

OPERATIONAL STRATEGY FOR THE FIRE MANAGEMENT PLAN

Point Reyes National Seashore and Northern Lands of Golden Gate National Recreation Area

August 2006



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EXECUTIVE SUMMARY

This Fire Management Plan (FMP) for the Point Reyes National Seashore (PRNS) is an operational manual containing the standards, practices and guidelines in use by the Fire Management Division when conducting actions within their jurisdictional area. The jurisdictional area is comprised of the 70,046 acres of PRNS and the 19,265 acres in the northern district of Golden Gate National Recreation Area (GGNRA) that is managed by PRNS through an agreement with GGNRA. For the purposes of this FMP, the use of the acronym PRNS in reference to a geographic area will encompass the 90,311 acres managed by Point Reyes National Seashore including the northern lands of GGNRA.

The FMP provides a framework for the Division's fire prevention and fuels reduction programs and governs actions and strategies for the Division's response to wildland fires in the jurisdictional area. The FMP was built upon guidance provided by the fire management section of the National Park Service (NPS) Management Policies (2000) and current Federal Wildland Fire Management Policy (2001). Current federal wildland policy stresses the protection of firefighters and the public, protection of public and private property, and protection, restoration and rehabilitation of the natural and cultural resources on federally-managed lands.

The fire management strategy implemented by this FMP was the subject of an Environmental Impact Statement (EIS) prepared by the NPS and finalized through the adoption of a Record of Decision (ROD), as required by the National Environmental Policy Act (NEPA). As part of the NEPA process, conformance requirements for the Endangered Species Act and the National Historic Preservation Act were also met.

Goals and specific strategies included in this FMP were developed as part of the FMP NEPA process, which concluded with signature of the ROD by the Regional Director in October 2004. Mitigation measures developed for the programmatic FMP EIS are carried forward and incorporated into this operational FMP. These measures will be applied to FMP implementation projects as part of an interdisciplinary team review to ensure continued conformance of the fire management program with the findings of the NEPA process.

The FMP is organized to present the current strategies and tactics for the range of actions assigned to the PRNS Fire Management Division. Program operations addressed include preparedness, prevention, suppression, fuels management, rehabilitation, fire education and information, monitoring and fire and fuels research. The FMP is written to be understood and implemented by PRNS staff as they plan and implement fuel reduction and resource protection and rehabilitation projects and conduct suppression actions.

1. FOUNDATION OF THE FMP

1.1 INTRODUCTION

Agencies within the Department of Interior with vegetation capable of sustaining wildland fire are required to prepare FMPs that conform to federal wildland fire management policy and meet all federal regulatory requirements. The NPS recognized and acted on this policy direction.

The PRNS FMP is based on the implementation strategy selected by the NPS Pacific West Regional Director at the conclusion of a multi-year EIS process involving public and regulatory agency consultations. The Record of Decision (ROD) is Appendix C to this FMP; the Mitigation Measures adopted through the ROD are Appendix D. Together these documents record the analyses conducted on the selected strategy, mitigation measures developed to reduce or avoid potential impacts from implementing that strategy and the findings, decisions and commitments made by the Regional Director in signing the ROD on October 29, 2004.

The FMP provides a framework for all fire management activities and the management of wildland fire and prescribed fire as a tool to safely accomplish protection and resource management objectives on NPS lands. NPS lands in PRNS consisting of 71,046 acres of Point Reyes National Seashore and the northern lands of GGNRA (19,265 acres) are addressed by this FMP. The northern lands of GGNRA lands are on Bolinas Ridge, directly east of the Point Reyes peninsula and are managed by PRNS through an agreement with GGNRA.

1.2 RELATIONSHIP TO LAND MANAGEMENT PLANNING AND FIRE POLICY

NPS fire management actions must conform to adopted plans and policies of the Department of the Interior and the National Park Service. These include the Federal Wildland Management Policy, NPS Management Policies, Director's Order #18 and Reference Manual #18 (2005), the guidance documents for wildland fire management in the NPS, as well as the General Management Plan and resource management plans for PRNS and GGNRA.

1.2.1 Federal Wildland Fire Management Policy (2001)

In 2001, the Interagency Federal Wildland Fire Policy Review Working Group revised and updated the Federal Wildland Fire Management Policy (NIFC 2001), which applies to all federal land management agencies. The key element of the policy is that firefighter and public safety is the first priority. In addition, the policy states that fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. The policy also directs that fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors.

1.2.2 National Park Service Management Policies (2000)

NPS Management Policies (NPS 2000) is the agency-wide policy document for the NPS. Management policies for wildland fire management and more specific guidance on implementation are found in Director's Order 18 and the companion document Reference

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Manual 18. These documents provide detailed guidance to NPS staff in the development of Fire Management Plans and other companion plans, such as monitoring plans.

Management Policies, Section 4.5, Fire Management

Regarding Fire Management Plans: “Each park with vegetation capable of burning will prepare a fire management plan and will address the need for adequate funding and staffing to support its fire management program. The plan will be designed to guide a program that responds to the park’s natural and cultural resource objectives; provides for safety considerations for park visitors, employees, neighbors, and developed facilities; and addresses potential impacts to public and private property adjacent to the park. Preparation of the plan and environmental assessment will include collaboration with adjacent communities, interest groups, state and federal agencies, and tribal governments.”

Regarding Overall Strategy: “All fires burning in natural or landscaped vegetation in parks will be classified as either wildland fires or prescribed fires. All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, and costs.”

Regarding Wildland Fire Suppression: “Parks will use methods to suppress wildland fires that minimize impacts of the suppression action and the fire, and are commensurate with effective control, firefighter and public safety, and resource values to be protected.”

Regarding Fire Management in Wilderness: “Suppression activities conducted within wilderness, including the categories of designated, recommended, potential, proposed, and study areas, will be consistent with the ‘minimum requirement’ concept identified in Director’s Order #41: Wilderness Preservation and Management.”

1.2.3 Director’s Order #18, Wildland Fire Management (2005)

Director’s Order #18, Section 5(2)(a), builds on the requirement from the Federal Wildland Fire Management Policy and reiterated in the NPS Management Policies that, “Every park area with burnable vegetation must have a fire management plan approved by the Superintendent.”

Director’s Order #18 specifically addresses the direction and content expected in the FMPs prepared for NPS units. The FMPs will:

1. Reinforce the commitment that firefighter and public safety is the first priority.
2. Describe wildland fire management objectives that are derived from land, natural, and cultural resource management plans and address public health issues and values to be protected.
3. Address all potential wildland fire occurrences and consider the full range of wildland fire management actions.
4. Promote an interagency approach to managing fires on an ecosystem basis across agency boundaries and in conformance with the natural ecological processes and conditions characteristic of the ecosystem.

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5. Include a description of rehabilitation techniques and standards that comply with resource management plan objectives and mitigate immediate safety threats.
6. Be developed with internal and external interdisciplinary input and reviewed by appropriate subject matter experts and all pertinent interested parties, and approved by the park superintendent.
7. Comply with the National Environmental Policy Act (NEPA) and any other applicable regulatory requirements.
8. Include a wildland fire prevention analysis and plan.
9. Include a fuels management analysis and plan.
10. Include procedures for short and long term monitoring to document that overall programmatic objectives are being met and undesired effects are not occurring.

1.2.4 PRNS and GGNRA General Management Plan (NPS 1980)

In 1980, the two parks collaborated on a joint planning and NEPA process that produced a joint plan and Environmental Assessment. In addressing fire management strategy, the General Management Plan recognized the need to incorporate prescribed burning into research programs designed to improve and inform ecosystem management in the park. The Plan states: “Although the majority of the seashore is generally viewed as a wild area where natural processes are allowed to predominate, manipulation of those processes through methods such as selective thinning, burning and mowing will be cautiously pursued when necessary to protect its scenic, ecological and recreational values (NPS, 1980).” Both parks are in the midst of public processes to update their respective General Management Plans.

2. FIRE MANAGEMENT STRATEGIES

2.1 FIRE MANAGEMENT GOALS

As part of the NEPA process for the FMP, PRNS staff developed goals for the overall fire management program based on guidance from Federal Wildland Fire Management Policy, NPS Management Policies, Directors Orders, and other fire-related guidance documents in conjunction with public input from meetings and workshops. In the listing below, elements of the adopted FMP alternative are paired with the seven FMP goals to demonstrate how the selected alternative will help the park achieve the goals of the FMP.

Goal 1: Protect firefighters and the public.

- √ Because of the potential for risk to public and staff safety from an uncontrolled wildland fire at PRNS, the policy at PRNS is full suppression of all wildland fires, precluding the option of wildland fire use.
- √ Fuel reduction projects will focus on reducing fuel loading in strategic areas where the PORE fire management units fall within the Seashore's wildland urban interface boundary by 25% (NPS 2003c).
- √ Each spring, the fire management staff will conduct an assessment of the condition of roads and trails that serve as emergency evacuation routes. Fire staff will ensure that routes needing roadside vegetation reduction or overhead clearance will be treated prior to the fire season.

Goal 2: Protect private and public property.

- √ The fire management officer and staff will work cooperatively with fire agencies and other land managers to develop and maintain zones of reduced fuels in high priority areas to slow the rate of spread of a wildland fire.
- √ The fire management staff will maintain defensible space adequate to protect park structures, infrastructure and employee housing. Defensible space will either conform to or exceed the requirements of California Public Resource Code (PL-4290 and 4291).

Goal 3: Maintain or improve conditions of natural resources and protect these resources from adverse impacts of wildland fire and fire management practices.

- √ PRNS will suppress all wildland fires that occur in the park employing Minimum Impact Suppression Techniques to the greatest extent feasible to minimize impacts to natural resources while providing for public and firefighter safety and wildland fire control. The MIST Guidelines are in Appendix E, Section 9.
- √ Fire hazard reduction projects will incorporate natural resource protection and rehabilitation objectives especially to increase cover and improve habitat for native species.

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- √ Prescribed fire and non-fire treatments will be used to control non-native invasive species including, but not limited to, French broom, Scotch broom and eucalyptus.
 - √ Prescribed fire and non-fire treatments will be used to increase the abundance and distribution of T & E species.
- Goal 4: Maintain or improve conditions of cultural resources and maximize efforts to protect cultural resources from adverse effects of wildland fire and fire management practices.
- √ Prescribed burning and non-fire treatments will be used to protect cultural resources and restore or maintain cultural landscapes and viewsheds.
 - √ Adequate defensible space will be established and maintained to protect historic structures.
 - √ Use of MIST to the greatest extent feasible will minimize impacts to both cultural and natural resources by avoiding unnecessary ground disturbance to known or suspected locations of sensitive resources. The MIST Guidelines are in Appendix E, Section 9.
- Goal 5: Foster and maintain effective community and interagency fire management partnerships.
- √ PRNS staff will participate in the National Fire Plan working cooperatively with other local fire agencies, jurisdictions, land managers and homeowners to help them to secure federal funding and meet federal compliance requirements.
 - √ PRNS will continue to participate with the Marin County Fire Department on the development and implementation of the Community Wildfire Protection Plan (CWPP).
 - √ The NPS will work cooperatively with the Marin Municipal Water District to create a zone of reduced fuels along the shared boundary on Bolinas Ridge. (MMWD 1995).
 - √ The NPS will regularly attend the meetings and participate in relevant planning and projects of FireSafe Marin and its members.
- Goal 6: Foster a high degree of understanding of fire and fuels management among park employees, neighbors, and visitors.
- √ PRNS will implement a comprehensive public information and education program to address fire safety and prevention, fuels management, the role of fire in the ecosystem, prehistoric and historic fire history in Marin, and fire research programs and opportunities.
 - √ Fire management facilities, offices and equipment will be moved to the main administration area in order to decrease response time and facilitate communication between park fire staff and staff from the other divisions.

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Goal 7: Improve knowledge and understanding of fire through research and monitoring and continue to refine fire management practices.

- √ Research and monitoring efforts will address the comparative effectiveness of various fuels treatments and their effects on the environment.
- √ Research results will be used to adaptively guide the fire management program by using results and trends to continually fine tune project objectives to achieve the maximum resource benefit.
- √ Research topics will include the fire history of PRNS, the effects of fire on abiotic and biotic resources, effects of fire on rare native plant and animal species, methods for controlling non-native plants using prescribed fire and methods for restoring native grasslands using prescribed fire (NPS 1999).

2.2 GENERAL MANAGEMENT CONSIDERATIONS

2.2.1 Legal Considerations

The NPS is constrained from implementing fire management actions that do not comply with relevant federal laws, regulations, or policies. These include NPS Organic Act, legislation establishing PRNS and GGNRA, NPS Management Policies (revised in 2000), Director's Orders 12 (regulations for implementing the National Environmental Policy Act), Director's Order 18 (regulations for Fire Management Programs), and the PRNS and GGNRA General Management Plan, and guidance from adopted PRNS planning and policy documents.

Enabling Legislation. Congress established PRNS on September 13, 1962 “to save and preserve, for purposes of public recreation, benefit and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped (Public Law 87-657).” An amendment to Public Law 94-544 (passed in 1976) instructs the NPS to administer the Seashore without impairment of its natural values.

Congress established GGNRA by Public Law 92-589 “in order to preserve for public use and enjoyment certain areas of Marin and San Francisco Counties, California (San Mateo County added by P.L. #96-607).” In addition to providing for recreation and educational opportunities consistent with sound principles of land use planning and management, the NPS was also instructed to “preserve the recreation area, as far as possible, in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area.”

Wilderness Act (16 USC 1133) applies to all work that could directly or indirectly affect the areas of the park that are currently or are proposed as wilderness. All actions undertaken in the wilderness, including suppression of wildfires and other aspects of fire management, must conform to the “minimum requirement” concept, and be conducted in such a way as to protect natural and cultural resources (NPS, 2000, Sec. 6.3.9).

The minimum requirement concept is a two-step documented process that is used to determine:

1. Whether the proposed action is appropriate or necessary to administer the area as wilderness and does not pose a significant impact to wilderness resources and character, and

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2. Which techniques or types of equipment should be used to ensure minimum impact to wilderness resources and character (NPS, 2000, Sec. 6.3.5).

Endangered Species Act as amended (PL 93-205, 87 Stat. 884, 16 USC §1531 et seq.) protects threatened and endangered species from unauthorized take and directs federal agencies to ensure



California red-legged frog
by Marc Jennings

that their actions do not jeopardize the continued existence of such species. There are currently 1,300 species that found entirely or in part in the USA and its water that are listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA). In the FMP planning area, there are 22 animal and 19 plant species listed under the ESA. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) share responsibility for implementing the ESA. Generally, USFWS manages land and freshwater species, while NMFS manages marine and "anadromous"¹ species. During the FMP NEPA process, the NPS completed formal consultations with the FWS and NMFS as required by Section 7 of the ESA. All measures to avoid adverse effects to listed plants and animals recommended by

NMFS and FWS through consultation have been incorporated into the FMP mitigation measures. It is the responsibility of NPS staff to ensure these measures are followed as FMP projects are implemented.

Clean Air Act. All PRNS prescribed burns must be submitted to the Bay Area Air Quality Management District (BAAQMD) with a Smoke Management Plan for approval. The BAAQMD grants approval to burn based on air basin air quality and competing requests to burn submitted by other entities. Due to these extenuating circumstances, plans for burning may not always be approved for implementation if air basin conditions are poor or there are too many competing requests for approval to burn.

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 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. To avoid significant adverse effects to cultural resources while



Pierce Point Ranch
by Richard Hitchman

¹ **Anadromous:** Anadromous fish are born in fresh water, migrate to the ocean to grow into adults, and then return to fresh water to spawn. In the FMP planning area, anadromous fish listed under the ESA are coho salmon and steelhead.

implementing the FMP, the NPS adopted cultural resource mitigation measures to address the pre-project, implementation and post-project periods. It is the responsibility of NPS staff to ensure these measures (CR-1, CR-2 and CR-3) are adhered to for each FMP project.

2.2.2 Jurisdictional Considerations

Direct Protection Areas (DPA). The NPS has wildland fire protection responsibility for all federally owned lands inside the boundary of the Seashore. Hence federally-managed lands within the congressionally designated boundary of the Seashore are Federal Responsibility Areas or National Park Service - Direct Protection Area (DPA). For Point Reyes National Seashore, this DPA includes all lands within the Seashore boundary that are federally managed and, through agreement, the northern lands of Golden Gate National Recreation Area on Bolinas Ridge. The NPS has the financial responsibility, as well as the fire protection force to accomplish this. However due to the limited capability of its protection force Marin County and other nearby West Marin fire agencies provide strong backup and reinforcement to any fire in or near the Seashore.

2.2.3 Technical or Logistic Considerations

Limited Season for Effective Use of Prescribed Burning. The normal weather window for prescribed burning at Point Reyes is from mid-June to November. Burning in grasslands should be conducted after the grasses have cured which can be as late as early July. Summer and fall burns must be timed to occur between the dissipation of the morning coastal fog, which can keep much of the planning area moist throughout the day, and the onset of the strong afternoon sea breezes. The later months of the prescribed burning period, from late September until the first rains in November, can be relatively fog free but prescribed burns can be difficult to schedule or complete if red flag conditions develop quickly given that fuels moistures are already very low.

Risk-related Considerations. There are four communities bordering PRNS that are listed as federal “communities at risk from wildfire” under the National Fire Plan. Because of the potential for risk to public safety or property from an uncontrolled wildland fire at PRNS, the policy at PRNS is full suppression for all wildland fires, precluding the fire management tool of wildland fire use. Since the risk of escape of a prescribed burn is a major factor when deciding between prescribed burning and mechanical fuel reduction, prescribed burns near the interface may be modified to minimize smoke production and limit the duration of the fire to a single day. This precludes fire management strategies involving large-scale landscape fire restoration at PRNS.

Park Resources or Values Considerations. PRNS has significant populations of threatened and endangered plant and animal species, and other unique wildlife. These biota can and do affect the time, location and layout of fire management activities. Avoiding these sensitive resources can result in burn units that are not optimally laid out for operational defensibility. This could require more firefighters or a prescription that calls for a slower, smaller or more precisely drawn prescribed fire than could optimally be achieved.

PRNS has significant prehistoric and historic resources including archaeological sites, structures, isolated artifacts and cultural landscapes. Subsurface and surface resources include at least 124 Coastal Miwok sites, mainly processing areas and shell middens, numerous shipwrecks, and 92 archeological sites from the historic period. It is estimated that only 87% of the park area has

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been surveyed so many sites remain undiscovered. The majority of the over 300 historic structures in PRNS are ranch structures in the Minimal Management FMU, but several of the 10 treatment FMUs contain National Register Status structures, such as the Olema Lime Kilns and Upper Pierce Ranch, and other historic structures. In addition, PRNS manages 39 cultural landscapes; 16 of which are within the treatment FMUs.

Staffing Considerations. The NPS has instituted new guidelines for prescribed burning (NPS 2005b, Chapter 10), which, among other changes, require that all NPS prescribed burns have “contingency resources” (such as fire trucks on stand-by) committed and assigned to every burn. These contingency resources must be available based on the prediction of a worst-case scenario. Resources may be requested from competing projects especially in the peak of the national fire season in the summer months when resources needed for prescribed burns are also needed for emergency fire suppression.

2.3 WILDLAND FIRE MANAGEMENT OPTIONS

To accomplish FMP goals, wildland fires will be suppressed and prescribed fire will be introduced where appropriate for hazard fuel reduction and/or resource benefit. Mechanical fuel reduction projects will focus on Wildland Urban Interface areas and protection of park visitors, staff and sensitive natural and cultural resources. Mitigation measures addressing potential environmental impacts will be incorporated into site specific projects as assigned through interdisciplinary project review as required by the NEPA process completed for the FMP. Fire managers will balance the potential resource impacts of wildland fire with the potential resource impacts of fire suppression activities in choosing the Appropriate Management Response.

PRNS contains significant natural and cultural resource values. Values to be protected and their susceptibility to damage or loss by fire are discussed in more depth in the descriptions of the Fire Management Units (FMU), Section 2.4 of this FMP. Resource management objectives, in turn, drive strategies that aim toward the restoration and maintenance of naturally functioning ecosystems, restoration of cultural landscapes and protection of sensitive natural and cultural resources.

Wildland fires at the PRNS are managed with the support of local community fire departments and federal land management agencies. This community-based approach to wildland fire management involves partnership, cooperation and collaboration between PRNS and Marin County Fire Department (MCFD) and local government and volunteer fire districts, local homeowners associations and special districts such as Marin Municipal Water District (MMWD).

The PRNS Division of Fire Management provides technical assistance to Pinnacles National Monument on fire management matters, including fire management programs such as the Weather Information Management System (WIMS), the Wildland Fire Management Information (WFMI) System, the National Fire Danger Rating System (NFDRS), the Resource Ordering System Status (ROSS), the Incident Qualification and Certification System (IQCS), Fire Program Analysis (FPA), and FIREPRO budgeting. The Division also assists the Pinnacles National Seashore with wildland fire qualification and certification programs, coordination of fire training and mobilizations, development of agreements with local and state agencies, administration of Rural Fire Assistance Program grants to local rural fire departments, fuel

reduction activities, prescribed burning, and developing fire prevention, preparedness, and suppression operational plans.

PRNS, in accordance with NPS policy, uses Minimum Impact Suppression Tactics (MIST) in all fire management activities. MIST is defined as the application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control. Further information is provided in Section 3.2 and the MIST Guidelines are in Appendix E, Section 9.

2.4 ENVIRONMENTAL FACTORS INFLUENCING FIRE MANAGEMENT

2.4.1 Historic Role of Fire

When compared to research into the prehistoric fire record, fire frequency in California has been decreasing over the past century as a result of fire suppression. The lack of periodic fire in the current period has resulted in changes in vegetation structure and species composition. For example, it is generally assumed that forest stand density in many areas has increased, and shrub and grassland habitats in many areas are being reduced in size due to encroachment by conifers. Populations of the Marin manzanita, a fire dependent plant, are becoming increasingly rare as a result of habitat loss due to shading from increasing forest stand density.

It has been well documented that fires in the Point Reyes area and within California coastal ranges were frequently set by Native Americans (Slaymaker, 1982; Keely, 2002) and European settlers. Fire history studies conducted in and around the peninsula show the northern coastal prairie was very important to the Coastal Miwok as a source of food. Seeds were harvested from the coastal prairie and other grasslands in late summer. Individual seed fields were the possession of specific families and were probably often burned after harvest to improve growth the next year. Documentation of Coast Miwok culture indicates burning of grasslands for several purposes, but information on the extent and timing is minimal. Some sources indicate that fields were burned frequently, as often as once a year (Lewis, 1973; Slaymaker, 1982). Pre-contact burning along the coast may have focused on grasslands, while later burning during the Spanish and Anglo periods focused on shrublands to increase pasture acreage. The latter probably did not burn grasslands because of the need for winter livestock forage, leading to a very different fire regime (Greenlee and Langenheim, 1990). A small percentage of historic fires were probably lightning caused.

Ecosystems of Point Reyes are not burning today with nearly the frequency they did in the past. This change in fire frequency can result in shifts from understory to overstory dominance, increases in fuel loads and changes in forest structure, including increases in ladder fuels, which may lead to increased incidence of overstory, stand-replacing fires (Covington et al., 1994).

The best records of Point Reyes fire history reside in fire-scarred tree rings in redwood, and to a lesser extent, in Douglas-fir trees. Bishop pines are relatively short-lived trees (100 to 120 years), and generally occur in single-aged stands which arise after a stand-replacing fires. While the age of a Bishop pine stand can give solid evidence of a single large fire, it yields little insight into longer-term fire history. Shrubs respond to burning by either sprouting back from their stumps, or by regenerating via seeds in the soil so little record of the physical evidence of fire is retained. The same is true of grassland species.

2.4.2 Research Studies on Fire History

Due both to past logging and the relatively thin bark and low resistance to burning in Douglas-fir, Douglas-fir forests are a limited source of data on fire history. However, at least one research team (Brown et al., 1999) was able to extract data from fire scars on Douglas-fir and redwood trees at three locations in Point Reyes. The researchers found that fire scars did not extend much beyond the late 1700s. The oldest Douglas-fir tree found in the park dated to 1680, but this individual had no fire scars. Within the approximately two hundred-year period of fire scars (roughly 1800 to the present), researchers calculated a mean fire interval ranging from 7.0 to 13.0 years for the Douglas-fir forests. They were unable to cross-date any pre-settlement redwood trees, although some post-settlement trees did contain fire scars that successfully cross-dated with the Douglas-firs. Researchers speculated these trees were likely basal sprouts that established after the original redwood stand was logged, or grew in response to fire. Using fire scar information for burns from the early 1800s to the early 1900s, the researchers calculated a mean fire return interval in the redwood groves of 7.7 to 8.5 years.

Adjacent to Point Reyes, Finney (1990) found mean fire intervals between 1850 and 1900 that ranged from 6 to 33 years, with a mean of 14 years in coast redwood stands on Bolinas Ridge. He was able to document high fire frequency in the grove studied dating from the middle 1400s. Jacobs et al. (1985) calculated mean fire intervals of 22 to 27 years from stumps containing fire scars on ridges surrounding Muir Woods National Monument.

Work at Humboldt Redwoods State Park revealed a larger range in fire intervals, although this area has higher precipitation levels than Point Reyes and so is not directly comparable. Stuart (1987) calculated mean pre-settlement fire intervals in Humboldt from fire scars and redwood sprouts varied between 11 and 44 years. In the same area, Fritz (1932) estimated that at least 45 severe fires had burned during the previous 1,100 years, with a mean fire interval of 25 years. At Salt Point State Park, Finney and Martin (1989) found fire return intervals of 20.6 to 29.0 years. The authors state that all of these studies probably overestimate the actual mean fire interval.

Sediment taken from the bottoms of the lakes at the south end of Point Reyes Peninsula provides further evidence of forest fires over the past several centuries (Russell, 1983). In an on-going charcoal stratigraphy study by Anderson (2001), sediment cores from Glenmire and Wildcat lakes are being analyzed with radiocarbon dating. The Glenmire sample within the Douglas-fir forest; the Wildcat Lake area is dominated by coastal scrub. Sediments from both lakes indicated a near absence of fire during the past 100 years. Ongoing research is examining additional sediment cores from wetland areas in Point Reyes through radiocarbon dating and pollen analysis with the goal of constructing a more complete fire history.

2.4.3 Recent Fire History

The Marin County Fire Department has historically maintained a list of the larger fires in the county in the 20th century. Several of these fires have occurred in the project area. A fire in October 1917 burned 2,000 acres on the ridge west of Inverness. The largest fire, in September 1923, burned 40,000 acres from Lucas Valley to Bolinas including 35 homes in Woodacre.

More recently, the Mount Vision Fire burned more than 12,000 acres in 1995. It was started by an unattended campfire on October 3 at approximately 1:00 pm within Tomales Bay State Park. Driven by 40- to 50-mile per hour winds in steep terrain and heavy forest fuels, the fire rapidly

burned 700 acres and spread to PRNS and the residential community of Paradise Ranch Estates where 48 structures were destroyed. By October 6, up to 1,200 firefighters had participated in suppressing the fire. The next night, October 7, 1995, the fire was declared contained after burning a total of 12,354 acres (11,598 acres NPS lands, 386 acres State Park lands, 370 acres of private lands). The fire was declared controlled 9 days later.

Since 1997, on the average, about three wildland fires occur annually in the planning area. In all cases, the burned area was less than ten acres and most were kept to less than one acre. Most of the fires occurred in the Olema Valley and all but one were human-caused. The one exception was a single lightning caused fire.

Fires in Western Marin County also can have natural sources of ignition. Conditions conducive to lightning-caused wildfire do occur in Point Reyes, but they are rare (Martin and Sugnet, 1984). The Bay Area averages about 3 lightning days a year. On the average, two lightning storms occur each year in the Inverness vicinity with 18 percent of these storms occurring in September (Martin and Sugnet, 1984). Between 1970 and 1989, 13 lightning-ignited fires occurred in the following areas: Inverness Ridge, Mt. Tamalpais, and Stinson Beach. On September 27, 2001 a lightning fire occurred on Bolinas Ridge above Stinson Beach. During this same September storm, an observer saw about 60 lightning strikes from the Mount Barnabe Lookout near Samuel P. Taylor State Park, adjacent to the National Seashore. In addition, Pacific Gas and Electric staff counted 4,600 lightning strikes in the Bay Area during this storm (Freed, 2001).

2.4.4 Historic Weather Analysis

PRNS receives an average of 38.2 inches of rain annually. This amount is higher than much of the San Francisco Bay area due to the somewhat more elevated terrain along the coast. Most annual rainfall in Marin County occurs from November through March (see Table 1). The following general climate description is from “Climate, Physiography, and Air Pollution Potential – Bay Area and its Subregions (BAAQMD, 2003a)”:

“Areas along the West Coast of Marin County are usually subject to cool marine air. In the summer months, the marine air is cooled as it passes over the offshore upwelling region, and forms a fog layer along the coast. In the winter, proximity to the ocean keeps the coastal regions relatively warm. Temperatures do not vary much over the year at these coastal areas: high 50s in the winter and low 60s in the summer. The warmest months are September and October, which are in the mid to high 60s.”

“...wind speeds are highest along the west coast of Marin, about 8 to 10 mph. Although most of the terrain throughout central Marin County is not high enough to act as a barrier to the marine airflow, the complex terrain creates sufficient friction to slow the airflow. Downwind, at Hamilton Air Force Base in eastern Marin County, the annual average wind speeds are only 5 mph. The prevailing wind directions throughout Marin County show less variation, and are generally from the NW.”

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FIGURE 1 – DOMINANT WIND PATTERNS, CENTRAL CALIFORNIA

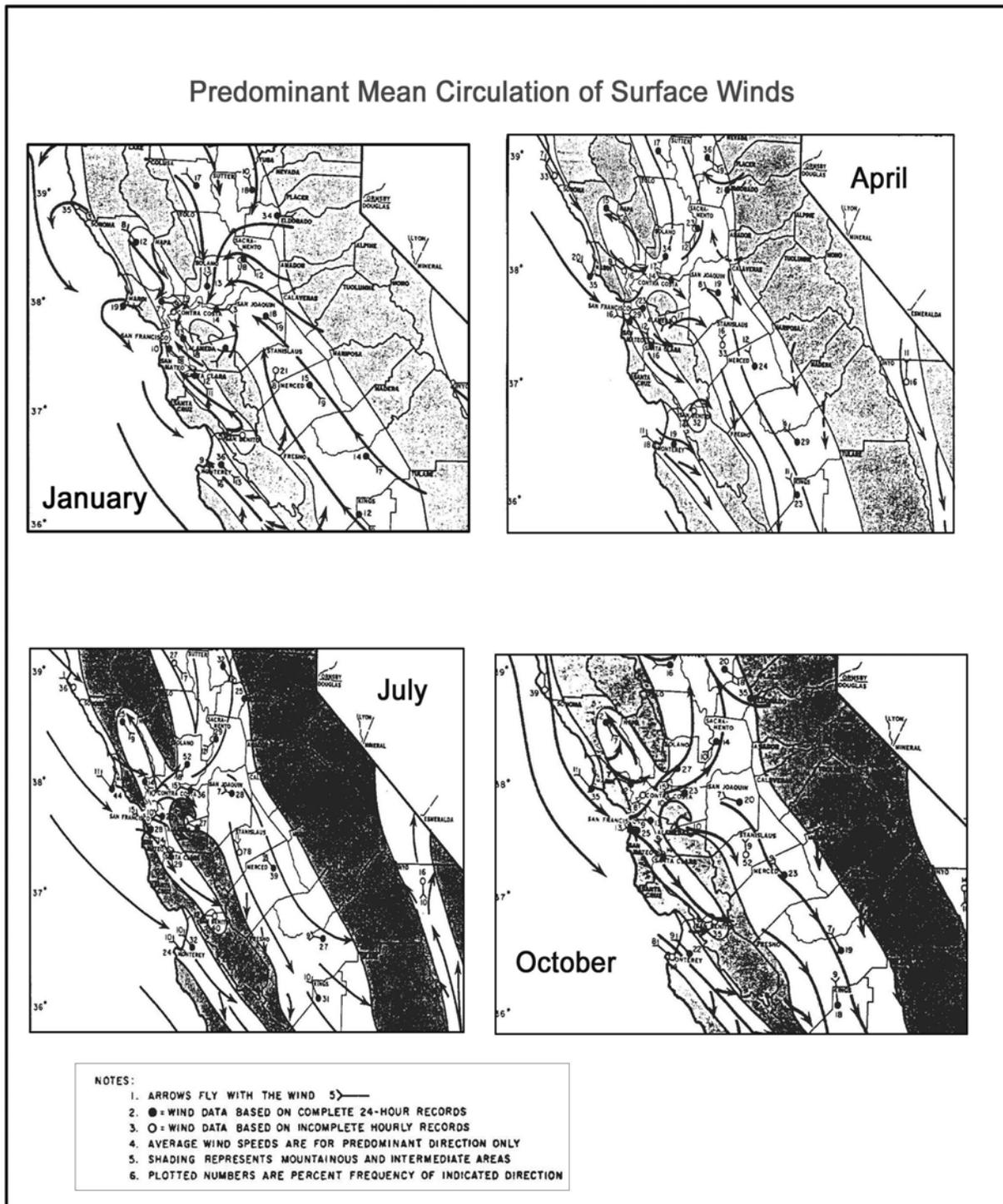


Figure 1 above illustrates predominant wind patterns occurring in California (Bell, 1958). The predominant regional surface winds during winter flow from the north-northeast. During spring and summer, stronger north-northwest winds dominate. These northwesterly winds are primarily

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caused and/or strengthened by the combination of high pressure offshore and the warmer air inland. During the fall transition, when warm easterly winds break through to the coast while inland conditions remain hot and dry, the coastal region faces its most significant fire threat.

Long-term average temperature and precipitation data have been collected at Bear Valley at the eastern part of the Point Reyes National Seashore (NPS, 2003). The Bear Valley monitoring station is the closest surface meteorological station to the project site. Surface climate data are presented in Table 1. Average temperatures (°F) during the summer vary from the high 40s to the low-to-middle 70s. Summer precipitation is low, averaging less than 0.2 inches per month, due to the strong stationary high-pressure system located off the coast and preventing weather systems from moving through the area. During the winter, average temperatures (°F) vary from the mid-to-upper 30s to the upper 50s-low 60s. About 84% of the precipitation in the area occurs during November through March, generally in association with storm systems that move through the region.

TABLE 1 -- TEMPERATURE AND PRECIPITATION DATA FOR
BEAR VALLEY, POINT REYES NATIONAL SEASHORE

Month	Average Daily Temperature (°F) ^a		Average Precipitation	
	Minimum	Maximum	Daily	(inches)
January	36.5	58.6	47.7	8.65
February	39.5	62.1	50.8	6.69
March	39.7	63.0	51.4	5.64
April	39.5	65.4	52.4	2.42
May	44.0	68.0	56.7	1.07
June	46.6	71.1	58.9	0.20
July	48.6	73.9	61.2	0.09
August	49.4	74.4	61.9	0.14
September	48.0	75.7	61.9	0.34
October	44.1	72.3	58.2	2.10
November	39.7	64.9	53.1	5.68
December	35.9	59.0	47.5	6.27
Annual Average	42.0	66.2	54.2	39.57 (total)

Source: Pt. Reyes National Seashore, 2003.

^average temperature and precipitation data for 1964-1989.

2.4.5 Fire Season

According to NPS FIREPRO III Base Analysis for PRNS, the composite "statistical" fire season can be defined by occurrence of wildfires. From this analysis, an early, mid, and late season is defined, with an embedded "core" season where annual base funding is derived. The core season is thus defined as pay period 15 through pay period 22 (July through mid-October).

The fire season at Point Reyes differs somewhat from most areas in the western United States. Following the cessation of winter rains in mid-April, fuels begin to dry and the light fuels of the annual grassland (2,000-7,000 lbs/acre) cure. During the summer months, live, dead and downed

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round wood material and duff in the understory of PRNS's forest stands gradually lose moisture. Bimodal peaks of fire danger occur in late spring and late summer/early fall. In most years, persistent fog keeps fire danger moderate in July and August when danger is highest in most of the western United States. The period from September 1 through October 31 can be considered the most critical time of fire danger for PRNS.

2.4.6 Fuel Characteristics and Fire Behavior

PRNS support a variety of vegetation classes, including hardwood forest, Monterey Pine/Monterey Cypress, Douglas fir/Coast Redwood Forest, Bishop pine forest, Riparian Woodland, Coastal Scrub, Grassland, Pasture and Coastal Dune.

Table 2 above represents an overall view of fuels on an area-wide basis.

TABLE 2 -- FUEL GROUPS AND MODELS (AREA IN ACRES)

Vegetation Type	Fuel Models	Monitoring Types	Acres
Douglas Fir Forest	6,8,10	FPSME1D10	16,301
Coast Redwood Forest	9		2,220
Bishop Pine Forest	10	FPIMU1D05	3,590
Hardwood Forest	8		7,896
Riparian Forest	8		2,336
Eucalyptus Forest	8	FEUGL1D08	219
Coastal Scrub	2,4,5,6,8	BBAPI1D105	18,577
Grassland	1	BCYSC1D05 BGEMO2D05 BLOPE1D01 BPHAQ1D03	19,842
Coastal Dune	1,5		1,862

Acreage estimates may not accurately reflect vegetation changes after the 1995 Vision Fire.

Also, not all vegetation types in PRNS are represented in this list.

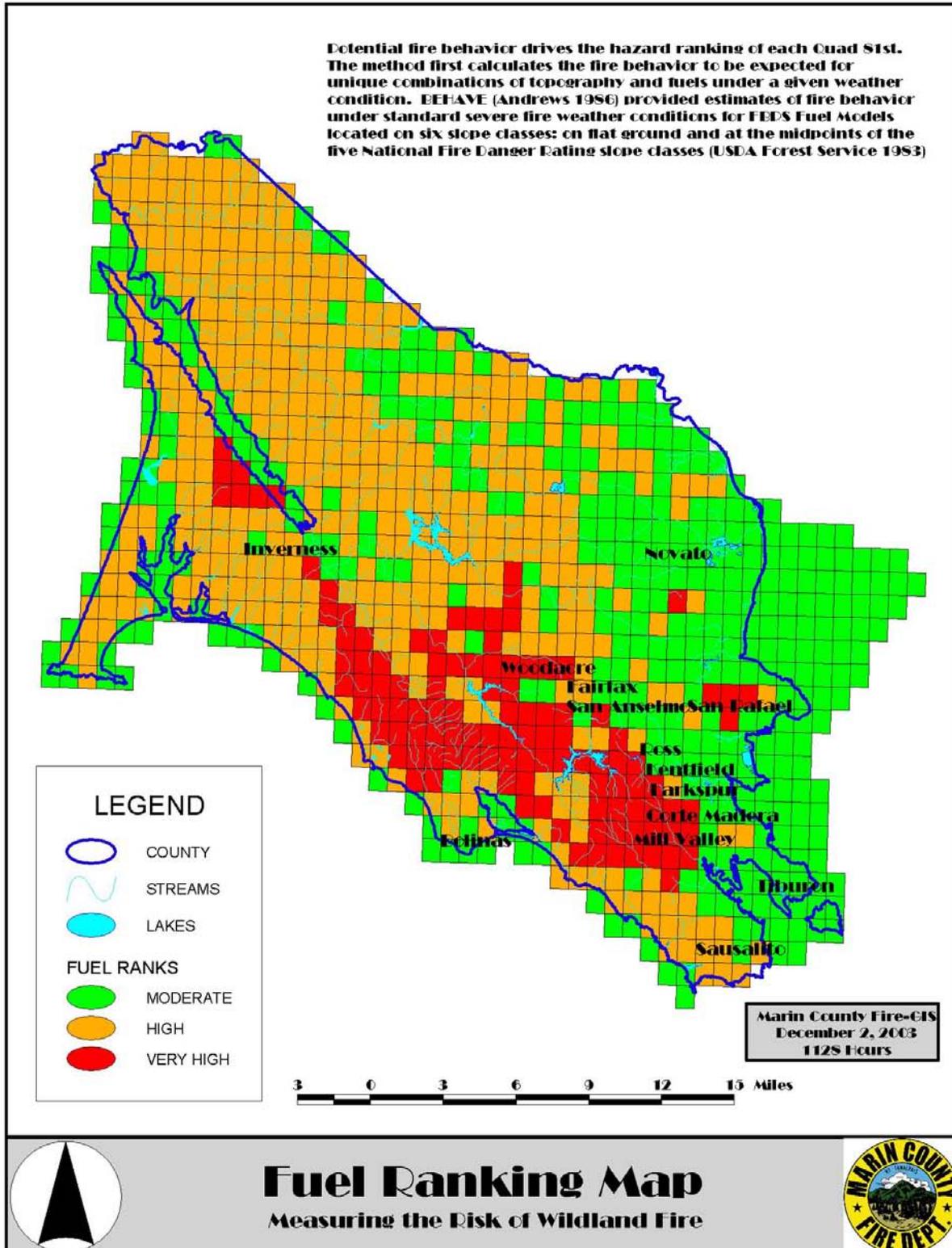
Source: PRNS GIS Database 2006

2.4.7 Hazard and Risk Modeling

Marin County Fire Department, using data provided by PRNS Fire and GIS personnel, developed a wildland fire risk model to determine areas of highest risk in the FMP planning area. Potential fire behavior was used to determine the degree of hazard (see Figure 3). Inputs to the potential fire behavior included topography and fuels under extreme weather conditions.

Using the same fire behavior inputs combined with additional variables (roadless area; certain fuel models with high rates of spread and intensity; slopes >40%;) produces another model which identifies areas where the resistance of controlling a wildland fire is amplified.

FIGURE 2 -- FUEL RANKING MAP



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The results of the model show that critical fuels and potential control problems are concentrated in the interface area along Inverness Ridge where the residential subdivision is adjacent to national parklands. Vegetation conditions here are heavier surface fuel loads and dense stands of fire adapted Bishop pine which could produce a high intensity wildland fire. The situation is compounded by the narrow road widths of the subdivision and inadequate area of defensible space providing substandard protection for many of the subdivision homes in the interface area. The largest fire in the 44-year history of the park was the 12,000-acre Vision Fire in 1995 which spread through the tree crowns driven by extreme north wind conditions. The Vision Fire destroyed 45 homes in the Inverness Ridge interface area.

Another portion of the FMP planning area with critical fuel concentrations is the southern portion of Highway One FMU. This area contains extensive stands of dense, non-native, highly flammable eucalyptus trees. Though there are few residences in the area, these eucalyptus stands represent a potential wildfire that could have a high resistance to control and, under extreme weather conditions (i.e. red flag day), spread to more densely populated communities such as Bolinas or Stinson Beach.

Many trees are killed by mostly surface fire but many survive, usually survivors include fire-resistant species of relatively large size.

Severity within individual fires varies between understory burning and stand-replacement, which creates a fine-grained pattern of young and older trees. This type of regime probably is due to fluctuations in weather during fires, diurnal changes in burning conditions, and variation in topography, fuels, and stand structure within burns. Highly dissected terrain is conducive to this fire regime.

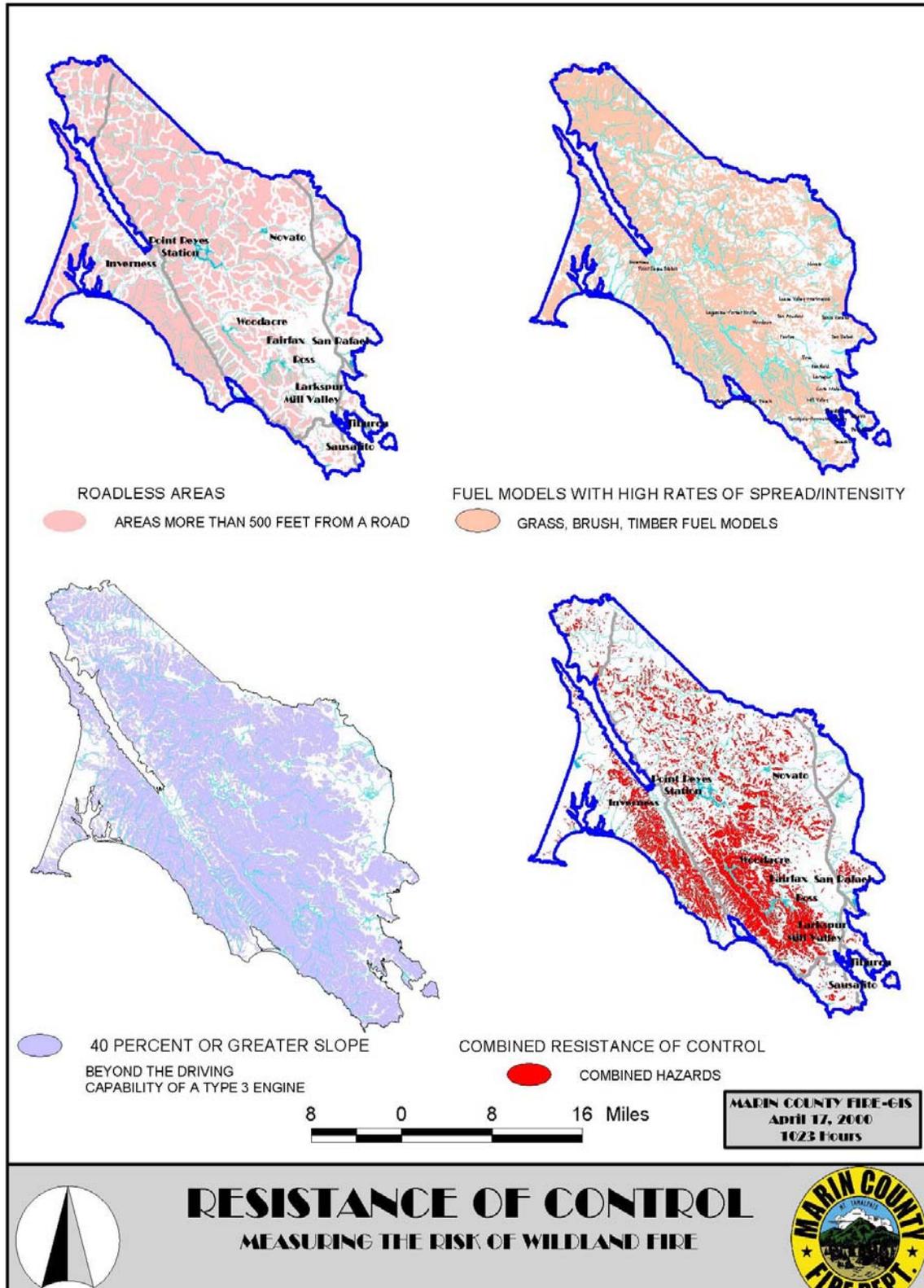
Fire severity varies over time with individual fires alternating between understory burns and stand-replacement. This regime has also been termed “variable” and has been applied to redwood forests.

Prior to Euro-American settlement, shrub-dominated or grassland plant communities in the project area may have been influenced by a stand-replacing fire regime, as most fires likely killed or removed most of the aboveground vegetation. The variability in topography, fuels, and diurnal weather fluctuations, however, could have resulted in a mixed severity fire regime, as described above for forests and woodlands.

The current fire regime for the Point Reyes area has changed dramatically since the mid-1800s as a result of Euro-American settlement patterns and practices. Effective fire suppression has resulted in large accumulations of fuels in many forest, woodland, and shrub-dominated plant communities. Thus, when fires do burn, they often are stand-replacing, as evidenced by many areas within the perimeter of the 1995 Vision Fire.

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FIGURE 3 -- WILDFIRE RISK



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2.5 PRNS FIRE MANAGEMENT UNITS: DESCRIPTION, STRATEGIES, CONSTRAINTS

A “Fire Management Unit” (FMU) is any land management area definable by common objectives, land features, access, values to be protected, political boundaries, fuel types, major fire regimes, or agency-designated special management areas directed by agency policy or congressional action (i.e., Wilderness or Wilderness Study Area).

For fire planning purposes, the planning area was divided into 11 fire management units (FMUs) based on geography, fuels management and habitat improvement needs, and on values at risk (see Figure 4). Ten of the FMUs, totaling 21,856 acres, represent the portion of PRNS where nearly all FMP actions, such as prescribed burning or mechanical fuel reduction treatments, would take place. The eleventh FMU - the Minimum Management Unit - includes most of the park and totals 71,046 acres. FMP actions in the Minimum Management FMU would be limited primarily to vegetation clearing around buildings and along roads and trails, prescribed burns with research objectives and, like the remainder of the park, full suppression of all wildfires.

Prescribed burns and mechanical treatments intended for resource objectives initially would be small and would be subject to intensive monitoring and research. If research results indicated that ecological conditions were improving after treatments in certain habitat types, the size of treatments in these habitat types could increase.

The FMP proposes small pilot project burns in habitats where the ecological effects of burning are not fully understood. These include Douglas-fir stands, Bishop pine forests, coastal scrub, and some grassland habitats. The focus for prescribed burns would be on areas where ecosystem health could be improved by burning and where fuel accumulations have created fire hazards. Prescribed burns would be conducted to approximate historic natural fire intensity and fire intervals to the extent possible while also ensuring public safety and protecting property.

Prescribed fire may also be used to reduce infestations of highly invasive non-native plant species. To increase effectiveness, PRNS staff may time these burns to suppress the invasive plants before they go to seed; this could result in prescribed burns scheduled for months that could seem contrary to burns that focus primarily on reducing fuels.

If herbicides are used, they are applied according to strict specifications using detailed Material Safety Data Sheets. Any application requires the approval of the park’s Integrated Pest Manager and the Washington Office coordinator for herbicide application. No applications occur in riparian or wetland areas (FMP FEIS page 38).

FIGURE 4 -- PRNS FIRE MANAGEMENT UNITS



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2.5.1 Tomales Bay FMU

The 2, 781-acre Tomales Point FMU encompasses all of Tomales Point north of the fence that delineates the Tule Elk Reserve. The fence runs east-west across the peninsula from Tomales Bay to the Pacific Ocean. The plant species composition of the grasslands in this FMU includes a mixture of native and non-native grasses and forbs, with scattered patches of coastal scrub dominated by coyote brush (*Baccharis pilularis*) and lupine (*Lupinus arboreus*).

No fire history data have been collected from the immediate vicinity of Tomales Point, but it can be inferred from fire history data collected elsewhere in PRNS that this FMU has been subject to periodic fire through time.

Environmental Considerations.

