

Emergency Stabilization & Rehabilitation Plan

Woodward Fire

Point Reyes National Seashore, CA



Submitted by: **CAREY FEIERABEND** Digitally signed by CAREY FEIERABEND
Date: 2020.09.25 11:16:44 -07'00' Date: Sept. 25, 2020
Carey Feierabend, Acting Superintendent



September 2020



PAGE INTENTIONALLY BLANK

Unit Summary Information

Unit Name	Point Reyes National Seashore
Unit Identifier	CA-RNP
NPS Region	Pacific West

Fire Summary Information

Fire Name	Woodward
Fire Number	CA-RPN-012009
Fire Code	NF62
Detection Date/Cause	August 17, 2020
Date Contained	N/A
Acreage	5,011 Acres (NPS GIS data)

Account Number

Emergency Stabilization, FY20

Fund	20XP112585
Cost Center	PPPWPOREF0
Functional Area	PF220ES85.RM0000
WBS	PF.FENF62020.00.1

Team Members

Position	Name & Affiliation
Team Leader	Jack Oelfke, North Cascades National Park Service Complex
GIS, Documentation	Trisha Johnson, Colville Confederated Tribes
Cultural Resources	Dan Hall, Bureau of Indian Affairs Paul Engel, Point Reyes National Seashore
Watershed	Spencer Higginson, National Oceanic and Atmospheric Administration
Watershed	Scott Sheppard, Bureau of Land Management
Forestry	Clark Cowan, Channel Islands National Park
Vegetation	Ellen Hamingson, Point Reyes National Seashore
Wildlife	Dave Press, Point Reyes National Seashore
Vegetation	Lorraine Parsons, Point Reyes National Seashore
Technical Support	Nelson Siefkin, Regional BAER Coordinator

EXECUTIVE SUMMARY

Introduction

This joint Emergency Stabilization (ES, also called Burned Area Emergency Response [BAER]) and Burned Area Rehabilitation (BAR) Plan has been prepared for the Woodward Fire at Point Reyes National Seashore (PORE), Olema, California. The Woodward Fire was ignited by lightning on August 17, 2020. It burned approximately 5,000 acres, much of it designated Wilderness, just west of the park's Bear Valley headquarters and visitor center, an area of heavy visitation with numerous high-value natural and cultural resources.

PORE was authorized for establishment in 1962 to preserve a portion of the seashore of the United States, a resource recognized as diminishing at that time. The park encompasses a geologically unique peninsula of more than 71,000 acres of beaches, coastal cliffs and headlands, marine terraces, coastal uplands, and forests, and includes all tide and submerged lands to 0.25 miles offshore.

Fundamental resources and values of the park include:

- Philip Burton Wilderness encompassing more than 33,000 acres, including marine Wilderness;
- Scenic coastal landscapes with more than 80 miles of wild beaches, dramatic cliffs, coastal grasslands, and detached coastal formations;
- Marine, estuarine, and freshwater environments;
- A diversity of terrestrial habitats and native species;
- A landscape that records more than 5,000 years of Native American history, early culture contacts, and historical ranching activities;
- Year-round opportunities for inspiration and recreation in a highly urbanized region.

Policy and Guidance

The Woodward Fire Emergency Stabilization and Rehabilitation Plan has been developed in accordance with Department of the Interior and National Park Service policy and guidance, including:

- [Office of Wildland Fire \(OWF\) Policy Memorandum 2016-01 \(Post-Wildfire Recovery Program and Policy Changes\)](#)
- [2020 Interagency Standards for Fire and Fire Aviation Operations](#)
- [NPS Reference Manual 18 \(Chapter 18\)](#)
- [NPS Wildland Fire & Aviation Management Business Rules, FY20](#)
- [Interagency Burned Area Emergency Response Guidebook \(Version 4.0\)](#)

- [Interagency Burned Area Rehabilitation Guidebook \(Version 1.3\)](#)

The primary objectives of the BAER program are to assess the need for and prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical natural and cultural resources. The BAR program is intended to protect resources by repairing or improving burned landscapes unlikely to recover naturally to desired management conditions and to repair or replace fire-damaged minor assets. BAER and BAR are conducted in accordance with approved land management plans and policies, and all relevant federal, state and local laws and regulations.

