitigation Measures for the PRNS/GGNRA North Fire Management Plan

To ensure that the action alternatives protect natural and cultural resources and the quality of the visitor experience, a consistent set of mitigation measures would be applied to actions of the Fire Management Plan. The National Park Service will complete appropriate environmental review (i.e., as required by National Environmental Protection Agency, the National Historic Preservation Act, the Endangered Species Act and other relevant legislation) for future actions not covered in the *Final Fire Management Plan/EIS*. As part of the environmental review, the NPS would avoid, minimize, and mitigate adverse impacts to the greatest extent possible. In addition as part of the project review process, projects carried out in designated wilderness will be required to go through a minimum requirement process. In this two step process, the park must: 1. make a determination as to whether or not a propose management action is appropriate or necessary for the administration of the park as wilderness; and 2. if the project or activity is appropriate or ness in wilderness, make a selection of the management method/tool that causes the least impact on the physical resource and experiential qualities of wilderness.

General

G-1. To ensure that implementation of fire management plan actions conforms to findings of this impact assessment, subsequent five year plans and individual projects will be subject to NPS project review. Prior to approval, all projects will be submitted through an NPS internal review process wherein an interdisciplinary team will evaluate if the potential effects of the proposed projects are adequately addressed through the FMP NEPA process. Conformance to the conclusions in the FMP EIS will be documented for the NEPA record. If the team finds that the project has major new environmental effects not addressed in this EIS or effects greater than those described in this EIS, a separate environmental process will be conducted.

Soils

General

S-1. Individual burn plans will be written with sufficient detail to determine the extent of impacts to soil from erosion. Subject matter experts will determine if the erosion control plan submitted is sufficient to prevent long-term moderate or major impacts on the rate of soil erosion. In other words, the expert will determine if the proposed erosion control strategy will be sufficient to ensure no greater than minor impacts to soils from erosion. If the assessment finds that standard erosion control strategies will be insufficient to avoid long-term moderate or major effects on the rate of erosion, a separate NEPA process will be initiated for that burn plan. Strategies used to minimize impacts to soils can include avoiding steep slopes, timing burns to minimize erosion potential, or using erosion control devices during or after burns.

S-2. Watershed level planning will be used to assure that erosion rates within any one watershed will conform to the conclusions of environmental effect reached in this FEIS, (e.g.,

impacts will be no more than moderate in intensity). Watershed level planning will be triggered when proposed actions have potential to exceed 10% of the total area of one or more FMP watersheds in one year. This mitigation measure assures that planning considers the watershed scale, and if a potential effect is identified, that a specific assessment be conducted for the burn plan to assure the conformance of watershed level effects with this FEIS.

For Prescribed Burns

S-3. Some coarse, woody debris, if available, will be left on the site for nutrient cycling and mycorrhizal function.

S-4. All constructed fire lines will be rehabilitated to prevent compaction if needed.

For Mechanical Treatments

S-5. Mechanical regrading of roads will be conducted to specifications identified in the PRNS Trails Inventory and Condition Assessment and Road Memorandum of Understanding with adjacent land management agencies. Use of these specifications will minimize erosion from fire roads.

S- 6. For FMP tree removal actions in areas with highly erosive soils or slopes over 15%, tree stumps will be left in place and cut as close to ground surface as feasible.

For Wildland Fire Control Activities

S-7. Following wildland fires, soil rehabilitation efforts will be focused on rehabilitating ground disturbance from heavy equipment.

S-8. Unless no feasible alternative is available, heavy equipment will not be used in areas where soils are wet or extensive compaction could occur. If staging of equipment or supplies occurs on soils, a clearly marked and visible limit of disturbance line will be installed using either stakes, flagging, or fencing. Surface soils in areas subjected to compaction will be scarified at the end of the period of use to retard runoff and promote revegetation.

S-9. Erosion control measures will be implemented where project actions could leave soils exposed to runoff prior to revegetation. Erosion control measures include covering exposed soils with weed-free chipped material, native duff, erosion control blankets, or certified sterile rice straw.

S-10. Where surface soils must be disturbed and soils support native vegetation, existing vegetation and topsoil will be retained and reinstalled whenever feasible.

Air Quality

A-1. If recommended by Bay Area Air Quality Management District, prescribed burn plans submitted for review could be modified to reduce production of pollutants. Options include

modifying burns to reduce the area burned, reducing fuel loading (e.g., mowing and understory thinning), or managing fuel consumption. Treatments to reduce overall air emissions from prescribed burns can include:

- Mowing grass and reducing density of vegetation in brushlands.
- Mechanical treatment of forested areas by removing standing or downed trees, understory thinning, thinning of forests, and creation of shaded firebreaks.
- More frequent, less intense burns to prevent unwanted vegetation from becoming established in clearings or in forest understory.