- Presence of approximately 450 tule elk.
- Populations of ten plant species of management concern, six of which are considered Species of Concern by the USFWS and one, Point Reyes blennosperma (*Blennosperma nanum*), is listed as rare by the state of California.
- High probability for unrecorded prehistoric sites.
- Pierce Ranch Complex, cultural site and landscape that includes eucalyptus trees.
- Presence of invasive non-native plants such as cape-ivy and velvet grass. Velvet grass is a highly invasive, non-native, perennial, rhizomatous grass that has been increasing in aerial extent and density in many areas of the PRNS Seashore, and has been identified by the park's Exotic Plant Management Plan (NPS 1989) as a priority for management.
- Portions of the FMU are within the Tomales Bay Watershed which is listed by the Regional Water Quality Control Board as impacted by sediments, nutrients and pathogens. FMP actions should not further impact this watershed.

Fire Management Strategies.

- Based on results of research conducted in other California grasslands, application of prescribed fire to the coastal grassland plant communities would be evaluated to determine if fire can be used to increase native species richness and density,
- Small prescribed burns would be conducted in the Tomales Point FMU and would be carefully monitored to determine the response of the plant communities, including the plants of special concern, to fire.
- Based on the results of research burns, prescribed burning would be considered to improve or expand habitat and forage for tule elk

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- Research burning will examine the use of prescribed burning to increase numbers of host plants for Myrtle's silverspot butterfly.
- Studies could be conducted to determine the response of the invasive non-native velvet grass to prescribed burning at different times of the year.
- Mechanical treatments include managing eucalyptus and Monterey cypress trees around Pierce Point Ranch using cutting and stump treatment of the eucalyptus with herbicides.

2.5.2. Headlands FMU

The Headlands FMU comprises 881 acres including the Point Reyes Lighthouse bluffs and Chimney Rock area at the westernmost tip of the Point Reyes peninsula. It contains some areas of designated wilderness along the outer bluffs. Vegetation on the unit is dominated by grassland and patches of mixed coyote brush and coastal scrub. The Headlands FMU has been subject to intense grazing pressure from cattle in the past, and currently some areas continue to be grazed, while others have more recently been excluded from agriculture.

Prescribed burns have not been conducted in this FMU in the past. Although fire history data have not been collected in this area, it is unlikely that this area has historically burned frequently due to the prevailing fog and moist conditions occurring most of the year.

Environmental Considerations.

- Twelve plant species of management concern occur in this FMU (Appendix B, Species List); five of these are federal Species of Concern, one is state-listed as rare (Point Reyes blennosperma), and one is state-listed as endangered (Point Reyes meadowfoam – *Limnanthes douglasii* var. *sulphurea*).
- The Headlands harbor sensitive animal species such as brown pelican and Steller sea lions. Other sensitive animal species include nesting seabirds such as ashly storm petrel.
- Marine mammals such as harbor seals are sensitive to human activities including low flying helicopters.
- Lands within this FMU receive very high levels of visitor use, and are popular for wildflower viewing in the spring.
- Cultural landscapes and historic structures including the Point Reyes Historic Ranch District, Ranch A, the Point Reyes Lifeboat Station and the Point Reyes Lighthouse.
- High probability for unrecorded prehistoric sites.



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- Half of this FMU is within the watershed of the Drakes Bay Drainages parts of which support steelhead trout so water quality of the creeks must be protected during FMP actions.

Fire Management Strategy.

- Small, prescribed burns would be applied in this FMU on a trial basis to determine if fire can be used to reduce the aerial extent and density of invasive non-native plants such as velvet grass, and to increase the percentage of native plant species in the headlands communities.
- Headlands - the effects of prescribed burning on coastal grassland plant communities would be evaluated to determine if fire can be used to increase native species - both animal and plant - richness and density, and/or to reduce density and aerial extent of non-native species.

2.5.3 Estero FMU

The 1,638-acre Estero FMU is located at the northern end of Drakes Estero, along the edges of Schooner and Home bays. Vegetation is primarily grassland and mixed coyote brush and poison-oak scrub habitats, with patches of wax-myrtle (*Myrica californica*) in seasonal drainages. A stand of Monterey pine is in the southeast corner of the FMU. PRNS has been using prescribed fire and mowing treatments to control the non-native Scotch broom (*Cytisus scoparius*) since 1993.

Environmental Considerations.

- Populations of Pt. Reyes mountain beaver occur in shrubby drainages within this unit. This species, although not federally listed, is of concern to Seashore managers as it is a rare species whose populations were significantly reduced by the Vision Fire in 1995.
- Nine plant species of management concern; five are federal Species of Concern.

Fire Management Strategy.

- Prescribed burns would be conducted to contain and reduce the extent and density of the non-native plants Scotch broom, Monterey pine, Monterey cypress, and eucalyptus. Eucalyptus should be treated with herbicides to prevent resprouting. Monterey pine will not resprout from the cut stump if the stumps are cut low enough to the ground surface (Cal-IPC 2004).
- Continue cutting and mowing to suppress Scotch broom.
- Conduct research burns on the effects of prescribed burning on the areal extent and density of Scotch broom.

2.5.4 Inverness Ridge FMU

The linear 1,250-acre Inverness Ridge FMU runs from the western edge of Tomales Bay State Park south along Inverness Ridge to the Bayview Trail parking area. Inverness Ridge - To date, prescribed burns have not been conducted in this FMU. The ridge is dominated by dense stands of Bishop pine (*Pinus muricata*) in the north, which grade into Douglas-fir (*Pseudotsuga menziesii*) forests further south. The understory vegetation beneath the Bishop pine forest is dense consisting of species such as salal, huckleberry and manzanita (*Arctostaphylos ssp.*). The understory of the Douglas-fir forests can be sparse, consisting primarily of grasses and herbs, or more dense, with salal and huckleberry.

Environmental Considerations.

- Four federal plant species of management concern, including two federal Species of Concern - Marin manzanita (*Arctostaphylos virgata*) and Mount Vision ceanothus (*Ceanothus gloriosus var. porrectus*).
- Northern spotted owls, federally listed as a threatened species, nest within this FMU.
- The Inverness Ridge FMU is immediately adjacent to residences and small commercial areas in Inverness Park.
- Portions of the FMU are within the Tomales Bay Watershed which is listed by the Regional Water Quality Control Board as impacted by sediments, nutrients and pathogens. FMP actions should not further impact this watershed.



Fire Management Strategy.

- The proximity of dense, flammable vegetation to the communities of Inverness and Inverness Park makes this area a focus for mechanical and prescribed fire fuel reduction projects.
- Conduct small pilot prescribed fire projects (less than 30 acres) in Bishop pine forest to determine:
 - a. whether understory biomass and dead and downed fuels can be effectively reduced without increasing invasive plant populations.
 - b. the effects on populations of plant and animal species associated with the Bishop pine community (including Marin manzanita and Mount Vision ceanothus).
 - c. the effects on dusky-footed woodrats, northern spotted owls, and Point Reyes mountain beavers.

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- Conduct prescribed burns and mechanical fuel reduction projects to promote regeneration of rare plant species that respond to fire and/or disturbance.
- Mechanical fuel reduction would include the creation and maintenance of a 3-mile shaded fuel break along the ridge. The purpose of the fuel break would be to reduce the risk of a wildfire burning in the park spreading into adjacent private lands. Initially, a 0.25-mile section of fuel break would be constructed and evaluated for effectiveness and to determine the significance of resultant environmental effects from both construction and maintenance of the fuel break. The fuel break could eventually extend from the Bay View Trail Parking Area to Point Reyes Hill and would be approximately 50-60 feet wide. Within the fuel break, the objective would be to reduce dead and downed woody debris by 60%, limb up trees to 10 feet in height, thin trees up to 4 inches in diameter, and brush cut vegetation in a mosaic pattern to break up fuel continuity.

2.5.5 Limantour Road FMU

This 4,142-acre FMU consists of a corridor along the entire length of Limantour Road from the Limantour Beach parking area, east over Inverness Ridge, and descending down to the intersection of Limantour Road and Bear Valley Road. Much of the unit is within the Philip Burton Wilderness Area. For management purposes, it also includes the area encompassing the PRNS headquarters buildings, the Bear Valley Visitor Center, and the Coast Miwok cultural exhibit at Kule Loklo.



The southwestern portion of this FMU, from Limantour Beach to Inverness Ridge, spreads out east and west of the road to include portions of the Phillip Burton Wilderness Area. Vegetation in this area is dominated by grassland and mixed coastal scrub in the southwest, which intergrades into Bishop pine stands and Douglas-fir forests on Inverness Ridge. An extensive salt water and brackish marsh system occurs at the Estero de Limantour, and high quality riparian corridors are located along several northeast to southwest trending creeks (e.g., Muddy Hollow, Laguna, Coast). The section of this FMU that stretches from Inverness Ridge west to the Bear Valley area supports Douglas-fir forest, mixed conifer/hardwood forest with coast live oak, California bay, coyote brush scrub, and grasslands.

Environmental Considerations.

- Six plant species of management concern, three considered federal Species of Concern.
- A free-ranging herd of approximately 28 tule elk.
- Federally-listed threatened coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Oncorhynchus mykiss*) in streams within the FMU.
- Large tracts of eucalyptus at Kule Loklo.

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- High probability for unrecorded prehistoric sites.
- Northern spotted owls are known to nest in the eastern section of this FMU.
- Portions of the FMU are within the Tomales Bay Watershed which is listed by the Regional Water Quality Control Board (RWQCB) as impacted by sediments, nutrients and pathogens. Approximately one fifth of the FMU flows to the Drakes Bay by creeks that may support steelhead trout. FMP actions should not degrade the water quality of these watersheds.

Fire Management Strategies.

- Prescribed burns would be conducted to reduce the density of Monterey pines, reduce hazardous fuel accumulations along the road corridor, and maintain defensible space around buildings and visitor use areas.
- Roadside thinning and limbing up of trees
- Cut to suppress Monterey pine.
- Conduct prescribed burns to assess the effects of fire on highly invasive non-native Harding grass.
- Conduct prescribed burning to determine if the effects may benefit populations of the rare plant fragrant fritillary (*Fritillaria liliaceae*).

2.5.6 Wilderness North FMU

The Wilderness North FMU is 1,591 acres. It is primarily Douglas-fir forest interspersed with small open meadows. It trends along Inverness Ridge southeast from the Bayview Trail parking area to the Bear Valley Trail. The terrain is characterized by steep slopes that climb up from the east and west toward the central ridge. The FMU contains Mt. Wittenberg, the highest point in the planning area at 1,407 feet. Much of the unit is within the Philip Burton Wilderness Area and contains Sky Camp, a backcountry campground.

Environmental Considerations.

1. Spotted owls are known to nest in this unit.
2. The FMU supports one plant species of management concern – the California bottlebrush grass (*Elymus californicus*).
3. Portions of the FMU are within the Tomales Bay Watershed which is listed by the RWQCB as impacted by sediments, nutrients and pathogens. Approximately one fifth of the FMU flows to the Drakes Bay by creeks that may support steelhead trout. FMP actions should not degrade the water quality of these watersheds.

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Fire Management Strategies.

- The initial burns in this FMU would be small pilot projects in Douglas-fir forest and grassland near Mt. Wittenberg. The primary objectives of these burns includes:
 - Reducing or breaking up the continuity of areas of very dense fuel loading in the forest thereby reducing the overall risk of more adverse effects associated with an unplanned ignition (e.g., potential stand-replacing crown fire, loss of homes or other structures);
 - Establishing areas of reduced fuel loading where fire suppression crews could be staged in the event of a wildfire; and
 - Reintroduce fire into forests that may have burned as frequently as a 7-14 year fire return interval, but which have not burned for 50-100 years.
- If small burns effectively reduce understory biomass, larger burns may be conducted in this FMU in the future.
- Use mechanical treatment to thin forests prior to prescribed burning to determine if this pre-treatment can be beneficial to Douglas fir ecosystem and can increase firefighter safety.
- When working in appropriate habitat, efforts should be made to evaluate the effects of prescribed burning and mechanical treatments on spotted owl habitat and on dusky-footed woodrats.

**2.5.7 Wilderness South**

This 2,297-acres unit is largely comprised of designated wilderness lands south of the Vedanta Society property. It is aligned along Inverness Ridge south of Wilderness North FMU and extends to just south of Mud Lake. Wilderness South FMU includes Firtop peak at 1,324 feet above sea level and lands southwest of Firtop, reaching to the coast at Wildcat Camp. Vegetation in this FMU is dominated by dense stands of Douglas-fir with significant amounts of dead and downed material present. The southwest corner of the FMU supports high quality stands of coastal scrub, including coffeeberry, California sagebrush, coyote brush, bush monkeyflower, and lizardtail. There are a few remnant stands of Marin manzanita in this FMU. The plant reproduces most readily after fire. The absence of fire and increasing overshadowing by the overstory has led to significant manzanita mortality. Encroachment of Douglas-fir into the areas with Marin manzanita has further reduced direct sunlight reaching the Marin manzanita.

Environmental Considerations.

- This FMU supports two plant species of management concern, Marin manzanita (*Arctostaphylos virgata*), and California bottlebrush grass (*Elymus californicus*).
- Northern spotted owls, federally listed as a threatened species, nest within this FMU.
- Cultural landscapes and historic structures including Olema Valley Historic Ranch District's Five Brooks Ranch and Stewart Ranch and Wildcat Military Reservation.
- Roughly one third of the FMU is within the Olema Creek Watershed which supports coho salmon, steelhead trout and California red-legged frogs while the remainder of the FMU flows to the Drakes Bay Drainages whose creeks support steelhead trout. FMP actions should not contribute to the degradation of water quality of these watersheds.

Fire Management Strategies.

- Projects should treat the area supporting Marin manzanita, either through prescribed burning or mechanical fuel reduction projects. The initial prescribed burns would be smaller pilot projects in Douglas-fir forest and grassland near Firtop, and in Douglas-fir forest near Mud Lake. The primary objectives in these locations would be to determine if prescribed burning can effectively reduce understory biomass and be safely conducted. If the burns prove effective, larger burns may be conducted in the future.
- Mechanical treatment should be used as a pre-treatment prior to prescribed burning to reduce understory and forest density.
- When working in appropriate habitat, efforts should be made to evaluate the effects of prescribed burning and mechanical treatments on spotted owl habitat, dusky-footed woodrats and Marin manzanita.

2.5.8 Highway One FMU

The 2,874-acre Highway One FMU begins immediately south of Five Brooks and runs south along the Olema Valley on both sides of Highway One south to the Bolinas-Fairfax road. The FMU includes the riparian corridors on Olema and Pine Gulch creeks and their tributaries which support coho salmon and steelhead trout. At higher elevations above the riparian areas, the vegetation is dominated by annual grassland, mixed scrub, and hardwood communities; many of the grasslands are grazed by cattle.

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Environmental Considerations.

- The Highway One FMU contains dense stands of French broom and eucalyptus.
- Most unplanned ignitions at PRNS occur in this FMU and are related to vehicle traffic on Highway One.
- Northern spotted owls, federally listed as a threatened species, are found within this FMU.
- Cultural landscapes and historic structures including Bolinas Copper Mines, Hagmaier Ranch, Ralph Giacomini Ranch, Teixeira Ranch, Wilkin's Ranch, and Olema Lime Kilns.
- High probability for unrecorded prehistoric sites.
- Roughly a quarter of this FMU is within the Olema Creek Watershed and one third drains to the Pine Gulch Watershed, both of which support coho salmon, steelhead trout and California red-legged frogs. FMP actions should not contribute to the degradation of the water quality within these watersheds.

Fire Management Strategies.

- Use mechanical treatments such as mowing to reduce grasses and control non-native French broom.
- Mechanical treatments to thin or remove eucalyptus.
- Prescribed burning to reduce roadside fuels and suppress French broom.
- Where appropriate, evaluate the effects of prescribed burning and mechanical treatments on creeks, riparian habitat, coho salmon and steelhead, and California freshwater shrimp.

2.5.9 Bolinas Ridge FMU

The Bolinas Ridge FMU is a long, linear FMU, 2,381 acres, stretching from Olema, east along Sir Francis Drake Blvd, and then south along Bolinas ridge to the Bolinas-Fairfax Road. The northern half of the unit contains grasslands grazed by cattle. Drainages within the northern portion of the FMU support mixed scrub, hardwood woodlands, and some Douglas-fir. The southern half of the unit supports primarily Douglas-fir and redwood forests, hardwood forests, and mixed scrub plant communities. A large portion of the northern half of this FMU is subject to grazing by cattle, which serves to reduce fuels. Prescribed burns have been conducted in the northern portion of the FMU on the site of a former Christmas tree farm and at Beebe Ranch. Burns would continue at this site, and would also be conducted in the Beebe Ranch area, and in grasslands and shrublands along Bolinas Ridge.

Environmental Considerations.

- At the southern end, the FMU supports a dense stand of maritime chaparral that supports three rare species – glory brush manzanita, Marin manzanita and Mason's ceanothus. The latter species is a federal Species of Concern and is state-listed as rare.
- No mechanical treatment was anticipated for the Bolinas FMU with the exception of routine roadside fuel reduction, trail clearance, mechanical treatments to prepare for prescribed burning and clearing for defensible space around structures. Mechanical fuel reduction projects that fall outside these categories would require additional NEPA review and possibly ESA consultation.



- Cultural landscapes and historic structures including the North Pacific Coast Railroad Grade.
- Northern spotted owls, federally listed as a threatened species, are found within this FMU.
- A quarter of the FMU is within the Olema Creek Watershed which supports coho salmon, steelhead trout and

California red-legged frogs. The northern portion of this FMU is within the Lagunitas Creek Watershed which supports California freshwater shrimp in addition to the three species also found in Olema Creek. FMP actions should not contribute to the degradation of the water quality within the watersheds.

Fire Management Strategies.

- Prescribed burning of the grasslands along the western portion of Sir Francis Drake Boulevard would be conducted to create a corridor of defensible space along the road.
- In the southern half of the FMU, the emphasis for prescribed burning would be along the Bolinas Ridge Fire Road. Burns would be conducted in cooperation with the Marin Municipal Water District for both fuel reduction and to achieve a natural resource benefit by stimulating reproduction in the rare, fire adapted species Marin manzanita, glory brush ceanothus and Mason's ceanothus.
- Prescribed burns in the southernmost portion of the ridge in coastal chaparral and mixed scrub habitats would be evaluated to determine if fire can be used to increase native species richness and/or density.

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2.5.10 Palomarin FMU

The 2,021-acre Palomarin FMU begins near Double Point in the Philip Burton Wilderness Area and follows the coastline southeast to the U.S. Coast Guard property, then turns inland on the northeast side of Mesa Road. This FMU supports primarily mixed coastal scrub and grasslands. The area flanking the Palomarin trailhead is characterized by an exceptional diversity of nonnative plants, including eucalyptus, French broom, cape-ivy (*Delairea odorata*), pittosporum (*Pittosporum oblongata*), periwinkle (*Vinca major*), Harding grass (*Phalaris aquaticus*), kikuyu grass (*Pennisetum clandestinum*), oblong spurge (*Euphorbia oblongata*), and others. To date, prescribed burns have not been conducted in this FMU.

Environmental Considerations.

- Three plant species of management concern are located in the Palomarin FMU.
- Cultural landscapes and historic structures including the Bolinas Military Reservation.
- High probability for unrecorded prehistoric sites.

Fire Management Strategies.

- Mechanical treatments would be used to reduce the densities of non-native invasive plants, including eucalyptus trees, beyond the Palomarin Trailhead and into the wilderness area in this section of the park.
- Mechanical treatment would include clearing of trees along roadways, mowing grasslands along the road, and cutting Douglas-fir encroaching into coastal scrub before these areas are burned.
- Prescribed burns would be conducted to reduce hazardous fuel accumulations and French broom populations near the Commonwealth garden site and along roadsides.
- The effectiveness of prescribed burning at reducing the density or diversity of non-native, invasive plants would be assessed by park staff in conjunction with PRBO Conservation Science staff (formerly known as PRBO - Point Reyes Bird Observatory) in the area near the Palomarin Trailhead.
- Small-scale pilot burns also would be conducted to reduce fuels, and to discourage Douglas-fir encroachment on coastal scrub habitats around the Point Reyes Bird Observatory (PRBO) field station to create a mosaic of vegetation in the area and improve habitat for birds. Burns in coastal scrub would generally be less than 100 acres and used in part to determine effects.



2.5.11 Minimum Management FMU

The Minimum Management FMU is 68,455 acres and includes all area of PRNS not included in any of the other ten FMUs. The majority of the pastoral zone (roughly 19,000 acres) is in this FMU and is dominated by grasslands and grazed by cattle. The area also includes large tracts of the Wilderness Area that support mosaics of forest, scrub and grassland. The FMU includes large bodies of water such as Drakes Estero, Limantour Estero, Abbotts Lagoon, and Tomales Bay.



Environmental Considerations.

- All known populations of the seven federally threatened and endangered plant species in PRNS occur only in the Minimum Management FMU, so would not regularly be subject to either prescribed burning or landscape-scale mechanical fuels treatments. Proposed FMP projects that could impact these species would require additional consultation.
- All known populations of Myrtle's Silverspot Butterfly and Western Snowy Plover in PRNS occur in the Minimum Management FMU. The FMP anticipated no impact to these species from FMP actions. If FMP projects are proposed that have potential to affect either of these species or habitat, additional consultation would be required.
- Numerous cultural landscapes and historic structures including most of the Olema Valley and Point Reyes Historic Ranch Districts, the Coast Guard Facilities, many of the Coastal Defense Sites and the RCA Marine Radio Station.
- Leaseholder improvements for dairy farming and ranching operations, the youth hostel and water supply for Bolinas.

Fire Management Strategies.

- Clear sufficient defensible space around all park structures.
- Provide adequate overhead clearance along all park roads and fire roads to allow for the passage of emergency vehicles (14 foot overhead clearance).
- Thin roadside vegetation within 10 feet of the edge of park roads and fire roads.
- Remove hazardous trees along roads and fire roads.
- Small areas within pastoral lands that have invasive non-native species, such as Scotch or French broom or Monterey pine, may be burned or mowed to reduce the density and aerial extent of these invasive species (NPS 2004, p. 294).

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Any fire management strategies, including suppression, prescribed fire, or mechanical fuel reduction should factor in the protection of natural and cultural resources, while maintaining that safety of employees and private citizens is the highest priority in any activity. On all wildland fire management actions, use of minimum impact suppression tactics (MIST) is the policy of the National Park Service.

3.1 GENERAL IMPLEMENTATION PROCEDURES

All wildland fires will be suppressed with aggressive initial attack action. All suppression activities on federal lands will be managed in Unified Command with Marin County Fire Department, a contract county for the California Department of Forestry and Fire Protection (CDF). Unified Command with Marin County Fire Department is required due to the proximity of local government and state fire protection areas of jurisdiction. Woodacre Emergency Command Center (ECC) is responsible to contact the appropriate fire management or law enforcement personnel to respond to the report of a wildland fire. Typically the Fire Management Officer or Chief Ranger responds to the Incident Command Post and serves as a Unified Incident Commander, Agency Representative or Resource Advisor.

A qualified Resource Advisor will be requested to proceed to all fires or to fires that have potential to spread on these lands. The Resource Advisor will assist in identifying sensitive resources and provide input on appropriate actions to minimize the impacts to these resources. The NPS Incident Commander or Agency Representative is responsible for requesting a Resource Advisor through the Park Dispatch.

3.2 MINIMUM IMPACT SUPPRESSION TACTICS

The policy at PRNS is to suppress all unplanned ignitions using minimum impact suppression tactics (MIST) whenever possible and feasible given the constraints along the urban interface. Suppression of fires will be aggressive and will be conducted with the highest regard for human safety. Specific MIST Guidelines tactics are included in Appendix E, Section 9.

Suppression will be accomplished through a combination of cooperative agreements with local fire agencies and qualified park fire personnel. Annual operating plans will identify individual suppression concerns in order to minimize suppression impacts. Furthermore, all control efforts will be evaluated for consideration of effects on resource values.

3.3 WILDLAND FIRE SUPPRESSION

All non-management ignited wildland fires at PRNS will be suppressed due to the close proximity of improvements and residences to wildland fuels (NPS 2005b).

The NPS has wildland fire protection responsibility for all federally owned lands inside the boundary of the Seashore. Hence lands within the congressionally designated boundary of the Seashore are Federal Responsibility Areas (FRA) or National Park Service - Direct Protection Area (DPA). The NPS has the financial responsibility, as well as the fire protection force to accomplish this. However due to the limited capability of its protection force, Marin County and

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other nearby West Marin fire agencies provide strong backup and reinforcement to any fire in or near the Seashore.

Local Government fire agencies in West Marin are responsible for structure fire protection in their areas of responsibility (Local Responsibility Area or LRA). State Responsibility Areas (SRA) are unincorporated, non-federal watershed lands under the protection responsibility of CDF. The responsible fire entity for unincorporated watershed lands in Marin County is the Marin County FD acting as the Agent for CDF.

The objective of wildland fire suppression, as an integral part of wildland fire management in the NPS, is to manage wildland fires safely and efficiently to accomplish protection objectives. It will



be integrated into land and resource management plans and activities on a landscape scale, across agency boundaries, and will be based on best available science. Protection priorities are (1) human life and (2) property and natural/cultural resources (NPS 2005b).

Because PRNS has limited fire management capabilities, most suppression activities will be accomplished in conjunction with the local fire agencies. This allows the cooperating West Marin fire agencies to assume interim Incident

Command of initial attack actions until a qualified federal Incident Commander and personnel arrives to assume Unified Command of the incident. Within the boundary of the park, all wildland fires will be suppressed according to federal and local government protocols as determined by the Unified Incident Commanders. Federal actions will be consistent with direction provided in RM 18, DO 60 and *Interagency Standards for Fire and Fire Aviation Operations*.

3.3.1 Range Of Potential Fire Behavior

All of the wildland fuels complexes represented at PRNS display a range of fire behavior; the most typical are described below:

- May and June. Creeping ground fires in herbaceous litter and underlying duff with overall lighter fuels and soil moistures such as early in the fire season.
- July. Surface fire spread with active flame front generally occurs during periods of lowering fuel moistures.
- August and Early September. Active surface fire spread with torching, short range spotting, usually due to higher frontal winds and/or lower humidity.

- September and October. Running surface fire with torching, intermittent or sustained crown fire, short and long-range spotting under high winds, low humidity, low foliar and surface fuel moistures, during north and east wind conditions where indices can be over the 90th percentile.

This is the typical fire behavior for these vegetation types during the fire season at PRNS.

- Grasslands. The critical concern in this vegetation type is the rate of spread and ease of ignition with grasslands acting as a vector to ignite other vegetation types. This is one of the most dangerous wildfire types for firefighter safety due to its rapid frontal spread. Production of airborne embers ahead of the flame front is not typical due to the rapid rate of spread.
- Brush and Scrub Dominated Communities. The Coastal Scrub vegetation types tend to be difficult to ignite. However, once ignited, fires in this community are difficult to suppress due to the dense stands and presence of volatile oils that make them burn faster and hotter.
- Eucalyptus Forests. The ignition potential of these forests is very high and directly related to the depth of the litter and dead materials on the ground. A continuity of fuel from the ground to the crown of the forest presents the greatest hazard with over 200 acres having high crowning potential.
- Bishop pine Forests. The critical concern in the Bishop pine stands is the stand density of reproduction following the 1995 Vision Fire. As this species of pine requires fire to regenerate themselves, much like lodgepole pine, young growth stands can be dense enough to generate crowning under severe wind conditions. Extensive dead fuel loading, due to the presence of needles, hazardous understory and dead wood underneath the canopy cover and lower portions of the tree boles, adds to the potential for crowning.
- Hardwood forest. This vegetation type with closed canopy tends to represent low hazard due to the relatively little surface fuels present and ignition potential is moderate due to the effects of canopy cover. Fire behavior is dependent on the buildup of surface fuels and dead materials within the tree that can carry fire to the crown.
- Redwood forest and Riparian forest. The behavior of fire in this type of vegetation tends to be fairly benign due to high fuel moistures and high humidity.

3.3.2 Preparedness Actions

The term “preparedness” refers to activities that lead to a safe, efficient and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Due to the proximity of GGNRA, close coordination and operational consistency in preparation for fire season is important. The FMOs from each unit will meet on a regular basis to coordinate preparedness activities, establish joint projects and procedures for wildland fire, mechanical fuels reduction and prescribed fire, readiness, funding issues, problem areas, and other items.

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The following items will be reviewed annually at joint meeting of the respective FMOs:

- Prepare mutual severity needs analysis for coming fire season when conditions exceed those of a normal fire year (consider: pre-positioning of suppression resources; augmentation and support outside local organization needed).
- Review new policies, roles and responsibilities.
- Review and update as necessary all delegations of authority and Agency Administrator Briefing Package.
- Identify any mutual safety issues and mitigating actions required.
- Clarify mutual criteria for team transitions, managing mutual multiple fire activity.
- Develop mutual and integrated action items to implement staffing levels (Ref: Step-up Plan).
- Identify strategies to communicate fire program principles to cooperators and publics (Red Flag alerts, severity, closures, etc.).
- Agree on mutual standards to evaluate performance of the preparedness operations within the Bay Area National Parks Network.
- Address other issues requiring coordination.

3.3.2.1 Fire Prevention

Prevention objectives for the planning area will include:

- Reduce the number of human-caused wildland fires.
- Integrate fire prevention messages into a variety of programs, ranger activities, and local media, targeting the community, schools, visitors, and landowners.
- Coordinate fire prevention efforts with all cooperators and affected landowners.
- Prepare and post prevention-related signs and messages.

3.3.2.2 Training and Fire Readiness

The purpose of wildland and prescribed fire training is to promote safe and effective individual performance in accomplishing fire management goals and objectives.

All wildland fire personnel will be qualified and certified for the position(s) assigned, according to the Wildland and Prescribed Fire Qualifications System Guide (PMS 310-1). The Interagency Standards for Fire and Fire Aviation Operations, Chapter 2, “Requirements for Fire Management Positions” details additional requirements for fire positions (NIFC 2006). Reference Manual #18 (NPS 2005b) and Director’s Order #18 (NPS 2005a) provide the guidelines for training and readiness.

All employees involved in wildland fire and prescribed fire operations will have their qualification records entered into and maintained annually in the Incident Qualification and Certification System (IQCS) and ROSS.

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Refresher courses (firefighter safety, basic aviation operations, etc) and other required annual training will be coordinated by qualified staff and held annually.

Readiness actions (in addition to those listed above) are described below.

- Fire caches and equipment shall be inspected and documented for completeness and serviceability on a pre-season and fire season basis.
- Ensure timely follow-up actions to preparedness inspections.
- PRNS will maintain supplies, materials, and equipment at the Fire Cache at Bear Valley Headquarters to meet normal fire-year requirements for a Type 6 engine. Minimum staffing during fire season includes 1-Duty Officer, 1-Engine Operators and 1-firefighter.

The following preparedness activity schedule will be followed annually as appropriate:

1. Year-round: NFDRS Weather Station (#042308) online, data entered into WIMS.
2. Annually - Local Preparedness Review.
3. May 1: Annual Operating Plan (AOP) between Marin County Fire Department will be updated and agreed to by all parties.
4. May 1– June 15: All fire line qualified permanent personnel will take the Work Capacity Test; seasonal personnel will be tested upon entering on duty.
5. May 1 – June 15: Red Cards will be signed by FMO and distributed to employees.
6. June 15 – 30: All engines and support equipment will be serviced and fire-ready; Step-Up Plan reviewed and updated.
7. May 15 – June 30: Training for all seasonal employees completed, including mandatory refresher for all carded employees.
8. May 1 – end of season: Roster of all fire qualified personnel maintained, with PPE/initial attack gear/Red pack ready for two-hour callout.
9. November 15: Fire Training and Experience Records will be entered in IQCS for permanent employees.
10. November 31: Equipment winterized, cache inventoried, post-season reviews and reports completed.
11. July 15: Annual Preparedness Review (RM-18 & *Interagency Standards for Fire and Fire and Fire Aviation Operations, Chapter 19*).

California Seasonal and Monthly Outlooks, prepared by the Northern California Geographical Area Predictive Services Unit will be analyzed as early as conditions warrant before and during fire season. Severity funding requests, if indicated from the Outlooks, should also be prepared and finalized in coordination with GGNRA. Submissions will move through agency fire channels to Fire Program Staff at the Regional Office. Refer to Interagency Standards for Fire and Fire Aviation Operations, Chapter 9 (NIFC 2006), and/or RM-18, Chapter 18 (NPS 2005b).

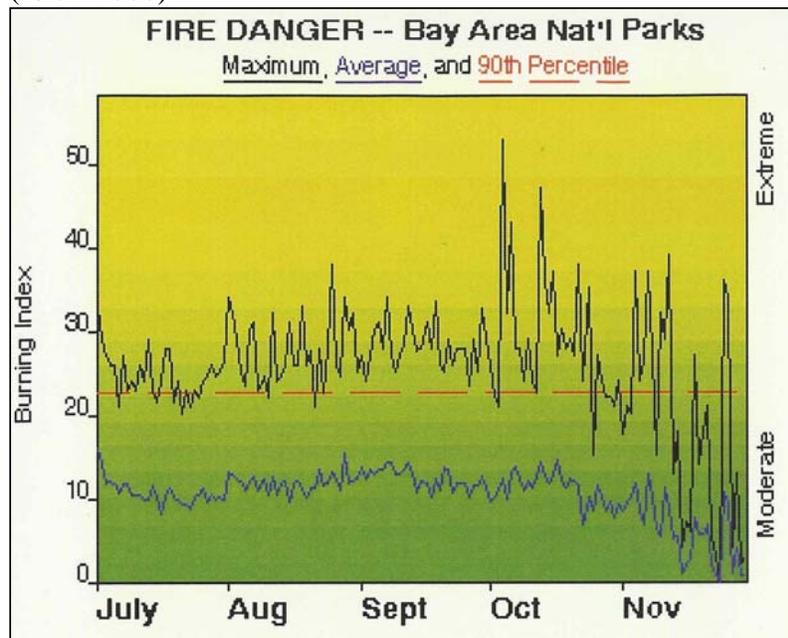
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3.3.2.3 Fire Weather and Fire Danger

Following the cessation of winter rains in mid-April, fuels dry rapidly and the light fuels of the annual grassland (2,000-7,000 lbs/acre) cure and live, dead and downed round wood material and duff in the understory of the Seashore's forest stands gradually lose moisture.

Fire season at Point Reyes begins in early June. At this time, high-pressure air masses frequently stagnate over the Great Basin. Strong foehn winds, referred to as Mono winds in central California, may develop if there is a low-pressure trough off the coast. These winds bring warm, dry air to Point Reyes and cause rapid drying of fuels. These episodes usually last 1-2 days and fire danger can be extreme. In typical years, a persistent coastal fog bank is formed by July 1,

FIGURE 5 -- MONTHLY BURNING INDEX LEVELS (1981-2000)



following the stabilization of the Pacific high over central California. From July through early September fog moves inland and back out to sea in a 3-4 day cycle in response to heating and cooling in California's Central Valley. Fine fuel moisture fluctuates in this cycle, while wood fuels and duff remain relatively wet. In mid-September the fog pattern changes and fuel moistures drop steadily. It is at this time that conditions contributing to Mono winds occur. The combination of prolonged drought, low relative humidity and a peak in fuel production often

causes fire danger to be high through September and October. In addition, almost one fifth of the area's annual lightning storms occur during this period (Martin and Sugnet, 1984).

In summary, the fire season at Point Reyes differs somewhat from most areas in the western United States. Bimodal peaks of fire danger occur in late spring and late summer/early fall. In most years, persistent fog keeps fire danger moderate in July and August when danger is highest in most of the western United States. The period from September 1 through October 31 can be considered the most critical time of fire danger for PRNS (see Figure 5). Figure 5 displays the FireFamily Plus Analysis for the FMP area indicating the periods when burning indices are at average, maximum and 90th percentile.

3.3.2.3.1 Weather Stations

PRNS accesses data from the Barnabe RAWS site located to the east of the Seashore above San Geronimo Valley. The station is located in western annual grassland with some coastal scrub. Indices from this station will generally over-predict fire behavior for PRNS. The station is cataloged in the Weather Information Management System (WIMS) as # 042308 (see Table 3,

Vicinity RAWs Stations) A second RAWs site, the Olema Valley RAWs, has been added to the Seashore but is in the process of being set up to transmit data to WIMS. Olema Valley RAWs site (#042303) is located at Bear Valley Park Headquarters.

Station Name	Station ID	MesoWest ID	Fuel Model	Location	Elevation	Owner
Olema Valley	042303	OVYC1	2	38.0425 122.7958	37 feet	NPS
Barnabe	042308	BBEC1	2	38.0281 122.7022	810 feet	NPS/Marin County
Woodacre	042309	WDAC1	2	37.9906 122.6447	1400 feet	Marin County

TABLE 4 -- RED FLAG WARNING MATRIX

Red Flag Guidance/Verification Matrix				
The matrix below assume 10-hour fuel moisture of less than 6%, annual grasses are cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.				
Relative Humidity	Sustained 20 foot Wind Speed (Note: the wind event should be expected to last at least 8 hours)			
	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Day MIN 29-42% Ngt MAX 61-80%				RED FLAG WARNING
Day MIN 19-28% Ngt MAX 46-60%			RED FLAG WARNING	RED FLAG WARNING
Day MIN 9-18% Ngt MAX 30-45%		RED FLAG WARNING	RED FLAG WARNING	RED FLAG WARNING
Day MIN < 9% Ngt MAX < 30%	RED FLAG WARNING	RED FLAG WARNING	RED FLAG WARNING	RED FLAG WARNING
To help verify Red Flag Warnings the links above will show you what RAWs sites have met the RFW criteria during the last 24 hours. After clicking on the Day MAX or Ngt MAX RH link <u>double check the times on the observations</u> . Both day and night observations will show up.				

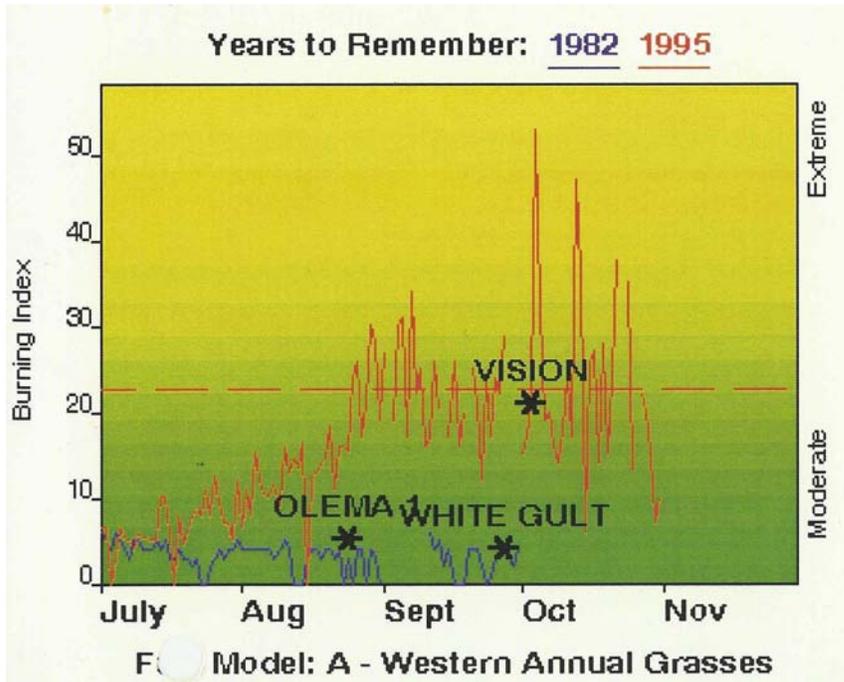
3.3.2.3.2 National Fire Danger Rating System (NFDRS)

NFDRS is a multiple index system developed to provide information about current and predicted fire danger conditions. Analysis used NFDRS Model A, Slope Class 2 (0-25 percent), perennial herbs, and Climate Class of 2 (semi-arid). Restriction thresholds for Park Visitor Activities are

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found in Appendix E, Section 4. The Northern California Coordination Center Predictive Services Group, in conjunction with the National Weather Service San Francisco Bay/Monterey Weather Forecasting Office, monitors, analyzes and predicts fire weather, fire danger and fire management resource impacts across the Bay Area and East Bay Hills.

FIGURE 6 -- BURNING INDEX LEVELS DURING PAST WILDFIRES



Red Flag Warnings are issued to warn of an impending or unusually severe fire weather event. As shown in Table 4, a warning is issued when the combination of conditions shown in the chart are occurring or expected within 24 hours.

Fire managers can use the NFDRS for computing daily and forecasted fire danger. Local thresholds documented on Fire Danger Pocket Cards that shout “Watch

Out” are: 20 foot wind speeds exceed 15 mph, Rh less than 25% and temperature over 80 degrees. The pocket card also uses the Burn Index (BI) of above the 90th percentile as a key indicator of increased fire activity. The graphic below from the Bay Area Parks Network Fire Danger Pocket Card shows the BI in relation to past major and minor incidents.

3.3.2.4 Step-Up Plan

The Step-Up Plan describes a series of escalating management responses which are intended to supplement normal wildland fire capabilities for short periods (i.e., normally one burn period). This policy-compliant plan is in table format and is located in Appendix E, Section 5.

3.3.2.5 Detection

Typically, most fires will be discovered and reported by local residences or members of the public using the Seashore for recreation. It is expected that most individuals wishing to report a fire would contact Marin County Fire Department at Point Reyes Fire Station in person or call Woodacre ECC through the 9-1-1 tie-in rather than notifying PRNS staff directly.

3.3.3 Initial Attack

Initial Attack is an aggressive suppression action consistent with firefighter and public safety and values to be protected.

All unplanned wildland fires must receive aggressive initial attack action (IA) by the nearest available suppression forces. Generally, first on scene would be a Marin County Fire Department engine company. NPS personnel will respond after notifying the Park Dispatch and Woodacre ECC. Woodacre ECC will be the ordering point for all initial attack fires within PRNS. As safety allows, initial attack Incident Commanders will assess the complexity of the fire to determine their capacities to manage the incident. If the initial attack Incident Commander (IC) is unable to initiate action due to the management complexity of the incident, forces will be staged in a safe location or modified tactics will be used until a fully qualified Type 3 Incident Commander arrives on scene.

If a federal Type 3 IC is not immediately available to take over the incident, a Battalion Chief or higher from the Marin County Fire Department may assume that position with the FMO and Superintendent's concurrence. If a fire continues into a second operational period, the ordering point will shift from the Woodacre ECC to Mendocino National Forest (NF) ECC.

Marin County Fire Department and nearby West Marin fire agencies have been authorized by an MOU to undertake initial attack actions on PRNS lands. This allows cooperating West Marin fire agencies to assume authority of initial attack actions until a qualified federal Incident Commander and personnel arrive to assume Unified Command of the incident.

3.3.3.1 Initial Attack Priorities and Closest Resources

In the unusual event that there are multiple simultaneous fires within PRNS, a fire start which has the potential to threaten life or property would have priority for suppression actions.

PRNS will follow the Closest Forces Concept for initial attack actions on PRNS lands. Employing the closest forces concept means that regardless of the protecting agency, the fire suppression resource that has the shortest timeframe to be the first to reach the incident location will be the one dispatched. This concept is standard operating procedure for all cooperating fire protection agencies in West Marin and is included as part of cooperative agreements with our local fire agencies.

3.3.3.2 Appropriate Management Response

The AMR will be based on objectives, relative risk, external influences and management boundary defensibility and may include one or some combinations of the following:

- Initial Attack. A planned response to a wildfire given the wildfire's potential fire behavior. The objective of initial attack is to stop the spread of the fire and put it out at least cost. This is an action where an initial response is taken to suppress wildfires consistent with firefighter and public safety and values to be protected.
- Wildfire suppression with multiple strategies. This action categorizes wildfires where a combination of tactics such as direct attack, indirect attack and confinement by natural barriers are used to accomplish protection objectives as directed in the Wildland Fire Situation Analysis (WFSAs).

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- Control and extinguishment. These actions are taken on a wildfire when the selected WFSAs alternative indicates a control strategy. Sufficient resources are assigned so that control of the fire can be achieved with a minimum of acres burned.

3.3.3.3 Fire Response Time Frames

The PRNS road system is in relatively good condition with most areas in the park accessible by vehicle and thus, response times to fires by engines would be relatively short. Those fires which require a walk-in response such as fires in FMUs in the Philip Burton Wilderness will have a delayed arrival time. However those arrival times are still considerably short when compared to other areas. Aerial delivery of firefighters by helicopter is an alternative to walk-in if speed to an incident is necessary. If fire response personnel feel they cannot walk to a fire by nightfall, firefighters can be delivered by helicopter and additional personnel can walk-in the following morning to reinforce those that staffed the fire the previous night.

CDF Copter 104 stationed at Boggs Mountain is the closest available helicopter capable of aerially delivering firefighters on the ground to staff an incident in remote areas where walk-in times are long. The copter would be ordered through Woodacre ECC as a CDF supplied resource. Marin County Fire Department and local West Marin fire departments have wildland fire resources available year around. (CDF Copter 104 is available early June through late November).

3.3.3.4 Restrictions and Special Concerns

As a unit of the NPS, there are sensitive resources requiring special protection throughout PRNS. During the NEPA process which preceded the preparation of this FMP, NPS staff and the public considered the potential impacts to the park and general area resources from wildland fire, fire suppression actions and more routine fire management projects. After reviewing the level of adverse and beneficial effects that could result from implementation of the FMP, staff, regulatory agencies and the public contributed to the development of a series of mitigation measures to be applied to FMP actions in order to minimize or avoid the predicted potential effects. These mitigation measures were adopted by the NPS through the signature of the Record of Decision for the FMP EIS by the Pacific West Region Deputy Director. It is therefore mandatory that appropriate mitigation measures from the list attached in Appendix D be adhered to when implementing FMP actions.

Mitigation measure requires that each FMP action conforms to the agreements and commitments made through the FMP NEPA process. To ensure that this occurs:

“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.”

The interdisciplinary team will assign mitigation measures to the proposed FMP actions. Mitigation measures may include those in Appendix D as well as project specific measures

developed to protect specific conditions of a project site. All FMP actions and project review materials will be signed by the Superintendent prior to implementation.

3.3.4 Extended Attack and Large Fire Suppression

The Incident Command System (ICS) provides for a management/organizational structure on incidents that evolve in complexity or increase in size, whether within a few hours or over several days. While the criteria for incident complexity vary by local conditions, a fire that has escaped initial attack is considered in extended attack when it:

1. Has not been contained by the initial attack resources dispatched to the fire.
2. Will not have been contained within management objectives established for that unit or area.
3. Has not been contained within the first operational period and there is no estimate of confinement or control.

When complexity levels exceed initial attack capabilities, the appropriate ICS positions should be added commensurate with the complexity of the incident. The Incident Complexity Analysis and the WFSA assist the Superintendent in determining the appropriate management structure to provide for safe and efficient fire suppression operations. When an Incident Management Team is ordered to manage a fire, a Superintendent In-Briefing Package and Delegation of Authority as well as a draft WFSA will be prepared and presented to the team upon arrival at the Seashore. A unified command structure will be a requirement in all multi-jurisdictional incidents.

An Incident Complexity Analysis (NIFC 2006, Chapter 10, Appendix 10-4 or 10-5) will be used as a guide for IC's, fire managers and Agency Administrators to evaluate emerging fires in order to determine the level of management organization required to meet agency objectives. This will assist in identifying resource, safety, and strategic issues that will require mitigation.

The WFSA is a decision making process in which the Superintendent or representative describes the situation, compares multiple strategic wildland fire management alternatives, establishes objectives and constraints for the management of the fire, selects the preferred alternative, and documents the decision. The format and level of detail required depends on the specific incident and its complexity. When a wildland fire cannot be controlled during the initial suppression response action or a prescribed fire has exceeded its parameters and been declared both unsuccessful and a wildfire, a WFSA will be initiated and a new strategy selected *Interagency Standards for Fire and Fire Aviation Operations*, Chapter 10-E (NIFC 2006).

Extended attack occurs when a fire has not been contained or controlled by initial attack forces and continues into the next operational period. Qualified IC's from Marin County Fire Department may fill this role if a federal IC is not available or until federal oversight can be provided. A transition to a higher level incident management team may be necessary as the incident grows in complexity. A Delegation of Authority will be prepared for all incidents involving federal lands which transition to a Federal Type 1 or 2 Incident Management Team. Mendocino NF ECC will be the ordering point for all Type 1 or Type 2 complexity fires.

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3.3.4.1 The Wildland Fire Situation Analysis (WFSA) Development

The WFSA is a decision making process in which the Superintendent (or designee) describes the situation, compares strategy alternatives, evaluates expected effects of each alternative, establishes objectives and management constraints, selects the preferred alternative, and documents the decision. It serves as a contingency to undesirable outcomes. If the selected alternative does not accomplish objectives, the WFSA can be amended.

The Superintendent or designee and the FMO and/or Incident Commander prepare the WFSA. Required elements to be addressed in a WFSA are:

- Current Situation
- Evaluation Criteria
- Alternatives
- Analysis of Effects
- Record of Decision
- Review/Evaluation/Update
- Probability of Success
- Consequences of Failure

TABLE 5 -- WILDLAND FIRE SITUATION ANALYSIS

SPECIFIC SITUATION	WFSA CONSIDERATIONS
Human-caused fire =(unwanted fire)	
Fire exceeds extended suppression action =(unwanted fire)	
Fire Exceeds prescribed burn plan in all FMU =(unwanted fire)	
Fire projected to leave federal lands, and the adjoining jurisdiction(s) will not/cannot accept management of the fire	

3.3.4.2 Complexity Decision Process for Incident Management Transition.

PRNS has developed a unit specific Incident Complexity Analysis for Type 4 and 5 fires and criteria for transitioning to a Type 3 incident command structure. See further information in Section 3.3.4, Extended Attack, and Appendix E, Section 13, PRNS Incident Complexity Analysis for Type 5, Type 4 and Transition to Type 3 Incidents.

3.3.4.3 Delegation of Authority for IC

The Delegation of Authority for IC form permits the Superintendent to delegate the responsibility for all incident suppression efforts to another qualified individual. The newly

delegated IC may be from another park unit, another federal agency or a state or local agency. The person has to be qualified for the complexity level of the incident as determined by the previous IC. See further information in Section 3.3.4, Extended Attack, and Appendix E, Section 12, Example of Delegation of Authority Form.

3.3.5 Rehabilitation Guidelines and Procedures

While many wildfires cause only limited damage to the land and pose few threats to fish, wildlife and people downstream, some fires create conditions that require proactive efforts to prevent further damage from occurring. Loss of vegetation exposes soil to erosion; runoff may increase and cause flooding, sediments may move downstream and damage houses or fill reservoirs, and put endangered species and community water supplies at risk. The Burned Area Emergency Response (BAER) program addresses these situations with the goal of protecting life, property, water quality, and deteriorated ecosystems from further damage after the fire is out.