BAER and BAR are intended to address imminent (<1 year) and short-term (<5 years) threats caused by wildfire, respectively; neither program is responsible for long-term management or rectifying deficiencies that existed prior to the fire. Department of the Interior and NPS BAER policy echoes federal wildland fire policy regarding protection priorities: human safety is first, and property and critical natural and cultural resources are ranked based on the relative values to be protected, commensurate with emergency stabilization and rehabilitation costs.

The basis of the BAER and BAR assessment process is identifying, evaluating, and protecting, repairing or replacing values at risk (VARs)—human safety, properties, capital improvements and natural and cultural resources—located within and downstream of burned areas, and impacted by fire and/or vulnerable to post-fire conditions. When evaluating a given VAR, consideration is given to the significance of the value, probability of damaging events occurring, the magnitude of potential consequences, and the feasibility to mitigate.

Local Management Plans

Pertinent approved land and resource management plans and other documents that guided the preparation of this plan include:

- [Foundation Document \(2020\)](#)
- [Fire Management Plan \(2004\)](#)
- [General Management Plan \(1980\)](#)

Assessments and Specifications

Eleven specifications— nine ES and two BAR—are proposed through this plan to address post-fire issues related to the Woodward Fire. These are summarized in the tables below, and described in greater detail by subject matter area assessments. Non-specification recommendations, which would be financed from sources other than ES or BAR, were also identified during the post-fire assessment process.

Emergency Stabilization

ID	Specification Name	FY20	FY21	FY22	FY23	Totals
ES-1	Plan Preparation	\$39,741	--	--	--	\$39,741
ES-2	Implementation Leader	--	\$13,845	\$10,170	\$10,390	\$34,405
ES-3	Storm Patrol	--	\$19,040	\$19,040	\$19,040	\$57,120
ES-4	Woody Debris Removal	--	\$26,160	--	--	\$26,160
ES-5	Invasive Plants	--	\$87,905	--	--	\$87,905
ES-6	Increased Agency Presence	--	\$151,991	--	--	\$151,991
ES-7	Cultural Site Stabilization	--	\$2,652	--	--	\$2,652
ES-8	Hazard Tree Surveillance and Mitigation	--	\$18,345	\$18,908	\$19,496	\$56,749
ES-9	Trails Repair	--	\$40,480	--	--	\$40,480
Totals		\$39,741	\$360,418	\$48,118	\$48,926	\$497,203

Burned Area Rehabilitation

ID	Specification Name	FY21	FY22	FY23	Total
BAR-1	Invasive Plants	\$41,385	TBD	TBD	\$41,385
BAR-2	Trails Repair/Infrastructure Replacement	\$64,500	\$40,135	\$41,400	\$146,035
Totals		\$105,885	\$40,135	\$41,400	\$187,420

Watershed Assessment

Issues

Watershed Response	The fire impact on the watershed will have a direct impact on the watershed response.
	With the reduction in vegetation, runoff and sedimentation will increase.
Roads and Culverts	Floatable woody debris in and near stream channels can block culverts causing damage to roads.
	During rain and wind events, wood, rock, and debris can fall or roll onto roads and into stream channels.
Cultural Sites	Increased runoff could negatively impact cultural sites on stream banks due to increased bank erosion.
Suppression Damage	Dozerlines on PORE and Vedanta land are stripped to mineral soil and will be damaged significantly by rain and wind erosion if they are not repaired.

Recommendations

ES-3, Storm Patrol: During and after each significant rainfall event, PORE staff will inspect each culvert on the Bear Valley Creek and where burned drainages cross Limantour Road to

ensure that the culverts are clear and functional. If culverts or channels are blocked by woody debris or sedimentation, the blockage must be removed to restore hydrologic function.