A-2. Increasing combustion efficiency or shifting the majority of combustion away from the smoldering phase and into the more efficient flaming phase will reduce emissions (except NO_x, which is produced in greater quantities at higher temperatures). Methods to accomplish this will include pile or windrow burning, rapid mop-up, and shortened fire duration. Pile or windrow burning will generate more heat and burn more efficiently and be most effective in reducing forest fuel rather than brush type fuels.

A-3. The park will develop a Smoke Communication Strategy to guide management of smoke events during prescribed fires, managed wildland fires, suppression actions, and fires occurring outside the park. Notification of proposed burns will be disseminated through local media and postings to provide adequate advance notice to persons with sensitivities to smoke when burning is planned. Information will be provided to visitors, employees, and residents in smoke affected areas regarding health issues and concerns. The park will monitor particulate levels in the park during large smoke events to provide data for future assessments.

A-4. PM_{2.5} monitoring data will be collected at Bear Valley in the Point Reyes National Seashore. Data collected will be shared with local, regional, and national air quality agencies and databases.

A-5. To reduce smoke and pollutant generation during late summer and early fall, efforts will be made to burn fuel concentrations, piles, landings, and jackpots outside of the prescribed burning season to increase the number of units that can be burned without overloading the airshed on days with good dispersal conditions.

A-6. To avoid impacts to visibility in the Class I PRNS portion of the project areas, burning will be avoided on holidays or other periods when recreational visitation is typically high.

A-7. To avoid public health and nuisance impacts to neighboring communities, prescribed burns will be conducted under meteorological conditions that will avoid smoke drift into sensitive residential areas and that will transport smoke away from populated areas. Planning for prescribed burning also will consider the smoldering period to avoid fires where downslope winds during the night could carry smoke into residential areas at the base of ridges.

Water Quality and Water Resources

W-1. Individual burn plans will be written with enough detail to determine the extent of erosion within the burn area due to a) the prescribed burn and/or, b) mechanical treatments. Subject matter experts will determine if the erosion control plan submitted is sufficient to prevent long-term moderate or major impacts to the water resources and water quality, and will assure project compliance with TDML implementation plans for Tomales Bay, Lagunitas Creek, and Walker Creek, according to availability through adoption by the EPA. Strategies to minimize erosion and sediment transport to water resources associated with prescribed burning include avoiding overly steep slopes, timing burns to minimize erosion potential, or using erosion control devices after burns. Strategies to minimize erosion and sediment transport to water resources associated with mechanical treatment include avoiding oversteep slopes, avoiding scraping or clearing to bare mineral soil (leave duff layer), or installing erosion control devices as part of mechanical treatment (if necessary).

W-2. Watershed level planning will be used to assure that prescribed burning and/or mechanical treatment within any one watershed will conform to the conclusions of the environmental effect reached in this EIS (e.g., the impacts will be no more than moderate in intensity). Watershed level planning will be triggered when proposed actions have the potential to exceed 10% of the total area of one or more FMU watersheds in one year. This mitigation measure assures that planning considers the watershed scale and, if a potential effect is identified that a specific assessment be conducted for the burn plan to assure the conformance of the watershed level effects within this EIS.

W-3. Helispots, staging areas, and spike camps will be located at least 100 feet away from streams, creeks, and other water bodies.

W-4. All fireline (both handline and dozer line) will be rehabilitated as quickly as possible, which will include application of Burned Area Emergency Rehabilitation (BAER) techniques such as recontouring, soil stabilization as needed, and monitoring for erosion and treatment as necessary in the first winter following disturbance.

W-5. When developing prescribed burn boundaries, non-treatment buffer areas will be established around perennial, intermittent, and ephemeral channels associated with Lagunitas Creek, Olema Creek, Pine Gulch Creek, and other coastal drainages originating from Inverness Ridge. Some treatment within buffer areas, including hand removal of non-native species and “cool” burns of non-native grasses, may occur within these areas. Fire lines around these areas will be mowed - not graded or scraped - in order to leave a 100-foot vegetated buffer strip from burn areas.

W-6. Foams or other fire retardants will not be used in or near wetlands.