There are four complementary parts to the BAER Program:

1. Suppression Activity Damage are repairs necessitated by damage resulting from the suppression activity rather than a result of the wildfire. The repairs are planned and implemented primarily by the incident command organization prior to demobilization. Suppression Activity Damage repairs are charged to the incident account.
2. Emergency stabilization (ES) actions are set out in the Burned Area Emergency Response Plan completed within 7 days of the containment of the fire by an interdisciplinary Burned Area Emergency Response Team. The Team surveys the burn area, identifies where repairs are needed and how the repair will be conducted. The goal of ES is to minimize threats to life and property or to stabilize and prevent unacceptable degradation to natural and cultural resources. ES repairs are to be implemented within one year of containment of the wildfire. ES is part of the Emergency Operations appropriation
3. Burned Area Rehabilitation (BAR) requires the preparation of a Rehabilitation Plan identifying projects that are in need of repair or improvement on a landscape scale resulting from direct damage by the wildfire. The goal of the rehabilitation plan is to rehabilitate and establish healthy, stable ecosystems in the burn area, prioritizing relative values to be protected, commensurate with rehabilitation costs. The plan is developed with public participation and describes projects and follow-up actions occurring up to three years after containment. BAR is a separate non-emergency appropriation.
4. Long-term (>3 years) Restoration are those rehabilitation actions occurring beyond the initial three years or after the repair or replacement of major facilities damaged by the fire.

Interior Department Guidance on the BAER program is found in Departmental Manual 620, Chapter 3. An Interagency Burned Area Emergency Response Handbook, Version 4.0 can be found at <http://fire.r9.fws.gov/ifcc/esr/Policy/es%20handbook%202-7-06.pdf>. The Burned Area Rehabilitation Handbook is currently in Draft form and circulating for review. Specific best management practices for implementing ES and BAR actions at PRNS should consider the following recommendations:

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- Burn area seeding may be considered, depending on specific local impacts. In 2005, the PRNS range management program began a seed increase program to grow out local, native seed for ranch projects. This seed may be available for rehabilitation; contact the PRNS Range Management Specialist. All seed applications must be approved by the PRNS Resource Advisor prior to purchase and application.
- To the greatest extent possible, waterbars shall be hand-placed. No mechanical equipment will be used in wilderness areas unless such action is in response to an immediate threat to watershed stability.
- A post-burn watershed assessment will be made for fires affecting sensitive watersheds.
- Rehabilitation actions may require consultation with the FWS and the NMFS. See Endangered Species Act (ESA) Section 7 Handbook, Chapter 8 for further guidance. Consultation shall be coordinated through the BAER Team in conjunction with local PRNS staff. If a BAER Team is not assigned to the incident, an ESA Coordinator will be assigned to this duty.
- NHPA compliance may be required prior to implementation of ES or BAR projects. A determination should be made as to whether the actions meet the requirements for NHPA compliance under emergency conditions described in the NHPA regulations, provision 800.12.
- Emergency stabilization funds can be used to control nonnative invasive plants within burned areas when it can be documented that the invasive may spread quickly and can out-compete emergency stabilization relying on seedings or reestablishment of native vegetation. Options for treatment may include chemical, biological or mechanical methods to control aggressive invasives, post-fire detection and monitoring which may be funded for up to one year following containment of the fire.
- If herbicides are prescribed for emergency stabilization actions, they will be applied according to strict specifications using detailed Material Safety Data Sheets. Any application requires the approval of the park's Integrated Pest Manager and the Washington Office coordinator for herbicide application. No applications would occur in riparian or wetland areas.
- Exclusion of livestock is critical for the recovery of burned vegetation or establishment and maintenance of new seedings. Limiting livestock and horse grazing will be considered to meet stabilization objectives. See Interagency Burned Area Emergency Response Guidebook, Version 4.0, (2006) for additional information.



- Monitoring intensity should be commensurate with the complexity of the emergency stabilization treatments, level of concern or controversy associated with the emergency stabilization treatment. See Appendix F, Wildland and Prescribed Fire Monitoring and Research Plan. Monitoring of rehabilitation treatments will be coordinated with the PRNS Fire Ecologist and Bay Area Network Fire Effects Monitoring Program.

3.3.6 Records and Reports

Quality, long-term documentation records for all actions taken on a wildland fire is critical. All decision documents, monitoring data, supporting documentation, and operational documents (Incident Action Plans, maps, unit logs, etc.) will be assembled and organized during and following a wildland fire management action.

Specifically, the fire report and file should contain:

- Any written policies, guidelines or authority statements signed by the Superintendent.
- Copy of the NPS WFSA.
- ICS-209's (Incident Status Report) for fires over 100 acres in Timber or over 300 acres in Grass.
- Copies of purchase orders, personnel request orders, etc. associated with the fire.
- All situation maps.
- Personnel rosters.
- Press releases, clippings, videotapes.
- Accident reports.
- All monitoring data, spot weather forecasts, Internet printouts.
- Documentation of financial charges made against the assigned account number.
- Narratives and unit logs.
- Burned Area Rehabilitation plan.
- DI-1202 Fire Report (completed within 10 working days after fire has been declared out).

It is particularly important to include IC narratives (see above) regarding effectiveness of planned strategies, trigger points, holding actions, and other pertinent factors encountered during the fire.

3.4 PRESCRIBED FIRE

For purposes of the Plan and as defined by federal Wildland Fire Management Policy, prescribed fire is any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan (burn plan) must exist prior to ignition. This plan contains a prescription defining goals, weather and fire behavior parameters, monitoring, and treatment methods used to achieve project specific objectives, while prioritizing firefighter and public safety. All Prescribed fire projects also require an approved Smoke Management filed with BAAQMD.

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For the foreseeable future, the prescribed fire program under the FMP will be aimed at restoring fire as a natural ecological process and reducing hazard fuels concentrations (see below). Many areas subject to first entry treatment may require subsequent treatment(s) in order to achieve hazard fuels reduction objectives, rather than attempting to meet all objectives on the first treatment and risk costly escape and/or unacceptable resource damage.



The range of possible beneficial outcomes of prescribed burning projects includes an increase in firefighter and public safety, protection of real property and natural and cultural resources, reduced risk of high intensity wildland fires, avoidance of savings property damage costs and the restoration of

fire to fire-adapted landscapes.

The late fall fire season is one of the primary constraints limiting the number of days available in the project area during which prescribed burns can be conducted each year. Other constraining factors are air quality and disruption of wildlife breeding periods.

3.4.1 Annual Planning and Documentation for Prescribed Burning

Prescribed fire project prioritization for the Seashore is determined annually in early winter. This includes projects for the following year as well as an updating to the five year plan. These are based on actual accomplished projects from the current and previous years, and target goals in the FMP.

Priorities are initially established based on the Fuel Ranking and Hazard maps produced by Marin County FD. However, these rankings strictly look at defending homes and property from wildfire; they do not include Resource and Vegetation Management goals or strategic fuel break locations based on government ownership boundaries. Sites for prescribed burning are proposed based on the risk factors, fuel conditions and resource management issues identified in the PRNS FMP for each. Based on the relative strength of the justification, projects are further considered for potential effectiveness in addressing critical needs and feasibility of implementation (i.e., under-story and ground fuel thinning along a major roadway to reduce the potential for fire ignitions or create a strategic holding position; or burning along a ridge line to reduce fire behavior in the event of a wildfire adjacent to a community.) Each FMU has unique goals and objectives, and therefore the creation and prioritization of projects within and between FMUs is

not readily quantifiable and must be based on the reasoned expertise of fire staff. All projects also follow the guidelines established by the California Fire Alliance and their requirement for the creation of CWPPs. Though we are not bound by the strategies in the CWPP but we do seriously consider, coordinate, cooperate, and plan with our local cooperators to ensure efficiency, and that our overall goals and strategies are in unison.

Another reality facing fuels and prescribed fire management decisions is the lack of funding. This reality must also be included in project decision criteria. Some of the highest ranked priorities based on fuel ranking and hazard maps would also be the most costly based on their proximity to private property. These projects require smaller acres to minimize public impacts and require more resources to ensure protection of property. The likelihood of these projects being funded by the regional office is diminished by the associated high cost per acre.

Project selection and prioritization involve a conglomerate of multi-divisional staff members including but not limited to: Vegetation and Range Management, Fire Ecologists, Fire Suppression Operations, Environmental Compliance Specialist, and Interpretation and Education.

All these disciplines gather and are able to bring new ideas to the table and to discuss and provide input for projects that are developed by the FMO office.

New projects for resource enhancement, vegetation and range management, and urban interface protection are presented to the group. These projects are prioritized base on the likelihood of funding, difficulty of operations, actual benefits from project completion, and the safety of the public and park staff. An additional key ranking criteria is how future projects relate to previous ones. Projects that are a continuation of work begun on long-term fuel reduction zones carry a high ranking. This ensures that previous efforts are maximized.

There is no set formula for determining and prioritizing projects. The Park staff needs to remain very flexible to address and react to changing management goals and budget realities. All projects that are approved have the complete involvement and support from all management disciplines within the park.

Requirements set forth in RM-18, Chapter 10, Section 6, Prescribed Fire, will be followed.

Prepare annual program priority list based on projects listed in the multi-year implementation plan. Prepare map of archaeological/biological survey before January 15 for anticipated projects to be conducted during the following fiscal year. The list identifies projects in priority order. This list is submitted through NFORS database by March 10. Regional fire staff informs PRNS FMO of the final list of selected projects by mid-summer via Superintendent Verification Sheet.

Once verified, the annual FMP review can be conducted. The finalized list of projects is presented at the beginning of the fiscal year to the Division Chief and Superintendent for review and comment. At that point, it is appropriate to conduct NEPA project review on the finalized list. As FPA comes on-line, the annual FMP review may be tied to the FPA schedule changing the annual review period to each January.

The following information should be included in project-level plans involving prescribed fire:

- Develop project objectives and site-specific treatment methods to accomplish objectives into a comprehensive project description for the NEPA assessment.

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- Input project information into the Planning, Environment and Public Comment (PEPC) database system, implemented agency-wide for all levels of NEPA review. Burn plans for areas that were sufficiently assessed through the FMP FEIS will be reviewed by the IDT and the conformance with the FEIS documented through a Memo to the File of the FEIS. The project impacts and mitigation measures must conform to the formal consultation conducted as part of the FMP. If a proposed project does not conform, additional consultation may be warranted. Upon completion of annual review process, any additional written documentation will be filed as part of the FMP EIS NEPA process as a Memo to File.
- If, due to proposed burn location, sensitive resources to be affected or potential burn intensity, a proposed prescribed fire is such that it was not anticipated in the FEIS, the burn will require a separate NEPA review and perhaps additional ESA or NHPA consultation. NEPA conformance for these projects will be conducted per D.O.-12, RM-12 and PRNS SOP-03. Conformance would be achieved by an EIS or EA if there is potential for significant adverse effect or exceptional circumstances; projects without potential for significant adverse effect may meet the requirements for a categorical exclusion for prescribed burning (categorical exclusion G.1).
- Following mitigating actions, an original copy of the burn plan will be routed with attached clearances by the FMO/Burn Boss.

Other actions which should be considered by the FMO or assigned Burn Boss in implementing a prescribed fire are the following:

- Reconnaissance (GPS) and burn unit layout and compliance (involve resources staff as needed to identify values to be protected, etc.).
- On-site documentation, fire effects monitoring, Job Hazard Analysis (JHA) elements, logistics, and identified mitigation work; complete complexity rating.
- Analyze potential ignition patterns with prescriptions, weather, fuels, and topography.
- Coordinate all burns w/grazing permit holders, cooperators, and media.
- Smoke management considerations, monitoring, modeling, and consultation with the Bay Area Air Quality Management District.
- Pre-burn notifications.
- Briefings, logistics, contingencies.
- Go/No-Go decision process.
- Organization, implementation plans.
- Follow-up coordination, evaluations, cost summaries, record keeping, reporting requirements (a DI-1202 will be completed for each burn and submitted via input through relevant agency channels within 10 working days after declared out date).
- Submit data for GIS addition to prescribed fire thematic map.

3.4.1.1 Annual Review

The five-year fuels treatment plan will be updated annually as target units are burned and fuel reduction projects completed. [The current Five Year Fuels Treatment Plan is Appendix E, Part 18 to this FMP.] Fire Management staff at the PWR office have established a process for the annual review of the five year fuels treatment plan *vis-à-vis* ensuring that actions conform to the findings and commitments agreed to in the NEPA process for the FMP. In addition to NEPA conformance, the annual review process provides a framework for ensuring continued conformance with the requirements of the ESA consultations and NHPA programmatic mitigation measures. The review of the five year fuels treatment plan will be undertaken by a multi-disciplinary team representing the range of expertise of the fire staff.

The specific process to follow for the annual review is found in Section 4.6.1.

3.4.1.2 Long-Term Strategy

The long-term strategy for the prescribed fire program is to employ prescribed fire as a tool to reduce hazardous fuel buildups and restoring fire as a key ecosystem process, while ensuring public safety and protection of property or resource values. Consideration should be made such that prescribed fire treatments should be implemented in a manner that simulates the natural ecosystem function of fire as determined through fire ecology and historic research to restore fire as a keystone natural process.

Goals and Objectives for the PRNS FMP were developed during the initial stages of the FMP NEPA process. These goals and objectives, along with the principles of federal wildland fire management policy and NPS fire management guidelines, constitute the long-term strategy of the FMP. Goals and objectives are found in FMP Section 2.1. Federal and agency fire management policies are summarized in FMP Chapter 1.

3.4.1.3 Personnel

All prescribed fire personnel assigned to prescribed fires will meet all national requirements for training and experience in NWCG 310-1. The Burn Boss assigned to prescribed fires will be certified according to complexity and fuel type of the treatment unit.

3.4.1.4 Fire Behavior and Fire Effects Monitoring

Before the burn, fuels characteristics such as live and dead fuel moisture contents will be established to check prescription parameters and fire behavior calculations. Prior to ignition, a Spot Weather Forecast will be submitted and the results analyzed by the Fire Effects Monitor and the Burn Boss as a factor of the Go/No-Go decision making process. During ignition, on a timetable agreed upon by the Fire Effects Monitor and the Burn Boss, but not to exceed one hour, on-site weather, smoke, and fire behavior observations will be recorded on forms found in the Western Region Fire Monitoring Handbook.

The Bay Area Cluster Fire Effects Monitoring Crew has established plots in a representative number of prescribed burn units. After the burns, on a schedule established by monitoring protocols, the crew will record post-fire data and submit annual reports to the Fire Ecologist and resources division for evaluation of burn effectiveness.

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3.4.1.5 Reporting and Documentation

For NPS, all prescribed fires will be documented with the following information, stored in an individual fire folder and maintained in the Seashore's files:

- Original signed Prescribed Burn Plan.
- Checklist of pre-Burn prescribed fire activities.
- All reviewer comments.
- All maps.
- Notification checklist.
- Permits such as burn, smoke, etc.
- Monitoring data.
- Weather forecasts.
- Superintendent Go/No-Go pre-ignition approval.
- Operational Go/No-Go checklist.
- Incident Action Plans.
- Unit logs, Daily Validation or other unit leader documentation.
- Press releases, public comments, and complaints.
- Smoke dispersal information.
- Post fire analysis.
- Fire Occurrence Report (DI-1202).
- NFPORS entry.

3.4.1.6 Prescribed Burn Plan Elements

For NPS, each plan shall include at the minimum, the elements listed below. An example of the outline of a Prescribed Fire Plan is in Appendix E, Section 16 of this FMP.

- Signature page.
- Executive summary.
- Description of prescribed fire area.
- Goals and objectives.
- Risk management.
- Project complexity.
- Organization.

- Cost.
- Scheduling.
- Pre-burn considerations.
- Prescription.
- Ignition and holding actions.
- Wildland fire transition plan.
- Protection of sensitive features.
- Public and firefighter safety.
- Smoke management.
- Interagency coordination and public information.
- Monitoring.
- Post-fire rehabilitation.
- Post-fire reports.
- Appendices.

3.4.2 Exceeding Existing Prescribed Burn Plan

If prescription parameters are exceeded during project execution, the Burn Boss will terminate ignition operations at a safe and appropriate location based on fire behavior, fuels, topography and weather conditions. If the project area comes back into prescription based on current and forecasted weather, ignition operations may continue. If not, the project area is put into a mop-up or patrol status. Holding actions will maintain control of the fire until a decision to continue, postpone or extinguish the prescribed fire is made and the Agency Administrator or their designee is notified. This decision making process will be articulated in the prescribed burn plan.

If the prescribed fire exceeds project boundaries and/or slopovers and spot fires are not contained within one burning period, suppression actions will be taken and the entire prescribed fire project will be declared a wildfire. Once declared a wildfire, suppression is the only option. A wildland fire cannot be converted back to a prescribed fire.

If at any time the prescribed fire poses a threat to life, property, or high value resources, beyond those mitigated in the plan, suppression actions will be taken and the fire will be declared a wildland fire.

Once the prescribed fire is declared a wildland fire, all subsequent actions (i.e. operational needs, notification, strategies, resource orders, etc.) will be defined under a wildland fire transition plan, which is part of the prescribed fire plan until an initial Wildland Fire Situation Analysis (WFSA) is completed.

3.4.3 Air Quality and Smoke Management

3.4.3.1 Regulatory Compliance and the Approval Process

Visibility and clean air are primary natural resource values in all NPS units. The protection of these resources must be given full consideration in fire management planning and operations.

PRNS is a Class I air shed under the Clean Air Act. Class I areas are places where pollution prevention is given a special priority; they include national parks established before 1977 with a total area greater than 6,000 acres. An air quality standard and degree of visibility were established for Class I areas like PRNS to serve as baseline barometers to track changes in emission levels over the ensuing years since 1977 by changes in visibility and emission levels. The GGNRA lands managed by PRNS are designated as a Class II area, where some incremental increase in emission levels is allowed based on the proximity of a population center.

The Federal Government has ceded responsibility and authority to establish air quality standards and regulations to the states (RM 18-Chapter 14). Therefore, PRNS complies with the Clean Air Act by adhering to the requirements of the California Air Resources Board and the Bay Area Air Quality Management District (BAQMD).

The California Air Resources Board (CARB) is responsible for disseminating regulations about air quality, including state ambient air quality standards and area designation. Title 17 of the California Code of Regulations, entitled Smoke Management Guidelines for Agricultural and Prescribed Burning, provides direction to air pollution control and air quality management districts for the regulation and control of agricultural burning and prescribed burning. These guidelines are intended to allow the use of prescribed burning as a tool, while minimizing smoke impacts on the public.

The Bay Area Air Quality Management District (BAAQMD) is the air quality management district for Seashore lands and has primary responsibility for control of air pollution from prescribed burning. BAAQMD has procedures that must be followed prior to implementation of a prescribed burn plan.

Prescribed burn plans must include a Smoke Management Plan that is to be submitted to BAAQMD a minimum 30 days in advance of the planned burn date. The Smoke Management Plan must include primary information about the proposed burn including smoke emission data. After reviewing and approving the Smoke Management Plan, BAAQMD issues a written approval to conduct the burn with specific conditions. The BAAQMD Application Form for Pile Burning is included as Appendix E, Part 15, to this FMP.

All fire management-ignited fires must be conducted on an “allowable burn day” unless the district has granted a variance in advance. Notice of an allowable burn day is posted by BAAQMD each afternoon for the burns planned for the following day

BAAQMD makes available a 96, 72, 48, and 24 hour burn forecast service to better assist fire agencies in determining their proposed burns dates. Final approval to burn is obtained by contacting BAAQMD the morning on the planned burn day. BAAQMD verifies the total acreage burning allocations in the district and if the fire agency’s acres and/or tonnage to be burned that day would not exceed the total allocation for the area, final approval is granted.

Following the burn, the Fuels Management Specialist must submit information on the fuel types and quantities or acres burned.

3.4.3.2 Regional Air Quality Considerations for Prescribed Burning

The air pollution potential in the region is moderated by the strong westerly winds most of the year. Pollutants are comparatively more concentrated near the ground during colder weather or after sunset. The marine dominated cool spring and summer conditions feature limited vertical mixing, but the cool moist conditions are not conducive to fire generation or propagation.

The frequent occurrence of temperature inversions over the project area and its surroundings limits the air mixing height and, consequently, could concentrate air pollution levels near the ground.

Atmospheric stability and mixing heights are considerations for determining pollutant dispersion. In general, the less stable an atmosphere, the greater the turbulence, resulting in more mixing and better dispersion. Good ventilation results from deep vertical mixing and at least moderate wind speeds within the mixing layer.

Mixing heights generally increase as the air temperatures increase, so that more dilution occurs during hot weather or the heat of the day. Improved vertical mixing typically accompanies the warm easterly fall winds that lead to the most significant fire threats in the project area.

3.5 NON-FIRE TREATMENT APPLICATIONS

PRNS uses two primary non-fire treatments to achieve FMP objectives: mechanical treatments and herbicidal treatment. Mechanical treatments allow fire managers to produce a desired change in vegetation on the ground based on values to be protected and fuel characteristics without the hazards associated with applying fire. The defensible space zone created around a structure is tactically located on the landscape to increase the effectiveness of adjoining fuel breaks, prescribed burn control lines or to help alter future fire behavior during a wildfire. Vegetation removed is chipped, piled to be burned or moved to another area for reuse.

Mechanical treatment may involve the use of the following equipment: chainsaws, chippers, mowers, weed whackers, and heavy equipment such as bulldozers, front loaders or haul trucks. Based on the type of vegetation to be treated, some projects will require the use of approved herbicides to ensure that plants do not re-sprout. The most commonly treated plants are eucalyptus, acacia, cotoneaster and broom. Herbicides are typically spot applied using backpack pumps. Grazing is also a tool of non-fire treatment that may be used under special circumstances.

Defensible space around buildings within the park is accomplished annually (with funding permitting). All efforts are made to conform to the California Fire Marshal's code pertaining to defensible space.

PRNS will follow RM-18 and the requirements to prepare a Hazard Fuels Project Plan that includes specified elements for all mechanical treatments and the *Interagency Standards for Fire and Fire Aviation Operations*, Chapter 6. Prescribed fire follow-up treatments may or may not be employed.

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Fuel break construction should be identified on an appropriate Geographic Information System (GIS)-compatible project location map (exact locations using GPS).

Fuel break planning will consider the following guidelines (see also mitigation measures below):

- Canopy thinned and feathered (or gradually opened) toward the area being defended, with spacing necessary to prevent crown fire and/or “wind tunnel” effect.
- Retaining a reasonable level of surface forbs and other plants to discourage exotic invasion.
- Fuel-break width is dependent on fuels conditions and other considerations.
- Photo-points installed to monitor vegetative recovery, exotic invasion, etc. Additional monitoring will be carried out as necessary.
- Levels of vegetation reduction will vary for each project based on the vegetation type, fuel loading levels, and surrounding vegetation types.
- All burn preparations involving pre-treatment with mechanical techniques will be reviewed through the park’s project review process and described in the burn plan. This may include but is not limited to:
 1. Snag felling, bucking in and around the treatment perimeter.
 2. Reducing tree densities along the treatment perimeter.
 3. Pruning individual trees and brush along the treatment perimeter.
 4. Bucking and removal of logs near the control line only (through bucking into short lengths, piling and burning on site).
- Defensible space around buildings within the park is accomplished annually (with funding permitting). All efforts are made to conform to the State Fire Code requirements.

High priority non-fire hazard fuel treatments will be sited strategically with the objective of meeting the goals and objectives of this Fire Management Plan. Mechanical fuel reduction projects could include the following:

1. Creation of Defensible Space Surrounding Park Structures. Over 75 structures in PRNS have either one or a combination of values as historic structures, administrative buildings or residences. In a 1996 survey, these structures were identified as needing defensible space clearance. Vegetation around these structures will be reduced to provide the minimum 100-foot radius of defensible space now recommended by the California Fire Code. If the predominant fuel to be cleared around a structure is grass, then the remaining herbaceous cover after treatment will be either low grass or a patchy continuity of taller grasses. Fuel reduction will be accomplished by the Bay Area Network Hazard Fuels Reduction Crew in cooperation/collaboration with residents and Division of Facilities Maintenance personnel.



2. Maintenance of Required Roadside Fuel Reduction and Overhead Roadway Clearance. As recommended by the State Fire Code, fuels will be reduced within a ten-foot wide strip along all fire and emergency ingress/egress roads. Not all trees will be removed but trees will be limbed up to 10 feet above ground level. Overhanging

limbs lower than 14 feet above the roadway will be trimmed back to provide safe clearance for emergency vehicles. It will also allow defensible space if the road is used for firing operation in the event of a wildfire. This work will be completed by the Bay Area Network Hazard Fuels Reduction Crew.

3. Creation of Shaded Fuel Breaks in Areas of the Park Not Accessible by Road. Shaded fuel breaks will be constructed in areas along the park boundary not accessible by road in order to reduce hazardous fuels and slow the progression of a wildland fire. A shaded fuel break involves removing dead and down fuels, limbing trees and removing selected shrubs with minimal ground disturbance. These semi-cleared areas will be sited to take advantage of topography and naturally occurring areas of low fuels and may not necessarily be adjacent to structures. Modeling completed as part of the Marin County Fire Department's County-wide Fire Plan (2002) (and used in the PRNS FMP FEIS) and fuel breaks later included in the 2006 Marin County Community Wildfire Protection Plan are used to develop the shaded fuel breaks for PRNS.

In areas that may have a high occurrence of species of special concern, shaded fuel break treatments need to take into account the environmental considerations and place limitations on the recommended methods to protect these specimens yet remove the targeted dead fuel. While many of these populations have been located, it is unlikely that all populations within PRNS have been identified. Therefore mechanical fuel reduction and prescribed burning should focus on pruning or thinning to reduce the overall fuel volume rather than removing the entire plant.

4. Whole Tree Removal of Eucalyptus to Reduce Hazardous Fuels and Contain the Spread of Non-Native Trees on NPS Lands. Thinning small diameter eucalyptus trees will rely on fuel reduction projects completed by the Bay Area Network Hazard Fuels Reduction Crew. Projects will consist of felling with subsequent and immediate chemical stump

CHAPTER 3 – FIRE MANAGEMENT PROGRAM COMPONENTS

treatment to prevent resprouting. Selective thinning of small diameter eucalyptus reduces the ground fuel loading and ladder fuels. Reducing the loading of standing fuels allows for an aggressive initial attack and decreases the resistance to control. Locations identified in the PRNS FMP EIS for these projects include stands along Highway One from the Hagmaier's Ranch House to the Bolinas-Shoreline Highway intersection; areas along Mesa Road (Bolinás) and the Palomarin Trailhead area; Bear Valley Headquarters-Kule Loklo-Morgan Horse Ranch; Coast Guard area of the North District. Where feasible and appropriate, large diameter whole-tree removal of eucalyptus may be warranted to remove the parent tree seed source. The cost of such projects is extremely expensive and may be cost prohibitive. However every effort should be made to remove the seed tree overstory if eucalyptus trees are to be contained.

Treatment methods in eucalyptus forests should emphasize removal of leaf litter, dead materials, fuel ladders, stand density reduction, as well as follow-up treatment to ensure trees are monitored to eliminate stump sprouts. Hand labor, “jackpot” burning, mechanical cutting and chemical follow-up treatment of stumps are preferred treatments. In stands where the potential for crown fires exist, the stand will need to be treated to reduce the spread of fire to the tops of the trees by removal of ground fuels, felling of trees less than 12 inches in diameter at breast height and limbing up the remaining trees to ten feet above ground level.

To discourage the further establishment of weedy species, a closed canopy of overstory should be maintained. Some of the eucalyptus stands areas along Highway One are actually a mix of native hardwoods, such as tanoak and coast live oak, that have persisted among the eucalyptus trees. Removing the eucalyptus may allow the stand to convert to a less flammable fuel type. Project objectives would determine whether the stand should be managed for this emerging vegetation (native hardwoods) or whether the existing canopy of eucalyptus should be maintained. Young eucalyptus (1-10 years) should be removed while still relatively small and easy to remove. It is anticipated that eucalyptus stands will need treatment every 2 to 3 years (perhaps even annual treatment in dense productive stands) to reduce densities, manage resprouts, ladder fuels and new shoots.

5. Silvicultural Treatments on Douglas-fir to Reduce Encroachment in Areas Traditionally Void of Douglas-fire. Thinning of small diameter Douglas-fir trees would be accomplished by the Bay Area Network Hazard Fuels Reduction Crew. In these areas, trees would be felled and slash disposed of by the most economical and sustainable method. Selective thinning along Highway One from Olema south to Dogtown; and near the Coast Guard Station along Mesa Road should be planned where Douglas-fir regeneration is beginning to encroach into traditional grasslands and coastal scrub. The elimination of grazing in these areas has encouraged the movement of Douglas-fire down from the west facing slopes onto the open grass areas. Small diameter Douglas-fir, less than 8 inches in diameter should targeted for removal.

3.5.1 Annual Review

The five-year fuels treatment plan will be updated annually as target units are burned and fuel reduction projects completed. [The current Five Year Fuels Treatment Plan is Appendix E, Part

18 to this FMP.] Fire Management staff at the PWR office have established a process for the annual review of the five year fuels treatment plan *vis-à-vis* ensuring that actions conform to the findings and commitments agreed to in the NEPA process for the FMP. In addition to NEPA conformance, the annual review process provides a framework for ensuring continued conformance with the requirements of the ESA consultations and NHPA programmatic mitigation measures. The update of the five year fuels treatment plan will be undertaken by a multi-disciplinary team representing the range of expertise of the fire staff. More information on the Annual Review process can be found in FMP Section 4.6.1.

3.5.2 Equipment and Seasonal Use Restrictions

Project equipment will be selected for effectiveness and the potential to avoid or minimize impacts to park resources. The process is the same as described for prescribed burning. Please refer to Section 3.3.3.4.

3.5.3 Effects Monitoring

For non-fire treatments, treatment prescriptions and locations will be documented and photo-monitoring will take place. Monitoring of non-fire treatments will be carried out by the Fire Effects Monitoring Crew according to the protocols found in Appendix F, Wildland and Prescribed Fire Monitoring and Research Plan.

3.5.4 Reporting and Documentation

All mechanical treatment projects will be listed in the PRNS five year fuels treatment plan and subject to the FMP annual review process. Individual projects will be assessed for potential effect and conformance with federal regulations through the Planning, Environment and Public Comment (PEPC) database system, now implemented agency-wide for all levels of NEPA review. Site specific projects that have been sufficiently assessed through the FMP FEIS will be reviewed by the IDT and the conformance with the FEIS documented through a Memo to the File of the FEIS.

Projects proposing types of activities or an intensity of impact or type of impact not anticipated in the FEIS will require separate NEPA review. NEPA conformance for these projects will be conducted per D.O 12, RM-12 and PRNS SOP-03. Conformance may be satisfied with a Memo to File to the FMP FEIS or, if there are new environmental effects not addressed in the FEIS, by a separate NEPA process.

3.5.5 Annual Planned Projects

All fire management projects, including mechanical treatments and prescribed burns, will be scheduled in the Seashore's Five Year Fuels Treatment Plan. Where projects will require recurring maintenance on a predictable interval or several initial re-treatments, these actions will also be scheduled in advance on the five year fuels treatment plan.

3.6 FIRE EDUCATION, INFORMATION AND NOTIFICATION

Public information and education are essential components of a successful fire management program. Informed and supportive agency staff, local community, visiting public, and partner organizations, will contribute greatly to the effectiveness of the fire program and the resources that it is designed to benefit.

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Based on the ecological principles and operational procedures of the Fire Management Plan, the goals for the fire information and education program are:

Goal 1: Offer year- round educational opportunities focusing on fire ecology, fire history, and fire management, which communicates how fire and fuels management activities meet natural resource management goals, and accomplish the mission of the National Park Service.

Goal 2: Work with local communities, park residents, and park permittees to promote fire safety, fire prevention, defensible space, firewise community planning, and fuels management. Provide fire safety messages with campfire permits.

Goal 3: Develop and maintain interagency, educational, and community partnerships to improve and expand fire education activities.

Goal 4: Provide accurate and timely incident information for local, regional, and national fire operations as needed.

Goal 5: Support regional and national fire management program activities through information and education.

Strategies for the public information and education program include:

- Establish a network of contacts and develop a proactive process that disseminates current and accurate fire information to multiple audiences.
- Incorporate the principles of fire's role in the ecosystem and the importance of fire as a resource management tool into interpretive programs, exhibits, video, interpretive trails through burned areas, publications, and special group presentations.
- Use national and local websites to promote prevention/mitigation and wildland fire education objectives.
- Report wildland fire activity through the NPS Fire News website.
- Forward all fire-related press releases to the respective Agency Administrator or Public Information Officer (PIO) for approval and keep members of the administrative staffs well informed of fire activity.
- Develop public information programs that promote the benefits of firewise community planning, defensible space, mechanical fuel reduction, and fire safe recreation.
- Establish relationships with local media representatives, and accommodate requests for information and access in order to promote the fire program.
- Conduct outreach to owners of adjacent lands and/or groups with traditional cultural concerns in conjunction with planning fire education, and fire management activities.

A detailed Fire Communications and Education Plan is in FMP Appendix G.

3.7 FIRE ECOLOGY AND FIRE EFFECTS MONITORING PROGRAMS

3.7.1 Programmatic and Policy Direction

The NPS is committed to monitoring fire management activities to determine whether management goals and objectives are being met and to facilitate adaptive management. The authority for fire management monitoring in the NPS is found in Director's Order #18, Wildland Fire Management, Section 5.2 Fire Management Plans and Section 5.8 Prescribed Fire Monitoring. The NPS Fire Ecology Strategic Plan: 2004-2008 (http://www.nps.gov/fire/ecology/program_direction/strategic_plan.htm) provides programmatic direction and Reference Manual #18, Chapter 11, provides policy direction for fire management monitoring (http://www.nps.gov/fire/download/fir_wil_rm18_ch11.pdf).

3.7.2 Current Program

PRNS hosts both the San Francisco Bay Area Network Fire Ecologist and the Southern and Central California Fire Effects Monitoring Crew. The Fire Ecologist serves PRNS, Golden Gate National Recreation Area, and Pinnacles National Monument. The Fire Effects Monitoring Crew serves six California parks in addition to PRNS. The goal of the Fire Ecology and Fire Effects Monitoring program at PRNS is to determine whether prescribed fire and mechanical fuels treatments objectives are being met and to help refine projects and objectives based on monitoring data.

The primary ecosystems at PRNS include Bishop pine forest, Douglas-fir forest, redwood forest, non-native pine/cypress/eucalyptus forest, hardwood forest, riparian woodland, coastal scrub, grassland, pasture, and coastal dune. However, the fire management program is currently actively managing only the coastal scrub, grassland, and non-native eucalyptus forest ecosystems. PRNS has ninety-three fire effects monitoring plots in eight different monitoring types: northern coastal scrub, Scotch broom, eucalyptus, French broom, non-native grassland, Harding grass, Bishop pine and Douglas-fir forest. All of the monitoring types, with the exception of the eucalyptus type, follow the protocols described in the FMH Monitoring Handbook (NPS 2003). Protocols for the eucalyptus monitoring type can be found in the Wildland and Prescribed Fire Monitoring and Research Plan (Appendix F).

3.7.3 Monitoring Levels

Fire effects monitoring occurs at a variety of levels. The most basic of these, Level 1, is the monitoring of environmental conditions including weather, fuel conditions, fire danger rating, etc. The fire effects program will coordinate with the Bay Area Network Inventory and Monitoring program to coordinate Level 1 monitoring efforts. Both programs will work together to ensure that monitoring efforts are not duplicated and to determine the most efficient way to accomplish Level 1 monitoring.

Monitoring Level 2 is fire observation, including fire behavior, smoke volume and movement, fire location and size, etc. Data will continue to be collected at levels 1 and 2 to satisfy the requirements for a Post-Fire Report for prescribed fires or a Wildland Fire Report for wildfires. Protocols for Level 2 post-wildfire monitoring will be included in Appendix F. Additionally, burn severity assessments will be completed for all fires greater than 500 acres and CBI plots will be installed in association with the burn severity assessment. For mechanical projects, treatment prescriptions and locations will be documented and photo-monitoring will take place.

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Protocols for monitoring non-fire treatments will be included in Appendix F.

Levels 3 and 4 are the monitoring of short-term (≤ 2 years) and long-term (> 10 years) change. Variables monitored at these levels of change include fuel loading and vegetation composition among others. Level 3 and 4 monitoring will take place in all monitoring types that are being actively managed by the fire management program through either prescribed fire or non-fire treatments. The monitoring effort must be sufficient to evaluate whether fire management objectives are being met.

3.7.4 Data Management and Analysis

Fire effects data will be maintained by the fire ecologist and lead fire effects monitor in both paper and digital form. Data will be analyzed by the fire ecologist on an ongoing basis. Data analysis will be presented to park fire management and resource staff annually as part of the annual review/update process. This analysis will be used to determine whether fire management projects are meeting their objectives, to adjust and refine fire management objectives if necessary, to adjust how and where fire management projects are carried out, and to identify fire research needs.

3.7.5 Wildland and Prescribed Fire Monitoring and Research Plan

The Wildland and Prescribed Fire Monitoring and Research Plan describes in detail how monitoring is to be conducted at PRNS. The Fire Monitoring and Research Plan presents ecological models for each of the monitoring types within PRNS and outlines the management and monitoring objectives for each. It also details the methods, locations, and frequency of monitoring. The format for the Plan will follow the guidelines provided by the NPS Fire Ecology Steering Committee. Appendix F will be added to the FMP coincident with the 2007 annual FMP update.

3.8 FIRE RESEARCH

The NPS is committed to supporting fire research to promote sound fire management decisions. The policy direction for fire research within the NPS is found in RM #18, Chapter 15 (http://www.nps.gov/fire/download/fir_wil_rm18_ch11.pdf). Fire research has been ongoing at PRNS since the mid-1990s. The objectives of fire research at PRNS are two-fold. The primary research objective is to collect and analyze data on specific biological resources in a scientifically rigorous manner to determine positive or adverse effects of prescribed burning on targeted resources. The secondary objective is to improve the knowledge base about prescribed fire and wildfire such that fire research will contribute both to science and to fire management. Research has been conducted by park staff and by outside researchers. It is the goal of the fire program at PRNS to continue in-park research efforts and to recruit high caliber research from outside organizations.

Past fire research at PRNS has been focused on two primary areas: the effects of the 1995 Vision Fire and the fire history of the area. The 1995 Vision Fire provided a rare opportunity to study the role of fire in the unique ecosystems of PRNS. Much of the post-Vision Fire research is summarized in the publication, "Lessons Learned from the October 1995 Vision Fire" (2003). Studies in this publication examine a wide array of topics including the effects of fire on the Point Reyes Mountain Beaver, changes in ectomycorrhizal communities following fire, and post-

fire vegetation response. Fire history at the PRNS has also been the subject of several research studies. Researchers have used dendrochronology and sediment core analysis to reconstruct historical patterns of fire history and vegetation (Brown et al. 1999, Anderson 2005).

A draft fire research plan for PRNS was drafted in 2001 and is currently being revised (Parravano and Moritsch 2001). When completed, it will be added to Appendix F of this FMP. High priority topics for future fire research include the effects of fire on invasive species with a particular emphasis on broom, Harding grass, and velvet grass; the effects of fire on rare chaparral plants; the effects of fire on the spread of Sudden Oak Death; the effects of fire on wildlife species that are of high management priority; and the reconstruction of historical vegetation patterns.

CHAPTER 3 – FIRE MANAGEMENT PROGRAM COMPONENTS

4. ROLES, FUNDING AND REVIEW

4.1 NPS ORGANIZATIONAL STRUCTURE, ROLES, AND RESPONSIBILITIES

The Organizational Chart for the Point Reyes National Seashore Division of Fire Management outlines the current structure for this division (See Figure 7).

The overall fire program responsibility rests with the Fire Management Officer (FMO). This position reports to the Superintendent, who retains ultimate responsibility for all Park programs. The FMO supervises the daily operations and reports directly to the Superintendent. The Fire Ecologist plays a key role in the overall fire management program by overseeing long-term fire ecology planning for the Seashore and fire ecology strategies for the Bay Area Network. The Fire Information, Education and Prevention Specialist resides in the Division of Interpretation to better service the Bay Area Network. The Fire Planner primarily serves PRNS and GGNRA, providing compliance guidance and documentation for fire-related projects. Both the Fire Ecologist and Fire Planner report to the Supervisory Plant Ecologist at PRNS in the Division of Resource Management. Refer to the Organizational Chart for additional fire management positions for PRNS.

4.1.1 Park Superintendent

1. Ensures safe implementation of wildland fire management program at PRNS.
2. Ensures program supports Service-wide initiatives.
3. Approves wildland fire management plan and updates, interagency agreements and operating plans, delegations of authority, prescribed burn plans, and management of wildland fire incidents, through daily updates of the WFSA.
4. Ensures compliance of Section 106 of NHPA, Organic Act and other relevant laws and policy.

4.1.2. Fire Management Officer

1. Develops and updates PRNS fire management plans, including annual appendix updates.
2. Ensures PRNS has the capability and skills to safely implement wildland fire programs as identified in the fire management plan.
3. Monitors fire danger and recommends fire restrictions in concert with neighboring agencies.
4. Perform administrative duties, i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment and evaluating performance of subordinates
5. Monitors actions taken on wildland fires, and ensures proper and adequate documentation.

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6. Approves DI-1202 (Individual Fire Report) and ensures they are properly prepared and submitted to WFMI.
7. Initiates taskbooks for wildland fire positions and certifies completion.
8. Formulates and directs the budget accountability program for preparedness, hazard fuels operations, emergency fire accounts and approves all FirePro expenditures.
9. Prepares WFSAs as needed.
10. Reviews prescribed fire burns plans.
11. Reviews procedures for off-unit dispatches of park personnel.
12. Sets goals and objectives for the wildland fire program, including staff supervision.
13. Coordinates with the GGNRA FMO and PINN staff on fire management actions and

issues.

14. Establishes liaisons with cooperating agencies, and coordinates and maintains cooperative agreements.

4.1.3 Fire Program Planner

1. Research and prepare NEPA documentation for fire management program projects, participate in planning meetings and site visits, input projects into PEPC, ensure compliance of fire management projects with the respective FMP NEPA documentation, and shepherds projects through the review and approval process.
2. Conducts consultations with the regulators for the Endangered Species Act, submits required documentation for approvals required by the Clean Water Act, Coastal Zone Management Act, etc.
3. Oversees the annual review process for the Fire Management Plan and the update of the five year fuels treatment plan.
4. Prepares documentation necessary for federal regulatory compliance for entities receiving federal funding through the National Fire Plan.
5. Represent NPS at FireSafe Council meetings.
6. Review and comment or prepare documentation for others in the San Francisco Bay Network and regional office.
7. COR for contracts for studies and surveys supporting compliance assessments.

4.1.4 Fuels/Prescribed Fire Specialist

1. Prepares prescribed burn plans and fuel reduction plans and inputs information to PEPC for units in the SF Bay Area Network.
2. Provides input into five-year fuels treatment plans for SF Bay Area Network.
3. Implements prescribed burns as Burn Boss.
4. Coordinates prescribed fire and mechanical hazardous fuels reduction operations for the Bay Area Parks Network.
5. Serves as Incident Commander on wildland fires
6. Manages National Fire Plan Operating and Reporting System (NFPORS) data entries for all Bay Area Parks
7. Serves as acting FMO as needed.
8. Coordinates, prioritizes and schedules the work of the Bay Area Network Hazardous Fuels Reduction Crew within the SF Bay Area Network and elsewhere as requested.

4.1.5 Engine Foreman

1. Ensures personnel and equipment readiness and capability for safe initial response.
2. Ensures 2-Type 6 engines are maintained in a state of readiness.
3. Participates in annual refresher training.
4. Leads PRNS fire crews in daily readiness activities, including fire safety briefings.
5. Supervises temporary fire technicians.
6. Implements signing and fire prevention activities.
7. Issues task books for Firefighter Type 1 and 2 and Engine Operator positions.

4.1.6 Fuels Technician (Fuels Crew)

1. Ensures Fuels Crew personnel and equipment readiness and capability for safe project work.
2. Leads Fuels Crew in conducting mechanical fuels reduction and prescribed burning projects.
3. Prepares prescribed burn plan components as requested.
4. Leads Fuels Crew in daily readiness activities, including fire safety briefings.
5. Determines prescribed burn unit preparation needs.
6. Leads Hazardous Fuels Crew personnel in safety sessions.

4.1.7 Engine Operator

1. Acts as assistant to the Engine Foreman.
2. Oversees fire cache inventory
3. Prepares prescribed burn plan components as requested.
4. Involved in all aspects of wildland fire suppression.
5. Implements signing and fire prevention activities.

4.1.8 Fire Program Management Assistant

1. Serves as payroll, personnel, and travel administrator for PRNS fire program.
2. Maintains payroll, procurement, inventory, travel and other records as needed.
3. Ensures accurate fire reports are entered into SACS, DI-1202 are signed and filed.
4. Maintains/updates employee fire qualifications records for PRNS.
5. Updates list of employee fire qualifications in IQCS.
6. Maintains and updates fire program budget and tracks expenditures in AFS3.
7. Initiates and updates Fire Code incident tracking system.

4.1.9 Fire Education and Information Specialist

1. Responsible for the development, coordination, and dissemination of internal and external communication of fire management program activities in the Bay Area Network.
2. Works with community stakeholders and various local, state, and federal agencies to provide fire education and information for the Bay Area Parks and surrounding communities.
3. Supports Fire Management program activities at the regional and national levels through fire education and information.
4. Responsible for developing and managing partnerships and projects which expand fire education capacity in the Bay Area Network.
5. Serves as Public Information Officer for prescribed fire and wildland fire in the Bay Area Parks.
6. Serves as an interdisciplinary team member to integrate fire management, resource protection, and public education.

4.1.10 Fire Ecologist

1. Manages and analyzes fire effects data.
2. Manages and refines monitoring program including the communication of measurable objectives, monitoring schedules, protocols and data analysis procedures. Writes the fire monitoring plan.

CHAPTER 4 – ROLES, FUNDING AND REVIEW

3. Hires, trains, and supervises fire effects monitors.
4. Assist with writing prescribed fire objectives and prescriptions for burning.
5. Provides expertise on the role of fire in ecosystems and advice on how fire can be used to accomplish management objectives.
6. Oversees long-term fire ecology planning for the Seashore and other parks in the Bay Area Network.
7. Identifies research needs, solicits researchers, writes proposals, and applies for funding for research projects.
8. Serves as a liaison between fire managers and resource management at host and cluster parks.
9. Contributes to and reviews compliance and other management documents.

4.1.11 Lead Fire Effects Monitor

1. Leads the California Mediterranean Coast and San Francisco Bay Region fire effects monitoring program (PRNS, PINN, GGNRA, SAMO, CHIS, JOTR).
2. Collects scientific data on vegetation monitoring plots in order to determine the effectiveness in meeting prescribed fire objectives.
3. Hires, trains and supervises fire effects monitors.
4. Identifies plants to the species level in a variety of ecosystems.
5. Monitors fire weather and fire behavior during prescribed burns.
6. Manages fire effects database and ensures quality control.
7. Sets monitoring schedule and communicates schedule with host parks.
8. Collaborates with fire ecologist on planning and annual reporting documents.

4.1.12 Fire Effects Crew Members (biological Science technicians)

1. Collect vegetation and fire effects monitoring data on monitoring plots.
2. Identify plants to the species level in a variety of ecosystems.
3. Enter data into databases.
4. Participate in wildland and prescribed fire operations.

4.2 FUNDING.

The Fire Management Program Center (FMPC), National Interagency Fire Center, will issue an annual budget structure and allocation report to PRNS. Allocated amounts will be entered in the Federal Finance System (FFS) at the allocation (ALCT) level by the FMPC for the following activities: Preparedness, Burned Area Rehabilitation, Hazardous Fuels Reduction, Wildland Urban Interface, and Rural Fire Assistance. PRNS will stay within the line item spending authority for each activity until additional funding is requested and approved.

CHAPTER 4 – ROLES, FUNDING AND REVIEW

The WASO Budget Office covers Emergency Suppression, Wildland Fire Use and Emergency Stabilization obligations and expenditures at the regional allotment (ALOT) level at year-end. Expenditures in the Emergency Suppression and the Burned Area Rehabilitation Activities are tracked through unique project accounts using the Fire Code guidelines.

The Fire Program Analysis System (FPA) will replace the existing NPS FIREPRO planning and budgeting program in the next few years. FPA will also replace the fire planning and budgeting systems in use by four other federal land management agencies.

4.3 INTERAGENCY COOPERATION AND CONTACTS

TABLE 6 – CONTACTS			
INTRA-AGENCY CONTACTS			
Golden Gate NRA	FMO Alex Naar	415-331-6374	[email address]
Pinnacles NM	Superintendent Eric Brunnemann	831-389-4485 x. 233-	[email address]
Marin County FD	Chief Rich Lopez	415-499-6717	[email address]
INTER-AGENCY CONTACTS			
Inverness Public Utilities District	Chief Jim Fox	415-669-7151	[email address]
Bolinas FD	Chief Anita Brown	415-868-1566	[email address]
Nicasio Volunteer FD	Chief Joe Runyon	415-662-2201	[email address]
Marin Municipal Water District	Mike Swezy, Resource Specialist	415-945-1190	[email address]
Marin Open Space District	Brian Sanford Supervising Ranger	415-499-7473	[email address]
Mendocino NF	FMO Dave Sinclair	530-934-7734	[email address]
Northern California Coordination Center	Ed Duncan, DOI Coordinator	530-226-9710	[email address]
National Weather Service Forecast Office, San Francisco-Monterey Bay.	Ryan Walburn, Fire Weather Forecaster	831-656-1710	[email address]
Bay Area Air Quality Management District	Doug Tolar, Enforcement and Compliance	415-749-5118	[email address]

CHAPTER 4 – ROLES, FUNDING AND REVIEW

4.4 INTERAGENCY AGREEMENTS

TABLE 7 – INTERAGENCY AGREEMENTS		
FIRE DEPARTMENT OR DISTRICT	AGREEMENT	DATE
Marin County Fire Department	in progress	
Bolinas Fire Protection District	in progress	
Inverness Public Utilities District	in progress	
Nicasio Volunteer Fire Department	in progress	

4.5 RECORDS AND REPORTS

TABLE 8 – RECORDS AND REPORTS			
FORM/REPORT	RESPONSIBLE PARTY	DISTRIBUTION	FREQUENCY
DI-1202 Fire Report	NPS Superintendent	Copy (1202 only) to Archives (SACS) within 10 work-days;	Per Incident
Interagency Fire Qualification Form and Card (IQCS card)	Fire Program Assistant Signed by FMO	Affected Personnel	Annually
Fire Weather/Indices (daily; see dates in Section 3.3.2.2)	Engine Foreman/Fire Program Assistant	Staffing levels (BI) to Visitor Center and Dispatch	Daily
Daily Cost Accounting	IC/Burn Boss	As agreed	Schedule to be determined
WFSA	Park Superintendent	Agency-specific	Per Incident

4.6. ANNUAL REVIEW OF THE FIVE YEAR FUELS TREATMENT PLAN AND FMP

Annual Review Process of the Operational FMP and Five Year Fuels Treatment Plan (per PWR Fire Staff)

[The current Five Year Fuels Treatment Plan is Appendix E, Part 18 to this FMP.]