ES-4, Woody Debris Removal: During high flow events on Bear Valley Creek and the burned drainages that cross Limantour Road, floatable woody debris can be mobilized and plug culverts. If this were to happen, the impounded water could flow over the road and cause damage or complete failure of the road structure. Therefore, the woody debris must be removed from the stream channel and culvert catchment basins. This is to be accomplished before the 2020-21 rainy season begins.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Public Safety and Resource Protection Assessment

Issues

Public Safety	Annual visitation at PORE exceeds 2 million people per year, and the park is utilized year-round. The Woodward Fire, which is located adjacent to the park's Bear Valley Visitor Center and contains more than 23 miles of trails and a campground, is a very popular area for recreation.
	Numerous safety hazard exist within the burned area, including fire-killed and damaged trees and rolling debris.
	Due to ongoing fire activity, the interior of the fire has not been surveyed for hazards. Hazard mitigation has been limited to Limantour Road, Bear Valley Trail and the Bear Valley visitor facilities. The burned area will remain hazardous through the 2020-21 rainy season.
Resource Protection	The Woodward Fire perimeter has many access points for the public. This presents resource management concerns for the burned landscape, including the creation of social trails and impeded vegetation recovery, impacts to sensitive resources located near existing roads and trails, and the spread of exotic invasive species.

Recommendations

ES-6, Increased Agency Presence: The burned area should remained closed to the public through the 2020-21 rainy season to allow fire-impacted trees to fall and vegetation recovery to begin. Closure will entail barricades and signage on roads and trails, as well as

increased agency presence in the form of uniformed NPS employees to interact with the public and patrol entry points during the closure period to ensure compliance. Staffing will include two law enforcement rangers, two traffic controllers for the Bear Valley Trail/visitor center, and one visual information specialist to provide social media communication regarding the Woodward Fire.

Cultural Resources Assessment

Issues

General	The Woodward Fire contains a diversity of cultural resources, including elements associated with a National Historic Landmark (Drake's Bay Historic and Archeological District), proposed Archeological District (Point Reyes Peninsula Indigenous Archeological District), and historical ranching and settlement activities.
Erosion	
Looting	The potential for unauthorized artifact collection was recognized at several archeological sites.

Recommendations

ES-7, Cultural Site Stabilization: CA-MRN-280, a small shell midden, is located on a low terrace near the mouth of Santa Maria Creek. The creek flows adjacent to the toe of the cut bank, causing site erosion and destabilization, with potential for slump failure that would result in total loss of the resource. Because the site is located in designated Wilderness, stabilization options are limited. A "living wall" of locally-obtained cut willow trees should be constructed along the cut bank. This minimally-invasive technique, which is supported by the local Tribe, will provide erosion control and encourage reestablishment of bank-stabilizing vegetation.

ES-6, Increased Agency Presence: Closure of the burned area through the 2020-21 rainy season will reduce the probability of looting and allow vegetation to reestablish within exposed cultural sites.

Non-specification recommendations for cultural resources within the Woodward Fire include:

- Stabilization of CA-MRN-392, which is also suffering erosion, is not considered practical. The site should be monitored after rainfall events. If unacceptable impacts are occurring, consider data recovery or non-invasive methods (e.g., remote sensing technologies) to obtain baseline information on buried cultural deposits;
- Document the remains of the Y Ranch;

- Remove slash from abandoned trail where it crosses site CA-MRN-271;
- Monitor dawn redwood tree for erosion for three years following significant rainfall events;
- Conduct focused surveys in areas of high probability for cultural resources before vegetation is reestablished.

Vegetation Assessment

Issues

General	PORE preserves some of California's last remaining native coastal habitats. The Woodward Fire contains a diversity of plant communities, including coniferous and hardwood forest, shrublands, grasslands and riparian. Numerous non-native plants also occur in the burned area, some of which are invasive, well-established, and/or disturbance-followers. Species of particular concern include jubata grass, panic veldt grass and ox-eye daisy. The establishment and spread of invasive plant species is the greatest threat to post-fire native vegetation recovery.
Suppression Impacts	Damages related to fire suppression actions taken during the Woodward Fire, particularly ground disturbance (e.g., fireline construction, staging areas, fire camps) and chemical retardant drops, could promote the establishment and spread of invasive plants. Additionally, novel species may have been introduced to the park by firefighting equipment and personnel.
Burn Severity	Areas of high burn severity within the Woodward Fire (approximately 425 acres) may be vulnerable to the establishment and spread of invasive plants due to the loss of canopy cover.
Public Use	Activities associated with public use of the burned area have the potential to spread invasive species and impede native vegetation recovery.