Vegetation

The following mitigation measures will be applied to reduce impacts from prescribed fire and mechanical treatment within all vegetation types:

V-1. “Pre”-Treatment Measures

- Individual prescribed burns will be conducted within the framework of a multidisciplinary planning effort. Personnel from fire management and from resource management will work together to identify areas that are expected to benefit from prescribed burning. Existing data on the response of plant communities in the Seashore to fire will be consolidated and analyzed to determine optimal areas, configurations, and times for burns. Clear objectives will be developed for prescribed burns that will include measurable parameters to determine the effects of the burns on vegetation. Following burns, vegetation will be analyzed to determine the effects of the burn, which will aid in future burn planning.
- Prescribed burns will be conducted at a time of year when introduction or spread of non-native plants will be minimized, and mortality of non-native plant species will be maximized.
- Whenever possible, existing roads or trails will be used as firebreaks for prescribed burns and for wildland fire suppression.
- Vegetation managers will work with fire management staff to develop maps of areas that support plant communities of special management concern (e.g., uncommon communities, wetlands, riparian areas, dunes, areas with no non-native plants that need to be kept intact, areas with highly invasive non-native plants that should not be spread) so fire personnel can attempt to avoid such areas when making decisions about fire management tactics.

V-2. “During” Treatment Measures

- Soil disturbance will be minimized to the greatest extent possible to reduce potential for introduction or spread of invasive non-native plant species.
- The aerial extent of disturbance associated with mechanical treatments will be kept to the minimum necessary to reduce fire risk.
- For helispots or spike camps, previously disturbed sites and open areas will be used whenever possible to minimize additional disturbance.
- Burn piles will be kept small to minimize the area disturbed and to allow for the recolonization of sterilized patches by mycorrhizal fungi and other soil organisms in adjacent areas.

V-3. “Post”-Treatment Measures

- Areas subject to fire management treatments will be monitored periodically for the presence of invasive non-native plant species, and if such species have established or spread as a result of such activities, the non-natives will be removed.

- All fireline (both handline and dozer line) will be rehabilitated as quickly as possible, which will include application of BAER techniques such as re-contouring, soil stabilization as needed, and monitoring for and removal of invasive non-native plant species for a minimum of three years following a fire.

V-4. In grasslands

- Follow-up non-native plant monitoring and removal will be conducted to remove new recruits that come into the site in years following prescribed burning or mechanical treatments.
- All grassland burns will be carefully monitored to ensure burn objectives (= recruitment and long-term maintenance of native species without introduction of invasive non-native plant species) are being met.
- To enhance grassland plant species composition, and reduce the chance of invasion or spread of non-native species, native seeding trials will be conducted following fire management treatments in some areas.
- In Alternative C, small pilot burns (less than 100 acres) will be conducted in the Tomales Point FMU grassland to determine plant community response. These burns will be carefully monitored to ensure burn objectives (= recruitment and long-term maintenance of native species without introduction of invasive non-native plant species) are being met. If pilot projects determine objectives can be met using prescribed fire, individual burn size will increase to a maximum of 150 acres.

V-5. In Bishop pine

- Follow-up non-native plant monitoring and removal will be conducted to remove new recruits that come into the site in years following prescribed burning or mechanical treatments.
- Prescribed burning in Bishop pine stands will occur only if the burns can be conducted under conditions that will result in germination and recruitment of new stands of Bishop pine. Relatively cool fires under moist conditions may not meet this objective.
- Initially, prescribed burns in Bishop pine forest habitat will be small and will be carefully monitored to ensure burn objectives (= recruitment and long-term maintenance of Bishop pine and associated native species without introduction of invasive non-native plant species) are being met.

V-6. In Douglas-fir/coast redwood forests

- If pre-burn thinning of trees is required in forested stands, the trees to be thinned will be no larger than 10" in diameter.

- Prior to conducting prescribed burning in Douglas-fir or coast redwood forests, Seashore fire and vegetation managers, and wildlife and plant ecologists will collaborate to fully develop rationale, objectives, prescriptions, and plans for conducting burns in the redwood forests within the project area.

V-7. In hardwood forests

- Site-specific objectives will be developed for prescribed burns in hardwood forest habitat. The intent of such burns may be to reduce density or abundance of this vegetation type to encourage coastal scrub development, or may be to enhance the ecological health of the hardwood plant communities. Unique, site-specific burn prescriptions and timing will be required to meet these differing objectives.

V-8. In coastal scrub

- In coastal scrub small pilot burns (> 50 acres) will be conducted. These burns will be carefully monitored to ensure burn objectives (= recruitment and long-term maintenance of native species without introduction of invasive non-native plant species) are being met. If pilot projects determine objectives can be met using prescribed fire, individual burn size will increase to a maximum of 200 acres.

Wetlands

W-1. Burns will be allowed to back into and burn around wetlands and meadows or through them if the vegetation is dry enough to carry fire. Wetlands will be avoided to the greatest extent possible during fire confinement and containment.

W-2. Fire suppression activities will not occur in wetlands unless there are no alternatives available to control the spread of a wildland fire.