1. Summarize the previous year's actions:

- Wildland fires, prescribed burns, mechanical fuel reduction projects,
- Education and information programs for the public,
- New or renewed agreements with other fire or land management agencies,

- Personnel information (number of positions, network location)
2. Assess Progress.
 - Did we achieve what was anticipated in the five year fuels treatment plan?
 - If the plan was not implemented as proposed, what were the budget or staffing challenges that kept you from being able to manage effectively?
 - Are there unforeseen circumstances that came up which were limited by the program's goals, objectives or mitigations that should be considered for inclusion in the over all strategy to better meet goals and objectives?
 3. Update FMP and Five Year Fuels Treatment plan.
 - Is new background information available to the park that is relevant to fire management planning (i.e., data gathering, annual fire ecology report findings)? Are there changes to methodologies or procedures that should be incorporated into the FMP (i.e., modeling or analyses, of risk, ecological modeling, or new management policies)?
 - Were there "lessons learned" from the past season that are important to note?
 - Are there research or field observation results that indicate strategy should be modified?
 - Were there outside (non-fire management) disturbance(s) (e.g., volcanic, windstorm, flood) that did or will affect the implementation of the FMP or five year fuels treatment plan?
 - Are there modifications to the FMP or the five year fuels treatment plan to suggest? Do any of the issues reviewed support continuation, refinement, or reconsideration of the plan as written.
 - Are there changes in DO-18 and RM-18 or other policy documents that require changes to the FMP or five year fuels treatment plan?
 4. Identify Issues Raised.

In implementing the FMP, were issues of concern raised by park staff, staff of other agencies, or the public? How were issues resolved? If not yet resolved, how does the review team propose solving these issues?

5. Assess Conformance with NEPA and other Federal Regulations.
 - Are there changes in the affected environment of PRNS or Northern Lands GGNRA that could result in significant effects to the environment (i.e., change in species listing under the ESA, CNPS, etc., new cultural resources identified, change in air pollution emissions status for the air basin, change in water quality status, new water quality projects completed)?
 - Were there projects or parts of projects that appear to be out of sync with the range of actions assessed in the FEIS?
 - Were there impacts that differed from those anticipated by the EIS assessment?

CHAPTER 4 – ROLES, FUNDING AND REVIEW

- Was the NEPA documentation adequate to address the actions undertaken during the past season?
- Does the updated FMP or five year fuels treatment plan include actions that do not conform to the scope of the assessment in the EIS?
- Are modifications needed to the NEPA record to retain the program in conformance?

Determine the needs for further compliance and let the regional fire and compliance office know your intentions.

6. Proposed Changes to the Five Year Fuels Treatment Plan and FMP.

- Use the current version of the Regional Environmental Screening Form to determine if any proposed changes to the FMP need further compliance

Initiate changes to the plan using NEPA process if needed, if not, make the changes, and in either scenario send new version to the National Office and to Regional Office

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APPENDIX B – SPECIES OF CONCERN

APPENDIX B – SPECIES OF CONCERN

Species known from PRNS and the northern lands of GGNRA

Federal, State, and California Native Plant Society (CNPS) Listed Plant Species in each Fire Management Unit.

SPECIES		REGULATORY STATUS		
COMMON NAME	SCIENTIFIC NAME	FEDERAL	STATE	CNPS LIST ¹
Tomales Point FMU				
pink sand-verbena	<i>Abronia umbellata</i> ssp. <i>breviflora</i>	Species of Concern	none	1B
coast rock cress	<i>Arabis blepharophylla</i>	none	none	4
Point Reyes blennosperma	<i>Blennosperma nanum</i> var. <i>robustum</i>	Species of Concern	Rare	1B
coastal bluff morning glory	<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	none	none	1B
Franciscan thistle	<i>Cirsium andrewsii</i>	none	none	1B
Point Reyes bird's beak	<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Species of Concern	none	1B
Marin checker lily	<i>Fritillaria affinis</i> var. <i>tristulis</i>	none	none	1B
San Francisco gumplant	<i>Grindelia hirsutula</i> var. <i>maritima</i>	Species of Concern	none	1B
rosy linanthus	<i>Linanthus rosaceus</i>	none	none	1B
Marin knotweed	<i>Polygonum marinense</i>	Species of Concern	none	3
San Francisco owl's clover	<i>Triphysaria floribunda</i>	Species of Concern	none	1B
Headlands FMU				
Blasdale's bent grass	<i>Agrostis blasdalei</i>	Species of Concern	none	1B
coast rock cress	<i>Arabis blepharophylla</i>	none	none	4

APPENDIX B – SPECIES OF CONCERN

SPECIES		REGULATORY STATUS		
COMMON NAME	SCIENTIFIC NAME	FEDERAL	STATE	CNPS LIST ¹
Point Reyes blennosperma	<i>Blennosperma nanum var. robustum</i>	Species of Concern	Rare	1B
Franciscan thistle	<i>Cirsium andrewsii</i>	none	none	1B
Marin checker lily	<i>Fritillaria affinis var. tristulis</i>	none	none	1B
short-leaved evax	<i>Hesperevax sparsiflora var. brevifolia</i>	none	none	2
perennial goldfields	<i>Lasthenia marcrantha</i>	none	none	1B
Point Reyes meadowfoam	<i>Limnanthes douglasii var. sulphurea</i>	Species of Concern	Endangered	1B
North Coast phacelia	<i>Phacelia insularis var. continentis</i>	Species of Concern	none	1B
Point Reyes rein orchid	<i>Piperia elegans ssp. decurtata</i>	none	none	1B
beach starwort	<i>Stellaria littoralis</i>	none	none	4
San Francisco owl's clover	<i>Triphysaria floribunda</i>	Species of Concern	none	1B
Estero FMU				
Blasdale's bent grass	<i>Agrostis blasdalei</i>	Species of Concern	none	1B
coast rock cress	<i>Arabis blepharophylla</i>	none	none	4
coastal marsh milk-vetch	<i>Astragalus pycnostachyus var. pycnostachyus</i>	none	none	1B
Point Reyes bird's beak	<i>Cordylanthus maritimus ssp. palustris</i>	Species of Concern	none	1B
Marin checker lily	<i>Fritillaria affinis var. tristulis</i>	none	none	1B
marsh microseris	<i>Microseris paludosa</i>	none	none	1B

APPENDIX B – SPECIES OF CONCERN

SPECIES		REGULATORY STATUS		
COMMON NAME	SCIENTIFIC NAME	FEDERAL	STATE	CNPS LIST ¹
Gairdner's yampah	<i>Perideridia gairdneri</i> var. <i>gairdneri</i>	Species of Concern	none	4
Marin knotweed	<i>Polygonum marinense</i>	Species of Concern	none	3
San Francisco owl's clover	<i>Triphysaria floribunda</i>	Species of Concern	none	1B
Limantour Road FMU				
Marin manzanita	<i>Arctostaphylos virgata</i>	none	none	1B
Point Reyes bird's beak	<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Species of Concern	none	1B
California bottlebrush grass	<i>Elymus californicus</i>	none	none	4
Marin checker lily	<i>Fritillaria affinis</i> var. <i>tristulis</i>	none	none	1B
fragrant fritillary	<i>Fritillaria liliaceae</i>	Species of Concern	none	1B
Marin knotweed	<i>Polygonum marinense</i>	Species of Concern	none	3
Wilderness North FMU				
California bottlebrush grass	<i>Elymus californicus</i>	none	none	4
Wilderness South FMU				
Marin manzanita	<i>Arctostaphylos virgata</i>	none	none	1B
California bottlebrush grass	<i>Elymus californicus</i>	none	none	4
Highway One FMU				
Marin checker lily	<i>Fritillaria affinis</i> var. <i>tristulis</i>	none	none	1B

APPENDIX B – SPECIES OF CONCERN

SPECIES		REGULATORY STATUS		
COMMON NAME	SCIENTIFIC NAME	FEDERAL	STATE	CNPS LIST ¹
Lobb's aquatic buttercup	<i>Ranunculus lobbii</i>	none	none	4
Bolinas Ridge FMU				
Marin manzanita	<i>Arctostaphylos virgata</i>	none	none	1B
glory brush	<i>Ceanothus gloriosus var. exaltatus</i>	none	none	4
Bolinas ceanothus	<i>Ceanothus masonii</i>	Species of Concern	Rare	1B
California bottlebrush grass	<i>Elymus californicus</i>	none	none	4
Inverness Ridge FMU				
Marin manzanita	<i>Arctostaphylos virgata</i>	none	none	1B
swamp harebell	<i>Campanula californica</i>	none	none	1B
Mount Vision ceanothus	<i>Ceanothus gloriosus var. porrectus</i>	none	none	1B
California bottlebrush grass	<i>Elymus californicus</i>	none	none	4
Palomarin FMU				
Sonoma Alopecurus	<i>Alopecurus aequalis var. sonomensis</i>	Endangered	none	1B
Marin manzanita	<i>Arctostaphylos virgata</i>	None	none	1B
nodding semaphore grass	<i>Pleuropogon refractus</i>	None	none	4

NOTES:

¹ CNPS List 1B: Rare or Endangered in California and Elsewhere

CNPS List 3: Need More Information

CNPS List 4: Plants of Limited Distribution

APPENDIX C – RECORD OF NEPA/NHPA/ESA COMPLIANCE**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.

APPENDIX C – RECORD OF COMPLIANCE

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.

APPENDIX C – RECORD OF COMPLIANCE

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 benefit 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 benefit 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 fuels treatment 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

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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 benefits would accrue as a secondary objective 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.

APPENDIX C – RECORD OF COMPLIANCE

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

- 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

APPENDIX C – RECORD OF COMPLIANCE

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

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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

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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.

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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 adverse 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

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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 Period which concluded on October 12, 2004. The Final EIS was placed on the park website during the no-action period and notices of its 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, State of California Department of Fish and Game, and Bay Area Air Quality Management District. Two individual letters of comment were received regarding the *Final Fire Management Plan/EIS*. These letters expressed general concern about prescribed burning, but did not have specific comments that could be addressed.

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

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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:

signed by Jonathan B. Jarvis on October 27, 2004

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

Date

APPENDIX D. FMP MITIGATION MEASURES

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.

Guidance on the use of herbicides in conjunction with implementing the FMP is found on page 38 of the FMP FEIS.

If herbicides are used, they are applied according to strict specifications using detailed Material Safety Data Sheets. Any application requires the approval of the park's Integrated Pest Manager and the Washington Office coordinator for herbicide application. No applications occur in riparian or wetland areas (FMP FEIS page 38).

The following mitigation measures would be applied regardless of the alternative selected:

General

G-1. To ensure that implementation of fire management plan actions conforms to findings of this impact assessment, subsequent fire 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.

APPENDIX D – FMP MITIGATION MEASURES

Soils

General

S-1. Individual burn plans will be written with enough 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

APPENDIX D – FMP MITIGATION MEASURES

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 BAAQMD, 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.

APPENDIX D – FMP MITIGATION MEASURES

A-4. PM_{2.5} monitoring data will be collected at Bear Valley in 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 oversteep 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.

APPENDIX D – FMP MITIGATION MEASURES

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 fire line (both handline and dozer line) will be rehabilitated as quickly as possible, which will include application of Burned Area Emergency Response (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.

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.

APPENDIX D – FMP MITIGATION MEASURES

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 fire line (both handline and dozer line) will be rehabilitated as quickly as possible, which will include application of Burned Area Emergency Response (BAER) techniques such as recontouring, 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 improve 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.
- 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

APPENDIX D – FMP MITIGATION MEASURES

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 improve 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.

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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 fire lines 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),

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- 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, and
- conduct small burns (less than 100 acres) of mountain beaver habitat each year.

SS-4. Avoid conducting burns during the nesting season, March 15 through August 15, 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.

APPENDIX D – FMP MITIGATION MEASURES

- 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 rehabilitation.
- 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.

APPENDIX D – FMP MITIGATION MEASURES

- 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 fire lines and safety zones will be used to minimize exposure.

APPENDIX E – SUPPLEMENTAL INFORMATION

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APPENDIX E – SUPPLEMENTAL INFORMATION

APPENDIX E, PART 1

POINT REYES NATIONAL SEASHORE

DAILY RESOURCE AVAILABILITY

Date: _____

Fire Management Office415-464-5233

Point Reyes Law Enforcement-Public Safety Dispatch.....415-464-5170

Duty Officer (call in order listed):

Order	Name	Office Phone	Pager	Cell Phone	Home Phone
1	Roger Wong	415-464-5232	415-227-2943	xxx-xxx-xxxx	xxx-xxx-xxxx
2	Jordan Reeser	415-464-5235	xxx-xxx-xxxx	xxx-xxx-xxxx	xxx-xxx-xxxx
3	Jon Haag	415-464-5236	xxx-xxx-xxxx	xxx-xxx-xxxx	xxx-xxx-xxxx

Agency Administrator/Chief Park Ranger:

Colin Smith	415-464-5175	xxx-xxx-xxxx	xxx-xxx-xxxx	xxx-xxx-xxxx
-------------	--------------	--------------	--------------	--------------

Today's Predicted Fire Danger (circle one):

LOW MODERATE HIGH VERY HIGH EXTREME

Today's Available Resources (Circle)

ENGINES

Patrol 6-2 Type 6 available staffing

Engine 3-1 Type 3 available staffing

HAZARDOUS FUELS REMOVAL MODULE

Crew #9 Type 2 IA available staffing

SINGLE RESOURCES

Contact Duty Officer to confirm availability of positions and personnel listed in /ROSS.

COMMITTED RESOURCES	ACTIVE FIRES

APPENDIX E – SUPPLEMENTAL INFORMATION

APPENDIX E, PART 2**DISPATCH PROTOCOL FOR FIRES
2006**

1. Gather information about the **FIRE (Initial)**:
 - Location.
 - Type (Structure, Wildland, Vehicle)
 - Name and Phone Number of the Reporting Party. **(911 call)**

2. Notify **WOODACRE**: 415-499-6717. Coordinate as to what equipment etc. is being dispatched. They will become the ordering point for both Initial Attack and Extended Attack fires.

3. Radio Notification of **FIRE AND LAW ENFORCEMENT PERSONNEL**:
 - **Three tones** followed by “**Wildland, Structure/ Vehicle Fire reported in the vicinity of _____.**” (Include any other available information). “**The following units respond.**”
 - **LEO units.**
 - **Engine(s) with staffing level.**
 - **Duty Officer.**

 - After two minutes, re-contact dispatched units. “**The Following Units Responding to _____, acknowledge.**” “**First unit on-scene will be the _(name of the location)_ I.C.**”

 - **Two tones** followed by “Following Units responding to “**Wildland, Structure/ Vehicle can cancel and return. Following units acknowledge _(off the dispatch log).**”

 - **One tone** followed by “**All units responding to _____ additional information _____ (give details).**”

4. Contact **Roger Wong**: 415-464-5232 (work) and or **Jordan Reeser**: 415-464-5235 (work)
 xxx-xxx-xxxx (cell) xxx-xxx-xxxx (cell)
****Duty Officer Pager Number 415-227-2943**

5. Notify Park Superintendent/ Chief Ranger/ Chief of Resource Management.

6. Information needed from **QUALIFIED** fire personnel upon arrival. (First Unit On-Scene, Initial Attack I.C.) **Prompt them if this information is not relayed to you.**
 - Specific Fire Location. (address, etc.)
 - Fire Size (acres).
 - Fuel Type.
 - Fire Behavior (smoldering, creeping, running, torching, crowning)
 - Direction of Fire Spread.
 - Values at Risk. (structures, etc.)
 - Best **SAFE** Access to the Area.
 - Request for Resources. (Type and Quantity)
 - Special Hazards (i.e. Downed powerlines, aerial hazards, Haz. Mat., etc.)

Note: By this time a **QUALIFIED I.C.** should be on scene, have assumed command, and should have been identified. Dispatch will make it known to all incoming and on-scene personnel an I.C. has been established, and convey similar information whenever a new person assumes command. All radio traffic should be relayed through that identified person. The I.C. will use the fire name followed by “IC” . During the incident, keep records of personnel and equipment requests and locations. **It is the understanding that Woodacre will handle all fire incidents, but request a copy of the Dispatch Log of the incident for Park records. Once obtained, send a copy of it to the FMO.**

August 24, 2006

APPENDIX E, PART 3

**WEATHER INFORMATION MANAGEMENT SYSTEM WALK-THROUGH
(WIMS)**

Go to [\[not public information\]](#)

Click on WIMS

User Name: [not public information]

Password: [not public information]

Go to “fast path”, type in “didx” and hit “go”

Click on Station ID, enter date (@1730 today’s date, 0800 yesterday’s date), enter

xxxxx = Barnabe or enter xxxx in SIG to get all the data

xxxxx = Woodacre

xxxxx = Marin Civic Center

As stated in the Step-Up plan, **xxxxx is the first choice**. If it is not available, collect information from either of the others listed (xxxxx, xxxxx)

Scroll over to the BI column to retrieve fire danger information.

forecasted BI (OT column will be F, O = observed)

fuel model MSGC7A2A2 (grass fuels not MSGC7B2A2 = forest fuels)

Step-Up Plan

Low	Mod	High	Very High	Extreme
0-18	19-27	28-33	34-37	38+

Call to BVVC (5919) and dispatch (5170) before 0900.

On weekends, dispatch will retrieve info the night prior and leave a message at the VC since no fire staff is on duty and dispatch gets in at 0900.

APPENDIX E, PART 4

NFDRS INDICES AND PARK VISITOR FIRE RESTRICTIONS

Fire Danger – How Will It Affect You?

If the FIRE DANGER RATING is....	Is this type of use allowed??			
	Self-contained gas stoves	Park provided grills (designated picnic areas & campgrounds)	Self-contained charcoal barbecues (ex., Webers)	Beach open pit fires
LOW	YES	YES	YES	YES
MODERATE	YES	YES	YES	YES
HIGH	YES	YES	YES	NO
VERY HIGH	YES	NO	NO	NO
EXTREME or RED FLAG WARNING	YES	NO	NO	NO

- ✘ Fires shall at all times be maintained in a safe condition that does not threaten any person, natural or structural feature.
- ✘ Firewood gathering is prohibited.
- ✘ The possession or discharge of fireworks is prohibited.
- ✘ Never leave a fire unattended.
- ✘ Report all wildfires immediately.
- ✘ Extinguish all fires prior to departure.
- ✘ Ground fires are not permitted.
- ✘ Ask a park ranger for further information.

APPENDIX E, PART 5.**FIRE STEP UP PLAN (SOP PR-37)**

A5639

June 30, 2005

POINT REYES STANDARD OPERATING PROCEDURE: PR-37

SUBJECT: FIRE STEP UP PLAN

The Point Reyes National Seashore fire step up plan will be in operation from approximately July 1 through November 15 each fire season. During years of unusual drought or wetness, starting and ending dates of the fire step up plan may be adjusted in writing by the Fire Management Office and approved by the Superintendent. As required in NPS Reference Manual #18, this plan will be revisited on an annual basis. Minor revisions may be made to the plan in writing during fire season if a revision better meets Seashore staffing needs. This will be determined by the Fire Management Officer and approved by the Superintendent.

The Point Reyes fire step up plan is based on the Burning Index (BI), which is one of the outputs from the National Fire Danger Rating System (NFDRS). Burning Index is defined as an estimate of potential difficulty of fire containment as it relates to the flame length at the head of a fire. For this fire step up plan, staffing levels determinations will be based on the BI in cured short annual grass (NFDRS Fuel Model A) based on weather observations from the Mount Barnabe weather station (station identification number 42308).

At approximately 0800 each day, the Point Reyes Fire Program Assistant will obtain the day's forecasted BI from the predicted NFDRS outputs from the Weather Information Management System (WIMS). On days when the Fire Program Assistant is unavailable due to prescribed burns, suppression activities, or on weekends, the Point Reyes park dispatcher will obtain the BI. If the park dispatcher is unavailable, the Visitors Center will obtain the BI from Marin County Fire Department by phone (499-6717). If there is no data available from the Mount Barnabe weather station, the BI should be obtained from observations from the Woodacre weather station (station identification number 42307). Fire danger ratings are derived based on the break down of the BI values listed below. Upon receipt of the Burning Index:

1. The Fire Program Assistant will relay the daily predicted fire danger to fire personnel, the park dispatcher, and the Visitor Center.
2. At 0900, the park dispatcher will broadcast the daily fire danger to all park personnel.
3. At 1600 the park dispatcher will announce if there will be extended staffing for red carded personnel (very high and extreme fire danger days only).

August 24, 2006

APPENDIX E – SUPPLEMENTAL INFORMATION

If fire personnel are not available to staff engines on weekends, engine staffing will be the responsibility of law enforcement personnel. Cross training on the Point Reyes fire engines will be provided to these individuals at the earliest possible convenience.

Assistance on wildfire suppression, weekends or otherwise, should be requested from Marin County Fire Department.

If you have any questions or concerns concerning this step up plan please do not hesitate to contact me.

/s/

Don L. Neubacher
Superintendent

Attachments:
Fire Step Up Plan

Responsible:
Superintendent

Distribution:
All Employees

APPENDIX E – SUPPLEMENTAL INFORMATION

FIRE DANGER RATING: LOW
BURNING INDEX: 0-18

1. Fire personnel will work normal tour of duty hours and are required to have their fire packs and personal protective equipment immediately available. Fire personnel will monitor pertinent radio channels throughout the day.
2. Engine Crew personnel will perform apparatus inspections by 0815. Inoperative units are to be reported to the Fire Management Office.
3. The Engine Crew, Hazard Fuels Crew, and Prescribed Fire Specialist will status themselves via the Fire Program Assistant, with Marin County Fire by 0830.
4. If a high visitation period is determined to pose exceptional human caused risk of wildland fire (e.g., 4th of July weekend), the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
5. If the predicted or observed lightning activity level (LAL) is 4, 5, or 6, the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
6. If a “Red Flag Warning” has been issued by the National Weather Service, the staffing class will be moved up to level 5.
7. The following will be implemented on a “Low Fire Danger Day”:
 - The park entrance fire sign at Bear Valley will be changed to indicate “low Fire Danger” by Engine Crew personnel.
8. At 0900, the park dispatcher will broadcast the following message on a LOW FIRE DANGER RATING DAY:

“All park personnel standby for today’s fire danger information. Today is a low fire danger day. Staffing class is 1. There are no special staffing requirements or restrictions in effect.”

APPENDIX E – SUPPLEMENTAL INFORMATION

FIRE DANGER RATING: MODERATE

BURNING INDEX: 19-27

1. Fire personnel will work normal tour of duty hours and are required to have their fire packs and personal protective equipment immediately available. Fire personnel will monitor pertinent radio channels throughout the day.
2. Engine Crew personnel will perform apparatus inspections by 0815. Inoperative units are to be reported to the Fire Management Office.
3. The Engine Crew, Hazard Fuels Crew, and Prescribed Fire Specialist will status themselves via the Fire Program Assistant, with Marin County Fire by 0830.
4. If a high visitation period is determined to pose exceptional human caused risk of wildland fire (e.g., 4th of July weekend), the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
5. If the predicted or observed lightning activity level (LAL) is 4, 5, or 6, the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
6. If a “Red Flag Warning” has been issued by the National Weather Service, the staffing class will be moved up to level 5.
7. The following will be implemented on a “Moderate Fire Danger Day”:
 - The park entrance fire sign at Bear Valley will be changed to indicate “Moderate Fire Danger” by Engine Crew personnel.
8. At 0900, the park dispatcher will broadcast the following message on a MODERATE FIRE DANGER RATING DAY:

“All park personnel standby for today’s fire danger information. Today is a moderate fire danger day. Staffing class is 2. There are no special staffing requirements or restrictions in effect.”

APPENDIX E – SUPPLEMENTAL INFORMATION

FIRE DANGER RATING: HIGH
BURNING INDEX: 28-33

1. Fire personnel will work normal tour of duty hours and are required to have their fire packs and personal protective equipment immediately available. Fire personnel will monitor pertinent radio channels throughout the day.
2. Engine Crew personnel will perform apparatus inspections by 0815. Inoperative units are to be reported to the Fire Management Office.
3. The Engine Crew, Hazard Fuels Crew, and Prescribed Fire Specialist will status themselves via the Fire Program Assistant, with Marin County Fire by 0830.
4. If a high visitation period is determined to pose exceptional human caused risk of wildland fire (e.g., 4th of July weekend), the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
5. If the predicted or observed lightning activity level (LAL) is 4, 5, or 6, the staffing class may be moved up to level 4 at the discretion of the Fire Duty Officer (per RM-18).
6. If a “Red Flag Warning” has been issued by the National Weather Service, the staffing class will be moved up to level 5.
7. The following will be implemented on a “High Fire Danger Day”:
 - The park entrance fire sign at Bear Valley will be changed to indicate “High Fire Danger” by Engine Crew personnel.
 - High Fire Danger signs are to be posted by Engine Crew personnel on Bear Valley Road just west of the Highway One intersection, on Limantour Road just south of the Bear Valley intersection, and on Sir Francis Drake mid-way up Ottinger Hill.
 - Engine Crew personnel will flip down the “High Fire Danger – No Fires” signs on Highway One south of Olema, at Stewart’s Horse Camp, at the bottom of Drakes View Drive in Inverness Park, and at the Palomarin trailhead. (Point Reyes Bird Observatory can be contacted at 868-0655 to flip down the Palomarin sign.)

APPENDIX E – SUPPLEMENTAL INFORMATION

- All beach fires will be banned within the Seashore. All other previously issued beach fire permits become null and void. Only self-contained gas stoves, self-contained charcoal barbecues (such as Webers) and the park-provided cooking grills will be permitted at designated campgrounds and picnic areas. Law Enforcement personnel will post any “No Fires” signs at campgrounds, trailheads, and appropriate beaches.

8. At 0900, the park dispatcher will broadcast the following message on a HIGH FIRE DANGER RATING DAY:

“All park personnel standby for today’s fire danger information. Today is a high fire danger day. Staffing class is 3. There are no special staffing requirements in effect.

All beach fires are banned within the Seashore. Only self-contained gas stoves, self-contained charcoal barbecues (such as Webers) and the park-provided cooking grills are allowed in designated campgrounds and picnic areas.”

APPENDIX E – SUPPLEMENTAL INFORMATION

FIRE DANGER RATING: VERY HIGH
BURNING INDEX: 34-37

1. Fire personnel will work normal tour of duty hours and are required to have their fire packs and personal protective equipment immediately available. Fire personnel will monitor pertinent radio channels throughout the day. Extended staffing of fire and other park red carded personnel will be determined by the Fire Duty Officer and relayed to the park dispatcher by 1600. Extended staffing will generally be until the end of the burning period, but can be modified at the discretion of the Fire Duty Officer. Funding for extended staffing will be established through the appropriate emergency account.
2. Red carded personnel from non-fire divisions working extended hours may be expected to report to either the Hagmaier Work Center or the Headquarters Fire Cache (check with the Fire Duty Officer) by 1645. (On duty Law Enforcement personnel are exempt from this requirement.) Personnel will be required to wear fire boots and Nomex, and have their fire packs and personal protective equipment with them.
3. Engine Crew personnel will perform apparatus inspections by 0815. Inoperative units are to be reported to the Fire Management Office.
4. The Engine Crew, Hazard Fuels Crew, and Prescribed Fire Specialist will status themselves via the Fire Program Assistant, with Marin County Fire by 0830.
5. If a “Red Flag Warning” has been issued by the National Weather Service, the staffing class will be moved up to level 5.
6. If the lightning activity level is observed at 4, 5, or 6, Fire Management will contact Marin County Fire to determine if either the Mount Barnabe or Mount Tamalpais lookouts have observed any smokes on park land. Engine Crew personnel will patrol for smokes at least once during the day or more often if determined by the Fire Duty Officer. Additional detection patrols may be requested from Law Enforcement personnel.
7. The following will be implemented on a “Very High Fire Danger Day”:
 - The park entrance fire sign at Bear Valley will be changed to indicate “High Fire Danger” by Engine Crew personnel.
 - High Fire Danger signs are to be posted by Engine Crew personnel on Bear Valley Road just west of the Highway One intersection, on Limantour Road just south of the Bear Valley intersection, and on Sir Francis Drake mid-way up Ottinger Hill.
 - Engine Crew personnel will flip down the “High Fire Danger – No Fires” signs on Highway One south of Olema, at Stewart’s Horse Camp, at the bottom of Drakes View Drive in Inverness Park, and at the Palomarin trailhead. (Point Reyes Bird Observatory can be contacted at 868-0655 to flip down the Palomarin sign.)
 - All fires will be banned within the Seashore. All other previously issued beach fire permits become null and void. Only self-contained gas stoves will be permitted at

APPENDIX E – SUPPLEMENTAL INFORMATION

designated campgrounds and picnic areas. Law Enforcement personnel will post any “No Fires” signs at campgrounds, trailheads, and appropriate beaches.

8. At 0900, the park dispatcher will broadcast the following message on a VERY HIGH FIRE DANGER RATING DAY:

“All park personnel standby for today’s fire danger information. Today is a very high fire danger day. Staffing class is 4.

All fire personnel and red carded Law Enforcement personnel are required to have their fire packs and personal protective equipment immediately available. Other park red carded personnel who are available for extended staffing should contact the Fire Duty Officer by 1400.

All fires, including charcoal fires, are banned within the Seashore. Only self-contained gas stoves are allowed in designated campgrounds and picnic areas.”

9. At 1600, the park dispatcher will be broadcast the following message if there is to be extended staffing:

“All park personnel standby for a fire staffing announcement. There will be extended staffing for red carded employees until _____ hours. All non-fire personnel must have authorization from their supervisor prior to working extended hours. Red carded employees working extended hours will report to their assigned work place by 1645. Employees will be need to be wearing boots and Nomex and have their fire packs and personal protective equipment with them.”

APPENDIX E – SUPPLEMENTAL INFORMATION

FIRE DANGER RATING: EXTREME
BURNING INDEX: 38+

or a

RED FLAG WARNING

has been issued by the National Weather Service

1. Fire personnel will work normal tour of duty hours and are required to have their fire packs and personal protective equipment immediately available. Fire personnel will monitor pertinent radio channels throughout the day. Extended staffing of fire and other park red carded personnel will be determined by the Fire Duty Officer and relayed to the park dispatcher by 1600. Extended staffing will generally be until the end of the burning period, but can be modified at the discretion of the Fire Duty Officer. Funding for extended staffing will be established through the appropriate emergency account.
2. Red carded personnel from non-fire divisions working extended hours may be expected to report to either the Hagmaier Work Center or the Headquarters Fire Cache (check with the Fire Duty Officer) by 1645. (On-duty Law Enforcement personnel are exempt from this requirement.) Personnel will be required to wear fire boots and Nomex, and have their fire packs and personal protective equipment with them.
3. Engine Crew personnel will perform apparatus inspections by 0815. Inoperative units are to be reported to the Fire Management Office.
4. The Engine Crew, Hazard Fuels Crew, and Prescribed Fire Specialist will status themselves via the Fire Program Assistant, with Marin County Fire by 0830.
5. The Fire Duty Officer may request additional red-carded employees to staff apparatus with a minimum two of individuals.
6. Fire personnel will generally restrict their activities to station maintenance or other duties where they can meet a rapid response time. Physical fitness training will be cancelled for the day. Hazard Fuel Crew personnel will be available to staff engines as requested.
7. If the lightning activity level is observed at 4, 5, or 6, Fire Management will contact Marin County Fire to determine if either the Mount Barnabe or Mount Tamalpais lookouts have observed any smokes on park land. Engine Crew personnel will patrol for smokes at least once during the day or more often if determined by the Fire Duty Officer. Additional detection patrols may be requested from Law Enforcement personnel.
8. The following will be implemented on an “Extreme Fire Danger or Red Flag Day”:
 - The park entrance fire sign at Bear Valley will be changed to indicate “Extreme Fire Danger” by Engine Crew personnel.
 - Extreme Fire Danger signs are to be posted by Engine Crew personnel on Bear Valley Road just west of the Highway One intersection, on Limantour Road just south of the Bear Valley intersection, and on Sir Francis Drake mid-way up Ottinger Hill.

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- Engine Crew personnel will flip down the “High Fire Danger – No Fires” signs on Highway One south of Olema, at Stewart’s Horse Camp, at the bottom of Drakes View Drive in Inverness Park, and at the Palomarin trailhead. (Point Reyes Bird Observatory can be contacted at 868-0655 to flip down the Palomarin sign.)
- All fires will be banned within the Seashore. All other previously issued beach fire permits become null and void. Only self-contained gas stoves will be permitted at designated campgrounds and picnic areas. Law Enforcement personnel will post any “No Fires” signs at campgrounds, trailheads, and appropriate beaches.
- The Mount Vision Road will be closed to vehicle traffic. North District Rangers will implement the closure.
- Park employees will not use equipment such as chain saws, lawn mowers, weed eaters, welders, and other potential ignition sources outside of developed areas in the park. Developed areas are defined as areas where defensible space (30 foot clearance of vegetation) has been established. Exemptions to this must have mitigation measures in place pre-approved by the Fire Duty Officer and the Superintendent.
- A press release will be prepared and faxed to local media outlining the Seashore’s extreme fire danger and/or red flag warning status. On weekdays, the Interpretative Division will be responsible for the press release; on weekends the park dispatcher will be responsible.

9. At 0900, the park dispatcher will broadcast the following message on an EXTREME FIRE DANGER RATING and/or RED FLAG DAY:

“All park personnel standby for today’s fire danger information. Today is an extreme fire danger day (or red flag warning day or both, whichever it is). Staffing class is 5.

All fire personnel and red carded Law Enforcement personnel are required to have their fire packs and personal protective equipment immediately available. Other park red carded personnel who are available for extended staffing should contact the Fire Duty Officer by 1400.

All fires, including charcoal fires, are banned within the Seashore. Only self-contained gas stoves are allowed in designated campgrounds and picnic areas.

All park personnel are to refrain from activities such as welding or using chain saws or weed eaters outside of developed areas in the park.”

10. At 1600, the park dispatcher will be broadcast the following message if there is to be extended staffing:

“All park personnel standby for a fire staffing announcement. There will be extended staffing for red carded employees until _____ hours. All non-fire personnel must have authorization from their supervisor prior to working extended hours. Red-carded employees working extended hours will report to their assigned work place by 1645. Employees will be need to be wearing boots and Nomex and have their fire packs and personal protective equipment with them.”

APPENDIX E, PART 6 -- BAY AREA NETWORK PARTS POCKETCARD

FIRE DANGER -- Bay Area Nat'l Parks

Maximum, Average, and 90th Percentile

Years to Remember: 1982 1995

Model: A - Western Annual Grasses

Fire Danger Area:

- Bay Area National Parks
- Golden Gate & Pt. Reyes
- Bay Area Weather Stations

Fire Danger Interpretation:

EXTREME -- Use extreme caution
(Caution) -- Watch for change
Moderate -- Lower Potential, but always be aware

Maximum -- Highest Burning Index by day for 1981 - 2000
Average -- shows peak fire season
90th Percentile -- Only 10% of the days from 1981 - 2000 had an Burning Index above 28

Local Thresholds - Watch out:

Combinations of any of these factors can greatly increase fire behavior:
20' Wind Speed over 15 mph, **RH** less than 25%,
Temperature over 80

Remember what Fire Danger tells you:

- ✓ Burning Index gives day-to-day fluctuations calculated from 2 pm temperature, humidity, wind, daily temperature & rh ranges, and precip duration.
- ✓ Wind is part of BI calculation.
- ✓ Watch local conditions and variations across the landscape -- Fuel, Weather, Topography.
- ✓ Listen to weather forecasts -- especially WIND.

Past Experience:

Fire Danger for the Bay Area National Parks- Golden Gate NRA and Pt. Reyes 1981-2000

Developed by NAGFDR--National Advisory Group for Fire Danger Rating

APPENDIX E, PART 7, DELEGATION FOR PARK FMO FROM SUPERINTENT PRNS



United States Department of the Interior

NATIONAL PARK SERVICE

Point Reyes National Seashore

Point Reyes Station, California 94956

DELEGATION FOR PARK FIRE MANAGEMENT OFFICER FROM PARK SUPERINTENDENT, POINT REYES NATIONAL SEASHORE

THE FIRE MANAGEMENT OFFICER FOR POINT REYES NATIONAL SEASHORE (INCLUDING NORTH DISTRICT LANDS – GOLDEN GATE NATIONAL RECREATION AREA) IS DELEGATED AUTHORITY TO ACT ON MY BEHALF FOR THE FOLLOWING DUTIES AND ACTIONS:

- PROVIDE DIRECTION, SUPERVISION AND LEADERSHIP TO THE PARK FIRE OPERATIONS STAFF OUTLINED IN THE ATTACHED ORGANIZATION CHART.
- COORDINATE WITH AND PROVIDE TIMELY AND ACCURATE REPORTS TO CHIEF RANGER ON ALL ACTIVITIES OF FIRE OPERATIONS PERSONNEL.
- RESPONSIBLE FOR FIRE BUDGET COORDINATION AND OVERSIGHT TO ASSURE THE FISCAL GUIDELINES ARE ADHERED TO WITHIN PARK FUNDING CRITERIA.
- ASSURE PERSONNEL PARTICIPATING IN PRESCRIBED FIRE AND WILDFIRE OPERATIONS ARE FULLY QUALIFIED.
- REQUEST AND OVERSEE DISTRIBUTION OF PREPAREDNESS, SEVERITY AND HAZARDOUS FUELS FUNDING FOR PARK FIRE OPERATIONS.
- ENSURE ALL PARK FIRE INCIDENTS ARE MANAGED IN A SAFE AND COST-EFFECTIVE MANNER.
- OVERSEE THE RECRUITMENT AND HIRING OF PARK FIRE OPERATIONS PERSONNEL.
- RESPONSIBLE FOR REPRESENTING POINT REYES NATIONAL SEASHORE IN ALL MATTERS RELATED TO THE WILDLAND AND PRESCRIBED FIRE MANAGEMENT WITH LOCAL COOPERATORS AND THE NORTHERN CALIFORNIA GEOGRAPHICAL AREA.

APPENDIX E – SUPPLEMENTAL INFORMATION

- COORDINATE PARK FIRE PREVENTION ACTIVITIES WITH THE CHIEF OF INTERPRETATION, CHIEF OF RESOURCE MANGEMENT, AND ASSIST WITH APPROPRIATE PROGRAM DIRECTION AND GUIDANCE.
- PROVIDE FOR MANAGEMENT OF PROPERTY RECORDS FOR EQUIPMENT AND SUPPLIES PURCHASED WITH PROGRAM ALLOCATIONS.
- COORDINATE, PREPOSITION, SEND AND ORDER FIRE AND AVIATION RESOURCES IN RESPONSE TO CURRENT AND ANTICIPATED PARK, REGIONAL AND NATIONAL FIRE CONDITIONS.
- HIRE EMERGENCY FIREFIGHTERS IN ACCORDANCE WITH DEPARTMENT OF INTERIOR “PAY PLAN FOR EMERGENCY WORKERS.”
- MANAGE INCIDENT QUALIFICATIONS CERTIFICATION SYSTEM AND CERTIFY INCIDENT QUALIFICATION CARDS WITHIN THE PARK.
- ENSURE STAFF MEMBERS ARE TRAINED IN PARK SAFETY PROGRAM. CREATE AWARENESS THAT PUBLIC AND FIREFIGHTER SAFETY IS THE FIRST PRIORITY IN ANY FIRE ACTIVITY.

DON L. NEUBACHER
PARK SUPERINTENDENT, POINT REYES NATIONAL SEASHORE

APPENDIX E, PART 8

2006-2007
PRESEASON WILDLAND FIRE SUPPRESSION PLAN
FOR
POINT REYES NATIONAL SEASHORE AND
GOLDEN GATE NATIONAL RECREATION AREA

PARTICIPANTS:

Bolinas Fire Protection District
Inverness Fire Department
Marin County Fire Department
Stinson Beach Fire Department
Muir Beach Fire Department
Presidio Fire Department
Southern Marin Fire Department

PURPOSE:

This plan is to facilitate the joint use of resources and identify areas of concern in the suppression of wildfires for the 2006 fire season.

AREA DESCRIPTION:

This plan covers National Park Service lands located with Marin County including Point Reyes National Seashore and Golden Gate National Recreation Area.

SUPPRESSION TACTICS:

The National Park Service priorities in the suppression of wildfires are the protection of life, property, and natural/cultural resources. In carrying out these priorities, the National Park Service is dedicated to minimize the impacts of fire suppression activities on its lands. **Minimum Impact Suppression Tactics** will be used whenever possible on all park lands. (See Appendix "A") **The Park Superintendent or his/her representative must approve the use of bulldozers, and only after all other tactics have been considered.**

SPECIAL PROTECTION AREAS:

Special Protection Areas include: Muir Woods National Monument, Philip Burton Wilderness (PRNSS), historic buildings, and habitat of federally listed plants and animals. It is important that the wildland fire suppression tactics implemented limit the impacts on these features.

*A National Park Service Resource Advisor will be made available to help guide decision-making on all wildland fires occurring on federal lands.

PROTECTION ORGANIZATION:

The Incident Command System (I.C.S.) will be used on all fires located on National Park Service lands. A "**Unified Command**" structure will be established on all fires located

APPENDIX E – SUPPLEMENTAL INFORMATION

on or threatening National Park Service lands and on fires with multiple jurisdictions. Each agency involved will provide a person capable of assuming the I.C. (Incident Commander) or Deputy I.C. responsibility. In the event that the National Park Service does not have a qualified incident commander on the fire, the I.C. position will be assumed by Marin County Fire and the National Park Service will provide an Agency Representative. A National Park Service representative must be requested for all wildfires burning on National Park Service lands **immediately after dispatch of initial attack resources.**

If a fire on National Park Service lands goes beyond extended attack, an incident management team will be ordered. **The National Park Service preference is that a federal interagency incident management team (I.M.T.) be ordered. No I.M.T. will assume command unless a Delegation of Authority has been signed and issued by the Park Superintendent, or his/ her representative.**

Prior to the beginning of fire season, each agency shall have the opportunity to update this plan, including boundary changes, telephone lists, common communication frequencies and designated persons.

PROCEDURES:

It is anticipated that there will be "RED FLAG" days during the year. The Fire Management Office will normally obtain notification of "RED FLAG" days daily directly from the National Weather Service web site. To ensure "RED FLAG" days are promptly notified, Marin County Fire will also notify the National Park Service of any predicted "RED FLAG" days. This notification will be done by Marin County Fire Dispatch faxing the daily fire danger rating and weather predictions to 415-331-6942 and to 415-663-8132 and 415-663-5182. On those days the Golden Gate Fire Management Office will notify Marin County and GGNRA Dispatch 415-561-5510 of any restrictions or closures at Golden Gate. The Point Reyes Fire Management Office will report restrictions or closures to Marin County and Point Reyes N.S. Dispatch 415-464-5170.

FIRE REPORTING:

Any wildfire occurring on lands identified in this plan will be immediately reported to Marin County Fire Department (415) 499-6717. Marin County Fire Department will immediately notify GGNRA Dispatch (415) 561-5656, or Point Reyes National Seashore Dispatch 415-464-5170 of any fires on respective National Park Service lands. GGNRA Dispatch will notify the Fire Management Officer Alex Naar at (415) 331-6374 (work), (xxx) xxx-xxxx(cell/pager), (xxx) xxx-xxxx(residence), or during work hours by radio call number "xxxx". Point Reyes National Seashore Dispatch will notify the Point Reyes Fire Management Officer Roger Wong at (415) 464-5232 (work), (xxx) xxx-xxxx (pager), (xxx) xxx-xxxx (cell), (xxx) xxx-xxxx (residence), or during working hours by radio call number "Seashore xxx" OR Fuels Management Specialist Jordan Reeser (Seashore xxx) at (415) 464-5235 (work), (xxx) xxx-xxxx (cell), (xxx) xxx-xxxx (residence). **In the event Marin County Fire Department is unable to reach a National Park Service Dispatcher, all attempts will be made to contact the Fire Management Officer directly. This is especially critical during after work hours.**

WILDLAND FIRE INVESTIGATIONS:

Marin County Fire Department will be the lead agency in providing for the investigation of all Wildland fires on National Park Service lands.

RESTRICTIONS AND CLOSURES:

Point Reyes National Seashore: There are no blanket fire restrictions at PRNSS. Fire restrictions and closures at PRNSS are based upon daily Fire Danger ratings obtained from the Burn Index (BI) calculated from Barnabe RAWS (WIMS ID #42308). See attached Fire Danger Rating Adjectives and associated campfire restrictions.

Golden Gate National Recreation Area: Fires are not permitted within the GGNRA except at Kirby Cove camping area, Battery Alexander camping area, and at Muir Beach. Any change in this policy will be communicated to Marin County Fire Department.

SHARING OF EQUIPMENT/RESOURCES/REIMBURSEMENT:

Marin County Fire Department will be the single ordering point for resources requested for initial fires burning on National Park Service lands. Each agency will provide resources as requested, provided such sharing does not impact the sending agency's ability to meet its protection obligations. Reimbursement shall be agreed upon in MOUs. If an incident extends longer than 24 hours on National Park Service lands the ordering point will be transferred to Mendocino National Forest.

RESOURCE AVAILABILITY

The following resources are available for initial attack at PRNSS area:

- (1) 5 person hand crew.
- (1) 3 person Type 3 Engine.
- (1) Type III I.C. Trainee. Jordan Reeser, Fuels Specialist
- (3) Type IV ICs. Roger Wong, Fire Management Officer
Jon Haag, Engine Captain
Bill Yohn, Fire Management Specialist

The following resources are available for initial attack at GGNRA Area:

- (1) 4 person Type 6 Engine.
- (1) Type IV I.C. Greg Jones, Engine Captain
- (1) Type III Information Officer Trainee. Mark Grupe'

The following resources are available for initial attack from Marin County Fire Dept.

- (1) Battalion Chief IA
- (6) Type III Engines IA (High Dispatch)/(4) Type III Engines IA (Medium Dispatch)
- (1) Bulldozer IA
- (2) Water Tender IA
- (1) 12 Person Crew

The following resources are available for initial attack Local Government:

- (1) Battalion Chief
- (1) Type III Engine IA, (6) more on request.
- (2) Water Tenders

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The following resources are available for initial attack CDF:

- (1) Agency Rep.
- (1) Air Tactical (CDF Air Attack 140 – Sonoma)
- (2) Air Tankers (CDF Airtanker 86 & 85 – Sonoma)
- (1) Helicopter (CDF Copter 104 – Boggs Mountain)
- (2) Type 1 State Hand Crews (Delta Conservation Camp)

Point Reyes Fire Management and GGNRA Fire Management will submit a daily fax to Marin County Fire Department with the availability of the above resources beginning June 26, 2006.

COMMUNICATIONS:

Radio Frequencies:	TX Freq.	Tone	RX Freq.	Tone
Fed Travel	xxx.xxx		xxx.xxx	
NIFC TAC 1	xxx.xxx		xxx.xxx	
NIFC TAC 2	xxx.xxx		xxx.xxx	
NIFC TAC 3	xxx.xxx		xxx.xxx	
Fed Shared Use 1	xxx.xxx		xxx.xxx	
Fed Shared Use 2	xxx.xxx		xxx.xxx	
Fed Air to Ground	xxx.xxx		xxx.xxx	
Point Reyes Direct	xxx.xxx	xxx.x	xxx.xxx	
Point Reyes Barnabe Repeat	xxx.xxx	xxx.x	xxx.xxx	xxx.x
Point Reyes Lighthouse Repeat	xxx.xxx	xxx.x	xxx.xxx	xxx.x
White Fire 1	xxx.xxx		xxx.xxx	
White Fire 2	xxx.xxx		xxx.xxx	
White Fire 3	xxx.xxx		xxx.xxx	
Blue Air	xxx.xxx		xxx.xxx	
Green Air	xxx.xxx		xxx.xxx	
Yellow Air	xxx.xxx		xxx.xxx	
Marin County Fire	xx.xx			
	xx.xx – Control 13			
	x			
	x			
	xx.xx – Control 6			
CALCORD	xxx.xxx		xxx.xxx	

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TELEPHONE NUMBERS: (all area codes are 415)

Golden Gate Fire Management Office	331-6374	
Golden Gate Fire Management Officer	331-6374,	xxx-xxxx(cell), xxx-xxxx(H)
Golden Gate Fire Management Office FAX	331-6942	
Golden Gate Engine Crew	331-6374,	xxx-xxxx(cell)
Golden Gate Dispatch	561-5510	
Presidio Fire Department	561-5135	
Presidio Fire Department FAX	561-4222	
Point Reyes Dispatch	464-5170	
Point Reyes Fire Management Office	464-5233	
Point Reyes Dispatch FAX	464-5182	
Point Reyes Fuels Specialist	464-5235	
Point Reyes Fuels Crew	464-5251	
Point Reyes Engine Crew	464-5252	
Marin County Fire Department	499-6717	
Bolinas Fire Protection District	868-1566	
Inverness Fire Department	669-7151	
Mill Valley Fire Department	388-4231	
Muir Beach Fire Department	380-9627	
Stinson Beach Fire Department	868-0622	
Southern Marin Fire Department	380-1100	

APPENDIX E – SUPPLEMENTAL INFORMATION

PRESEASON WILDLAND FIRE SUPPRESSION PLAN
2006-2007
OPERATING PLAN

MARIN COUNTY FIRE DEPARTMENT
POINT REYES NATIONAL SEASHORE
GOLDEN GATE NATIONAL RECREATION AREA

This Operating Plan has been approved by the following COUNTY and FEDERAL administrators and is authorized as an attachment to the PLAN.