Recommendations

ES-5, Invasive Plants: Detect and treat invasive plants within the Woodward Fire and other areas of PORE affected by suppression activities. The primary focus of this treatment will be areas of high burn severity (e.g., coastal scrub in and around the Santa Maria Creek watershed), locations with suppression activity, particularly dozerlines and chemical fire retardant drops, and along main trails that serve as vectors (e.g., Coast, Sky, Bear Valley). The work will be performed in accordance with standard Best Management Practices and environmental mitigations.

BAR-1, Invasive Plants: This treatment continues invasive plant detection and eradication on the Woodward Fire in late FY21, FY22 and FY23.

ES-6, Increased Agency Presence: Closure of the burned area to public use through the 2020-21 rainy season will allow natural vegetation to reestablish and lower the potential for the spread of invasive plants. Patrols and public information should be targeted for areas most vulnerable to the spread of invasives.

Non-specification recommendations for vegetation within the Woodward Fire include:

- Develop a local native seed collection plan for suppression damage repair;
- Prior to installation of any erosion control materials, implement seeding of dozer and handlines and isolated burned meadows with native species;
- To prevent social trails, obscure firelines to the greatest extent possible (particularly at intersections with existing trails);
- Conduct rare plant surveys of known California bottle-brush grass populations to increase understanding of the effects of fire and other disturbance events on this species;
- Obtain aerial imagery at several time points to assess post-fire vegetation change;
- Investigate drone mapping of infestations in topographically-challenging areas.
- Conduct additional post-fire vegetation monitoring and surveys in collaboration with the San Francisco Bay Area Inventory and Monitoring Program.

Hazard Tree Assessment

Issues

Human Safety	Roads, trails and facilities within the Woodward Fire are heavily used by the public and PORE employees.
	The northern portion of the Woodward Fire burned in a mixed evergreen forest. Three tree species—California bay, Douglas-fir and red alder—are of particular concern for post-fire human safety due to their size and ubiquity. Further, bay trees contain multiple trunks with cavities that can burn out, causing catastrophic failure. Mature Douglas-fir, especially younger specimens, may be subject to delayed mortality months or years after exposure to fire.
	Due to fire activity and safety concerns, inventory of hazard trees was limited to roads (Limantour), trails (Bear Valley, Morgan Horse Ranch, Morgan, Woodpecker) and facilities (Sky Camp) on or near the perimeter of the Woodward Fire. Although the number of identified hazard trees in these areas was low, delayed mortality is possible.
	Trails within the interior of the Woodward Fire have not been evaluated for hazard trees. This poses a potential safety risk to visitors and personnel working in these areas.

Recommendations

ES-8, Hazard Tree Surveillance and Mitigation: Survey roads, trails and facilities within the Woodward Fire for imminent tree hazards and mitigate as appropriate. In areas that were previously inaccessible due to safety issues, this will occur before personnel are allowed to enter to perform post-fire treatments. These areas must remain closed to visitors until determined safe. Previously surveyed roads, trails and facilities will be periodically assessed for delayed mortality. This treatment should be performed for three years post-fire.

ES-6, Increased Agency Presence: Closure of the burned area to public use through the 2020-21 rainy season will keep visitors safe from potential tree hazards. The public should be warned of this threat through signage, social media, etc.