W-3. Fires near wetlands will be ignited when wetlands are too moist to sustain fire spread, thereby minimizing impacts to wetlands.

W-4. To the greatest extent possible, mechanical treatments will not occur in wetlands.

W-5. Wetlands may be used as natural boundary for prescribed fires. When a wetland area is being used as a boundary, the control line will occur in adjacent uplands, not in wetlands.

W-6. Prescribed fires will not occur more frequently than the time required for native plant species to set seed.

W-7. Foams or other fire retardants will not be used in or near wetlands.

W-8. Firebreaks or firelines will be constructed in previously disturbed areas whenever possible.

W-9. Chipped material will not be spread in wetlands.

Special Status Species

SS-1. Known populations of special-status plant and animal species will be monitored to ensure long-term impacts are avoided. Known populations of special status species will be avoided when locating helispots or spike camps.

SS-2. In Spotted Owl Habitat

- annually identify and map areas where spotted owls are nesting,
- protect occupied and previously used nest sites from unplanned ignitions,
- do not conduct prescribed burns within 400 meters of an occupied or previously used nest site,
- do not conduct mechanical treatments with mechanized equipment within 400 meters of an occupied or previously used nest site between February 1 and July 31 (breeding season),
- conduct post-treatment monitoring to ascertain any impacts.

SS-3. In Point Reyes Mountain Beaver Habitat

- identify and map areas known to support Point Reyes mountain beaver and areas that have habitat suitable for supporting Point Reyes mountain beaver,
- protect known and potential habitat from unplanned ignitions,
- establish buffer areas 30 feet wide around known habitat areas,
- conduct small burns (less than 100 acres) of mountain beaver habitat each year.

SS-4. Avoid conducting treatments during nesting season, March 15 through July 31, unless biologists can ascertain that birds are not nesting in the planned burn area.

SS-5. During the tule elk calving seasons, burns will be conducted in habitat away from areas where birthing and loafing of females and calves occur.

SS-6. To protect California red-legged frogs, areas to be treated by mechanical means or prescribed fire will have a buffer area of 30 feet established around known breeding habitat.

SS-7. The annual work plan for FMP implementation will be provided to NOAA Fisheries each year to allow that agency to monitor the types of projects proposed.

Cultural Resources

CR-1. Pre-Action

- Cultural resources will be considered during all fire management planning efforts.
- Fire management personnel and other staff will receive annual training on cultural resources and fire management actions.
- All cultural resources will be evaluated with respect to hazardous fuel loads. As needed, fuel loads will be reduced using methods commensurate with avoiding or minimizing adverse effects. Maintaining light fuel loads on and in close proximity to cultural resources will be emphasized. All areas slated for ground disturbing activities will be subjected to pre-action field surveys. This includes areas likely to be disturbed during future wildfires.
- Pre-burn survey will be conducted prior to all prescribed burns as dictated by resource distribution and vulnerability, vegetation and topography, and expected fire behavior.
- Consultation with local Native American communities will continue to occur in the context of fire management actions. Spiritual sites and important plant communities will be identified and appropriately managed for preservation, maintenance, and/or enhancement.
- Computer and other databases containing cultural resources data will be created and maintained, and made available to fire management personnel in the event of emergencies.
- Cultural resources specialists from adjacent land management agencies will be consulted in order to coordinate mitigation efforts prior to planned and unplanned fire management actions.
- Appropriate cultural resources monitoring protocols will be established and implemented.
- Potential research opportunities to study the effects of fire management actions on cultural resources will be identified.

CR-2. During-Action

- A cultural resource specialist or resource advisor will be present during all fire management actions where recorded and unrecorded resources of interest are considered at risk. Additional survey will be conducted on an as-needed basis.

- Observations of fire behavior and other variables will be made with respect to recorded cultural resources and/or areas with high probability of containing unrecorded cultural resources.
- Cultural resources data will be shared with fire management personnel as needed to avoid or minimize adverse effects.
- A cultural resource specialist or resource advisor will educate fire management personnel about cultural resources and the potential impacts of fire management actions.

CR-3. Post-Action

- The post-action condition of all recorded cultural resources will be assessed. Resources requiring stabilization or other treatment will be mitigated.
- As appropriate, post-action survey will be conducted in previously surveyed and unsurveyed areas. Previously unrecorded cultural resources will be assessed for condition, and stabilization and other protection needs.
- Monitoring and research data will be compiled, evaluated, and used to help refine cultural resource compliance for fire management actions.

Human Health and Safety

HH-1. Firefighters will be frequently rotated and allowed to rest or sleep when needed, and firelines and safety zones will be used to minimize exposure.