Ken Massucco, Fire Chief
Marin County Fire Department

Alex Naar, FMO
Golden Gate National Recreation Area

Roger Wong, FMO
Point Reyes National Seashore

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APPENDIX E, PART 9 – MARIN EMERGENCY RADIO AUTHORITY (MERA) RADIO TALK GROUP MATRIX

		MARIN EMERGENCY RADIO AUTHORITY (MERA) RADIO TALK GROUP MATRIX														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	FD DSP Fire Dispatch	EMS EMS Dispatch	HOSP All Hospitals	MGH 1 Consult	MGH 2 Report	KSR 1 Consult	KSR 2 Report	NCH 1 Consult	NCH 2 Report	EMS 10 EMS Tactical	LG CLL Local Gvt Call	LG TLK Local Gvt Talk	PD CLL Police Call	PD TLK Police Talk	KNOX Knox box	911 Emergency
B	FD DSP Fire Dispatch	FDCNV1 Fire Car-to- car	FDCNV2 Fire Car-to- car	CPW 1 Marin Co. DPW	NPW 1 Novato DPW	SRPW 1 San Rafael DPW	CMPW Crite Madera DPW	LPW Larkspur DPW	RPW Ross DPW	SAPW San Anselmo DPW	FPW Fairfax DPW	SPW Sausalito DPW	MVPW Mill Valley DPW	TPW Tiburon DPW	BPW Belvedere DPW	911 Emergency
C	FD DSP Fire Dispatch	IC CLL ICS Call	ICS 3 ICS Tactical	ICS 4 ICS Tactical	ICS 5 ICS Tactical	ICS 6 ICS Tactical	ICS 7 ICS Tactical	ICS 8 ICS Tactical	ICS 9 ICS Tactical	ICS 10 ICS Tactical	ICS 11 ICS Tactical	ICS 12 ICS Tactical	ICS 13 ICS Tactical	ICS 14 ICS Tactical	ICS 15 ICS Tactical	911 Emergency
D	FD DSP Fire Dispatch	CTL D2 Novato Control	CTL D3 Novato Control	TAC D4 Fire Tactical	CMD D5 Fire Command	TAC D6 Fire Tactical	NV CMD Novato Command	TAC D8 Fire Tactical	TAC D9 Fire Tactical	NP Novato PD Dispatch	NP2 Novato PD Dispatch	NP T1 NPD Tac	FD CLL FD CLL	FD TLK FD TLK	NF AD	911 Emergency
E	FD DSP Fire Dispatch	CTL E2 San Rafael Control	CTL E3 San Rafael Control	TAC E4 Fire Tactical	CMD E5 Fire Command	TAC E6 Fire Tactical	SR CMD SR Command	TAC E8 Fire Tactical	TAC E9 Fire Tactical	SRP SRPD Dispatch	JL CLL Jail Call	COURT Marin SO Courts	FD CLL FD CLL	FD TLK FD TLK	SRF AD	911 Emergency
F	FD DSP Fire Dispatch	CTL F2 Central Control	CTL F3 Central Control	TAC F4 Fire Tactical	CMD F5 Fire Command	TAC F6 Fire Tactical	CA CMD Central Command	TAC F8 Fire Tactical	TAC F9 Fire Tactical	TCP TCPD Dispatch	SAP SAPD Dispatch	FP FPD Dispatch	FD CLL FD CLL	FD TLK FD TLK	CAF AD	911 Emergency
G	FD DSP Fire Dispatch	CTL G2 Southern Control	CTL G3 Southern Control	TAC G4 Fire Tactical	CMD G5 Fire Command	TAC G6 Fire Tactical	SA CMD Southern Command	TAC G8 Fire Tactical	TAC G9 Fire Tactical	SMP SMPD Dispatch	GNRA Golden Gate NRA	CHP CHP Dispatch	FD CLL FD CLL	FD TLK FD TLK	SAF AD	911 Emergency
H	FD DSP Fire Dispatch	CTL H2 Woodacre Control	CTL H3 Woodacre Control	TAC H4 Fire Tactical	CMD H5 Fire Command	TAC H6 Fire Tactical	WS CMD Western Command	TAC H8 Fire Tactical	TAC H9 Fire Tactical	SO Marin SO Dispatch	MMWD Marin Water	FD INF (Weather)	FD CLL FD CLL	FD TLK FD TLK	WSF AD	911 Emergency
I	FD DSP Fire Dispatch	EVNT 2 Special Events	EVNT 3 Special Events	EVNT 4 Special Events	EVNT 5 Special Events	EVNT 6 Special Events	EVNT 7 Special Events	EVNT 8 Special Events	EVNT 9 Special Events	PO MAC	EOC Emerg. Ops Center	OES County OES	CPR RG County Pk Rangers	OSD Open Space Dist.	NP T2 NPD Tac	911 Emergency
M	FD DSP Fire Dispatch	USAR M2	USAR M3	USAR M4	USAR M5	ICS 6 ICS Tactical	ICS 7 ICS Tactical	ICS 8 ICS Tactical	ICS 9 ICS Tactical	ICS 10 ICS Tactical	SAR 1 Search & Rescue	SAR 2 Search & Rescue	SAR 3 Search & Rescue	BAY CR Bay Cor Repeater	BAY CD Bay Cor Direct	911 Emergency

**APPENDIX E, PART 10, MINIMUM IMPACT SUPPRESSION TACTICS.
MINIMUM IMPACT SUPPRESSION TACTICS (MIST)
GUIDELINES**

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CONCEPT

The concept of Minimum Impact Suppression Tactics (MIST) is to use the minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response. In some cases MIST may indicate cold trailing or wet line may be more appropriate than constructed hand line. In another example, the use of an excavator may be used rather than a dozer. Individual determinations will be dependent on the specific situation and circumstances of each fire.

MIST is not intended to represent a separate or distinct classification of firefighting tactics but rather a mind set of how to suppress a wildfire while minimizing the long-term effects of the suppression action. When the term MIST is used in this document it reflects the above principle.

Suppression actions on all wildfires within PRNS protected wilderness will be those having a minimum impact on the physical resources associated with each site. In so doing, the principle of fighting fire aggressively but providing for safety first will not be compromised.

The key challenge to the line officer, fire manager and firefighter is to be able to select the wildfire suppression tactics that are appropriate given the fire's probable or potential behavior. The guiding principle is always least cost plus loss while meeting land and resource management objectives. It is the second part of this statement which must be recognized more than it has in the past. Appreciation of the values associated with wilderness has been more difficult to articulate but, nevertheless, are important. As this recognition emerges, actions must be modified to accommodate a new awareness of them.

These actions, or MIST, may result in an increase in the amount of time spent watching, rather than disturbing, a dying fire to insure it does not rise again. They may also involve additional rehabilitation measures on the site that were not previously carried out.

When selecting an appropriate suppression response, firefighter safety must remain the highest concern. In addition, fire managers must be assured the planned actions will be effective and will remain effective over the expected duration of the fire.

GOAL

The goal of MIST is to halt or delay fire spread in order to maintain the fire within predetermined parameters while producing the least possible impact on the resource being protected. These parameters are represented by the initial attack incident commander's size-up of the situation in the case of a new start or by the escaped fire situation analysis (EFSA) in case of an escaped fire.

It is important to consider probable rehabilitation need as a part of selecting the appropriate suppression response. Tactics that reduce the need for rehab are preferred whenever feasible.

SUPPRESSION RESPONSIBILITY

As stated previously, safety is the highest priority. All action will be anchored to the standard fire orders and watch out situations. Safety will remain the responsibility of each person involved with the incident.

Initial/Extended Attack

Incident Commander – To understand and carry out an appropriate suppression response, which will best meet the land management objectives of the area at the least cost plus loss. Insure all forces used on the fire understand the plan for suppressing the fire in conjunction with MIST.

Keep in communication with responsible fire management or line officer to insure understanding and support of tactics being used on the fire. Evaluate and provide feedback as to the tactical effectiveness during and after fire incident.

Project Fire

Type 1/ Type 2 Incident Commander – To carry out instructions given by the responsible line officer both verbally and through the WFSA. Establish and nurture a close dialogue with the resource advisors assigned to the fire team. Review actions on site and evaluate for compliance with land line officer direction and effectiveness at meeting fire management protection objectives.

Responsible Line Officer –transmits the land management objectives of the fire area to the fire team and to define specific fire management protection objectives. Periodically review for compliance.

Resource Advisor – To insure the interpretation and implementation of WFSA and other oral or written line officer direction is adequately carried out. Provide specific direction and guidelines as needed. Participate at fire team planning sessions, review incident action plans and attend daily briefings to emphasize resource concerns and management's expectations. Provide assistance in updating WFSA when necessary. Participate in incident management team debriefing and assist in evaluation of team performance related to MIST.

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IMPLEMENTATION GUIDELINES

Following is a list of considerations for each fire situation.

Hot-Line/Ground Fuels

- Allow fire to burn to natural barriers.
- Use cold-trail, wet line or combination when appropriate.
- If constructed fire line is necessary, use only width and depth to check fire spread.
- Burn out and use low impact tools like swatter or 'gunny' sack.
- Minimize bucking and cutting of trees to establish fire line; build line around logs when possible.
- Use alternative mechanized equipment such as excavators, rubber tired skidders, etc. rather than tracked vehicles. Use high pressure type sprayers to clean equipment prior to assigning equipment to the incident command in order to reduce the potential to spread noxious weeds.
- Constantly re-check cold trailed fire line.

Hot-Line/Aerial Fuels

- Limb vegetation adjacent to fire line only as needed to prevent additional fire spread.
- During fire line construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- Minimize felling of trees and snags unless they threaten the fire line or seriously endanger workers. In lieu of felling, identify hazard trees with a lookout or flagging.
- Scrape around tree bases near fire line if it is likely they will ignite.

Mop-up/Ground Fuels

- Do minimal spading; restrict spading to hot areas near fire line.
- Cold-trail charred logs near fire line; do minimal tool scarring.
- Minimize bucking of logs to extinguish fire or to check for hotspots; roll the logs instead if possible.
- Return logs to original position after checking and when ground is cool.

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- Refrain from making bone yards; burned and partially burned fuels that were moved should be returned to a natural arrangement.
- Consider allowing large logs to burn out. Use a lever rather than bucking to manage large logs that have to be extinguished.
- Use gravity socks in stream sources and/or a combination of water blivits and fold-a-tanks to minimize impacts to streams.
- Consider using infrared detection devices along perimeter to reduce risk.
- Personnel should avoid using rehabilitated fire lines as travel corridors whenever possible because of potential soil compaction and possible detrimental impacts to rehab work, i.e. water bars.

Mop-up/Aerial Fuels

- Remove or limb only those fuels which if ignited have potential to spread fire outside the fire line.
- Before felling consider allowing ignited tree/snag to burn itself out. Ensure adequate safety measures are communicated if this option is chosen.
- Identify hazard trees with a lookout or flagging.
- If burning trees/snag pose a serious threat of spreading fire brands, extinguish fire with water or dirt whenever possible. Consider felling by blasting when feasible. Felling by crosscut or chainsaw should be the last resort.
- Align saw cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight when possible.

LOGISTICS**Campsite Considerations**

- Locate facilities outside of wilderness whenever possible.
- Coordinate with the Resource Advisor in choosing a site with the most reasonable qualities of resource protection and safety concerns.
- Evaluate short-term low impact camps such as coyote or spike versus use of longer-term higher impact camps.
- Use existing campsites whenever possible.
- New site locations should be on impact resistant and naturally draining areas such as rocky or sandy soils, or openings with heavy timber.

APPENDIX E – SUPPLEMENTAL INFORMATION

- Avoid camps in meadows, along streams or on lakeshores. Camps should be located at least 200 feet from water resources or other sensitive areas.
- Consider impacts on both present and future users. An agency commitment to wilderness values will promote those values to the public.
- Lay out the camp components carefully from the start. Define cooking, sleeping, latrine, and water supply.
- Minimize the number of trails and ensure adequate marking.
- Consider fabric ground cloth for protection in high use areas such as around cooking facilities.
- Use commercial portable toilet facilities where available. If these cannot be used a latrine hole should be used.
- Select latrine sites a minimum of 200 feet from water sources with natural screening.
- Do not use nails in trees.
- Constantly evaluate the impacts which will occur, both short and long term.

Personal Camp Conduct

- Use “leave no trace” camping techniques.
- Minimize disturbance to land when preparing bedding site. Do not clear vegetation or trench to create bedding sites.
- Use stoves for cooking, when possible. If a campfire is used limit to one site and keep it as small as reasonable. Build either a “pit” or “mound” type fire. Avoid use of rocks to ring fires.
- Use down and dead firewood. Use small diameter wood, which burns down more cleanly.
- Don’t burn plastics or aluminum – “pack it out” with other garbage.
- Keep a clean camp and store food and garbage so it is unavailable to wildlife. Ensure items such as empty food containers are clean and odor free, never bury them.
- Select travel routes between camp and fire and define clearly.
- Carry water and bathe away from lakes and streams. Personnel must not introduce soaps, shampoos or other personal grooming chemicals into waterways.

AVIATION MANAGEMENT

One of the goals of wilderness managers is to minimize the disturbance caused by air operations during an incident.

Aviation Use Guidelines

- Maximize back haul flights as much as possible.
- Use long line remote hook in lieu of constructed helispots for delivery or retrieval of supplies and gear.
- Take precautions to insure noxious weeds are not inadvertently spread through the deployment of cargo nets and other external loads.
- Use natural openings for helispots and paracargo landing zones as far as practical. If construction is necessary, avoid high visitor use areas.
- Consider maintenance of existing helispots over creating new sites.
- Obtain specific instructions for appropriate helispot construction prior to the commencement of any ground work.
- Consider directional falling of trees and snags so they will be in a natural appearing arrangement.
- Buck and limb only what is necessary to achieve safe/practical operating space in and around the landing pad area.

Retardant Use

During initial attack, fire managers must weigh the non-use of retardant with the probability of initial attack crews being able to successfully control or contain a wildfire. If it is determined that use of retardant may prevent a larger, more damaging wildfire, then the manager might consider retardant use even in sensitive areas. This decision must take into account all values at risk and the consequences of larger firefighting forces' impact on the land.

- Consider impacts of water drops versus use of foam/retardant. If foam/retardant is deemed necessary, consider use of foam before retardant use.
- Are there restrictions on certain types of retardant.

APPENDIX E – SUPPLEMENTAL INFORMATION

HAZARDOUS MATERIALS**Flammable/Combustible Liquids**

- Store and dispense aircraft and equipment fuels in accordance with National Fire Protection Association (NFPA) and Health and Safety Handbook requirements.
- Avoid spilling or leakage of oil or fuel, from sources such as portable pumps, into water sources or soils.
- Store any liquid petroleum gas (propane) downhill and downwind from firecamps and away from ignition sources.

Flammable Solids

- Pick up residual fusees debris from the fire line and dispose of properly.

Fire Retardant/Foaming Agents

- Do not drop retardant or other suppressants near surface waters.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

FIRE REHABILITATION

Rehabilitation is a critical need. This need arises primarily because of the impacts associated with fire suppression and the logistics that support it. The process of constructing control lines, transport of personnel and materials, providing food and shelter for personnel, and other suppression activities has a significant impact on sensitive resources regardless of the mitigating measures used. Therefore, rehabilitation must be undertaken in a timely, professional manner.

During implementation, the resource advisor should be available for expert advice and support of personnel doing this work as well as quality control.

Rehabilitation Guidelines

- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.
- Clean fire pit of unburned materials and fill back in.
- Discourage use of newly established trails created during the suppression effort by covering with brush, limbs, small diameter poles, and rotten logs in a naturally appearing arrangement.
- Replace dug-out soil and/or duff and obliterate any berms created during the suppression effort.

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- If impacted trails have developed on slopes greater than six percent, construct waterbars according to the following waterbar spacing guide:

Trail Percent Grade	Maximum Spacing Ft.
6-9	400
10-15	200
15-25	100
25+	50

- Where soil has been exposed and compacted, such as in camps, on user-trails, at helispots and pump sites, scarify the top 2-4 inches and scatter with needles, twigs, rocks, and dead branches. It is unlikely that seed and fertilizer for barren areas will be appropriate, in order to maintain the genetic integrity of the area. It may be possible, depending on the time of year and/or possibility of a rainy period, to harvest and scatter nearby seed, or to transplant certain native vegetation.
- Blend campsites with natural surroundings, by filling in and covering latrine with soil, rocks, and other natural material. Naturalize campfire area by scattering ashes in nearby brush (after making sure any sparks are out) and returning site to a natural appearance.
- Where trees were cut or limbed, cut stumps flush with ground, scatter limbs and boles, out of sight in unburned area. Camouflage stumps and tree boles using rocks, dead woody material, fragments of stumps, bolewood, limbs, soil and fallen or broken green branches. Scattered sawdust and shavings will assist in decomposition and be less noticeable. Use native materials from adjacent, unimpacted areas if necessary.
- Remove newly cut tree boles that are visible from trails or meadows. Drag other highly visible woody debris created during the suppression effort into timbered areas and disburse. Tree boles that are too large to move should be slant cut so a minimal amount of the cut surface is exposed to view. Chopping up the surface with an axe or pulaski, to make it jagged and rough, will speed natural decomposition.
- Leave tops of felled trees attached. This will appear more natural than scattering the debris.

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- Consider -- if no other alternatives are available -- helicopter sling loading rounds and tops from a disturbed site when there has been an excessive amount of bucking, limbing and topping.
- Tear out sumps or dams, where they have been used, and return site to natural condition. Replace any displaced rocks or streambed material that has been moved. Reclaim streambed to its predisturbed state, when appropriate.
- Walk through adjacent undisturbed area and take a look at your rehab efforts to determine your success at returning the area to as natural a state as possible. Good examples should be documented and shared with others!

DEMOBILIZATION

Because demob is often a time when people are tired or when weather conditions are less than ideal, enough time must be allowed to do a good job. When moving people and equipment, choose the most efficient and least impactful method to both the landscape and fire organization mission. An on-the-ground analysis of “How Things Went” will be important.

POST-FIRE EVALUATION

Post-fire evaluation is important for any fire occurrence so management can find out how things went. Identify areas needing improvement, to formulate strategies and to produce quality work in the future. This activity is especially important in wilderness and like sensitive areas due to their fragility and inclination to long-term damage by human impacts.

Resource advisors and functional specialists such as wilderness rangers will be responsible for conducting the post-fire evaluation. They are the people who have the experience and knowledge to provide information required to make the evaluation meaningful and productive.

Post-fire evaluation by Burn Area Response Emergency Team will begin during the suppression effort. An emergency stabilization plan will be completed within 7 days of the date of fire containment per 620 DM 3.

DATA COLLECTION/DOCUMENTATION/RECOMMENDATIONS

This phase will be completed by a review of the rehab plan and visit to the fire site as soon after demobilization as possible. An inventory of comps and helispots will be completed. This will also include an objective overview of other areas covered by the rehab plan.

Observations will be documented in a brief report to the line officer with a copy to the appropriate incident commander. In the report, the evaluator will include recommendations for ensuing fire suppression activities on similar lands. It is important that the evaluator recognize and commend the initial attack forces or overhead team for positive activities. Make special note of the extra efforts and sensitivity to suppression impacts.

STANDARD FIRE ORDERS

- F** Fight fire aggressively but provide for safety first.
- I** Initiate all actions based on current and expected fire behavior.
- R** Recognize current weather conditions and obtain forecast.
- E** Ensure instructions are given and understood.

- O** btain current information on fire status.
- R** Remain in communication w/ crew members, your supervisor, & adjoining forces.
- D** Determine safety zones and escape routes.
- E** Establish lookouts in potentially hazardous situations.
- R** Retain control at all times.
- S** Stay alert, keep calm, think clearly, act decisively.

WATCH OUT SITUATIONS

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisor.
8. Constructing fire line without safe anchor point.
9. Building fire line downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zone difficult.

APPENDIX E, PART 11 – MINIMUM TOOL FLOW CHART**Wilderness Minimum-Requirement Worksheet****Introduction**

The Minimum Requirement Analysis is designed to assist program managers in making appropriate decisions affecting wilderness that are consistent with the Wilderness Act and National Park Service Management Policies.

The worksheet is divided into two parts; 1) the Minimum Requirement Analysis to determine whether the action is necessary and consistent with wilderness goals, and 2) the Minimum Tool Determination that selects methods and tools that minimize environmental and aesthetic impacts. These concepts flow from the Wilderness Act and NPS Management Policies:

...except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

- *Wilderness Act: Section 4(c)*

All management decisions affecting wilderness must be consistent with a minimum requirement concept ... When determining minimum requirement, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than economic efficiency and convenience. If a compromise of wilderness resource or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable. ...the method used must clearly weigh the benefits and impacts of the proposal, document the decision-making process and be supported by an appropriate environmental compliance document.

- *NPS Management Policies: 6.3.5*

Purpose

The Minimum Requirement process is implemented as a two-part process:

1. A determination of whether or not a proposed action is appropriate or necessary for the administration of the area as wilderness and does not pose significant impact to the wilderness resource or character
2. If the project is appropriate and necessary in wilderness, the selection of management tools and methods that cause the least amount of impacts to the physical environment or wilderness character.

Procedure

Step 1 - Complete Part 1 (Minimum Requirement Analysis). If the project is consistent with the minimum wilderness requirement, proceed to step 2.

Step 2 – Complete the Minimum Tool Determination to select the methods, tools and techniques to implement the proposal with the least impact to wilderness resources and values.

Minimum Requirement Analysis Worksheet Point Reyes National Seashore

Proposed Action:

Project Lead:

Date:

PART A: Minimum Requirement (Should the action be done in wilderness)

1

IS THE ACTION AN EMERGENCY?

YES

Act according to
established procedures

NO



Answer: Yes No

Explain:

2

Does the Action conflict with legislation,
wilderness goals or DFC?

YES

Do Not Undertake

NO



Answer: Yes No

Explain:

3

Can the action be accomplished with less
intrusive means?

YES

Do It

NO



Answer: Yes No

Explain

4

Can the action be accomplished outside of
wilderness?

YES

Do it there

NO



Answer: Yes No

Explain

5

Proceed to PART B

PART B: Minimum Tool (how the action should be done in wilderness)

What is Proposed:

Location:

When will the action occur:

Start:

End:

Method 1

Method 2

Method 3

Method 4

Use of motorized equipment or mechanical transport

Use of non-motorized equipment or non-mechanical transport

Combination of Methods 1 & 2

Other methods

Use extra sheets if needed

1

Rational for Method

(use additional sheets if needed)

2

Impacts to wilderness resources and wilderness character

3

Impact Mitigations

(use additional sheets if needed)

Resources Environment

Social Experiential Character

Health Safety

=

Superintendent Concurrence

Date



WILDLAND FIRE SITUATION ANALYSIS

Wildland Fire Situation Analysis (WFSA) is a decision-making process in which the Agency Administrator or representative describes the situation, establishes objectives and constraints for the management of the fire, compares multiple strategic wildland fire management alternatives, evaluates the expected effects of the alternatives, selects the preferred alternative, and documents the decision. The format and level of detail required is dependent on the specific incident and it's complexity. The key is to document the decision.

WFSA INITIATION

FIRE NAME

JURISDICTION(S)

DATE AND TIME INITIATED

WFSA COMPLETION/FINAL REVIEW

THE SELECTED ALTERNATIVE ACHIEVED DESIRED OBJECTIVES ON (DATE/TIME):

THE SELECTED ALTERNATIVE DID NOT ACHIEVE THE DESIRED OBJECTIVES AND A NEW WFSA WAS PREPARED ON (DATE/TIME):

AGENCY ADMINISTRATOR OR REPRESENTATIVE SIGNATURE:

WFSA INSTRUCTIONS

Section I. WFSA Information Page

The Agency Administrator completes this page.

- I.A. Jurisdiction(s): Assign the agency that have or could have fire protection responsibility, e.g., USFWS, Forest Service, BLM, etc.**
- I.B. Geographic Area: Assign the recognized "Geographic Coordination Area" in which the fire is located, e.g., Northwest, Northern Rockies, etc.**
- I.C. Unit: Designate the local administrative unit, e.g., Hart Mountain Refuge Area, Flathead Indian Reservation, etc.**
- I.D. WFSA #: Identify the number assigned to the most recent WFSA for this fire.**
- I.E. Fire Name: Self-explanatory.**
- I.F. Incident Number: Identify the agency number assigned to the fire, e.g., BOD 296, BNF 001.**
- I.G. Accounting Code: Insert the local unit's accounting code.**
- I.H. Date/Time Prepared: Self-explanatory.**
- I.I. Attachments: Check here to designate attachments used in the completion of the WFSA. "Other" could include data or models used in the development of the WFSA. Briefly describe the "other" items used.**

I. WILDLAND FIRE SITUATION ANALYSIS

A. JURISDICTION(S):

B. GEOGRAPHIC AREA:

C. UNIT(S):

D. WFSA #:

E. FIRE NAME:

F. INCIDENT #:

G. ACCOUNTING CODE:

H. DATE/TIME PREPARED:

I. ATTACHMENTS:

- COMPLEXITY MATRIX/ANALYSIS¹**
- RISK ASSESSMENT¹**
- PROBABILITY OF SUCCESS¹**
- CONSEQUENCES OF FAILURE¹**
- MAPS¹**
- DECISION TREE²**
- FIRE BEHAVIOR PROJECTIONS¹**
- CALCULATIONS OF RESOURCE REQUIREMENTS¹**
- OTHER (SPECIFY)**

¹ Required

² Required by the USFS

Section II. Objectives and Constraints

The Agency Administrator completes this page.

II.A. Objectives: Specify criteria that should be considered in the development of alternatives.

Safety objectives for firefighters, aviation, and public must receive the highest priority, Suppression objectives must relate to resource management objectives in the unit resource management plan.

Economic objectives could include closure of all portions of an area, thus impacting the public, or impacts to transportation, communication and resource values.

Environmental objectives could include management objectives for airshed, water quality, wildlife, etc.

Social objectives could include any local attitudes toward fire or smoke that might affect decisions on the fire, safety, etc.

Other objectives might include legal or administrative constraints which would have to be considered in the analysis of the fire situation, such as the need to keep the fire off other agency lands, etc.

II.B. Constraints: List constraints on wildland fire action. These could include constraints to designated wilderness, wilderness study areas, environmentally or culturally sensitive areas, irreparable damage to resources or smoke management/air quality concerns. Economic constraints such as public and Agency cost could be considered here.

II. OBJECTIVES AND CONSTRAINTS

A. OBJECTIVES (must be specific and measurable):

1. **SAFETY:**
Public

Firefighter

2. **ECONOMIC:**

3. **ENVIRONMENTAL:**

4. **SOCIAL:**

5. **OTHER:**

B. CONSTRAINTS:

Section III. Alternatives

The FIRE MANAGER/and or INCIDENT COMMANDER complete(s) this page.

- III.A. Wildland Fire Management Strategy:** Briefly describe the general wildland fire strategies for each alternative. Alternatives must meet resource management plan objectives.
- III.B. Narrative:** Briefly describe each alternative with geographic names, locations, etc., that would be used when implementing a wildland fire strategy. For example, "Contain within the Starvation Meadows' watershed by the first burning period".
- III.C. Resources Needed:** Resources listed must be reasonable to accomplish the tasks described in Section III.B. It is critical to also look at the reality of the availability of these needed resources.
- III.D. Estimated Final Fire Size:** Estimated final size for each alternative at time of containment.
- III.E. Estimated Contain/Control Date:** Estimates for each alternative shall be made based on predicted weather, fire behavior, resource availability and the effects of wildland fire management efforts.
- III.F. Cost:** Estimate all fire costs for each alternative. Consider mopup, rehabilitation, and other costs as necessary.
- III.G. Risk Assessment: Probability of success/Consequences of failure:** Describe probability as a % and associated consequences for success and failure. Develop this information from models, practical experience or other acceptable means. Consequences described will include fire size, days to contain, days to control, costs and other information such as park closures and effect on critical habitat. Include fire behavior and long-term fire weather forecasts to derive this information.
- III.H. Complexity:** Assign the complexity rating calculated in the Guide for Assessing Fire Complexity.
- III.I. Maps:** A map for each alternative must be prepared. The map shall be based on the "Probability of success/Consequences of Failure" and include other relative information.

III. ALTERNATIVES			
	A	B	C
A. WILDLAND FIRE STRATEGY:			
B. NARRATIVE:			
C. RESOURCES NEEDED: HANDCREWS ENGINES DOZERS AIRTANKERS HELICOPTERS			
D. ESTIMATED FINAL FIRE SIZE:			
E. ESTIMATED CONTAIN/ CONTROL DATE			
F. COSTS:			
G. RISK ASSESSMENT: PROBABILITY OF SUCCESS/ CONSEQUENCES OF FAILURE			
H. COMPLEXITY:			
I. ATTACH MAPS FOR EACH ALTERNATIVE			

Section IV. Evaluation of Alternatives

The Agency Administrator(s), FMO and/or Incident Commander(s) completes this page.

IV.A. Evaluation Process: Conduct an analysis for each element of each objective and each alternative. Objective shall match those identified in section II.A. Use the best estimates available and quantify whenever possible. Provide ratings for each alternative and corresponding objective element. Fire effects may be negative, cause no change or may be positive. Examples are: 1) a system which employs a "-" for negative effect, a "0" for no change, and a "+" for positive effect; 2) a system which uses a numeric factor for importance of the consideration (soils, watershed, political, etc.) and assigns values (such as -1 to +1, -100 to +100, etc.) to each consideration, then arrives at a weighted average. If you have the ability to estimate dollar amounts for natural resource and cultural values this data is preferred. Use those methods which are most useful to managers and most appropriate for the situation and agency. To be able to evaluate positive fire effects, the area must be included in the resource management plan and be consistent with prescriptions and objectives of the Fire Management Plan.

Sum Of Economic Values: Calculate for each element the net effect of the rating system used for each alternative. This could include the balance of: pluses (+) and minuses (-), numerical rating (-3 and +3), or natural and cultural resource values in dollar amounts. (Again resource benefits may be used as part of the analysis process when the wildland fire is within a prescription consistent with approved Fire Management Plans and in support of the unit's Resource Management Plan.)

IV. EVALUATION OF ALTERNATIVES

A. EVALUATION PROCESS	A	B	C
<p>SAFETY</p> <p style="padding-left: 20px;">Firefighter</p> <p style="padding-left: 20px;">Aviation</p> <p style="padding-left: 20px;">Public</p>			
Group of Environmental Values			
<p>ECONOMIC</p> <p style="padding-left: 20px;">Forage</p> <p style="padding-left: 20px;">Improvements</p> <p style="padding-left: 20px;">Recreation</p> <p style="padding-left: 20px;">Timber</p> <p style="padding-left: 20px;">Water</p> <p style="padding-left: 20px;">Wilderness</p> <p style="padding-left: 20px;">Wildlife</p> <p style="padding-left: 20px;">Other (specify)</p>			
Group of Environmental Values			
<p>ENVIRONMENTAL</p> <p style="padding-left: 20px;">Air</p> <p style="padding-left: 20px;">Visual</p> <p style="padding-left: 20px;">Fuels</p> <p style="padding-left: 20px;">T & E Species</p> <p style="padding-left: 20px;">Other (specify)</p>			
Group of Environmental Values			
<p>SOCIAL</p> <p style="padding-left: 20px;">Employment</p> <p style="padding-left: 20px;">Public Concern</p> <p style="padding-left: 20px;">Cultural</p> <p style="padding-left: 20px;">Other (Specify)</p>			
Group of Environmental Values			
<p>OTHER</p>			

Section V. Analysis Summary

The Agency Administrator(s), FMO and/or Incident Commander(s) complete this page.

- V.A. Compliance with Objectives:** Prepare narratives that summarize each alternative's effectiveness in meeting each objective. Alternatives that do not comply with objectives are not acceptable. Narratives could be based on effectiveness and efficiency. For example: "most effective and least efficient", "least effective and most efficient", "or "effective and efficient". Or answers could be based on a two-tiered rating system such as "complies with objective" and "fully complies with or exceeds objective". Use a system that best fits the manager's needs.
- V.B. Pertinent Data:** Data for this section has already been presented and is duplicated here to help the Agency Administrator(s) confirm their selection of an alternative. Final Fire Size is displayed on page three, section III.D. Complexity is calculated in the attachments and displayed on page three, section III.H. Costs are displayed on page three, section III.F. Economic Values have been calculated and displayed on page four. Probability of Success/Consequences of Failure are calculated in the attachments and displayed on page three, section III.G.
- V.C. External and Internal Influences:** Assign information and data occurring at the time the WFSA is signed. Identify the Preparedness Index (1 through 5) for the National and Geographic levels. If available, indicate the Incident Priority assigned by the MAC group. Designate the Resource Availability status. This information is available at the Geographic Coordination Center and needed to select a viable alternative. Designate "yes" indicating an up-to-date weather forecast has been provided to, and used by, the Agency Administrator(s) to evaluate each alternative. Assign information to the "other" category as needed by the Agency Administrator(s).

Section VI. Decision

Identify the alternative selected. Must have clear and concise rationale for the decision, and a signature with date and time. Agency Administrator(s) signature is mandatory.

V. ANALYSIS SUMMARY

ALTERNATIVES	A	B	C
A. COMPLIANCE WITH OBJECTIVES: SAFETY ECONOMIC ENVIRONMENTAL SOCIAL OTHER			
B. PERTINENT DATA: FINAL FIRE SIZE COMPLEXITY COST RESOURCE VALUES PROBABILITY of SUCCESS CONSEQUENCES of FAILURE			
C. EXTERNAL/INTERNAL INFLUENCES: NATIONAL AND GEOGRAPHIC PREPAREDNESS LEVEL _____ INCIDENT PRIORITY _____ RESOURCE AVAILABILITY _____ WEATHER FORECAST (LONG-RANGE) _____ FIRE BEHAVIOR PROJECTIONS _____			

VI. DECISION

The selected alternative is:

RATIONALE:

AGENCY ADMINISTRATOR SIGNATURE _____

DATE/TIME _____

Section VII. Daily Review

The Agency Administrator(s), or designate complete(s) this page.

The date, time and signature of reviewing officials are reported in each column for each day of the Incident. The status of Preparedness Level, Incident Priority, Resource Availability, Weather Forecast, and WFSA Validity is completed for each day reviewed. Ratings for the Preparedness Level, Incident Priority, Resource Availability, Fire Behavior, and Weather Forecast are addressed on page five, section V.C. Assign a “yes” under “WFSA Valid” to continue use of this WFSA. A “no” indicates this WFSA is no longer valid and another WFSA must be prepared or the original revised.

Section VII. Daily Review

The Agency Administrator(s), or designate complete(s) this page.

The date, time and signature of reviewing officials are reported in each column for each day of the Incident. The status of Preparedness Level, Incident Priority, Resource Availability, Weather Forecast, and WFSA Validity is completed for each day reviewed. Ratings for the Preparedness Level, Incident Priority, Resource Availability, Fire Behavior, and Weather Forecast are addressed on page five, section V.C. Assign a "yes" under "WFSA Valid" to continue use of this WFSA. A "no" indicates this WFSA is no longer valid and another WFSA must be prepared or the original revised.

APPENDIX E, PART 13. Delegation of Authority

Name of Incident Commander is assigned as Incident Commander of the *Name of Incident*, Point Reyes National Seashore for the National Park Service, effective *Time and Date*.

The Incident Commander has full authority and responsibility for managing the fire suppression activities within the framework of the law and National Park Service policy and direction as provided by this office. The Resource Advisor will provide Resource Management Plans and other appropriate documents.

Names of Resources Advisors and contact Information are assigned as Resource Advisors. They or the Park Superintendent (or designate) will be consulted in situations where natural resource decisions or trade offs are involved unless life safety issues require immediate attention and those actions will be documented.

Specific direction and fire suppression priorities for the *Name of Incident* are as follows, and are in priority order:

1. Provide for firefighter and public safety.
2. Use of minimal impact techniques should be employed to reduce habitat damage. Use natural barriers and roads if possible for burnout operations.
3. Use of dozers or tractors requires approval of the Park Superintendent or their designate (resource advisors) prior to implementation.

Include other Standards or conditions as needed.

Turn Back Standards

1. All *Name of Incident* contracts, agreements, bills, medical problems, equipment repairs, and fire cache re-supply shall be closed out prior to team being released.
2. Road or levee damage during suppression efforts will be repaired prior to the team's departure.
3. Fire perimeter mopped-up *Specify* and all lines checked for heat and integrity.
4. Rehabilitation Plan will be completed in Coordination with the Resource Advisor.
5. Fire perimeter mapped by GPS and loaded into the Refuges GIS Database.
6. Tort claims reviewed by Park Superintendent or their designate.

The Chief Ranger, Fire Program Manager, or their designate will represent the Park Superintendent on any occasion where Park Superintendent is not immediately available.

Park Superintendent, _____ Point Reyes National Seashore,

Date and Time. _____

APPENDIX E – SUPPLEMENTAL INFORMATION

APPENDIX E, PART 14. Incident Complexity Analysis

Incident Complexity Analysis (Type 4, 5)			
Type 5 Incident		Yes	No
1. Span of Control > 6 firefighting personnel			
2. Fire Suppression Containment Time > 4 hours (disregard if managing fire as a WFRB or implementing 'Confined' strategy).			
3. Fire intensity - flame length > 2 feet			
4. Public safety concerns (roads, urban interface, populated/congested areas, sightseers, etc.) Specify: _____			
5. Aviation – Any Tactical aviation resources assigned			
If Item # 1 is checked YES, classify incident as Type 4. If any two additional items are checked (2,3,4,5), this is a Type 4 incident. If decision has been made to stay at Type 5, document your rationale and discussion. If fire is Type 4 order IC if not qualified. TAKE ACTION TO THE LEVEL OF YOUR TRAINING AND QUALIFICATIONS UNTIL RELIEVED. If transition does take place, give a thorough briefing to incoming IC and make transfers of command official with dispatch and fireline personnel.			
IC Comments:		Date:	Time:
Type 4 Incident		Yes	No
1. Span of control > 5 resources			
2. Containment time – beyond first operation period hours (disregard if managing fire as a WFRB or implementing 'Confined' strategy).			
3. Fire Intensity – flame length > 4 feet			
4. Public safety concerns (roads, urban interface, populated/congested areas, sightseers, etc.) Specify: _____			
5. Aviation – any tactical aviation resources assigned			
If item #1 or item #2 are checked YES, classify incident as Type 3. If any two additional items are checked (3, 4, 5) this is a Type 3 Incident. If decision has been made to stay at Type 4, document your rationale and discussion. If fire is Type 3 order IC if not qualified. TAKE ACTION TO THE LEVEL OF YOUR TRAINING AND QUALIFICATIONS UNTIL RELIEVED. If transition does take place, give a thorough briefing to incoming IC and make transfers of command official with dispatch and fireline personnel.			
IC Comments :		Date:	Time:

APPENDIX E. SUPPLEMENTAL INFORMATION

APPENDIX E, PART 15. PRNS INCIDENT ORGANIZER

Point Reyes National
Seashore



Incident Organizer

Fire Management

Incident Name	
Incident Number	
Fire Code	
Other Code	
Unit	

IC Time & Date	
IC Time & Date	

Containment Date & Time	
Control Date & Time	
Final Size	

Directions and Intent:

MOST INCIDENTS ONLY REQUIRE FILLING OUT THE FIRST FEW PAGES - i.e., TYPE 4 AND 5 INCIDENTS. (In these situations, fill out afterwards when doing your AAR.)

- Intended to provide the IC with a format and focal point to begin processing an incident that is emerging. (Start to plan the fight – delegate – instead of fighting the fight and possibly losing your situational awareness as IC.)
- Use until an Incident is out or operating on an IAP.
- Serves as an Incident Workbook used in conjunction with the Incident Response Pocket Guide, Redbook or Fireline Handbook.
- Red-blocked items are required to be filled in for 30-mile accident prevention (Forest Service).

IC Signature: _____

IC Signature: _____

APPENDIX E. SUPPLEMENTAL INFORMATION

Initial Attack Fire Size-Up														
Fire Name:			Fire Number			DOI:			USDA:					
IC Name:			State:											
Descriptive Location:														
*Arrival Date:			Time:											
*Legal:			Township			Range			Section(s)					
			Latitude			Longitude								
*Coordinates:			UTM:			E:			N:					
Reported by:														
*Estimated Size:			acres			Ownership:								
Estimated Containment			Date:			Time:								
Estimated Control			Date:			Time:								
Fire Investigator? <input type="checkbox"/> No <input type="checkbox"/> Yes, on order														
Resources Responding (use resource summary on next page to record this data):														
Initial Fire Size-Up														
*Are any structures threatened? <input type="checkbox"/> No <input type="checkbox"/> Yes - specify:														
Does the fire constitute any control problems? <input type="checkbox"/> No <input type="checkbox"/> Yes - specify:														
Are additional resources needed? <input type="checkbox"/> No <input type="checkbox"/> Yes - specify:														
*Hazard(s):														
*Spread Potential:														
1. Low			2. Moderate			3. High			4. Extreme					
*Character of Fire:														
1. Smoldering			3. Running			5. Torching			7. Crown/spotting					
2. Creeping			4. Spotting			6. Crowning			8. Erratic					
*Slope at Head of Fire:														
1. 0-25%			2. 26-40%			3. 41-55%			4. 56-75%			5. 76+%		
Position on Slope:														
1. Ridgetop			4. Middle 1/3 of slope			7. Valley bottom								
2. Saddle			5. Lower 1/3 of slope			8. Mesa/Plateau								
3. Upper 1/3 of slope			6. Canyon bottom			9. Flat or rolling								
*Fuel Type:														
1. Grass			4. Coastal Scrub			7. Eucalyptus								
2. Grass/brush			5. Bishop pine			8. Riparian Forest								
3. Hardwood Forest			6. Douglas fir			9. Other (specify)								

Radio Frequencies	
Net	Frequency
Command	Rx
	Tx
Support/Dispatch	Rx
	Tx
Air-to-Ground	Rx
	Tx
Air-to-Air	Rx
	Tx
Tac 1	Rx
	Tx
Tac 2	Rx

APPENDIX E. SUPPLEMENTAL INFORMATION

EXPECTATIONS:

- **YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY AND THOSE AROUND YOU.**
- You have the right to a safe workplace and assignments.
- If you don't understand an assignment, ask for clarification. **COMMUNICATE** within the chain of command. **Communicate. Coordinate** and **Cooperate.**
- You ARE paid to think. If you have a better way to do things, let's hear it. If you think what you are doing is stupid, then speak up. A supervisor has the responsibility to explain to you why what you are doing is meaningful and needed.

• **You are expected to exercise LCES everyday and in every situation.** Make it meaningful to you. **Remember your 10 Standard AND 18 Situations.**

• You are in a job where you will have to make decisions. You will be held accountable for your decisions. Be able to explain your rationale for your decision.

• You are a fire professional, you must be physically fit and mentally prepared to go to work. You can expect to complete arduous work under inclement conditions for long periods of time. Others are counting on you to carry your load, to show up to work on time and be a professional. If you have special needs for time off or a special event let your supervisor know far in advance.

• Your Mom does not work here. Don't expect anyone else to clean up after you. Keep your areas, projects and vehicles clean and organized.

• You have been hired to go to fires in and out of the Park and assist in other emergencies. We expect you to always have your gear, red card and taskbooks ready, and respond within a 3-5 minute getaway.

• We have the responsibility to ensure you have the latest trend and specific information available. There are information boards available to you. These include information on fuels, their **moistures**, and **weather forecasts** and **expected fire severity information.** **IT IS YOUR RESPONSIBILITY TO CHECK THIS INFORMATION DAILY.**

- We offer 3 hours of physical training time weekly. Due to fires or special circumstances you may not always be able to take PT time.

- **If you need help, ask for it. No one expects you to injure yourself.**

- Complete tailgate safety sessions every day and when your tasks change significantly from what you had been doing.

- **Exercise Situational Awareness**

- **USE SPOTTERS WHEN BACKING VEHICLES.**

Size Up Information

1. Fire Name
2. Legal Location (S, T, R)
3. Cause
4. Size (Acres or 10ths)
5. Aspect
6. Slope (%)
7. Rate of Spread/Direction
8. Flame Length
9. Winds (Spd/Dir)
10. Temp / RH
11. Hazards
12. Anticipated Fire Behavior and Spread
13. Needs

General Information

Weather is to be taken, recorded and called in hourly for spot weather forecasts:

- Temperature (Dry Bulb)
- Relative Humidity (Alt)
- Wind Direction/Speed
- Cloud Cover (%)
- Elevation
- Aspect

Fire Size Classes (In Acres):

- A = 0 - .25 ac
- B = .26- 9.9 ac
- C = 10 - 99.9
- D = 100 - 299.9
- E = 300 - 999.9
- F = 1000 - 4999.9
- G = 5000 +

- 1 Chain = 66 feet
- 1 Mile = 80 Chains
- 1 Mile = 1.6 Kilometers
- 1 Mile = 5280 feet
- 1 Acre = 10 Sq. Chains

Fire Monitoring Info

- Helispots near Fire (Lat/Long)
- Access to Fire
- Spike Camps near Fire
- Fuels Ahead of Fire
- Fuel Models
- Unusual Argmt/Loading
- Predicted Rate of Spread
- Smoke Production
- Smoke Dispersal
- Sensitive Features
- Critical Resource Values
- Review Trigger Points
- Review Mgmt Action Pts
- Additional Mitigation Necessary

Installation of HOBOS/Wx Stations
Temp Gradient p/1000 ft Elev.
Time Spot Wx Forecast Needed

Other Information: LCES;

- **Lookouts**
- **Communications**
- **Escape Routes**
- **Safety Zones**

What frequencies will be used for intra crew communication and for inner crew posted Lookout be using.

APPENDIX E. SUPPLEMENTAL INFORMATION

OUT OF PARK/AREA FIRE ASSIGNMENTS (CHIEF OF PARTY DUTIES):

FIRE NAME: _____ ORDER #: _____

Request #: _____ Position Ordered: _____

Request Date: _____ Request Time: _____

Report to Location: _____

Order(s) Filled By: _____

Directions: _____

Incident Phone: _____ Contact: _____

Est Time & Date of Departure: _____

Vehicle: _____ Beg Mi: _____ Ending Mi: _____

Release Date & Time: _____ Date/Time at Park: _____

BEFORE LEAVING THE PARK:

- Ensure you have a current Blanket Travel Authorization.
- If traveling in a Govt vehicle ensure it has a gas card.
- Recommend taking personal money (\$50) keep receipts.

- Ensure you have a CA and other state maps you will be traveling to.
- Stay together and communicate what will be the standard procedure to establish contact should you get separated.

WHILE TRAVELLING:

- Keep track of meals en-route to and from fire assignments.
- Separate out all travel time to and from the fire.
- Separate out all hazard time make note of hazard type and exposure time for wage employees. Show all breaks on timesheets.
- Check in with "Check-In" and "Timekeeping" when arriving at incident base. Turn in timesheets that you started when you left the Park. Tell timekeepers the fax number for your home unit (415) 868-8918 so that they can fax times to the FPA.
- Keep all receipts from your travel, turn them into the FPA upon return.
- Check in with the Park FMO or Duty Officer while in travel status, your location, any problems and your status and those assigned to you. (415-464-5243 FMO)
- Adhere to R&R guidelines (1 in 14) and 15/8 Driving regs.

ON RETURNING TO THE PARK:

- Turn in timesheets to the Fire Program Assistant.
- Complete a DI-1202 Fire Report (the RNP-1202 in this book should help you). Make sure your experience and those you were responsible for are recorded for the SACS.
- CLEAN VEHICLES, clarify when due back at work (R&R).