Wildlife Assessment

Issues

General	PORE is home to a diversity of wildlife, including approximately 35 species of terrestrial mammals, 12 reptiles, 10 amphibian species, and 20 non-marine fish. The park also hosts the greatest avian diversity of any National Park Service unit in the United States (490 bird species).
Special Status Species	Northern spotted owl (federally-threatened): The Woodward Fire occurred within six known spotted owl territories. No impacts to nesting birds or recently fledged young occurred. The degree to which the fire impacted owl habitat and territories is unknown due to inaccessibility post-fire. Impacts could result through loss of roost and nest trees and diminished prey populations.
	California red-legged frog (federally-threatened): Approximately 3,582 acres of critical habitat were burned by the Woodward Fire. No breeding sites occur within the fire perimeter, and no chemical fire retardant was applied to freshwater streams where red-legged frogs were residing during the fire.
	Steelhead Trout (federally-threatened): Three streams within the Woodward Fire support steelhead trout populations. None of these streams were affected by suppression actions. The removal of floatable woody debris from streams to protect roads and culverts will diminish habitat structure somewhat, but larger woody material will be left in place. A short-term post-fire increase in streamflow and sedimentation may impact steelhead spawning areas.
	Point Reyes Mountain Beaver (CDFW Species of Special Concern): The Woodward Fire burned through at least six known mountain beaver colonies. The degree to which the fire impacted mountain beaver colonies is unknown due to inaccessibility post-fire. Fire severity will influence mountain beaver survivorship during the fire and post-fire habitat recovery.

Recommendations

ES-5 and BAR-1, Invasive Plants: Detection and treatment of invasive plants within the Woodward Fire and other areas of PORE affected by suppression activities will indirectly benefit wildlife through the successful recovery of native vegetation communities.

Non-specification recommendations for wildlife within the Woodward Fire include:

- Northern Spotted Owl: Monitor post-fire conditions in the six territories for each of the next 10 years;
- Steelhead Trout: Repeat systematic sampling of Bear Valley Creek and perform presence/non-detection surveys in Coast and Santa Maria Creeks;
- Point Reyes Mountain Beaver: Conduct immediate post-fire surveys of known mountain beaver colonies.

Trails and Minor Facilities Assessment

Issues

Trails	Based on a limited inventory due to safety concerns, the following trail impacts due to the Woodward Fire were identified: • Burned Adopt-A-Trail sign at Old Pine Trailhead; • Two burned 30-foot wooden bridges (Santa Maria Creek, “Secret Bridge”); • Fire damage to the wooden bridge at the base of Horse Trail; • Burned wooden retaining walls, tread damage due to burned root, extensive debris on Woodward Valley Trail; In addition, the burned area contains 23 miles of trail with 398 drainage devices. Woody material and rock accumulations are likely to be considerable on trails.
Minor Facilities	The following fire-related impacts to minor facilities were documented: • Two burned picnic tables, two burned site marker posts (Sky Camp); • Burned fencing and garden irrigation system (Kule Loklo).

Recommendations

ES-9, Trails Repair: Cleaning and maintaining water drains is one of the most important trail maintenance tasks to protect the asset. With burned slopes above the trails, there will be increased material passage and drainage needs on treads. Water drains must be cleaned prior to the 2020-21 rainy season and maintained as appropriate.

BAR-2, Trails Repair/Infrastructure Replacement: Increased wind-fallen trees need to be removed promptly to prevent social trailing. The two burned bridges need to be replaced to enable safe passage across creeks and prevent damage to the streambanks that would occur (especially by horses) by trampling of the soft soils on banks. The retaining walls hold the trail tread in place in narrow sections of the Woodward Trail. The burned picnic tables at Sky Camp and fencing at Kule Loklo should be replaced in-kind.

Plan Organization

This plan includes a narrative summary of the Woodward, followed by in-depth resource or issue specific burned area assessments, and itemized specifications for BAER and BAR treatments and activities. Environmental compliance is an appendix to the plan.

TABLE OF CONTENTS

UNIT SUMMARY INFORMATION	1
FIRE SUMMARY INFORMATION	1
ACCOUNT NUMBER	1
TEAM MEMBERS	1
EXECUTIVE SUMMARY	2
TABLE OF CONTENTS.....	12
FIRE NARRATIVE	13
BURNED AREA ASSESSMENTS	21
WATERSHED ASSESSMENT.....	22
PUBLIC SAFETY AND RESOURCE PROTECTION ASSESSMENT	29
CULTURAL ASSESSMENT	33
VEGETATION ASSESSMENT	46
HAZARD TREE ASSESSMENT	70
WILDLIFE ASSESSMENT	78
MINOR FACILITIES AND TRAILS ASSESSMENT	86
SPECIFICATIONS	92
APPENDIX	
A. Environmental Compliance	

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

FIRE NARRATIVE

This narrative was developed from incident documentation on file at Point Reyes National Seashore.