PORE - FIRE MANAGEMENT EXTENSION & PHONE LISTING (415) 464-5100

Point Reyes Fire Management Staff	Radio Call	Work Extension	Cell/Pager c/p	Residence
Davis, James Assistant engine foreman	xxx	415-464-5241	xxx-xxx-xxxx	xxx-xxx-xxxx
Haag, Jon Engine Foreman	xxx	415-464-5252	xxx-xxx-xxxx	xxx-xxx-xxxx
Jensen, Jim Crew 9 seasonal	xxx +last name	415-464-5241	xxx-xxx-xxxx	
Kruger, Brian Crew 9 Supervisor	xxx	415-464-5241	xxx-xxx-xxxx	xxx-xxx-xxxx xxx-xxx-xxxx cell
Neubacher, Don Superintendent	xxx	464-1000	xxx-xxx-xxxx	xxx-xxx-xxxx
Poinsot, Wendy Fire Program Planner		415-218-6551	xxx-xxx-xxxx	xxx-xxx-xxxx

APPENDIX E. SUPPLEMENTAL INFORMATION

Reeser, Jordan Prescribed fire specialist	xxx	415-464-5251	xxx-xxx-xxxx p xxx-xxx-xxxx c	xxx-xxx-xxxx
Raelander, Wende Fire effects monitor	xxx	415-464-5286		xxx-xxx-xxxx
Thomas, Loren Fire program analyst	xxx	415-464-5240		
Wong, Roger Fire management officer	xxx	415-464-5243	xxx-xxx-xxxx p xxx-xxx-xxxx c	xxx-xxx-xxxx xxx-xxx-xxxx
Chapman, Jennifer Fire Information		415-464-5133		
FMO FAX	415-868-1202			
Fire Management Fax	415-868-8918			
GOGA Fire Management	Radio Call	Work Extension	Cell/Pager c/p	Residence
GGNRA General Number		415-331-6374 (tel) 415-331-6942 (fax)		
Grupe, Mark GIS Specialist		415-331-6374		
Naar, Alex FMO	xxxx	415-331-6374	xxx-xxx-xxxx	
Poinsot, Wendy Fire Program Planner		415-218-6551	xxx-xxx-xxxx	xxx-xxx-xxxx
Jones, Greg Engine Foreman				
Engine Tech 1				
Engine Tech 2				
Engine Tech 3				
PORE Law Enforcement	Radio Call	Work Extension	Cell/Pager c/p	Residence
Buehl, Rene Boating officer	xxx	415-464-5277	xxx-xxx-xxxx Safeboat patrol boat xxx-xxx-xxxx	
Conde, Gus L.E. Ranger	xxx	415-464-5275	xxx-xxx-xxxx	
Dombrowski, Bruce L.E. Ranger	xxx	415-464-5274	xxx-xxx-xxxx	
Gregorio, Angelina L.e. Ranger	xxx	415-464-5279	xxx-xxx-xxxx	
Habig Dan LE Ranger	xxx	415-464-5128	xxx-xxx-xxx	

Schifsky, David L.E. Ranger	xxx	415-464-5178	xxx-xxx-xxxx	
Smith, Colin Chief Ranger	xxx	415-464-5175	xxx-xxx-xxxx	
PORE Fire GIS/ Ecologist	Radio Call	Work Extension	Cell/Pager c/p	Residence
Alison Forrestal	xxx	415-464-5200		
PORE Dispatch	Radio Call	Work Extension	Cell/Pager c/p	Residence
Fiske, Jeni, Griffin, Meg	799	415-464-5170		

APPENDIX E. SUPPLEMENTAL INFORMATION

MARIN County Fire Overhead	Radio Call	Work Extension	Cell/Pager c/p	Residence
Fire chief	XXXX	Ken Massucco	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Deputy chief	XXXX	Rich Lopez	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Battalion chief Training officer	XXXX	Brian Mueser	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Battalion chief A shift	XXXX	Steve Del La Montanaya	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Battalion chief C shift	XXXX	Tim Thompson	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Battalion chief B shift	XXXX	Ed Mestre	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Forester	XXXX	Kent Julin	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Fire Marshall	XXXX	Scott Alber	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Fire Captain, GIS	XXXX	Tim Walsh	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Fire Captain, EMS	XXXX	Mike Giannini	XXX-XXX-XXXX XXX-XXX-XXXX	XXX-XXX-XXXX
Marin County Stations	Radio Call	Work Extension	Station Captain	Fax Number
Woodacre	XXXX XXXXXX XXXXXXXXXX	415-499-6717	Doug Cole	
Point Reyes	XXXX	415-663-1018	Ken Carter	XXX-XXX-XXXX
Tomales	XXXX	707-878-2464	Mark Brown	XXX-XXX-XXXX
Hicks Valley	XXXX XXXXXX	415-662-2503	Ken Finn	XXX-XXX-XXXX
Marin City	XXXX	415-499-7517	Bill Roberts	XXX-XXX-XXXX
Throckmorton	XXXX	415-388-5414	Frank Neer	XXX-XXX-XXXX

APPENDIX E. SUPPLEMENTAL INFORMATION

Volunteer Fire Departments	Wildand engine	Phone Ch-chiefs	Fire Chief & Radio call	Fax Number
Inverness Volunteer Fire Dept	xxx	415-669-7151 415-669-1413ch	Jim Fox xxx	415-669-1010
Bolinas Volunteer Fire Dept	xxx	415-868-1566 415-868-2914 ch	Kevin Hicks xxx	415-868-2009
Stinson Beach Volunteer Fire Dept	xxx	415-868-0622 415-868-0859ch	K. Stevens xxx	
Other Emergency Numbers		Phone Number	FAX	
GGNRA Fire		415-331-6374	415-331-6942	
GGNRA Dispatch Info		415-561-5505	Alex Naar GGNR FMO xxx-xxx-xxxx cell	
GGNRA Dispatch Emergency		415-551-4202	GGNRA Engine foreman xxx-xxx-xxxx cell	
GGNRA Marin office		415-331-1540	Josh Rollins GGNRA xxx-xxx-xxxx cell	
Stinson Tower		415-868-0942	CA RNP E-61 xxx-xxx-xxxx C	
HAZMAT RESPONSE			CA RNP E-62 xxx-xxx-xxxx C	
CHEMTREC		1-800-424-900		
EMERGENCY ROAD NUMBERS	PHONE NUMBER	Miscellany		
Marin Sheriff	415-499-7284			
CHP	415-924-1100			
AAA Towing Cheda 's	415-663-1227	Gary Cheda xxx-xxx-xxxx home		
AAA towing	1-800-222-4357			
Caltrans	1-800-427-7623	xxx-xxx-xxxx		
Marin County Road Dept	415-499-7518			

APPENDIX E. SUPPLEMENTAL INFORMATION

Helicopter Services	Phone Number
Cal Star	1-800-252-5050
CHP H30 Henry 1	707-257-0103
Life Flight (Stanford)	1-800-321-7820
Reach 1 (Santa Rosa)	707-575-6886
Reach 2 (Vacaville)	
PG&E 24Hr Assistance	1800-743-5000
STATE PARKS	Phone Number
Pantoll	415-388-2070
S.P. Taylor	415-488-9897
Tomales Bay	415-669-1140
China Camp	415-456-0766
Air Quality	1-800-435-7247
Air Quality Fax	415-928-0338
North ops	530-224-2466
Mendocino Dispatch	530-934-1155
Mendocino Fax	530-934-2326
NIFCC	
Coast Guard	415-399-3417 (SAR)
Fish & Game	707-944-5500
F&G Marin area office	415-893-1580
F&G Angel Island	415-435-1915
F&G Boat operator	415-435-2055
F&G Northern Dispatch	916-358-1311

PORE - FIRE MANAGEMENT RADIO FREQUENCIES -- BANK 1

Primary Interagency channel 10 White 2

Channel	Label	Rx Freq	Rx CG	Tx Freq	Tx CG
1	PORE DIRECT	xxx.xxx		xxx.xxx	
2	PORE LIGHTHOUSE	1xx.xxx	xxx.x	xxx.xxx	xxx.x
3	PORE BARNABY	xxx.xxx	xxx.x	xxx.xxx	xxx.x
4	SPECIAL USE 1	xxx.xxx		xxx.xxx	
5	SPECIAL USE 2	xxx.xxx		xxx.xxx	
6	NIFC TAC 1	1xx.xxx		xxx.xxx	
7	NIFC TAC 2	1xx.xxx		xxx.xxx	
8	NIFC TAC 3	1xx.xxx		xxx.xxx	
9	WHITE 1	1xx.xxx		xxx.xxx	
10	WHITE 2	1xx.xxx	Marin county	xxx.xxx	CDF
11	WHITE 3	1xx.xxx		xxx.xxx	
12	CAL CORD	1xx.xxx		xxx.xxx	
13	USFS A2G	1xx.xxx		xxx.xxx	
14	NOAA WEATHER	1xx.xxx		xxx.xxx	

BENDIX KING RADIO PROGRAMMING PROTOCOL

PROGRAMMING

1. PRESS SWITCH AND HOLD **FCN**
2. ENTER **000000** PRESS **ENT**
3. ENTER CHANNEL NUMBER TO BE PROGRAMMED AND PRESS **ENT** THEN **FCN**
4. PRESS **CLR** TO REMOVE OLD RX FREQUENCY AND ENTER NEW RX FREQUENCY AND PRESS **ENT**
5. PRESS **CLR** TO REMOVE OLD RX CG FREQUENCY AND ENTER NEW RX CG FREQUENCY AND PRESS **ENT**
6. PRESS **CLR** TO REMOVE OLD TX FREQUENCY AND ENTER NEW TX FREQUENCY AND PRESS **ENT**
7. PRESS **CLR** TO REMOVE OLD TX CG FREQUENCY AND ENTER NEW TX CG FREQUENCY AND PRESS **ENT**
8. PRESS **FCN** REPEATEDLY TO REVIEW AND CORRECT IF NEEDED
9. REPEAT STEP 3 TO PROGRAM MORE CHANNELS OR TURN RADIO OFF AND BACK ON AGAIN TO USE

CLONING

1. PRESS SWITCH AND HOLD **FCN**
2. ENTER **000000** PRESS **ENT**
3. PRESS **FCN** AND *
4. SCREEN FLASHES **PRGM**
5. PRESS **FCN**
6. IF COMPLETE, FLASHES **PRGRM**
7. IF INCOMPLETE, FLASHES **FAIL**
8. TO CLONE AGAIN, PRESS **FCN**

APPENDIX E. SUPPLEMENTAL INFORMATION

*Windspeed: mph									
1. Calm		3. NE		5. SE		7. SW		9. NW	
* Wind Direction		2. North		4. East		6. South		8. West	
								10. Erratic	
Today's ERC or BI of Unit, record here:									

Weather Observation Time	Dry Bulb	Wet Bulb	RH %	DP	Wind Dir	Wind Speed	Cloud Cover	Prob. Ignition	FDFM	Slope	Aspect	Position A/B/L
Time	Dry Bulb	Wet Bulb	RH %	DP	Wind Dir	Wind Speed	Cloud Cover	Prob. Ignition	FDFM	Slope	Aspect	Position A/B/L

APPENDIX E. SUPPLEMENTAL INFORMATION

Spot Weather Observation and Forecast Request											
1. Name of Incident or Project		2. Control Agency:		3. Request Made				Date:		Time:	
4. Location: (Township, Range, Section)			5. Drainage Name:			6. Exposure / Aspect					
7. Size of Incident or Project (acres):			8. Elevation		9. Fuel Type:		10. Project On:				
			Top	Bottom			Ground		Crowning		
11. Weather Conditions at Incident or Project or from RAWS:											
Place	Elev.	Observation Date/Time	Wind		Temperature		RH		Sky Condition		
			Direction/Velocity	Eye-level	Dry bulb	Wet bulb		DP			
The weather Forecaster will furnish information for									Date/Time:		
Block 13											

Risk Management		Decision Points	
<p>Maintain your situational awareness. Ensure compliance with the 10 Standard Firefighting Orders and LCES. Continually monitor the 18 Situations and apply appropriate mitigation. As the incident progresses, continually re-evaluate your situation. When hazards are identified mitigate them or change tactics and or strategy.</p> <p style="text-align: center;">Refer to the green pages in the IRPG.</p>			
YES	NO	Decision Points	
		Controls in place for identified hazards? If no reassess your situation	
		Are selected tactics based on expected fire behavior? If no reassess your situation	
		Are the current strategy and tactics working? If no reassess your situation	
Incident Complexity Analysis (Type 3, 4, 5)			
Fire Behavior			
		Yes	No
	Fuels extremely dry and susceptible to long-range spotting or you are currently experiencing extreme fire behavior.		
	Weather forecast indicating no significant relief or worsening conditions.		
	Current or predicted fire behavior dictates indirect control strategy with large amounts of fuel within planned perimeter.		
Firefighter Safety			
	Performance of firefighting resources affected by cumulative fatigue.		
	Overhead overextended mentally and/or physically.		
	Communication ineffective with tactical resources or dispatch.		
Organization			

APPENDIX E. SUPPLEMENTAL INFORMATION

Values to be protected	
Urban interface; structures, developments, recreational facilities, or potential for evacuation.	
Fire burning or threatening more than one jurisdiction and potential for unified command with different or conflicting management objectives.	
Unique natural resources, special-designation areas, critical municipal watershed, T&E species habitat, cultural value sites.	
Sensitive political concerns, media involvement, or controversial fire policy.	

If you have checked "Yes" on 3 to 5 of the analysis boxes, consider requesting the next level of incident management support.

Type 5 Characteristics: (a) C&G Staff positions are not activated. (b) Resources vary from one to five firefighters. (c) Incident is normally contained rapidly during IA. (d) A written action plan is not required.

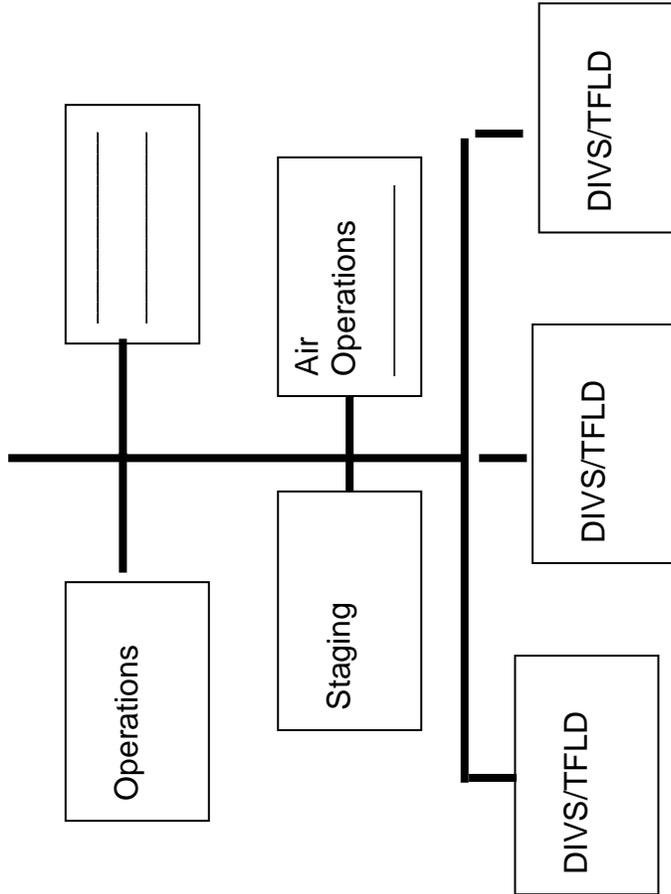
Type 4 Characteristics: (a) C&G Staff positions are not activated. (b) Resources vary from single Firefighter to several single resources or a single Task Force or Strike Team. (c) The incident is limited to one operational period in the control phase. Mop-up may extend into multiple periods. (d) A written plan is not required.

Type 3 Characteristics: (a) Some of the C&G Staff may be activated, as well as DIVS/GROP Supervisor and Unit leaders. (b) Resources vary from several single resources to several TFL's/STL's. (c) Incident may be separated into several divisions, but usually does not meet the DIVS/GROP Supervisor position for span or control. (d) May involve several burning periods prior to control, which requires a written action plan.

Work Rest Ratio Documentation Worksheet				
This worksheet is designed to help the IC document and calculate amount of rest required to meet the Work/Rest guidelines.				
<ul style="list-style-type: none"> • For every 2 hours of work or travel provide 1 hour of sleep or rest. • IC must justify and document work shifts exceeding 16 hours and those that do not meet the 2:1 work/rest guidelines -- see below. 				
Date	Operational Period Start Time	Operational Period Stop Time	Total Hours Worked	Rest Time (document hours when employee or module rested)

PWR Fire Contact Card			
6/18/2004			
Sue Husari FMO w 510-817-1371 m xxx-xxx-xxx h xxx-xxx-xxx	Bob Appling Fuels Specialist w 360-696-7540 m xxx-xxx-xxxx Seattle w 206-220-4021 h xxx-xxx-xxxx	Christy Neill Prescribed Fire Spec m xxx-xxx-xxxx h xxx-xxx-xxxx	Mary Beth Keifer Fire Monitoring w 510-817-1504 m xxx-xxx-xxxx ho xxx-xxx-xxxx h xxx-xxx-xxxx
John Kraushaar Deputy Regional FMO w 510-817-1370 m xxx-xxx-xxx h xxx-xxx-xxx	Paul Reeberg Fire Monitoring w 510-817-1372 h xxx-xxx-xxxx	Berkeley Yoshida Fire Fiscal Analyst w 808-985-6100 m xxx-xxx-xxxx h xxx-xxx-xxxx	
Robin Wills Fire Ecologist w 510-817-1432 m xxx-xxx-xxxx h o xxx-xxx-xxxx h xxx-xxx-xxxx	Rick Smedley Fire Planner w 360-696-7545 m xxx-xxx-xxxx h xxx-xxx-xxxx	Brenda Kauffman FPA w 510-817-1373 m xxx-xxx-xxxx h xxx-xxx-xxxx	
Corky Conover Fuels Specialist w 559-565-3129 m xxx-xxx-xxxx h xxx-xxx-xxxx	Nelson Siefkin Fire Archeologist w 510-817-1502 m xxx-xxx-xxxx h xxx-xxx-xxxx	Teresa Wright Incident Business Mngt w 206-220-4069 m xxx-xxx-xxxx h xxx-xxx-xxxx	

APPENDIX E. SUPPLEMENTAL INFORMATION



POINT REYES AREA RUN CARD			
DAILY FIRE DANGER	MARIN COUNTY RESPONSE ZONES		
	4A	4B	4C
LOW	BC	BC	BC
	PREV	PREV	PREV
	E1564	E1564	E1564
	E1584	E1584	E1584
MEDIUM	E1562	E1562	BOL E265
	WT1592	WT1592	E1562
	E1566	E1566	WT1592
	E1568	E1568	E1566
	DZ1540	WT1496	E1568
	INV E380	DZ1540	DZ1540
	--	INV E380	STN WT890
HI	E1560	E1560	STN E861
	E1565	E1565	E1565
	--	--	E1560
Additional CDF Resources (only MEDIUM and HIGH)			
(1) AIR ATTACK SUPERVISOR	AA140		
(2) AIR TANKER TYPE 2	AT86 AT85		
(1) COPTER	H104		
(2) HANDCREW (INMATE) TYPE 1	DELTA CONSERVATION CAMP		

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PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT(S):

PROJECT NAME:

PREPARED BY:

Name & Qualification

DATE:

TECHNICAL REVIEW BY:

Name & Qualification

DATE:

COMPLEXITY RATING:

APPROVED BY:

Agency Administrator

DATE:

DOI: The approved Prescribed Fire Plan constitutes the authority to burn. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported. Personnel will be held accountable for actions taken that are not in compliance with elements of the approved plan regarding execution in a safe and cost-effective manner.

AGENCY ADMINISTRATOR GO/NO-GO PRE-IGNITION APPROVAL CHECKLIST

PRESCRIBED FIRE NAME:

Instructions: The Agency Administrator’s GO/NO-GO Pre-Ignition Approval is the intermediate planning review process (i.e. between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Agency Administrator’s Go/No-Go Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Burn Plan elements, and internal and external notifications have been completed and expresses the Agency Administrator’s intent to implement the Prescribed Burn Plan. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Agency Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? <i>Hints: amendments, seasonality.</i>
		Have all compliance requirements been completed? <i>Hints: cultural, threatened and endangered species, smoke management, NEPA.</i>
		Is risk management in place and the residual risk acceptable? <i>Hints: Prescribed Fire Complexity Rating Guide completed with rational and mitigation measures identified and documented?</i>
		Will all elements of the Prescribed Fire Plan be met? <i>Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources</i>
		Will all internal and external notifications and media releases be completed? <i>Hints: Preparedness level restrictions</i>
		Are key agency staff fully briefed and understand prescribed fire implementation?
		Other:

Recommended by: _____ Date: _____
FMO/Prescribed Fire Burn Boss

Approved by: _____ Date: _____
Agency Administrator

Approval expires (date): _____

APPENDIX E. SUPPLEMENTAL INFORMATION

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PRESCRIBED FIRE GO/NO-GO CHECKLIST

PRESCRIBED FIRE NAME:

<p>A. Has the burn unit experienced unusual drought conditions or contain above normal fuel loadings which were not considered in the prescription development? If NO proceed with checklist., if YES go to item B.</p>	YES	NO
<p>B. If YES have appropriate changes been made to the Ignition and Holding plan and the Mop Up and Patrol Plans? If YES proceed with checklist below, if NO STOP.</p>		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked, and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

If all the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results

_____ Burn Boss

_____ Date

APPENDIX E. SUPPLEMENTAL INFORMATION

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COMPLEXITY ANALYSIS SUMMARY			
ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape			
2. The number and dependence of activities			
3. Off-site Values			
4. On-Site Values			
5. Fire Behavior			
6. Management organization			
7. Public and political interest			
8. Fire Treatment objectives			
9. Constraints			
10. Safety			
11. Ignition procedures/methods			
12. Interagency coordination			
13. Project logistics			
14. Smoke management			

COMPLEXITY RATING SUMMARY	
	OVERALL RATING
RISK	
CONSEQUENCES	
TECHNICAL DIFFICULTY	
SUMMARY COMPLEXITY DETERMINATION	
RATIONALE:	

APPENDIX E. SUPPLEMENTAL INFORMATION

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DESCRIPTION OF PRESCRIBED FIRE AREA	PROJECT NAME:	
	BURN UNIT NAME:	
PHYSICAL DESCRIPTION		
PROJECT OR BURN UNIT BOUNDARY DESCRIPTION		
FUELS DESCRIPTION		
ON-SITE FUELS DATA	ADJACENT FUELS DATA	
DESCRIPTION OF UNIQUE FEATURES (hazards, regulations, issues, constraints, etc. Examples may include: fences to protect, power poles, historical/cultural sites, threatened and endangered species or habitat, etc.)		

APPENDIX E. SUPPLEMENTAL INFORMATION

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GOALS AND OBJECTIVES	PROJECT NAME:	
	BURN UNIT NAME:	
PURPOSE AND RESOURCE MANAGEMENT GOALS:		
RESOURCE AND PRESCRIBED FIRE OBJECTIVES		
RESOURCE OBJECTIVES:		PRESCRIBED FIRE OBJECTIVES:
OBJECTIVES ARE S.M.A.R.T.		Specific Measurable Attainable Reasonable Time Related
CONSTRAINTS:		

APPENDIX E. SUPPLEMENTAL INFORMATION

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FUNDING	PROJECT NAME:		
	BURN UNIT NAME:		
PRESCRIBED FIRE PHASE:	COST:	FUNDING SOURCE:	
TOTAL OF ALL ESTIMATED COSTS:			

APPENDIX E. SUPPLEMENTAL INFORMATION

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PRESCRIPTION: ENVIRONMENTAL PARAMETERS	PROJECT NAME:			
	BURN UNIT NAME:			
	PRESCRIPTION COVERAGE: (Rx type &/or ignition method and season should be covered when multiple Rx included)			
ENVIRONMENTAL PARAMETERS NEEDED TO PRODUCE THE DESIRED FIRE BEHAVIOR: Fill in applicable environmental parameters (weather, topography, fuels, etc.) for this fuel model. Separate environmental prescriptions may be needed for multiple fuel model conditions, seasonal differences and/or types of ignition (black lining, underburning, broadcast aerial ignition, etc.*	Fuels Within the Project or Burn Unit Boundary		Fuels Outside of The Project or Burn Unit Boundary	
	Low Fire Intensity	High Fire Intensity	Adjacent	Max. Spot Distance
	Environmental parameters discussion, or description of empirical evidence utilized:			

*Separate prescriptions pages should be added for multiple prescriptions and result in multiple complexity ratings and burn organizations.

APPENDIX E. SUPPLEMENTAL INFORMATION

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PRESCRIPTION: FIRE BEHAVIOR PARAMETERS OUTPUTS	PROJECT NAME:			
	BURN UNIT NAME:			
	PRESCRIPTION COVERAGE: (Rx type &/or ignition method and season should be covered when multiple Rx included)			
DESCRIPTION OF PRESCRIBED FIRE BEHAVIOR CHARACTERISTICS NEEDED TO MEET THE RESOURCE MANAGEMENT OBJECTIVES STATED IN THE OBJECTIVES SECTION: Fill-in all applicable fire behavior parameters (flame lengths, rate of spread, scorch height, ERC, etc.) for this fuel model. Separate environmental prescriptions may be needed for multiple fuel model conditions, seasonal differences and/or types of ignition (black lining, underburning, broadcast, aerial ignition, etc.)*	Fire Behavior For Fuels Within the Project or Burn Unit Boundary		Fire Behavior For Fuels Outside the Project or Burn Unit Boundary	
	Low Fire Intensity	High Fire Intensity	Adjacent	Max. Spot Distance
	Fire Behavior outputs may be derived from BEHAVE models, nomograms, or historical/empirical evidence. Include modeling and/or empirical evidence documentation as an appendix or in the fire behavior narrative.			
Fire Behavior Narrative or description of empirical evidence:				
[Empty space for narrative]				

*Separate prescriptions pages should be added for multiple prescriptions and result in multiple complexity ratings and burn organizations.

APPENDIX E. SUPPLEMENTAL INFORMATION

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SCHEDULING	PROJECT NAME:	
	BURN UNIT NAME:	
IGNITION TIMEFRAMES:		
PROJECT DURATION:		
CONSTRAINTS:		

PRE-BURN CONSIDERATIONS	PROJECT NAME:				
	BURN UNIT NAME:				
ON AND OFF-SITE CONSIDERATIONS					
ON SITE: OFF SITE:					
METHOD AND FREQUENCY FOR OBTAINING WEATHER FORECAST(S):					
NOTIFICATIONS:					
Who	When*	Phone Number and/or e-mail	Responsibility	Date	Method

APPENDIX E. SUPPLEMENTAL INFORMATION

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PRESCRIBED FIRE BRIEFING CHECKLIST	
<input type="checkbox"/>	Burn Organization
<input type="checkbox"/>	Burn Objectives
<input type="checkbox"/>	Description of Burn Area
<input type="checkbox"/>	Expected Weather & Fire Behavior
<input type="checkbox"/>	Communications
<input type="checkbox"/>	Ignition plan
<input type="checkbox"/>	Holding Plan
<input type="checkbox"/>	Contingency Plan
<input type="checkbox"/>	Wildfire Conversion
<input type="checkbox"/>	Safety
<p>The Prescribed Fire Burn Boss, or designee, will ensure that any new personnel arriving to the prescribed fire receives a briefing prior to assignment.</p>	

APPENDIX E. SUPPLEMENTAL INFORMATION

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ORGANIZATION AND EQUIPMENT	PROJECT NAME:	
	BURN UNIT NAME:	
<p>Specify the minimum required implementation organization to meet the capabilities by position, equipment, and the supplies needed for the prescribed fire until declared out. Different organizations may be identified for different stages of implementation (i.e. holding v. mop-up and patrol, different ignition operations, different prescriptions).</p>		
CHANGES TO ORGANIZATION DURING IMPLEMENTATION:		
<p>Any changes to the organization during implementation must be documented. These are changes that may reflect assignments to other personnel not changes to the capabilities, equipment or supplies which would require an amendment.</p>		

APPENDIX E. SUPPLEMENTAL INFORMATION

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PUBLIC, PERSONNEL SAFETY	PROJECT NAME:	
	BURN UNIT NAME:	
GENERAL PUBLIC AND PERSONNEL SAFETY MESSAGE:		
SPECIFIC SAFETY DISCUSSION INCLUDING UNIQUE HAZARDS AND CONCERNS:		

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EMERGENCY MEDICAL PLAN	PROJECT NAME:	
	BURN UNIT NAME:	
EMERGENCY FACILITIES:		
EMERGENCY EVACUATION:		
MEDICAL EMERGENCY PROCEDURES:		
DIRECTIONS FROM NEAREST MEDICAL FACILITY TO PROJECT VIA GROUND:		

APPENDIX E. SUPPLEMENTAL INFORMATION

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TEST FIRE	PROJECT NAME:				
	BURN UNIT NAME:				
PLANNED LOCATION & SPECIFIC INSTRUCTIONS:					
BURN DAY DOCUMENTATION					
WEATHER CONDITIONS ONSITE:			RESULTS OF TEST FIRE:		
Does the test fire meet prescription parameters?	YES		NO		
COMMENTS:					

APPENDIX E. SUPPLEMENTAL INFORMATION

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IGNITION PLAN	PROJECT NAME:	
	BURN UNIT NAME:	
NARRATIVE FOR IGNITION PLAN:		
<p>METHOD(S)*:</p> <p>TECHNIQUES:</p> <p>SEQUENCES:</p> <p>ANTICIPATED PATTERNS:</p>		
<p>If aerial ignition (or other aerial operations) is planned, also cover aviation operations, organization, and safety. If a specific administrative or agency aerial ignition plan exists, attach to the prescribed fire plan</p>		

*Multiple prescriptions may require identifying and developing multiple ignition organizations and implementation instructions.

APPENDIX E. SUPPLEMENTAL INFORMATION

Final Draft July 15, 2005

HOLDING PLAN	PROJECT NAME:	
	BURN UNIT NAME:	
GENERAL PROCEDURES NARRATIVE FOR PRESCRIBED FIRE HOLDING:		
CRITICAL HOLDING POINTS AND MITIGATION ACTIONS:		
Critical holding points and safety zones will be identified on the project map		

PRESCRIBED FIRE MOP-UP & PATROL	PROJECT NAME:	
	BURN UNIT NAME:	
GENERAL PROCEDURES NARRATIVE FOR PRESCRIBED FIRE MOP-UP AND PATROL:		
PRESCRIBED FIRE DECLARED OUT BY:		

APPENDIX E. SUPPLEMENTAL INFORMATION

Final Draft July 15, 2005

CONTINGENCY PLAN	PROJECT NAME:	
	BURN UNIT NAME:	
TRIGGER POINTS:		
Determine trigger points that indicate when additional holding resources and actions are needed to ensure the prescribed fire stays within prescription.		
ACTIONS NEEDED:		
Describe actions to be taken to ensure the prescribed fire stays within prescription.		
MINIMUM RESOURCES AND MAXIMUM RESPONSE TIME(S):		
Describe personnel needed to ensure the prescribed fire stays within prescription. Plans may identify different levels of contingency staffing needed for different stages of the burn, ignition through patrol. Verify availability of identified contingency resources on day of implementation.		

If contingency resources availability falls below plan levels for that stage of the burn, actions must be taken to secure operations until identified contingency resources are replaced.

With the ordering and/or deployment of contingency resources, the burn boss will notify the Agency Administrator through the appropriate chain of command.

APPENDIX E. SUPPLEMENTAL INFORMATION

Final Draft July 15, 2005

WILDFIRE CONVERSION	PROJECT NAME:	
	BURN UNIT NAME:	
<p>A prescribed fire must be declared a wildfire by those identified in the plan when that person(s) determines that the contingency actions have failed or are likely to fail and cannot be mitigated within the next burning period by on-site holding forces and any listed contingency resources. In addition, an escaped prescribed fire must be declared a wildfire when the fire has spread outside the project boundary, or is likely to do so and cannot be contained within the next burning period.</p>		
WILFIRE DECLARED BY:		
Who will make the decision that the fire has escaped		
IC ASSIGNMENT:		
Identify who will be the IC		
NOTIFICATIONS:		
Identify the notifications to be made and who will make them.		
EXTENDED ATTACK ACTIONS AND OPPORTUNITIES TO AID IN SUPPRESSION EFFORTS:		

APPENDIX E. SUPPLEMENTAL INFORMATION

Final Draft July 15, 2005

SMOKE MANAGEMENT AND AIR QUALITY	PROJECT NAME:	
	BURN UNIT NAME:	
COMPLIANCE:		
Describe how the project will comply with local community, County, State, Tribal, and Federal air quality regulations.		
IMPACTED AREAS:		
Identify Class I air sheds, restricted areas, non-attainment areas (designated areas), and population centers that may be impacted.		
SENSITIVE FEATURES AND RECEPTORS:		
MITIGATION STRATEGIES AND TECHNIQUES TO REDUCE IMPACTS (If Applicable):		

APPENDIX E. SUPPLEMENTAL INFORMATION

Final Draft July 15, 2005

MONITORING	PROJECT NAME:	
	BURN UNIT NAME:	
MONITORING:		
Describe the monitoring that will be required for the prescribed fire. At a minimum specify the weather, fire behavior and fuels information (forecast and observed) and smoke dispersal monitoring required during all phases of the project and the procedures for acquiring it, including who and when.		

POST-BURN ACTIVITIES	PROJECT NAME:	
	BURN UNIT NAME:	
POST-BURN REPORT:		
Prescribed fire reporting will include: burn day conditions, fire behavior, smoke dispersal, and first order fire effects.		
OTHER:		
Describe other post-burn activities that must be completed. This may include: safety mitigation measures, and rehabilitation needs including those as a result of pre-burn activities undertaken.		



HAZARD REDUCTION FIRES

Please Print Legibly

BURNER AND BURN SITE INFORMATION

Property Owner(s):		Date:
Location (Street Address):		Tel: ()
City:	County:	Planned burn dates:
Name of Person Setting the Fire if different:		

SPECIFIC TYPE(S) OF MATERIAL TO BE BURNED

Natural Vegetation Cleared From Around Buildings or Structures: (PRC Section 4291-related)	Quantity: () Yd ³ or () Tons
Natural Vegetation Cleared From Other Areas on Property: (Unrelated to PRC Section 4291)	Quantity: () Yd ³ or () Tons

Fires must be set or allowed by the public fire official having jurisdiction. Compliance with Regulation 5 does not relieve a person of the responsibility to know and comply with any other applicable rule, regulation, or law governing the use of fire.

BURN AUTHORIZATION (if required by local fire agency)

Authorizing Public Fire Official:	Tel: ()
Title:	Date Authorized:
Authorizing Fire Agency:	

Emergency Waivers (This section should only be completed by an authorizing public fire official to grant an emergency waiver, pursuant to Regulation 5-404.)

5-401.6 Hazardous Material – See Regulation 5 for definition.

Authorizing Public Fire Official: Tel: ()

*This notification form is **not** an application for a permit. The District does **not** require a permit in order to burn. You are required to notify the District prior to burning by submitting this form. You will **not** receive a response.*

By submitting this notification, I understand and acknowledge the restrictions set forth for a Hazardous Material fire as defined in BAAQMD Regulation 5-208, "Hazardous Material."

Name: Date:

SEE BACK OF FORM FOR INSTRUCTIONS

APPENDIX E, PART 18

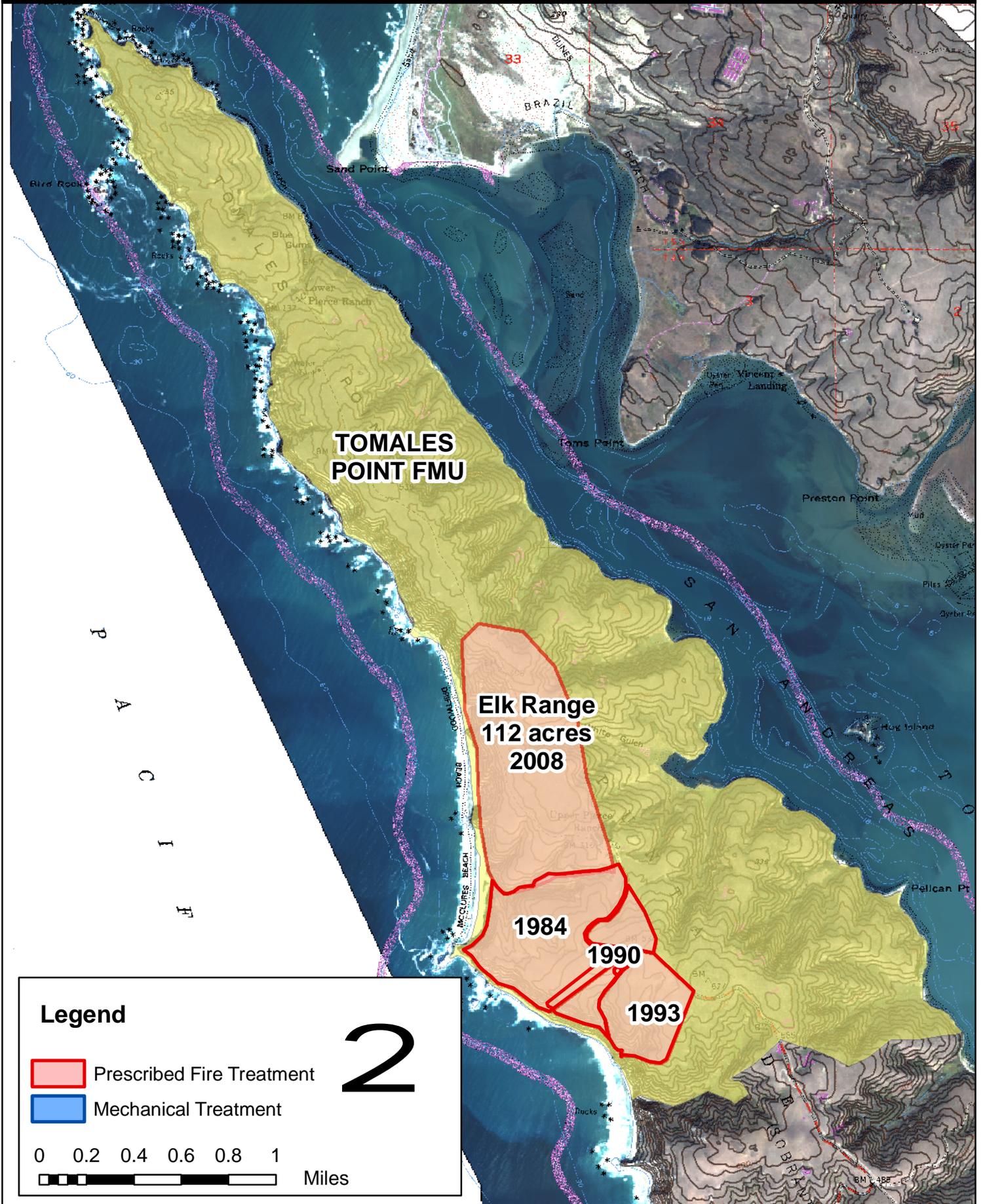
FMU MAPS
OF PAST AND PROPOSED
FIRE MANAGEMENT PROJECTS

Tomales Point FMU
Estero FMU
Inverness FMU
Limantour FMU
North Wilderness FMU
Highway One FMU
Bolin Ridge FMU
Palomarin FMU

IMPLEMENTATION STRATEGY
FOR THE
PRNS FIRE MANAGEMENT PLAN

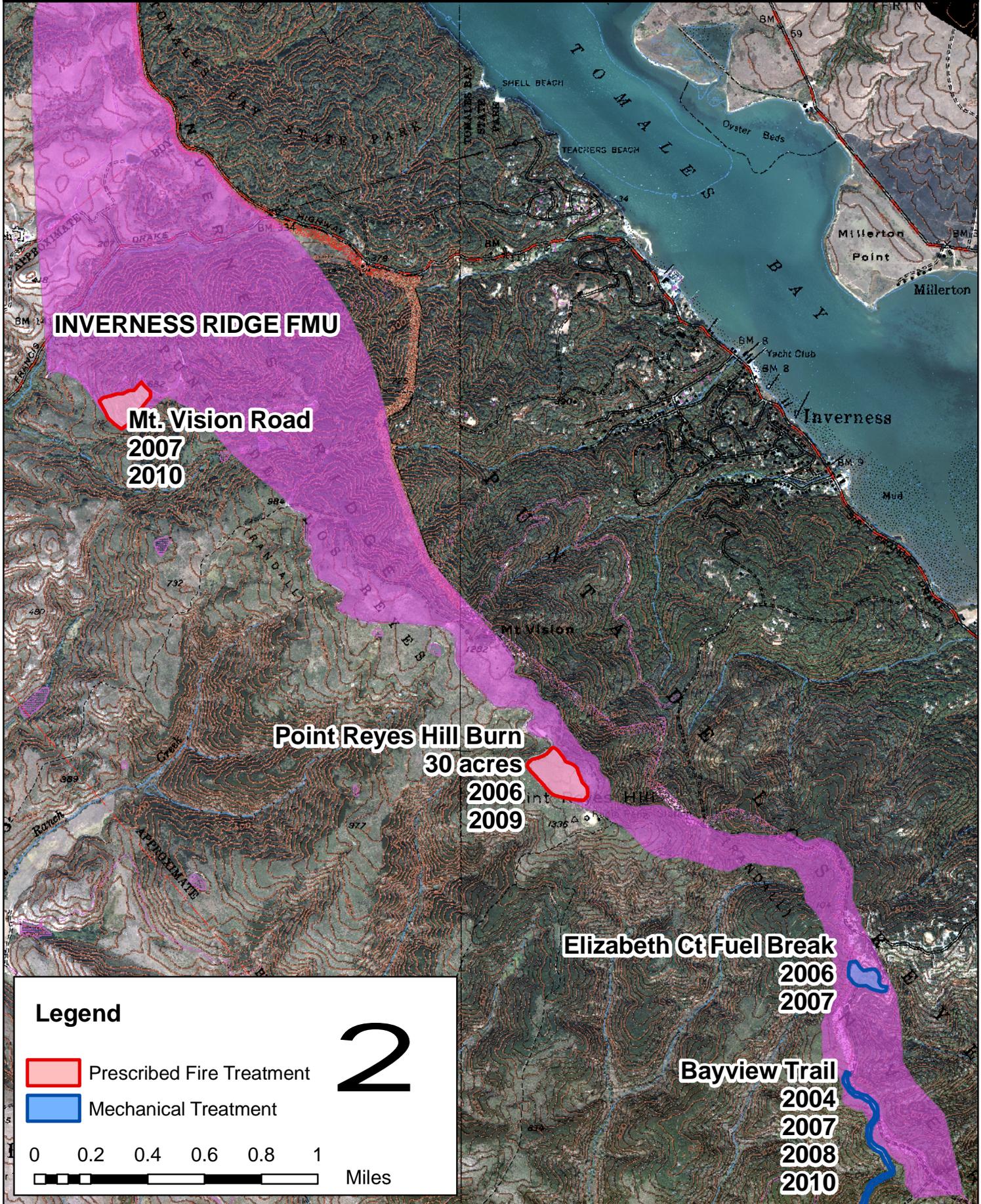
Tomales Point FMU

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National Park Service
Department of the Interior



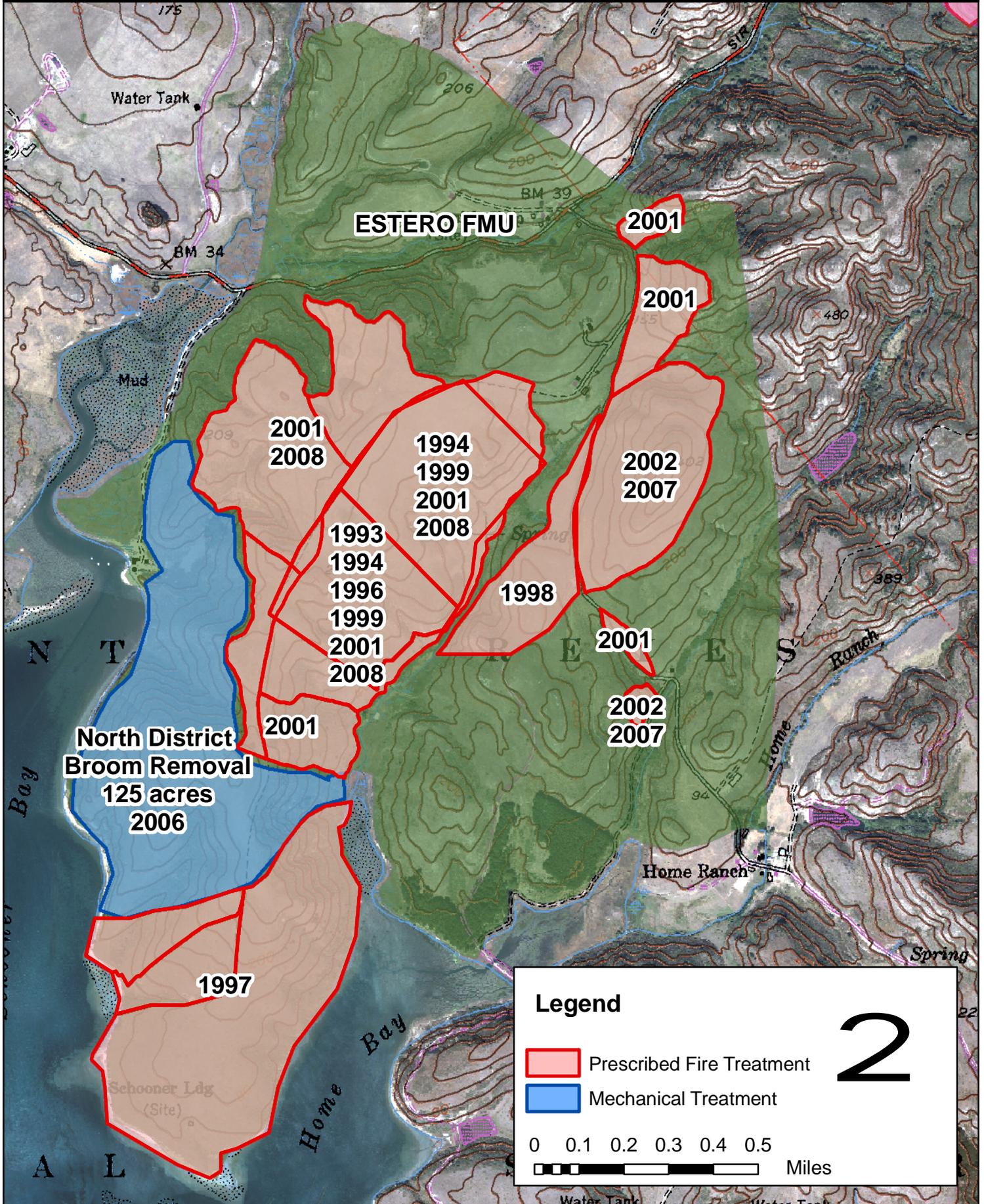
Inverness Ridge FMU

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National Park Service
Department of the Interior



Estero FMU

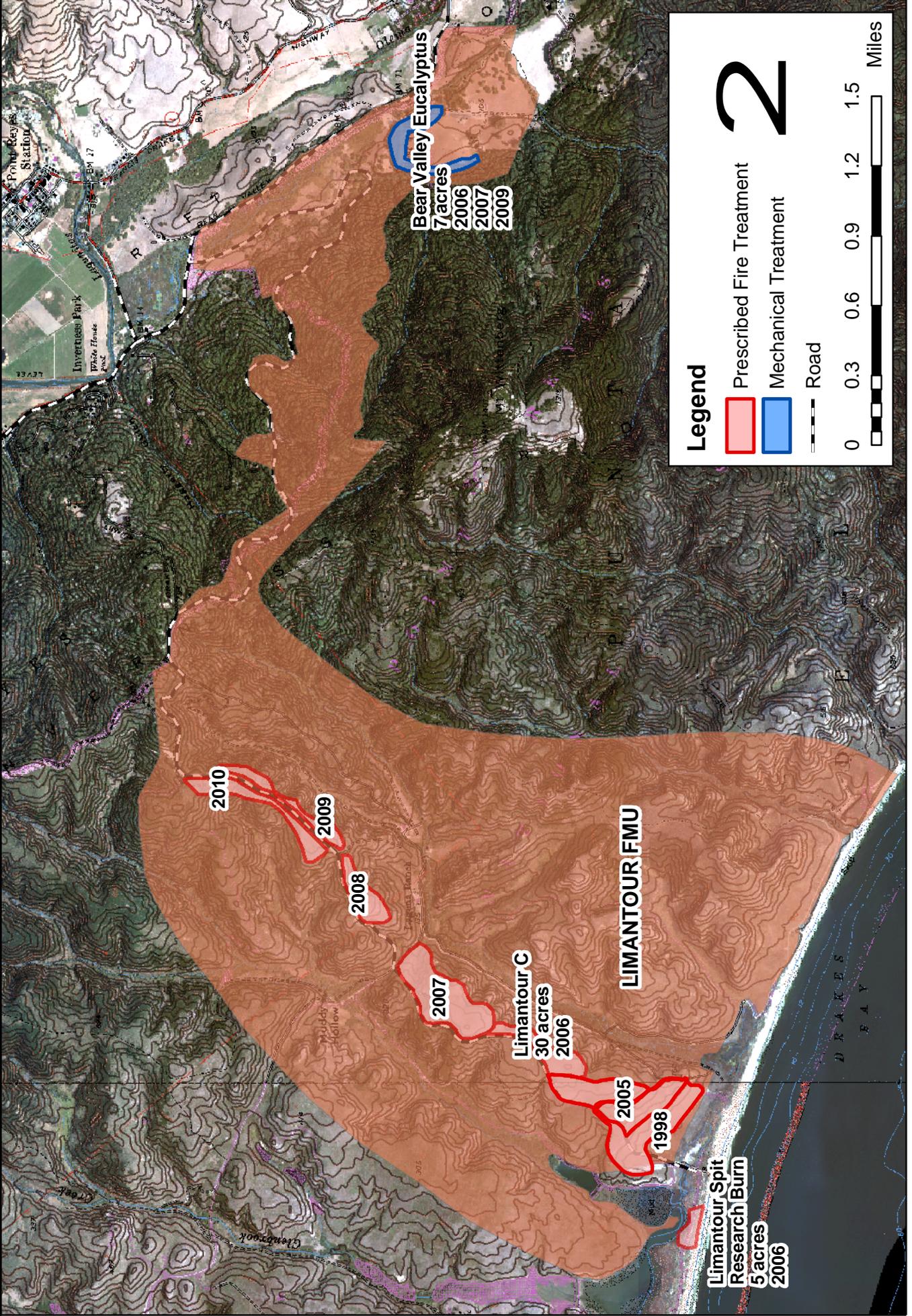
Point Reyes National Seashore
National Park Service
Department of the Interior





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National Park Service
Department of the Interior

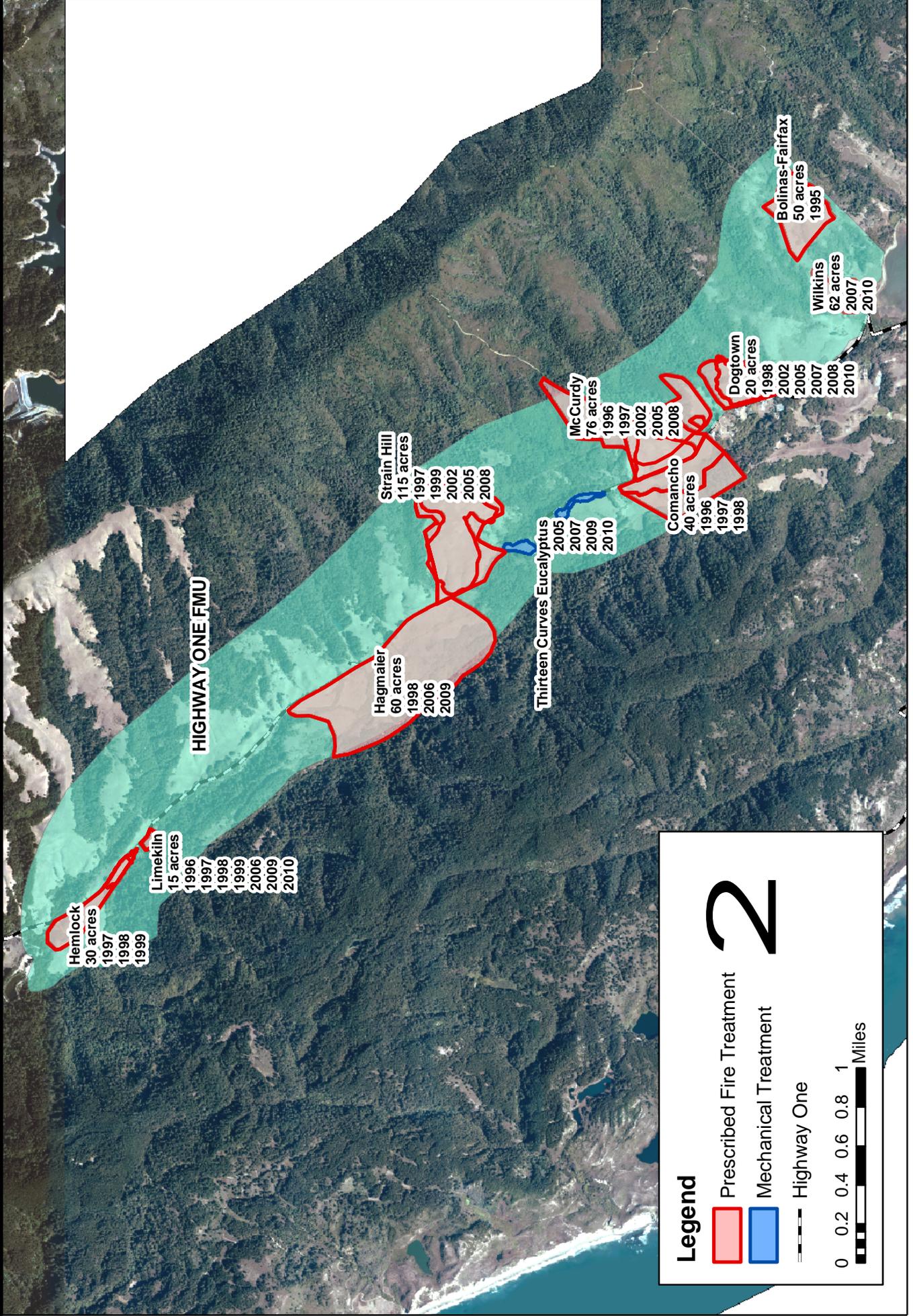
Limantour FMU





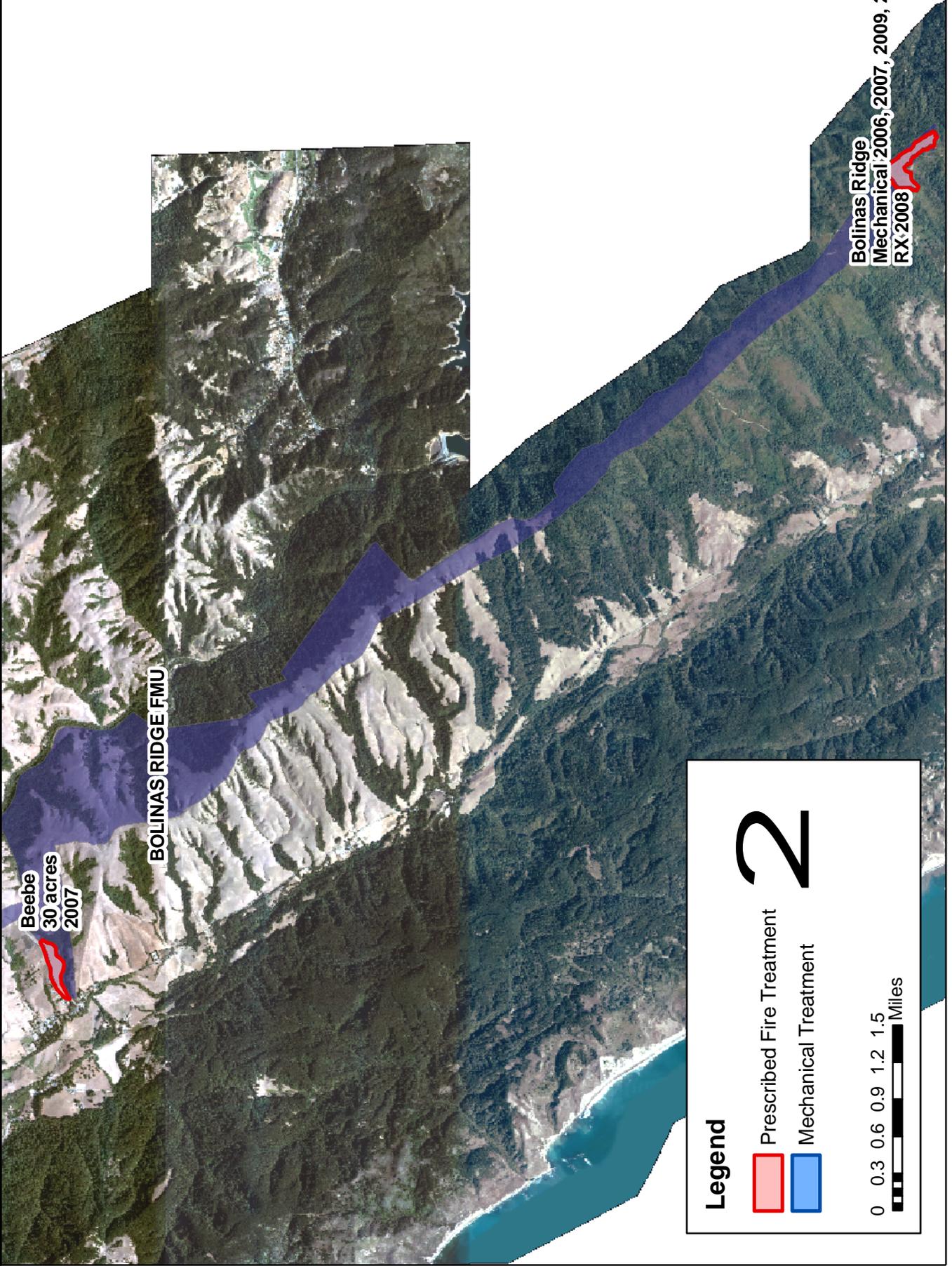
Point Reyes National Seashore
National Park Service
Department of the Interior

Highway One FMU



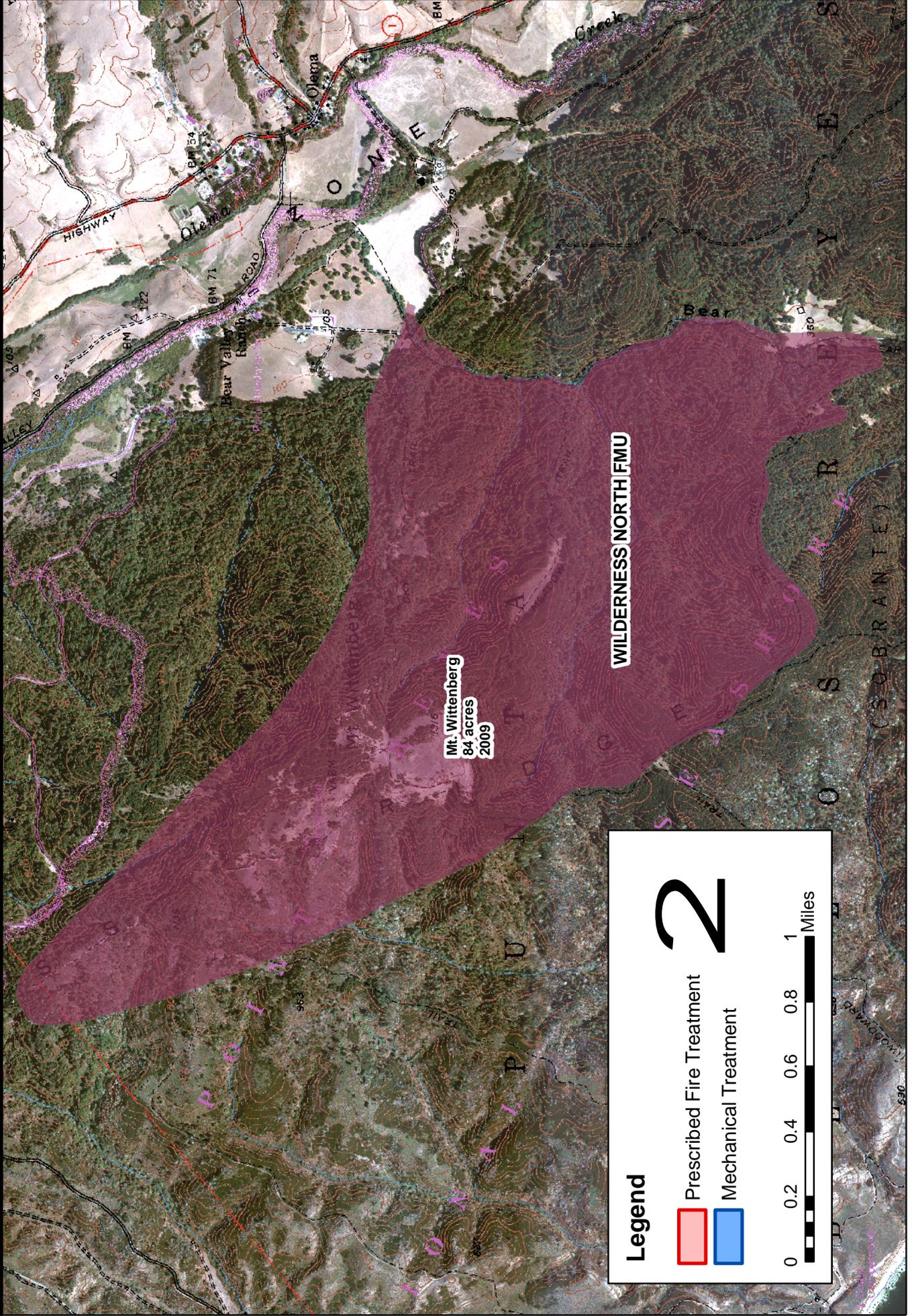
Bolinas Ridge FMU

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Department of the Interior



Wilderness North FMU

Point Reyes National Seashore
National Park Service
Department of the Interior



Palomarin FMU

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National Park Service
Department of the Interior

PALOMARIN FMU

Palomarin Eucalyptus
25 acres
2006
2008

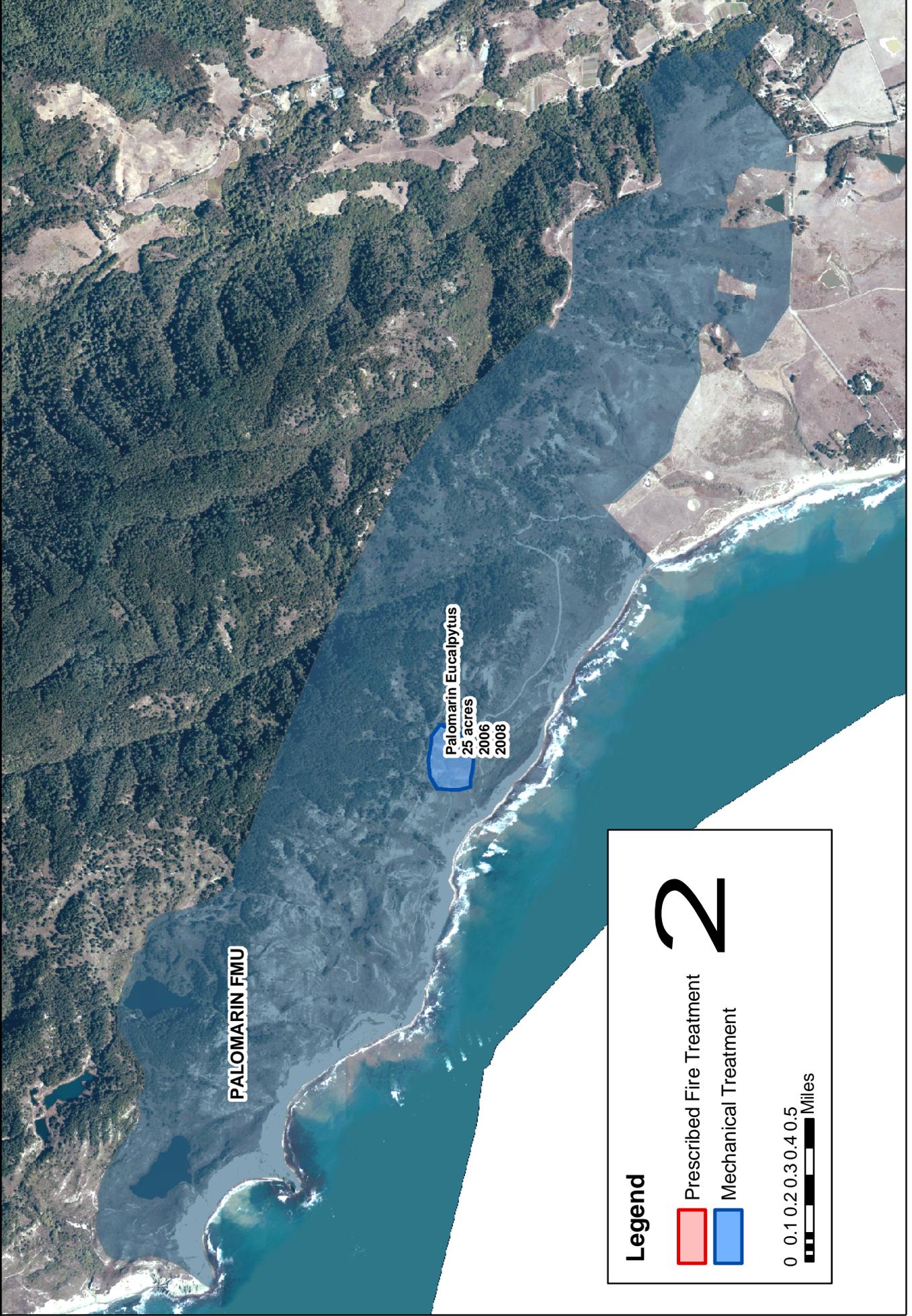
Legend

 Prescribed Fire Treatment

 Mechanical Treatment

0 0.1 0.2 0.3 0.4 0.5 Miles

2



Palomarin FMU

Point Reyes National Seashore
National Park Service
Department of the Interior

PALOMARIN FMU

Palomarin Eucalyptus
25 acres
2006
2008

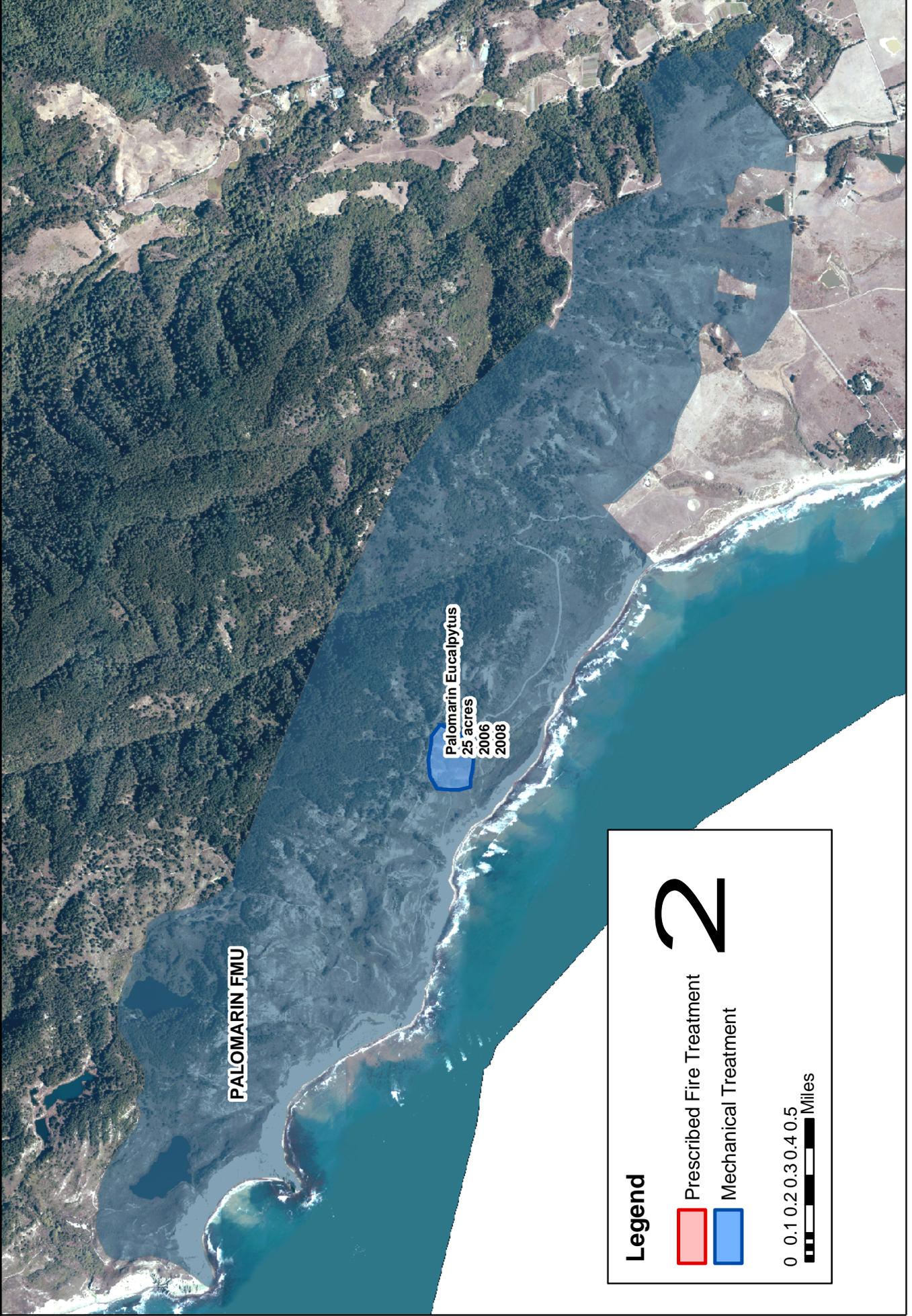
Legend

 Prescribed Fire Treatment

 Mechanical Treatment

0 0.1 0.2 0.3 0.4 0.5 Miles

2



APPENDIX F, PART 19

PRNS FIVE-YEAR TREATMENT PLAN
AND MAPS

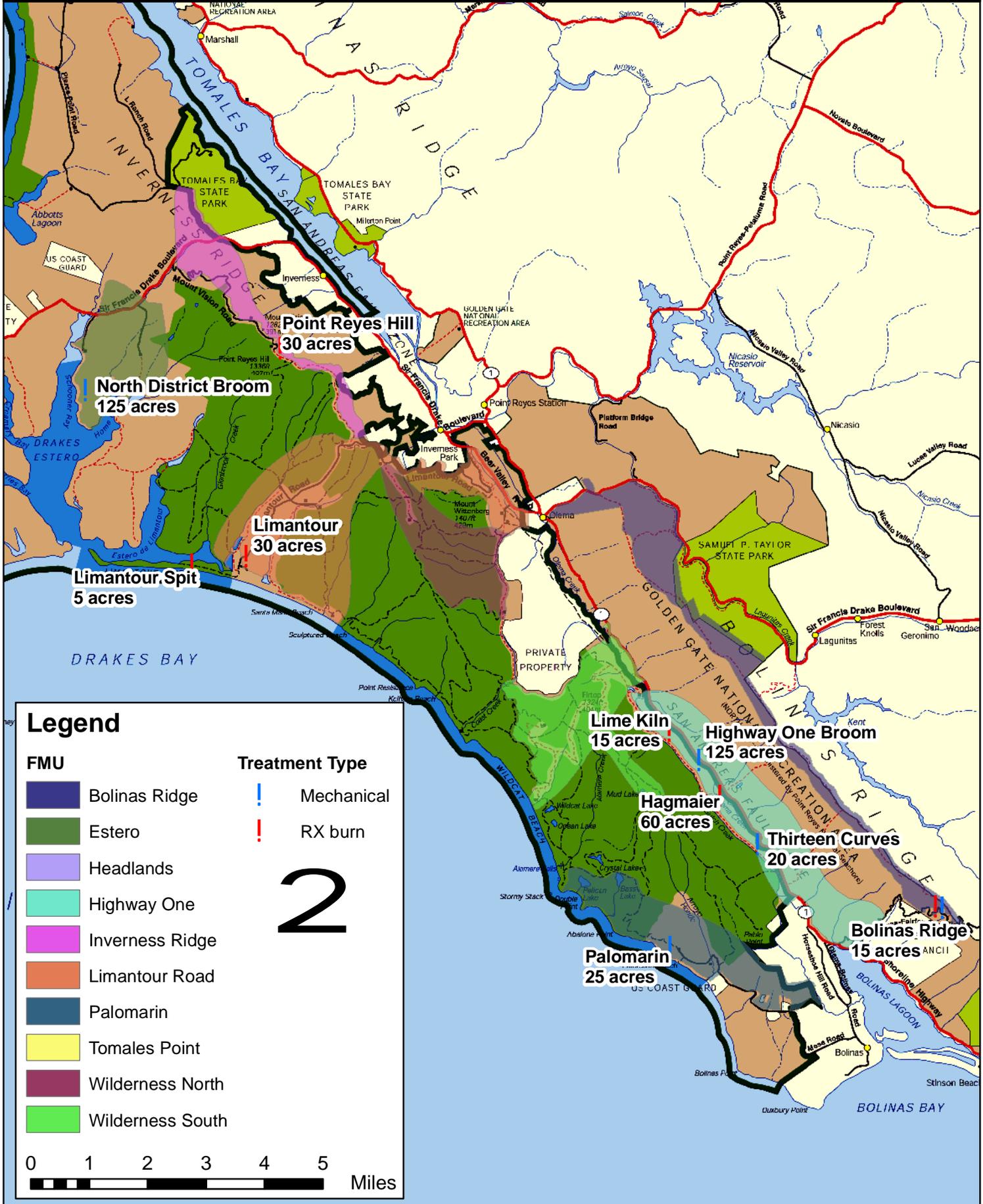
IMPLEMENTATION STRATEGY
FOR THE
PRNS FIRE MANAGEMENT PLAN

Project	FMU	Acres	Project Type	Specifics	%grass	%shrub	% forest/wdland	Timing	Funding	Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2	Date Completed
RX BURN PROJECTS		244														
1 Hagneier	Hwy One	59	Rx		100%	0%	0%	july - sept		1998	8	hazard fuel reduction along Hwy 1.	French broom and velvet grass.	Maintain or decrease the % cover of non-native species.	Maintain GEMO at 10% cover. & Obj #3 Hazard reduction on Hwy One.	
2 Lime Kiln	Hwy One	15	Rx		100%	0%	0%	july - sept		1999	2	French broom	high fuel	Maintain or decrease the % cover of non-native species.	Maintain GEMO at 10% cover. & Obj #3 Hazard reduction on Hwy One.	
3 Point Reyes Hill	Inverness Ridge	30	Rx		0%	100%	0%	july - sept		1995 Fire	11			No Crushing		
4 Limantour Phase 2	Limantour	40	Rx		0%	100%	0%	july - sept	15,000.00	1995 Fire	phased	high fuel	tending towards baccharis monoculture	20% decrease in Baccharis cover by 1 year post-burn.	Increase cover of native plants & maintain height of BAPI below xx cm.	10/20/2006
5 Limantour Phase 3	Limantour	30	Rx		0%	100%	0%	july - sept		1995 Fire	phased	high fuel	tending towards baccharis monoculture			
6 D Ranch	Minimal Management	65	Rx		100%	0%	0%	winter		2005	phased	non-native grasses		Prepare site for seed drilling	Reduce residue grass/match by 75%.	11/1/2006
7 Limantour spit	Limantour	5	Rx		100%	0%	0%			1st Treatment		European beach grass		Use a combination of fire & herbicide to control European beach grass		
MECHANICAL PROJECTS		365														
8 Marin Manzanita monitoring	All	0	compliance	mapping	0%	100%	0%	january	2,500.00	N/A	N/A	CNPS 1B fire adaptive plant	Becomes rare as overstory or taller shrubs develop	Determine extent & population dynamics of A. virgata population in PORE		
9 Bolinas Ridge Fuel Zone	Bolinas Ridge	15	mechanical	thinning, piling, chipping	0%	50%	50%	oct - march	15,000.00	2004	phased	High fire hazard	Rare plants	Hazard fuel reduction	coordinate with Janet Kleinh at MMWD	
10 North District Nonnative Plant Treatment	Estero/ Minimal management	125	mechanical	mowing	0%	100%	0%	august - sept	\$48,000 (\$15,000)	1st Treatment	annual	Scotch broom		% reduction in Scotch broom in mature plants.		
11 Park Structures Defensible Space	All	50	mechanical	mow, brush	75%	25%	0%	yearound	55,000.00	2005	annual	Protection of life & property		Defensible space		
12 Hwy 1 Broom, McDonald, McCurdy, Hagneier and Wilkins	Hwy One	125	mechanical	mow	0%	100%	0%	spring	23,000.00	2005	annual	Broom		Reduction in broom		
13 Herbicide application [euc stumps]	Hwy One, Inverness Ridge, Palomar	25	chemical	chemical	0%	0%	100%	aug-march	5,000.00	2005	continuation	Fire hazard	Invasive plants	Reduce eucalyptus density & spread		
14 Euc Removal Highway One	Hwy One	25	mechanical	thinning, piling and chipping	0%	0%	100%	aug-march	20,000.00	2005	phased	Fire hazard	Invasive plants	Reduce eucalyptus density & spread	decrease dead and downed fuels	decrease dead and downed fuels

Project	FMU	Acres	Project Type	Specifics	%grass	%shrub	% forest/wdland	Timing	Funding	Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2	Date Completed
ON HOLD - UNFUNDED																
15 Palomarin Eucalyptus Removal	Palomarin	25	mechanical	felling	0%	0%	100%	aug-march	0 (45000)			High Fire Hazard	Wilderness			
16 Palomarin Eucalyptus Removal	Palomarin	25	chemical	felling	0%	0%	100%	aug-march	5,000.00			High Fire Hazard	Wilderness			
17 Elizabeth Ct. Fuel Break	Inverness Ridge	15	mechanical	thinning, piling, chipping	0%	0%	100%	aug-march	0 (30000)			High Fire Hazard	WUI			
18 Elizabeth Ct. Fuel Break	Inverness Ridge	15	mechanical	thinning, piling, chipping	0%	0%	100%	aug-march	0 (20000)			High Fire Hazard	WUI			
19 Bear Valley Euc Removal	Limantour	7	mechanical	thinning, piling, chipping	0%	0%	100%	aug-march	0 (12000)			High Fire Hazard	Near center of visitor activity/ties			
20 Lime Kiln Compliance	Hwy One	15	compliance	cultural resource Survey	75%	25%	0%	aug-march	0.00			Cultural Resource	Creek supporting listed salmonids			
21 Five Brooks Defensible Space	Hwy One	1	Mechanical	brush, felling	0%	20%	80%	aug-march								
PORE WUI PROJECTS																
22 Cascade Canyon Fuels Treatment Plan	N/A		compliance/FWS consultation	fuel reduction zone, roadside fuel reduction	25%	25%	50%	aug-march	\$105,000	N/A	N/A	Project area is within 0.25 miles of 2 NSOW activity sites	Rare plants in serpentine area	Complete NEPA compliance	Complete FWS consultation & obtain MCOSD permit	75% complete, needs to complete consultation
23 Laurel Canyon Roadside Fuel Reduction Project	N/A	14.4	implementation and monitoring	limbing trees, brushing shrubs	0%	2000%	8000%	aug-march	\$21,000	N/A	85	NSCW activity site near project area.	Project area adjacent to creek supporting steelhead and coho	Complete NPS NEPA compliance.	Complete consultation with USFWS.	Feb-06
24 Seahaven Roadside Fuel Reduction	N/A	3.4	compliance & implementation	limbing trees, brushing shrubs	0%	1000%	9000%	aug-march	\$24,000	N/A	N/A	high fuel loading	hazardous trees	improve access and safety	reduce roadside fuels	Mar-06

2006 Projects

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National Park Service
Department of the Interior



Legend

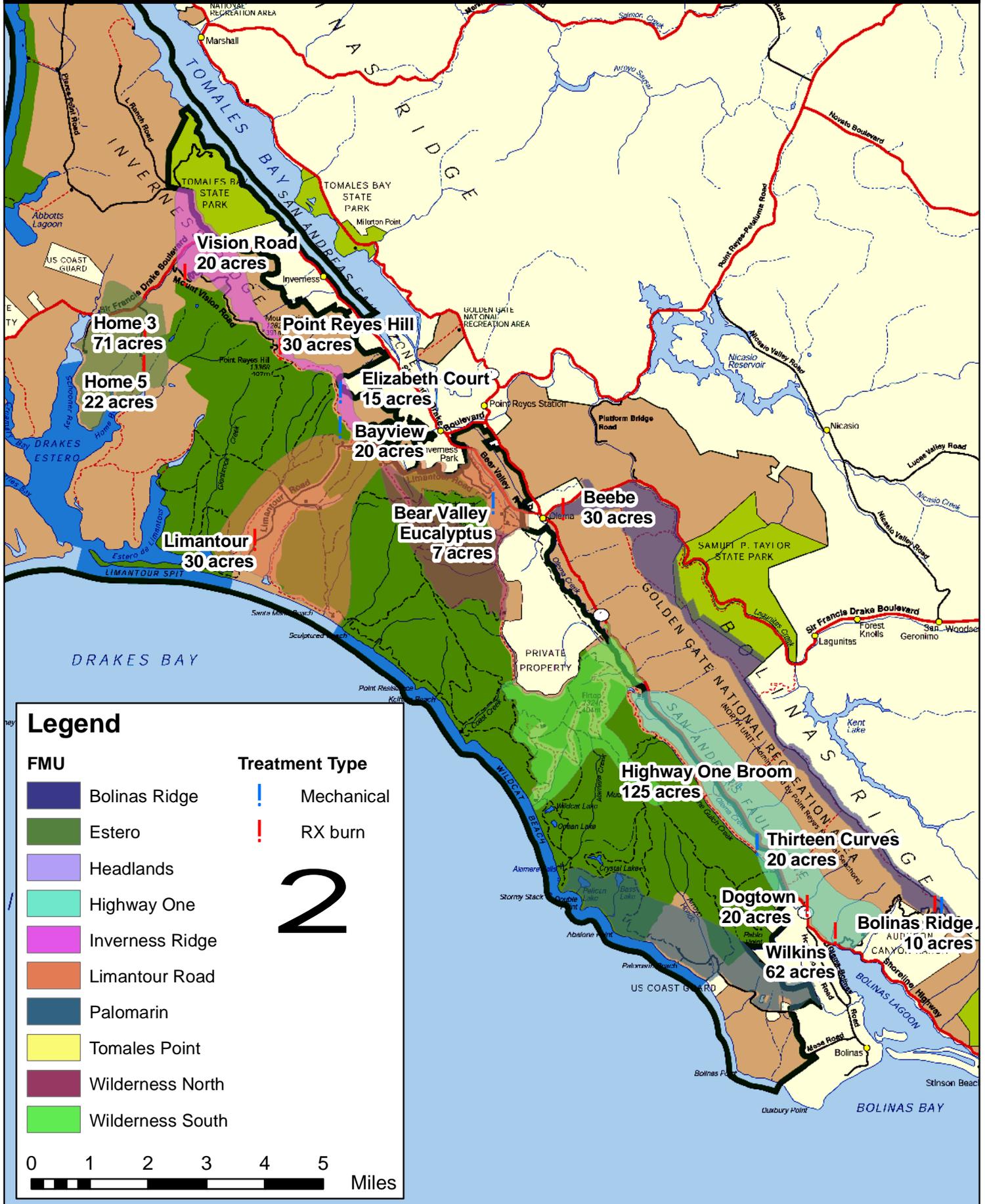
FMU	Treatment Type
Bolinas Ridge	Mechanical
Estero	RX burn
Headlands	
Highway One	
Inverness Ridge	
Limantour Road	
Palomarin	
Tomales Point	
Wilderness North	
Wilderness South	

2

	Project	FMU	Acres	Project Type	Specifics	%grass	%shrub	% forest/wdland	Timing	Funding	Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2
	RX BURN PROJECTS		341													
1	Limantour Phase 4	Limantour	40	Rx		100%	0%	0%	aug-sept		1995 Fire	phased	priority substitute for Beebe			
2	Pt. Reyes Hill	Inverness Ridge	30	Rx		25%	65%	10%	aug-nov		1st Treatment	phased				
3	Vision Rd Switchback	Inverness Ridge	20	Rx		0%	85%	15%	aug-nov		1st Treatment		Heavy Fuels		Roadside fuel reduction	
4	Strain Hill	Hwy One	115	Rx		100%	0%	0%	fall		late FY 2005	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
5	McCurdy Broadcast	Hwy One	76	Rx		100%	0%	0%	fall		late FY 2005	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
6	Dogtown	Hwy One	30	Rx		100%	0%	0%	aug-nov		late FY 2005	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
7	Beebe	Bolinas Ridge	30	Rx		80%	20%	0%	aug-nov	16,000	late FY 2005	4	Hazard fuels/funded	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
	MECHANICAL PROJECTS		391													
8	Park Structures Defensible Space	All	50	mechanical	mow, brush	N/A	N/A	N/A	yearound	\$45,000	2006	annual	funded			
9	Hwy 1 Broom, McDonald, McCurdy, Hagmeier, Wilkins	Hwy One	125	mechanical	mow	90%	10%	0%	spring	\$23,000	2006	annual	funded			
14	Bayview Trail Fuel Break	Limantour	10	mechanical	remove	0%	100%	0%	aug-march	17,600	1st Treatment	2	funded			
15	Bayview Trail Fuel Break	Limantour	6	mechanical	piling	0%	100%	0%	aug-march	0	1st Treatment	2	funded			
16	Bayview Trail Fuel Break	Limantour	10	mechanical	chipping	0%	100%	0%	aug-march	0	2005	2	funded			
11	Elizabeth Ct. Fuel Break (thin)	Inverness Ridge	15	mechanical	thin	0%	0%	100%	oct - march	30,000	1st Treatment		unfunded			
12	Elizabeth Ct. Fuel Break (disposal)	Inverness Ridge	15	mechanical	disposal	0%	0%	100%	oct - march	20,000	1st Treatment		unfunded			
13	Highway One Euc Removal - 13 curves (intermed. cut)	Hwy One	25	mechanical	thin	0%	0%	100%	aug-march		2006	phased	unfunded			
14	Highway One Euc Removal - 13 curves (intermed. cut)	Hwy One	25	mechanical	chip	0%	0%	100%	aug-march		2006	phased	unfunded			
15	Highway One Euc Removal - 13 curves (intermed. cut)	Hwy One	25	mechanical	herbicide	0%	100%	100%	aug-march		2006	phased				
16	Bolinas Ridge	Bolinas Ridge	10	mechanical	brush	0%	50%	50%	aug-march		2006	phased				
17	Palomarin (first thinning)	Palomarin	25	mechanical	thin	0%	0%	100%	aug-march	45,000	1 treatment	phased	funded			
18	Palomarin (first thinning)	Palomarin	25	mechanical	treat	0%	0%	100%	aug-march	0	1 treatment	phased	funded			
19	Palomarin (first thinning)	Palomarin	25	mechanical	disposal	0%	0%	100%	aug-march	0	1 treatment	phased	funded			

2007 Projects

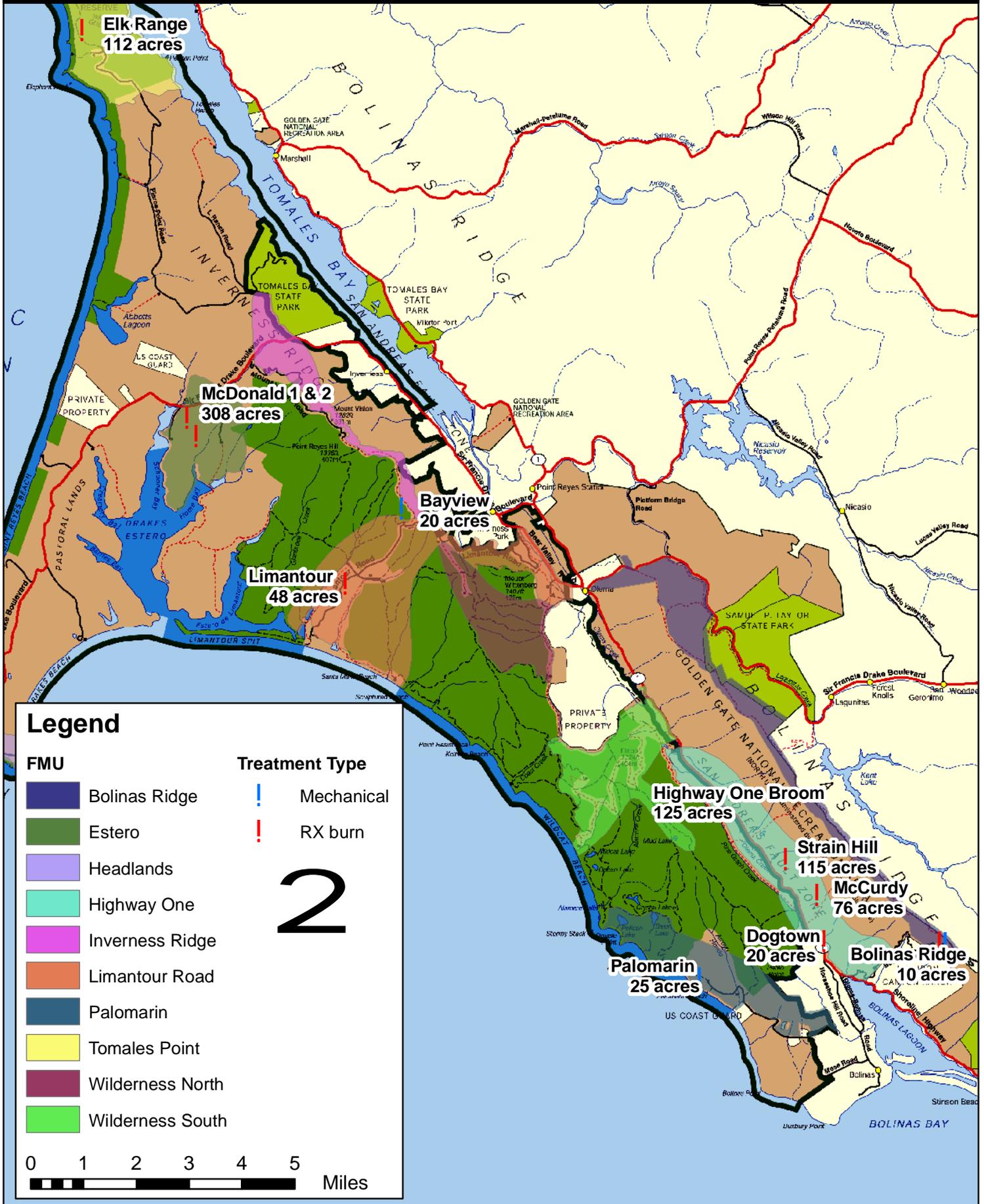
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		FMU	Acreage	Project Type	Specifics	%grass	%shrub	% forest/ woodland	Proposed Season	Funding	Yr. Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2
	RX BURN PROJECTS		677													
1	Limantour 5	Limantour	48	Rx		50%	50%	0%	fall		2005	3				
2	Elk Range 2	Tomales Pt.	112	Rx		55%	45%	0%	late summer/fall or late winter		1st Treatment		Need to avoid exclosures & unfenced reference sites.	must avoid calving season.		
3	Bolinas Ridge	Bolinas Ridge	39	Rx		55%	45%	0%	fall		1st Treatment					
4	Lime Kiln	Hwy One	15	Rx		100%		0%	july - sept		1999	2	French broom	high fuel	Maintain or decrease the % cover of non-native species.	Maintain GEMO at 10% cover. & Obj #3 Hazard reduction on Hwy One
5	Home 3	Estero	71	Rx		100%	0%	0%	aug-nov		2001	2				
6	Home 5	Estero	22	Rx		100%	0%	0%	aug-nov		2001	2				
7	Wilkins	Hwy One	62	Rx		100%	0%	0%	aug-nov		1st Treatment?	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
8	McDonald 1	Hwy One	187	Rx		55%	45%	0%	fall		2001	1 - 2 years				
9	McDonald 2	Hwy One	121	Rx		55%	45%	0%	fall		2001	1 - 2 years				
	MECHANICAL PROJECTS		75													
10	Park Structures Defensible Space	All	50	mechanical	mow, brush	N/A	N/A	N/A	yearound	\$45,000	2007	annual				
11	Hwy 1 Broom, McDonald, McCurdy, Hagmeier, Wilkins	Hwy One	125	mechanical	mow	90%	10%	0%	spring	\$23,000	2007	annual				
12	Bear Valley Euc Removal (intermed. thin)	Limantour	7	mechanical	thinning, piling	0%	0%	100%	oct - march	12,000	2004	phased				
13	Bear Valley Euc Removal (disposal)	Limantour	7	mechanical	chipping & disposal	0%	0%	100%	aug-march		2004	phased				
14	Bear Valley Euc Removal (chemical)	Limantour	7	mechanical	herbicide	0%	0%	100%	aug-march		2004	phased				
15	Palomarin (intermed. cut)	Palomarin	25	mechanical	thin	0%	0%	100%	aug-march		2007	phased				
16	Palomarin (intermed. cut)	Palomarin	25	mechanical	treat	0%	0%	100%	aug-march		2007	phased				
17	Palomarin (intermed. cut)	Palomarin	25	mechanical	disposal	0%	0%	100%	aug-march		2007	phased				

2008 Projects

Point Reyes National Seashore
National Park Service
Department of the Interior



Legend

FMU

- Bolinas Ridge
- Estero
- Headlands
- Highway One
- Inverness Ridge
- Limantour Road
- Palomarin
- Tomales Point
- Wilderness North
- Wilderness South

Treatment Type

- Mechanical
- RX burn

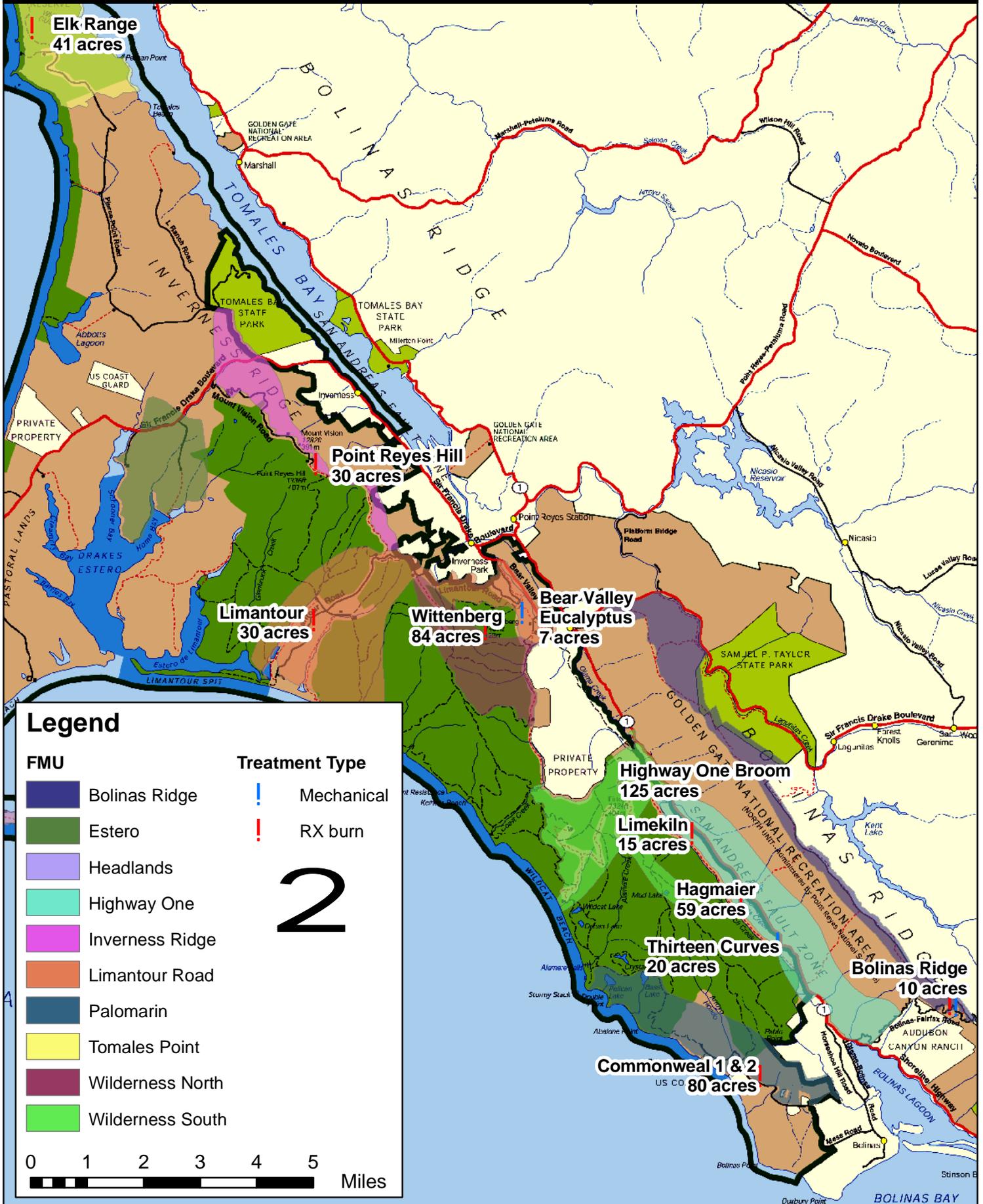
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	Project	FMU	Acres	Project Type	Specifics	%grass	%shrub	% forest/ wdland	Timing	Funding	Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2
	RX BURN PROJECTS		582													
1	Hagmeier	Hwy One	59	Rx		100%	0%	0%	July - sept		2006	3	French broom	velvet grass		
2	Lime Kiln	Hwy One	15	Rx		100%	0%	0%	July - sept		2006	2	French broom	high fuel		
3	Point Reyes Hill	Inverness Ridge	30	Rx		50%	50%	0%	July - sept		2006					
4	Limantour 6	Limantour	30	Rx		0%	100%	0%	July - sept		2006	phased				
5	Elk Range 1	Tomales Point	41	Rx		80%	20%	0%	fall		1st Treatment					
6	Dogtown	Hwy One	30	Rx		100%	0%	0%	aug-nov		late FY 2007	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
7	Strain Hill	Hwy One	115	Rx		100%	0%	0%	fall		late FY 2007	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
8	McCurdy Broadcast	Hwy One	76	Rx		100%	0%	0%	fall		late FY 2007	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
9	Wilkins	Hwy One	62	Rx		100%	0%	0%	aug-nov		1st Treatment?	2	Broom	Fuel loading along critical ingress/egress route	Roadside fuel reduction	control of invasive exotic species
10	Mt. Vision B	Inverness Ridge	40	Rx		40%	60%	0%	fall		1st Treatment					
11	Wittenberg 1	Wilderness North	84	Rx		10%	0%	90%	July - sept		1st Treatment					
	MECHANICAL PROJECTS		332													
12	Park Defensible Space	All	50	mechanical	maintenance	N/A	N/A	N/A	spring		2008	annual				
13	Highway One Broom Control	Hwy One	150	mechanical	mowing	95%	5%	0%	spring		2008	annual				
16	Bayview Trail Fuel Break	Limantour	26	mechanical	maintain	0%	100%	0%	aug- march		2007	2				
17	Bear Valley Euc Removal (intermed. thin)	Limantour	7	mechanical	thinning, piling, chipping	0%	0%	100%	aug - march		2008	phased	high fuel hazard	near center of visitor activity		
18	Bear Valley Euc Removal (disposal)	Limantour	7	mechanical	disposal	0%	0%	100%	aug - march		2008	phased	high fuel hazard	near center of visitor activity		
19	Bear Valley Euc Removal (chemical)	Limantour	7	mechanical	herbicide	0%	0%	100%	aug - march		2008	phased	high fuel hazard	near center of visitor activity		
20	Highway One Euc Removal - 13 curves (overstory removal)	Hwy One	25	mechanical	thin	0%	0%	100%	aug - march		2007	phased	high fuel hazard	cultural resource and roadside visibility		
21	Highway One Euc Removal - 13 curves (overstory removal)	Hwy One	25	mechanical	chip	0%	0%	100%	aug - march		2007	phased	high fuel hazard	cultural resource and roadside visibility		
22	Highway One Euc Removal - 13 curves (overstory removal)	Hwy One	25	mechanical	herbicide	0%	0%	100%	aug		2007	phased	high fuel hazard	cultural resource and roadside visibility		
23	Bolinas Ridge	Bolinas Ridge	10	mechanical	brush	0%	50%	50%	aug - feb		2007	phased	listed plants and animals	management plan needed for rare plants		

2009 Projects

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Legend

FMU

- Bolinas Ridge
- Estero
- Headlands
- Highway One
- Inverness Ridge
- Limantour Road
- Palomarín
- Tomales Point
- Wilderness North
- Wilderness South