On the morning of August 17, 2020, an unusually large dry lightning storm ignited numerous fires along the coast of central California. Smoke was reported in the lower Santa Maria Creek watershed in Point Reyes National Seashore, southwest of the park visitor center and headquarters in Bear Valley (Fire Location Map). The unusual weather pattern had dissipated the humid marine layer and shifted the typical northwest wind to a south/southwest direction. In addition, fuel moistures were extremely low (<10% for 100 and 1000 hour fuels).

A Type 4 IC (Jones), supported by NPS resources and a Marin County Fire Task Force, responded to the fire, which was given the designation 4/5. The fire was approximately 3 acres in size and burning in coastal scrub/chaparral with an overstory of scattered Bishop pine snags, an area that lay within the footprint of the 12,000 acre 1995 Vision Fire (Fire History Map) and federally-designed Wilderness. Handline was constructed around the perimeter of the fire, tying into the nearby Woodward Trail, resulting in tenuous containment at approximately 5 acres.

The same resources were assigned to the fire on August 18 and efforts were focused on improving containment lines. Access to water was limited and no air support was available. At midday, command was transferred to a new Type 4 IC (Chavira). At approximately 1500, smoke was detected about one-quarter mile upslope from the 4/5 Fire. This spot fire or, more likely, holdover lightning strike from the previous day, was designated the Woodward Fire. Due to increasing fire behavior and limited resources, no effort was made to engage the Woodward Fire. At 1800, with the Woodward Fire spreading rapidly, the IC decided to pull all resources from the 4/5 Fire. During the evening, the Woodward Fire attained approximately 700 acres, all or most within the Vision Fire scar.

With the tremendous amount of fire activity in central California on August 19, the Woodward and 4/5 Fires continued to be managed as a Type 4 incident. Virtually no suppression actions were taken, and emphasis was placed on scouting and observation. A Type 3 IC (Spielman) was ordered, along with additional resources. Fire behavior was extremely active in the evening, the

Woodward and 4/5 Fires merged, and together reached approximately 2,000 acres (Fire Progression Map), much of that within the Vision Fire footprint.

The park performed a Wildland Fire Decision Support System (WFDSS) analysis for the Woodward Fire. Risk was judged to be moderate to high for surrounding values, including communities (Bollinas, Inverness, Olema, Point Reyes Station), infrastructure (Highway 1, transmission lines), and social, natural, and cultural resources (designated Wilderness, critical habitat, cultural sites). These factors suggested a Type 1 or 2 IMT to manage the Woodward Fire. A full suppression strategy aimed at minimizing fire size through direct and indirect means between Highway 1, Bear Valley Trail and Limantour Road was selected, with consideration given to the protection of social, natural and cultural values within the park.

A Type 3 organization was in place on August 20, with many additional resources assigned, including one dozer, several engines and crews, one water tender, and overhead personnel. Suppression actions included application of more than 25,000 gallons of chemical retardant (Phos-Chek) on the ridge marking the western boundary of the Santa Maria Creek watershed, and a short section of handline constructed at the heel of the fire near the point of origin (Fire Rehab Map). Efforts were primarily focused on scouting for indirect containment opportunities, with the control objectives to keep the fire west of Bear Valley Trail and the park headquarters, and south of Limantour Road. Progression slowed as the fire spread predominantly north, west and east into heavier fuels located on the higher elevation western and southern flanks of Mt. Wittenberg (Fire Progression Map).

Control objectives remained the same on August 21, and a helicopter now assigned to the incident began to perform bucket drops. In addition, 17,000 gallons of chemical retardant were applied to the ridge west of Santa Maria Creek. The fire continued to burn in heavy fuels and spread remained slow (Fire Progression Map). Fire size was estimated at 2,300 acres. A Type 1 IMT (Northern Rockies Team 2) began to arrive on August 22, shadowed the Type 3 organization, and in-briefed with the park that afternoon. Guidance to the Type 1 IMT provided for firefighter and public safety (including COVID-19 protocols), coordination with cooperators, and balancing the protection of diverse values within the context of a designated Wilderness setting. A contingent of Resource Advisors was assigned to the incident to assist with identifying and minimizing the effects of fire and suppression actions on critical social, natural and cultural resources.