Treatment Type

- Mechanical
- RX burn

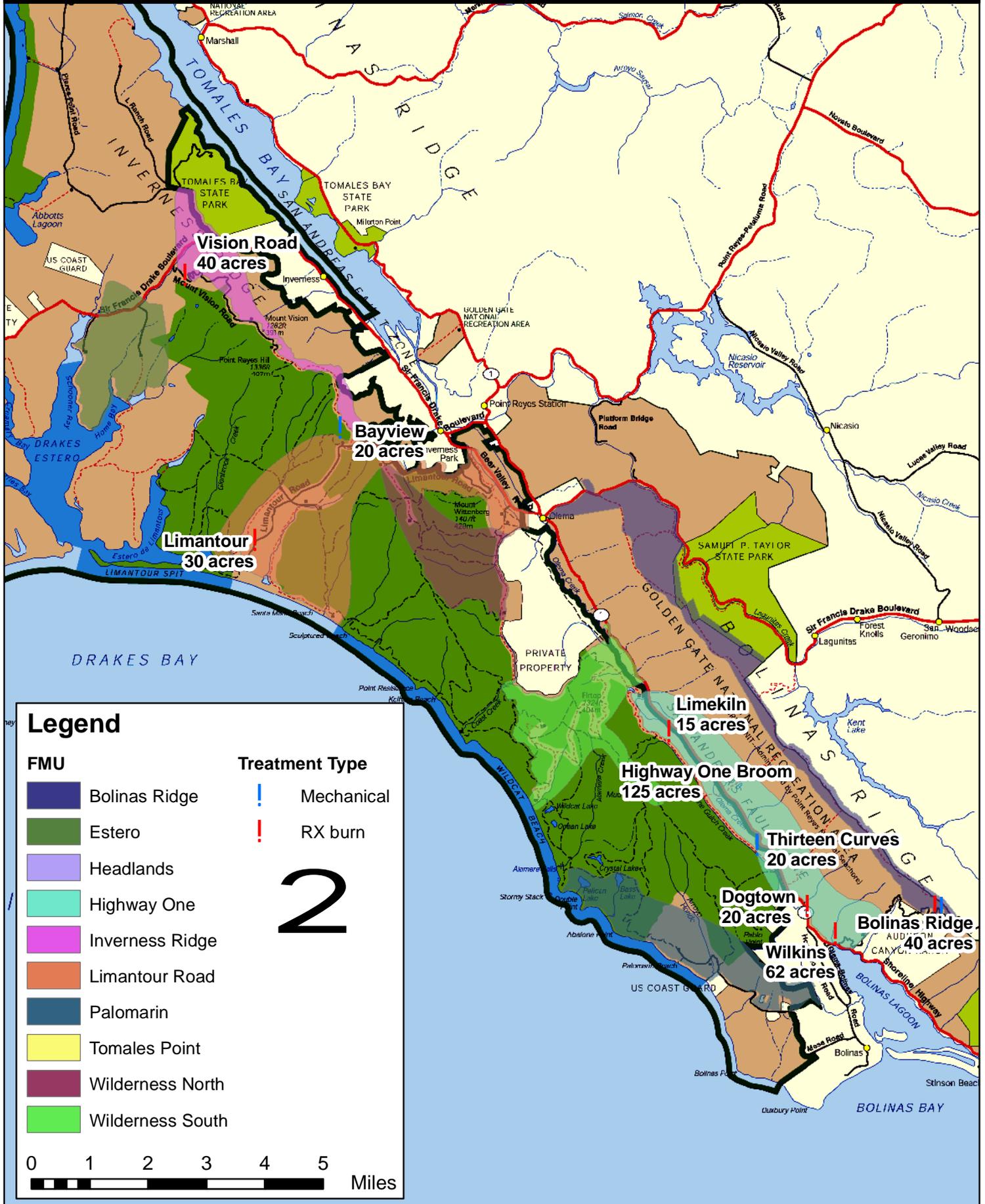
2



	Project	FMU	Acres	Project Type	Specifics	%grass	%shrub	% forest/wdland	Timing	Funding	Last Treated	Maint. Freq.	Issue 1	Issue 2	Obj 1	Obj 2
	RX BURN PROJECTS		606													
1	Limantour 7	Limantour	30	Rx		20%	80%	0%	july-sept		2006	4				
4	Bolinas Ridge	Bolinas Ridge	40	Rx		15%	80%	5%	fall		2008	continuation				
6	Commonweal 2	Palomarin	69	Rx		20%	80%	0%	fall		1st Treatment					
7	Commonweal 1	Palomarin	11	Rx		20%	80%	0%	july - sept		1st Treatment					
4	Home 3	Estero	71	Rx		100%	0%	0%	aug-nov		2001	2				
5	Home 5	Estero	22	Rx		100%	0%	0%	aug-nov		2001	2				
7	McDonald 1	Hwy One	187	Rx		55%	45%	0%	fall		2001	1 - 2 years				
8	McDonald 2	Hwy One	121	Rx		55%	45%	0%	fall		2001	1 - 2 years				
	Mt. Vision C	Inverness Ridge	40	Rx												
2	Lime Kih	Hwy One	15	Rx		100%		0%	july - sept		1999	2	French broom	high fuel	Maintain or decrease the % cover of non-native species.	Maintain GEMO at 10% cover. & Obj #3 Hazard reduction on Hwy One.
	MECHANICAL PROJECTS		335													
7	Bayview Trail	Limantour	35	mechanical	trimming and chipping	0%	100%	0%	aug-march		2005 & 2007	5				
8	Bolinas Ridge	Bolinas Ridge	15	mechanical	trimming and chipping	0%	50%	50%	aug-march		2006 & 2007	5				
9	Park Defensible Space	All	50	mechanical	maintenance	N/A	N/A	N/A	spring		2009	annual				
10	Highway One Broom Control	Hwy One	150	mechanical	mowing	95%	5%	0%	spring		2007	3				
	Highway One Eucalyptus Removal - 13 curves	Hwy One	20	mechanical	thinning	0%	0%	100%	aug-march		2009	continuation				
	Highway One Eucalyptus Removal - 13 curves	Hwy One	20	mechanical	chipping and disposal	0%	0%	100%	aug-march		2009	continuation				
	Highway One Eucalyptus Removal - 13 curves	Hwy One	20	mechanical	herbicide	0%	0%	100%	aug-march		2009	continuation				
14	Mt. Vision Road	Inverness Ridge	15	mechanical	thinning	0%	0%	100%	aug-march		1st Treatment					
15	Sky Camp	Wilderness North	10	mechanical	felling/pile burning	0%	20%	80%	aug-march		1st Treatment					

2010 Projects

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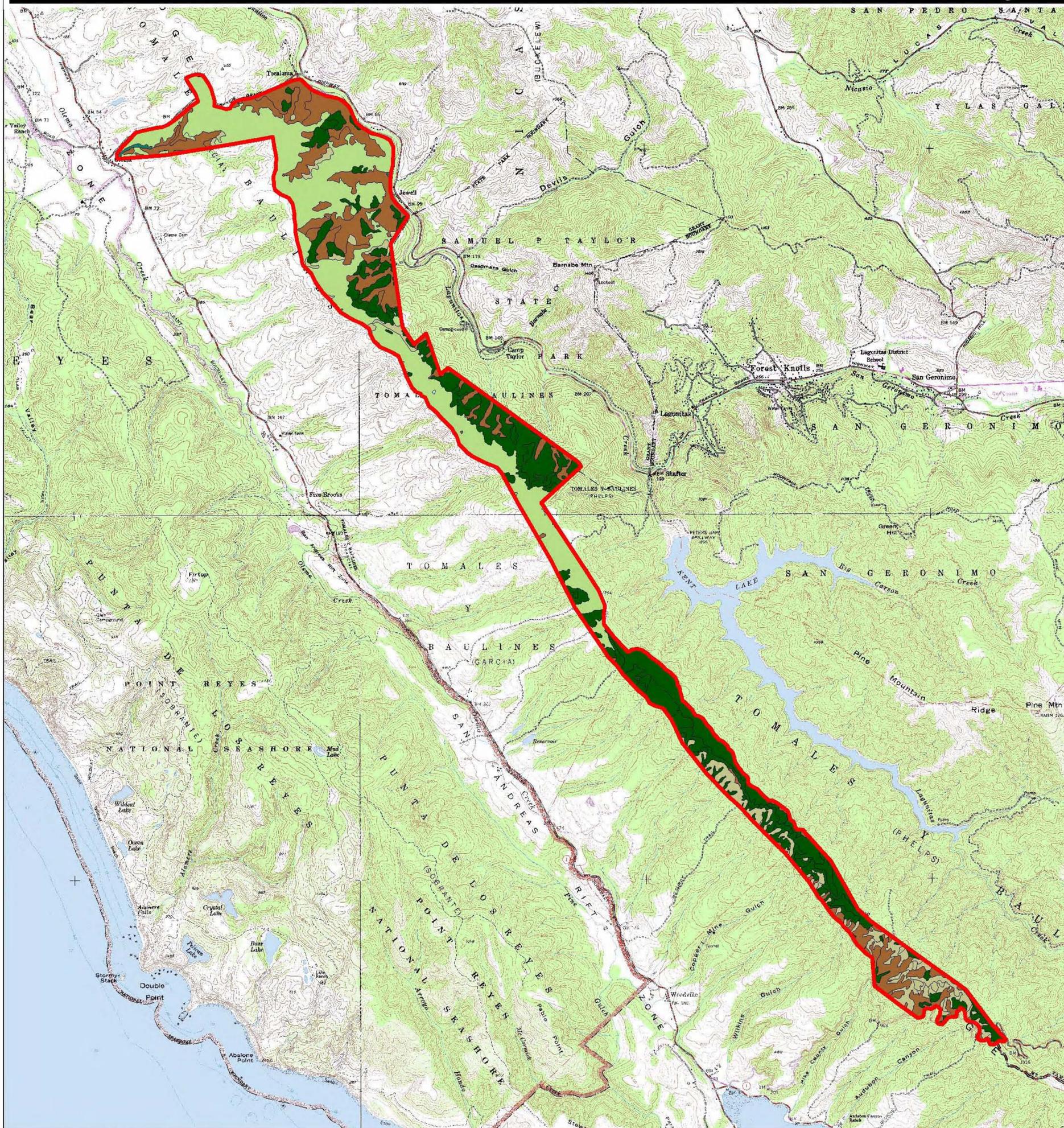
APPENDIX E, PART 20

VEGETATION MAPS
OF THE FIRE MANAGEMENT UNITS,
POINT REYES NATIONAL SEASHORE

IMPLEMENTATION STRATEGY
FOR THE
PRNS FIRE MANAGEMENT PLAN

Vegetation in Bolinas Ridge FMU

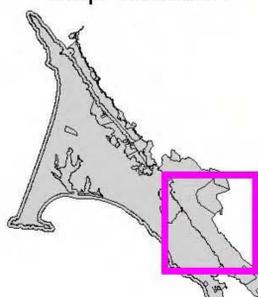
Point Reyes National Seashore



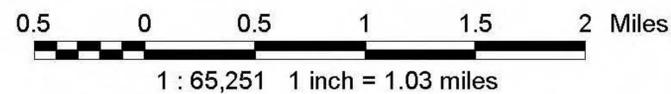
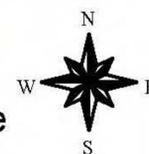
Vegetation Classes and Acreage

	Douglas-fir / Redwood = 755.4
	Grassland = 846.7
	Hardwood Forest = 570.0
	Riparian = 5.9
	Scrub = 203.4
	Water = 0.3
	Unvegetated = 0.2
	FMU Boundary

Map Location

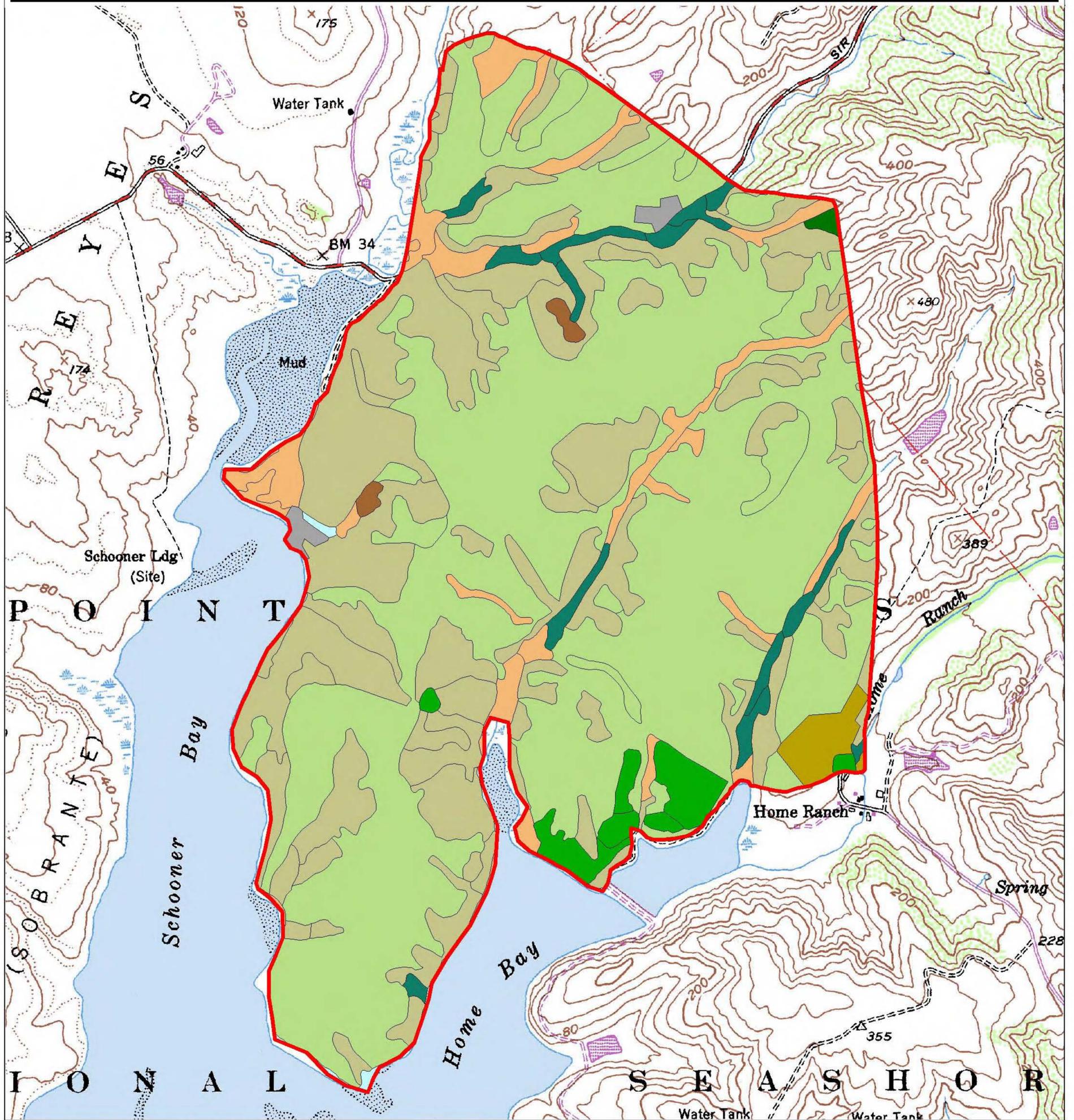


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Vegetation in the Estero FMU

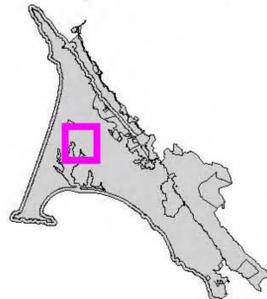
Point Reyes National Seashore



Vegetation Classes and Acreage

	Bishop Pine = 2.2		Riparian = 37.9
	Grassland = 913.1		Scrub = 520.2
	Hardwood Forest = 5.3		Unvegetated = 7.6
	Marsh = 94.2		Water = 4.7
	Monterey Pine/Cypress = 37.0		FMU Boundary
	Pasture = 16.9		

Map Location



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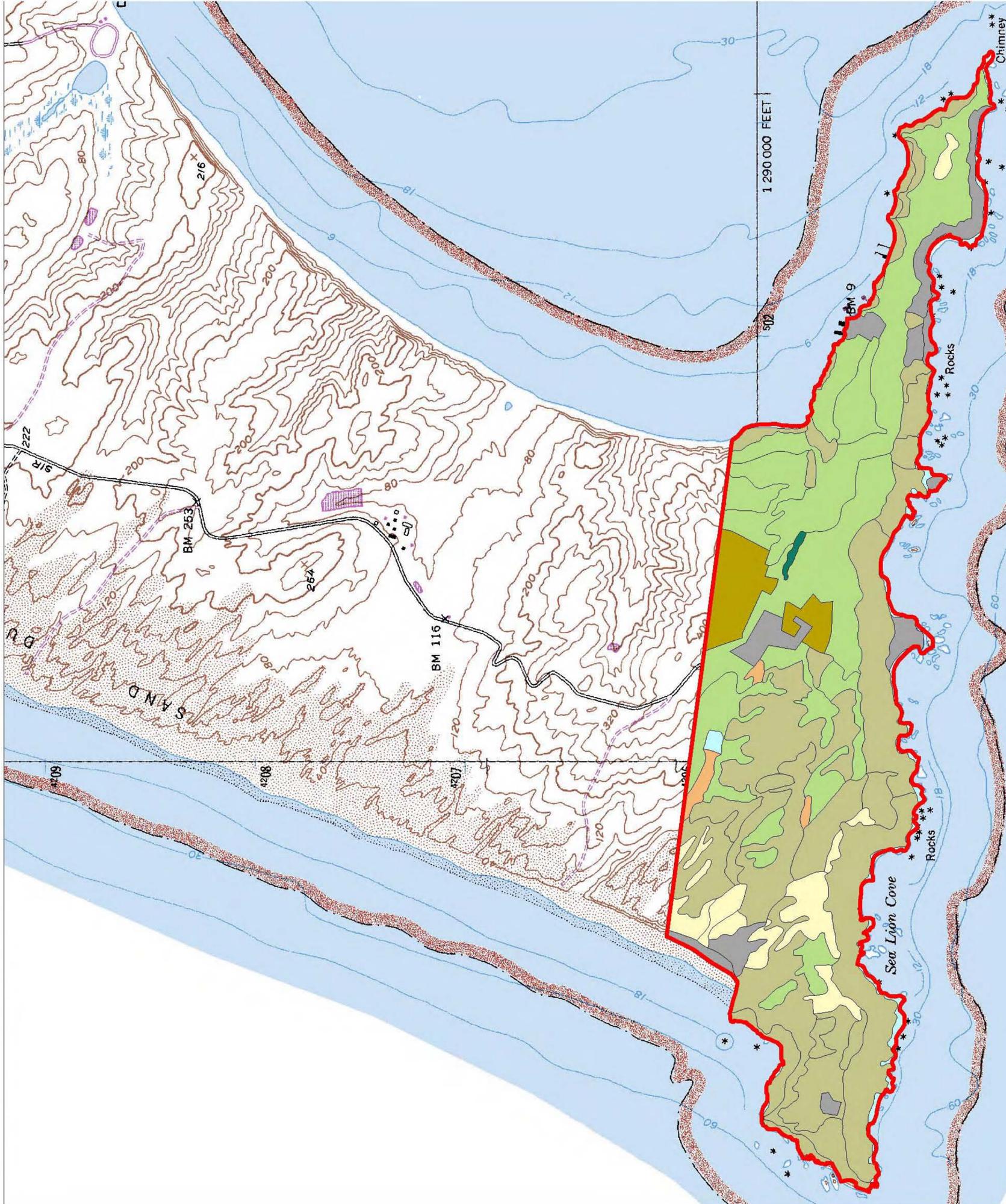


0.1 0 0.1 0.2 0.3 0.4 0.5 Miles

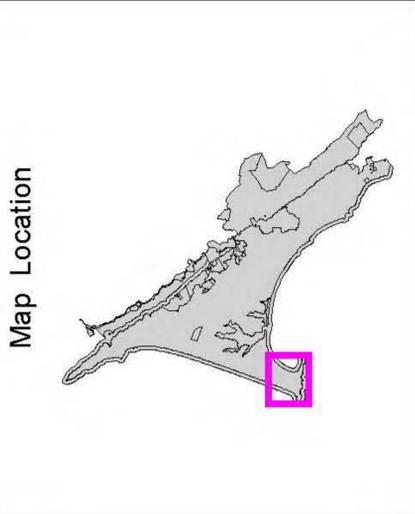


1 : 23,207 1 inch = 0.37 miles

Vegetation in the Headlands FMU Point Reyes National Seashore



	FMU Boundary
Vegetation Types and Acreage	
	Dune = 51.3
	Grassland = 299.4
	Marsh = 7.7
	Pasture = 38.1
	Riparian = 1.8
	Scrub = 400.7
	Unvegetated = 56.8
	Water = 24.5

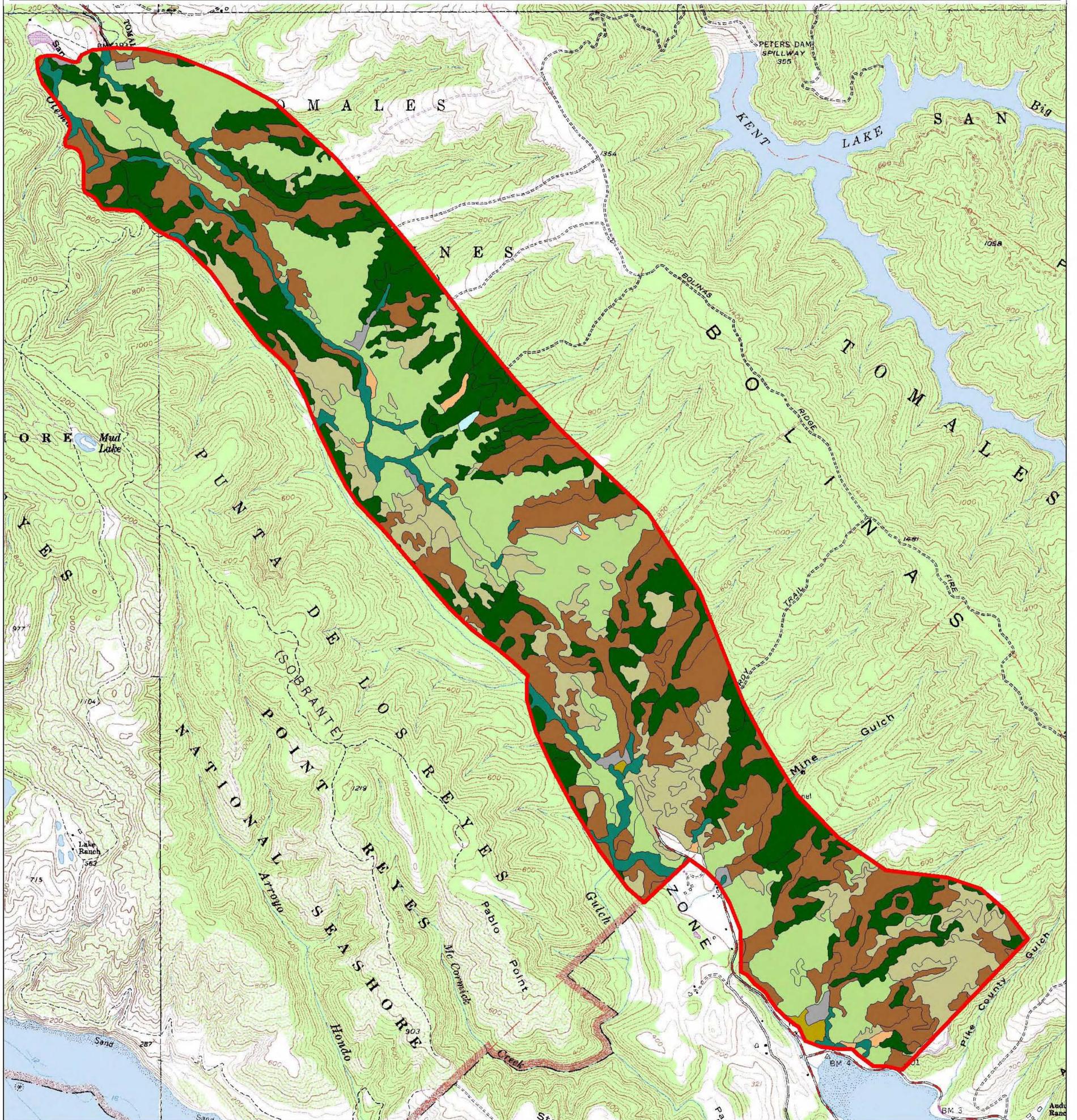


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0.1 0 0.1 0.2 0.3 0.4 0.5 Miles
1 : 28,981 1 inch = 0.46 miles

Vegetation in the Highway One FMU

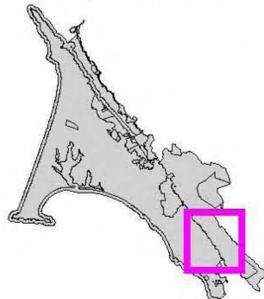
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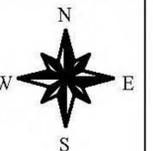
Vegetation Classes and Acreage

	Douglas-fir / Redwood = 719.3		Scrub = 421.6
	Grassland = 797.4		Unvegetated = 21.0
	Hardwood Forest = 771.1		Water = 2.8
	Marsh = 13.4		FMU Boundary
	Pasture = 8.8		
	Riparian = 112.4		

Map Location



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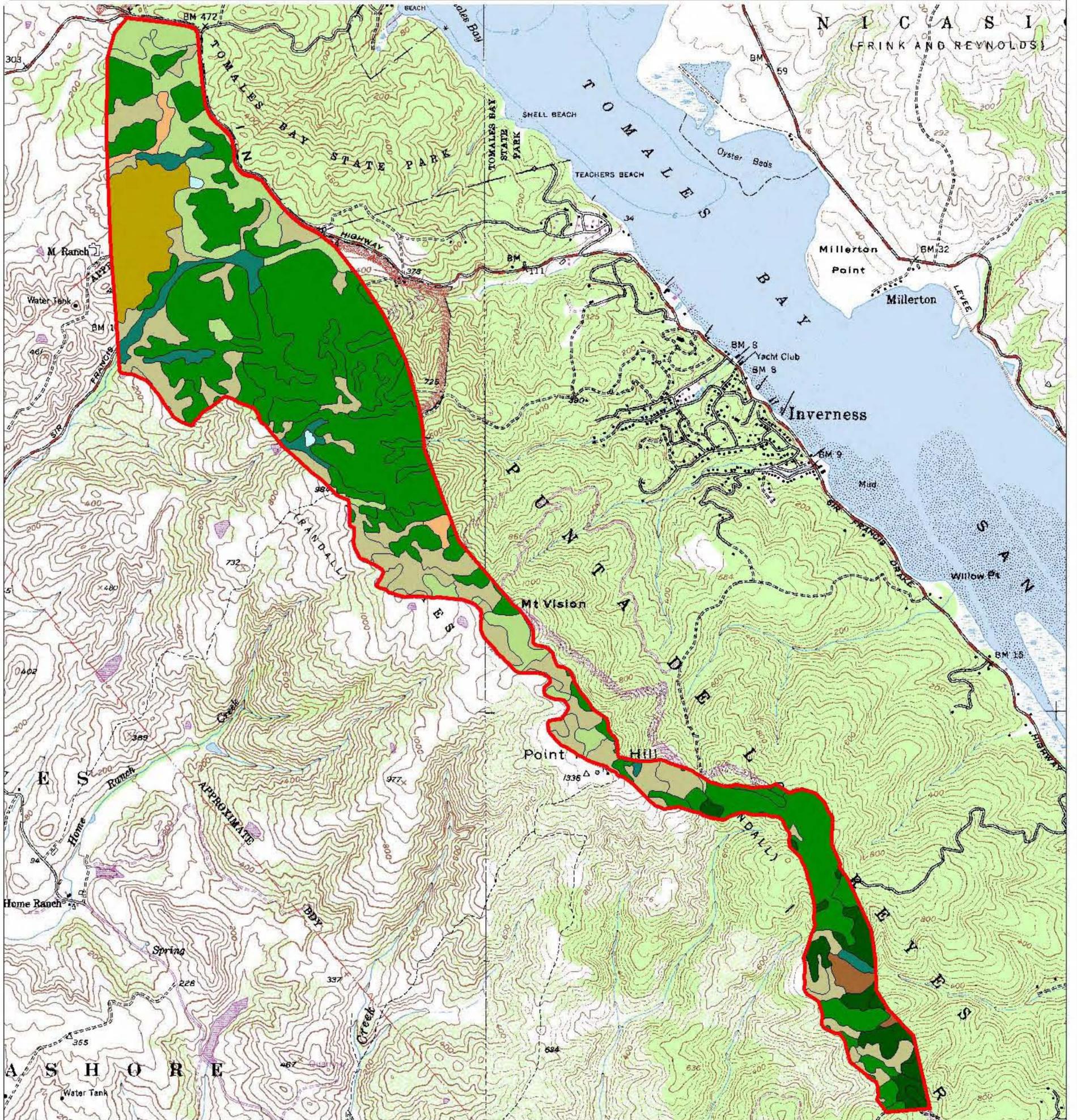
0.2 0 0.2 0.4 0.6 0.8 Miles



1 : 39,414 1 inch = 0.62 miles

Vegetation in Inverness Ridge F MU

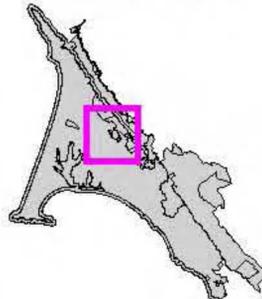
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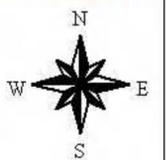
Vegetation Classes and Acreage

Bishop Pine = 646.3	Riparian = 46.2
Douglas-fir / Redwood = 55.7	Scrub = 245.6
Grassland = 143.8	Unvegetated = 0.0007
Hardwood Forest = 12.5	Water = 2.6
Marsh = 13.4	F MU Boundary
Pasture = 84.4	

Map Location



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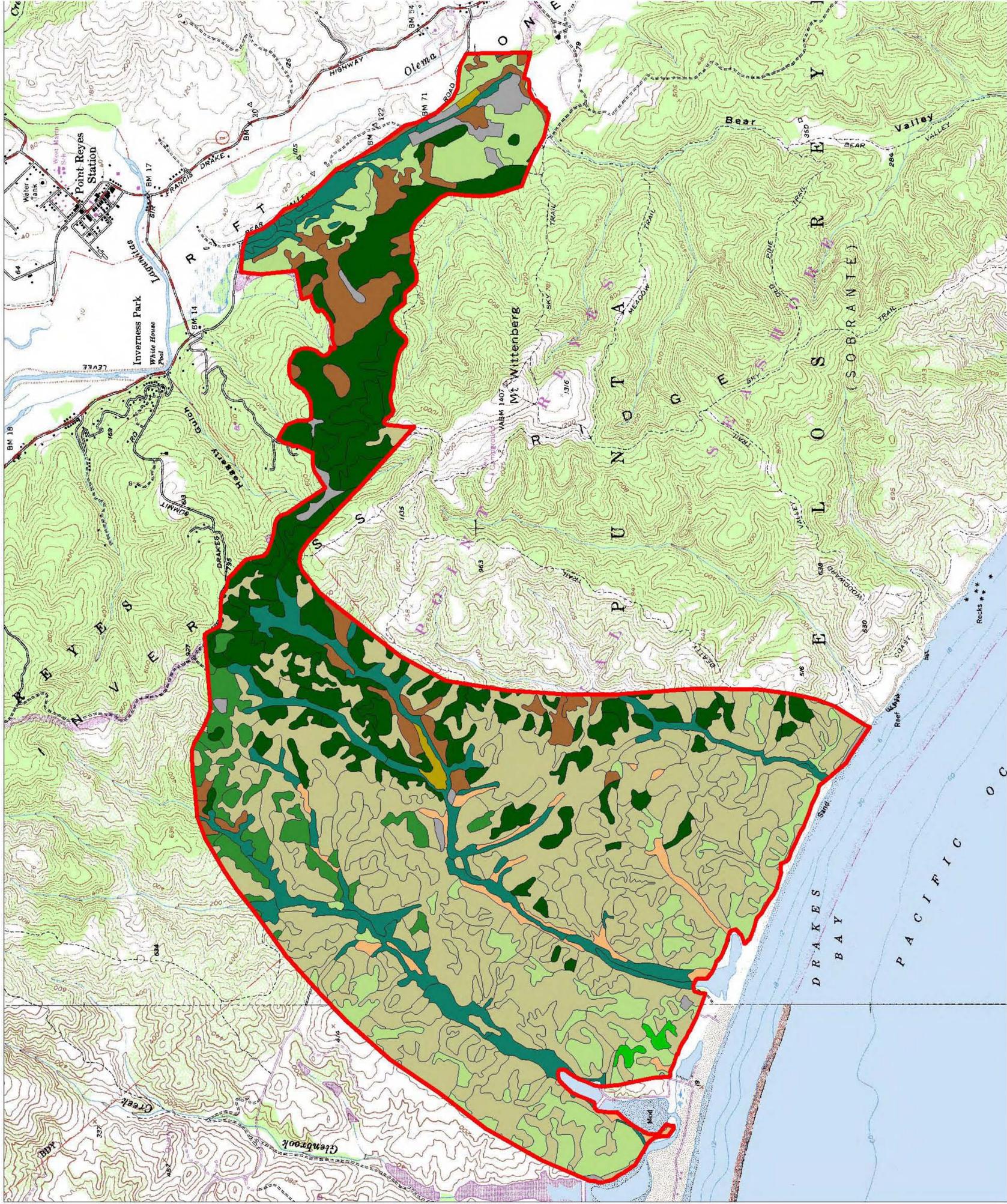


0.2 0 0.2 0.4 0.6 0.8 Miles



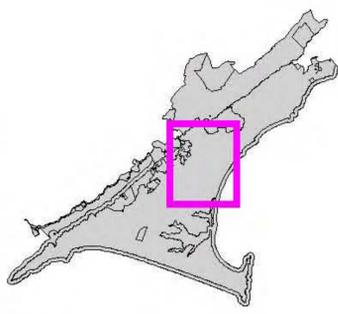
1 : 37,161 1 inch = 0.59 miles

Vegetation in the Limantour Road FMU Point Reyes National Seashore

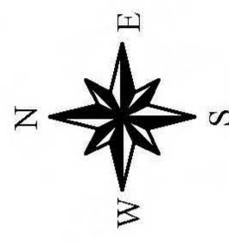
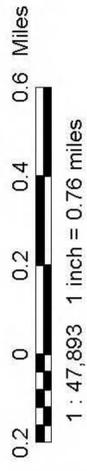


FMU Boundary	
	FMU Boundary
Vegetation Classes and Acreage	
	Bishop Pine = 140.9
	Douglas-fir / Redwood = 748.4
	Dune = 0.2
	Grassland = 462.2
	Hardwood Forest = 216.9
	Marsh = 69.7
	Monterey Pine/Cypress = 12.1
	Pasture = 13.6
	Riparian = 371.5
	Scrub = 2040.3
	Unvegetated = 65.1
	Water = 2.8

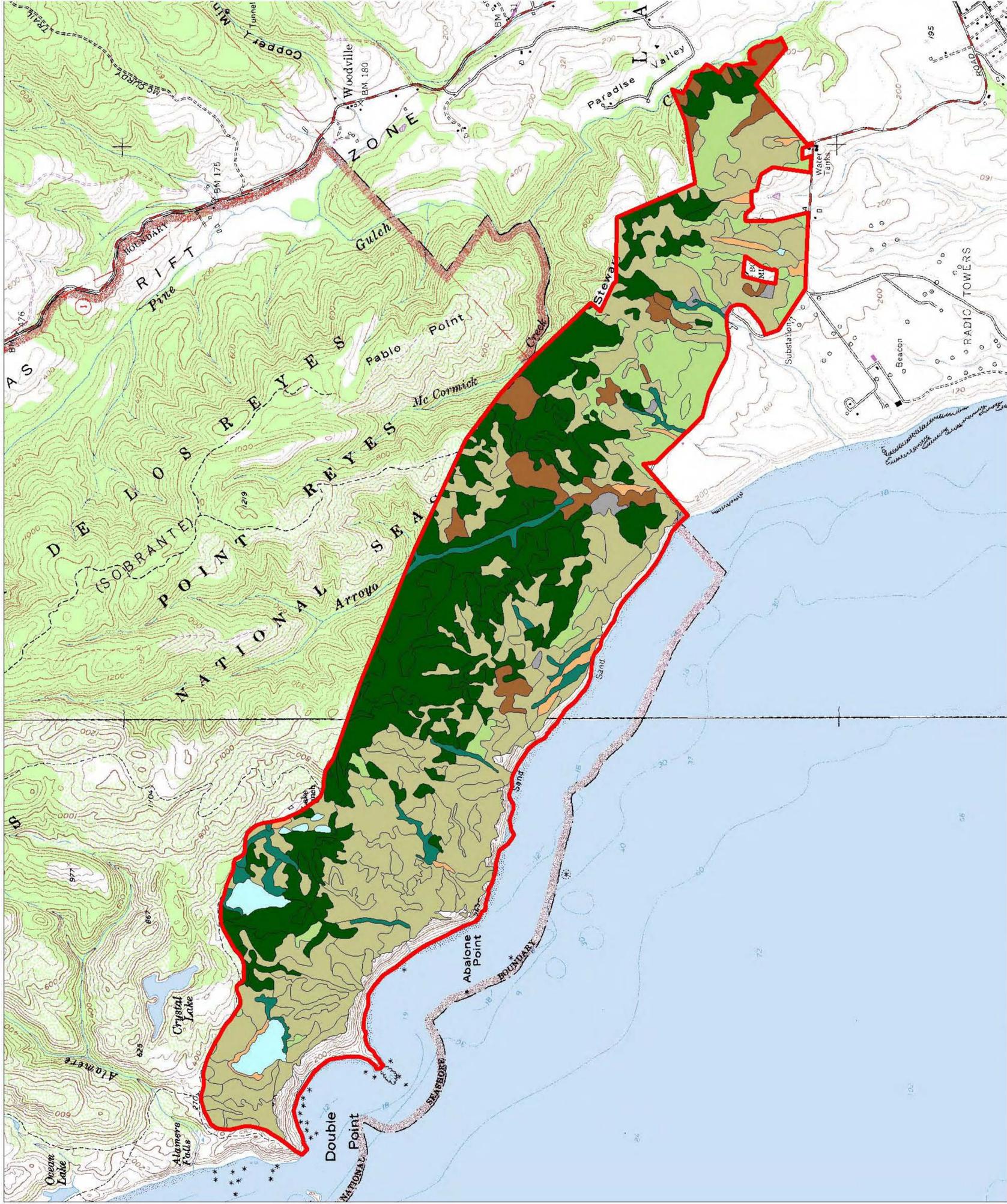
Map Location



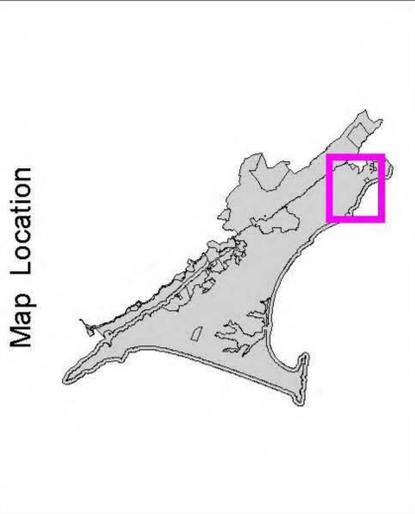
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Vegetation in the Palomarin FMU Point Reyes National Seashore



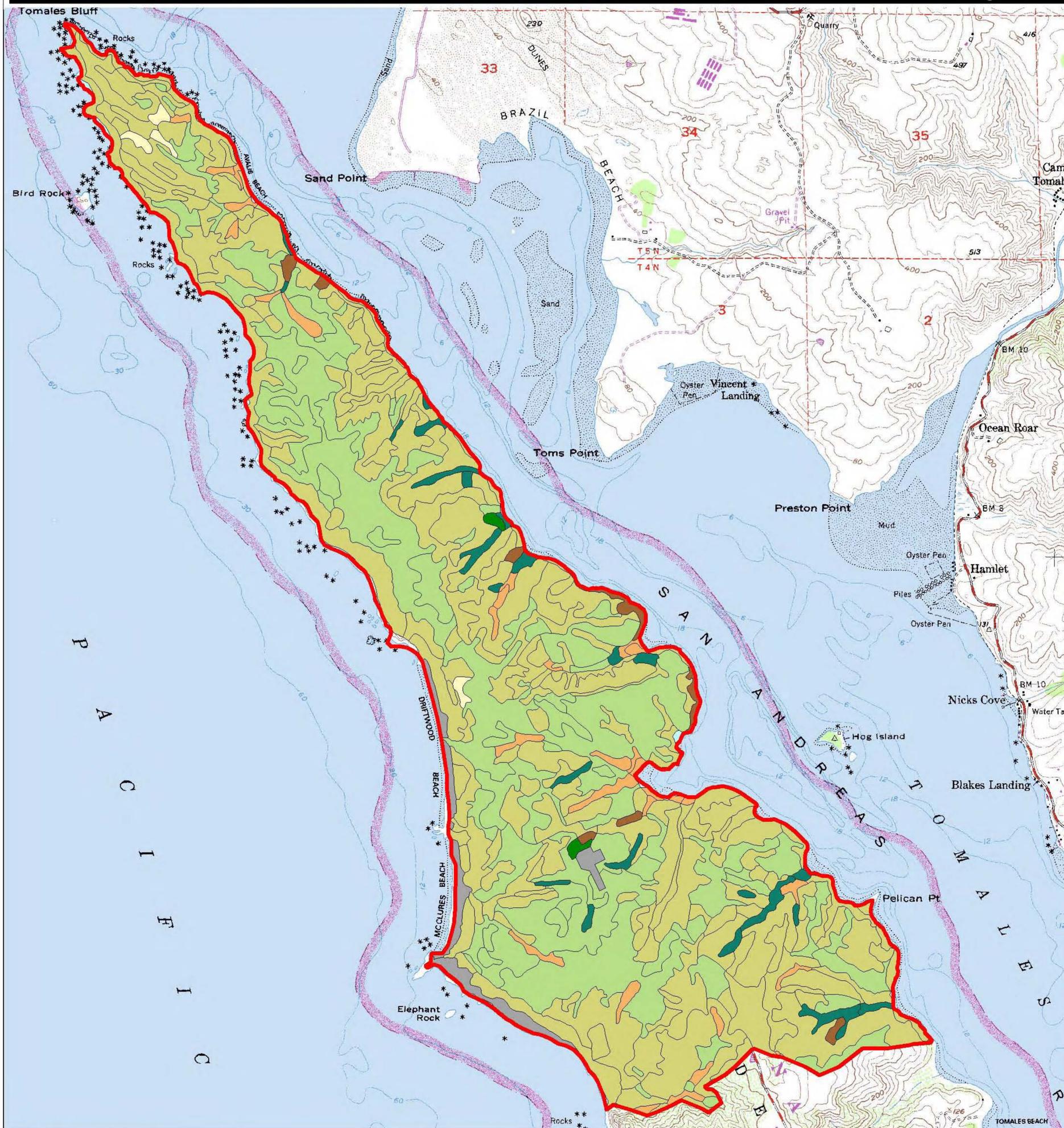
	FMU Boundary
Vegetation Classes and Acreage	
	Douglas-fir / Redwood = 624.3
	Grassland = 190.2
	Hardwood Forest = 92.2
	Marsh = 25.2
	Monterey Pine/Cypress = 0.08
	Pasture = 0.1
	Riparian = 58.4
	Scrub = 889.0
	Unvegetated = 12.8
	Water = 37.7



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Vegetation in Tomales Point FMU

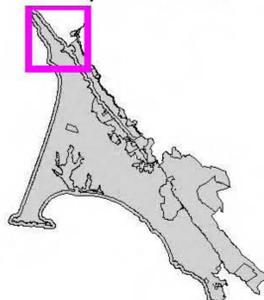
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Vegetation Classes and Acreage

	Dune = 12.5		Scrub = 1518.9
	Grassland = 1006.7		Unvegetated = 49.5
	Hardwood Forest = 24.9		Water = 22.5
	Marsh = 74.3		FMU Boundary
	Monterey Pine / Monterey Cypress = 5.6		
	Riparian = 64.3		

Map Location



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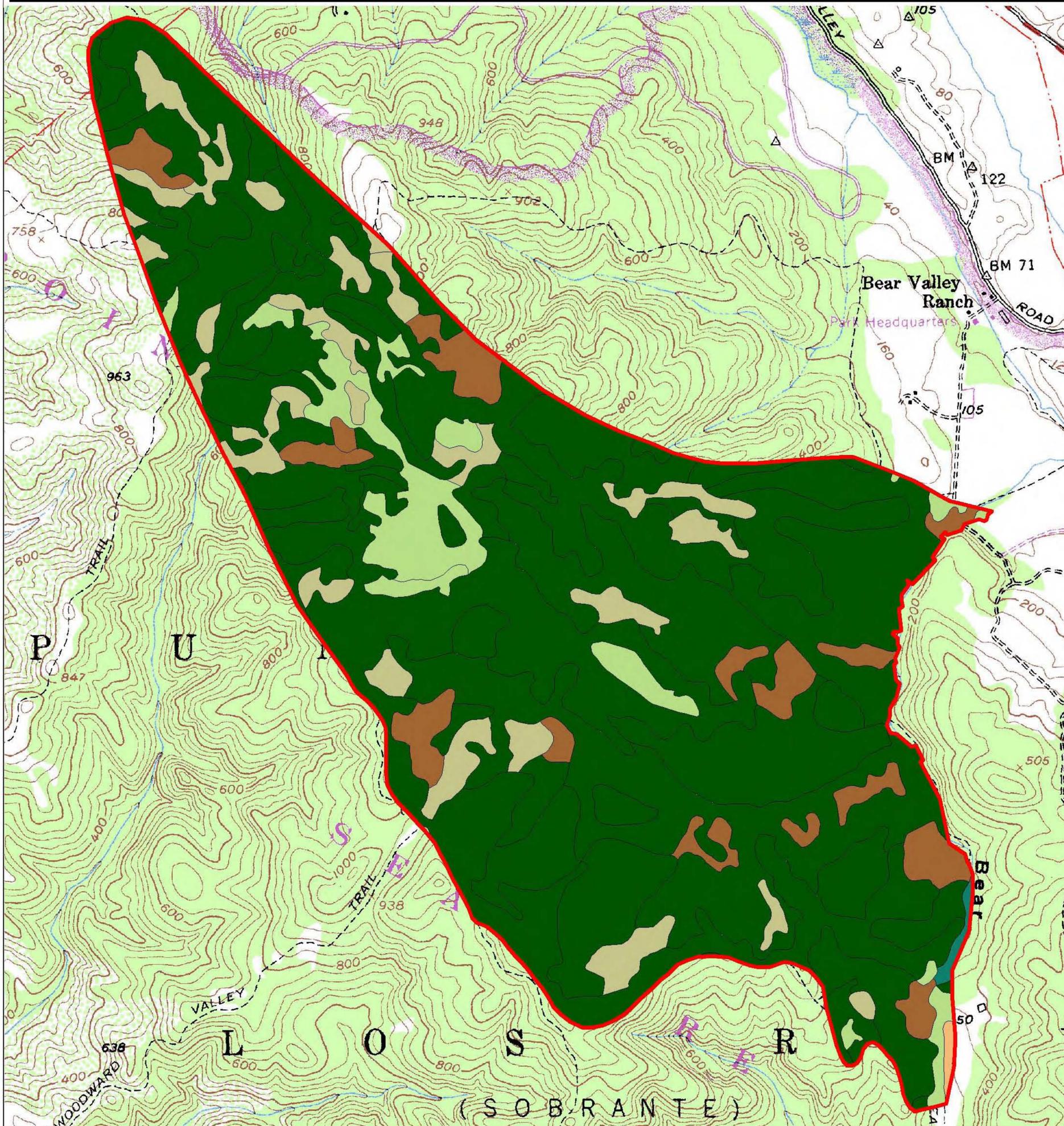


0.2 0 0.2 0.4 0.6 0.8 1 Miles

1 : 42,270 1 inch = 0.67 miles

Vegetation in Wilderness North FMU

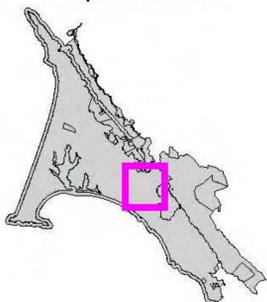
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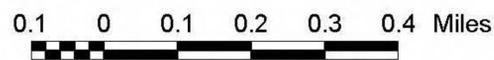
Vegetation Classes and Acreage

	Douglas-fir / Redwood = 1,262.3
	Grassland = 88.4
	Hardwood Forest = 103.5
	Marsh = 2.6
	Riparian = 4.0
	Scrub = 130.6
	FMU Boundary

Map Location



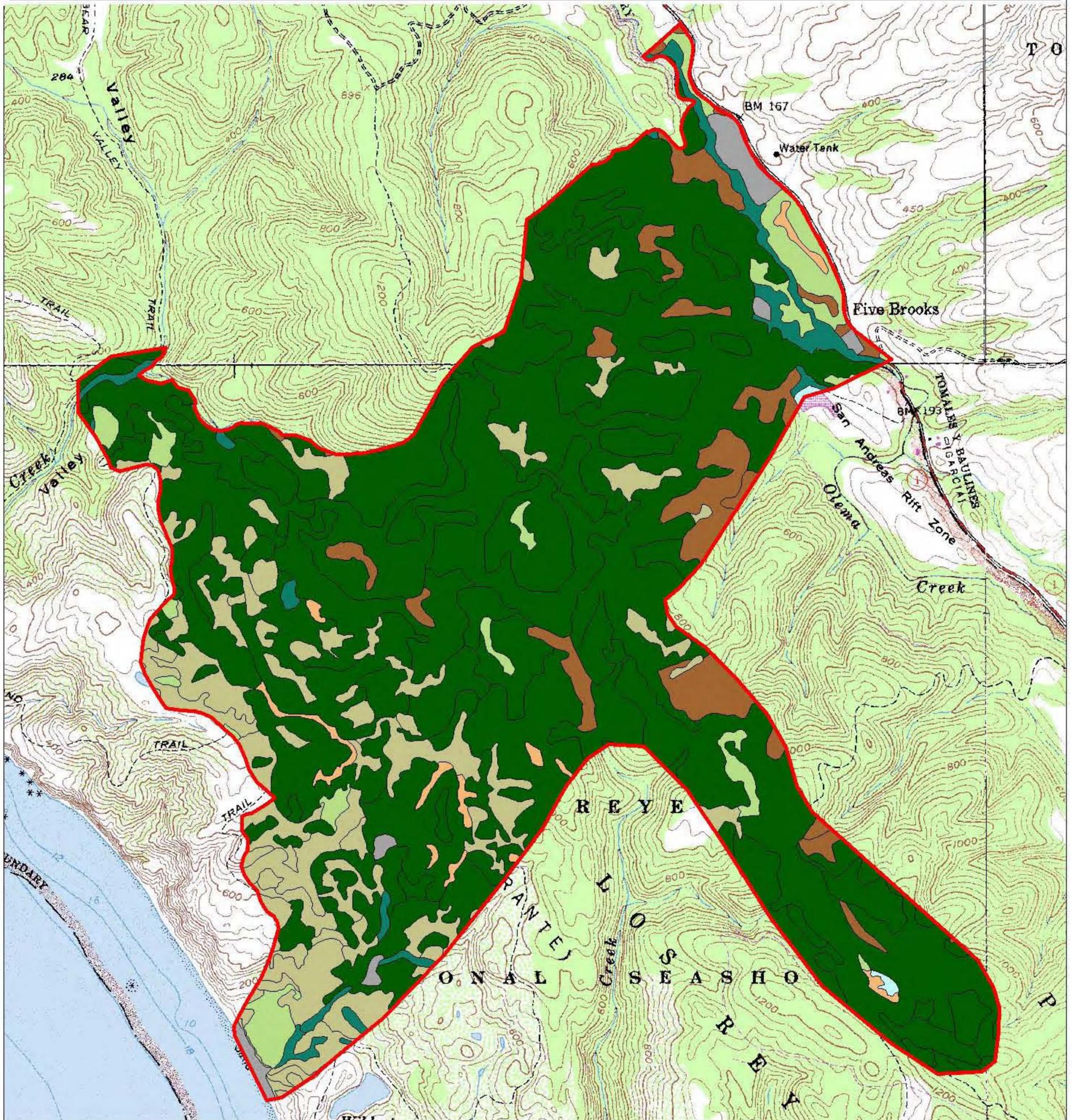
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1 : 28,401 1 inch = 0.45 miles

Vegetation in Wilderness South FMU

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Vegetation Classes and Acreage

	Douglas-fir / Redwood = 1673.3		Unvegetated = 28.2
	Grassland = 85.5		Water = 3.0
	Hardwood Forest = 128.0		FMU Boundary
	Marsh = 22.4		
	Riparian = 54.0		
	Scrub = 303.6		

Map Location



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0.2 0 0.2 0.4 0.6 Miles



1 : 31,879 1 inch = 0.50 miles