The Type 1 IMT assumed command of the Woodward Fire at 0600 on August 23. In addition to those previously assigned, the list of resources expanded considerably to include more crews, dozers, engines, masticators, helicopters and airplanes. Owing to the heavy fuel loads and steepness of the terrain, the Point Reyes Superintendent, in consultation with park staff,

approved the use of bulldozers to strategically construct firelines within the park, including designated Wilderness (a Minimum Requirement Analysis [MRA] was performed in conjunction with this decision). Dozerline construction was begun on the ridge west of Santa Maria Creek (Fire Rehab Map), but further chemical retardant drops were hindered by heavy smoke. On the southeastern flank of the fire, ground crews, supported by water drops, began preparing a direct handline between the Coast Trail and Bear Valley Trail. Crews also brushed the margins of Limantour Road on the north. Fire spread was predominantly within the Santa Maria Creek drainage (Fire Progression Map).

On August 24, 8,500 gallons of chemical retardant were dropped between Limantour Road and Mt. Wittenberg to help secure the northern margin of the fire (Fire Rehab Map), and fireline construction and prep continued. Fire activity remained fairly low, with spread to the north, east and west (Fire Progression Map). Fire size was estimated at approximately 2,500 acres, with 5% containment. A marine layer over the fire on August 25 further diminished activity, and fog and smoke restricted aerial water drop operations to a small late afternoon window.

The dozerline west of Santa Maria Creek was completed on August 26 (Fire Rehab Map). Burnout operations by ground and air began along eastern margins of the fire (Fire Progression Map), with the aim to achieve control objectives while minimizing burn severity in Douglas-fir forest. Fire behavior was fairly subdued until late afternoon, when several spot fires, which were quickly contained by ground crews, occurred east of Bear Valley Trail. Mop-up commenced in the southern and southeastern portions of the fire, and structure assessments were performed in surrounding communities where evacuation orders had been issued. Fire size was estimated at approximately 2,800 acres, and 8% containment.

Continued burnout operations along Bear Valley Trail and Limantour Road on August 27 and 28 brought the size of the Woodward Fire to more than 3,000 acres and 15% containment. Dozer line was constructed between Horse Trail and Limantour Road (Fire Rehab Map), and structure protection resources performed fuels reduction in surrounding communities. On August 31, a flare-up on the eastern flank of the fire prompted Marin County Fire to construct approximately 4 miles of contingency dozerline and short sections of handline on private property (Vedanta Retreat) adjacent to the park (Fire Rehab Map).

As the marine layer and smoke allowed, systematic perimeter and an interior burnout operation continued through September 5 (Fire Progression Map). Although slow due to humid conditions, these were ultimately successful, and brought the size of the Woodward Fire to approximately 5,000 acres and 90%+ containment. The evacuation order for most surrounding communities was lifted on September 3. A Type 3 Team (Great Basin Team 4) assumed

command of the fire on September 7, and focused primarily on securing the fire perimeter, finalizing burnouts, mop-up and monitoring fire activity in the interior.

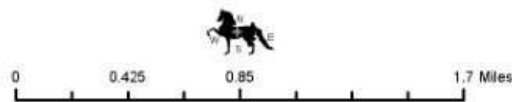
The Woodward Fire is currently at 96% containment, and transfer of command to the local unit occurred on September 18. Suppression repairs will commence upon approval by the IC and the lifting of the current repair stand-down in northern California (which is a result of extremely heavy fire activity).



BAER - Woodward Fire General Fire Location



- ✕ Fire Origin
- ▭ Woodward Fire Perimeter
- ▭ Point Reyes National Seashore




This map is for display purposes only
BAER-GISS-TJ 8/17/20

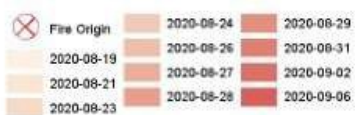
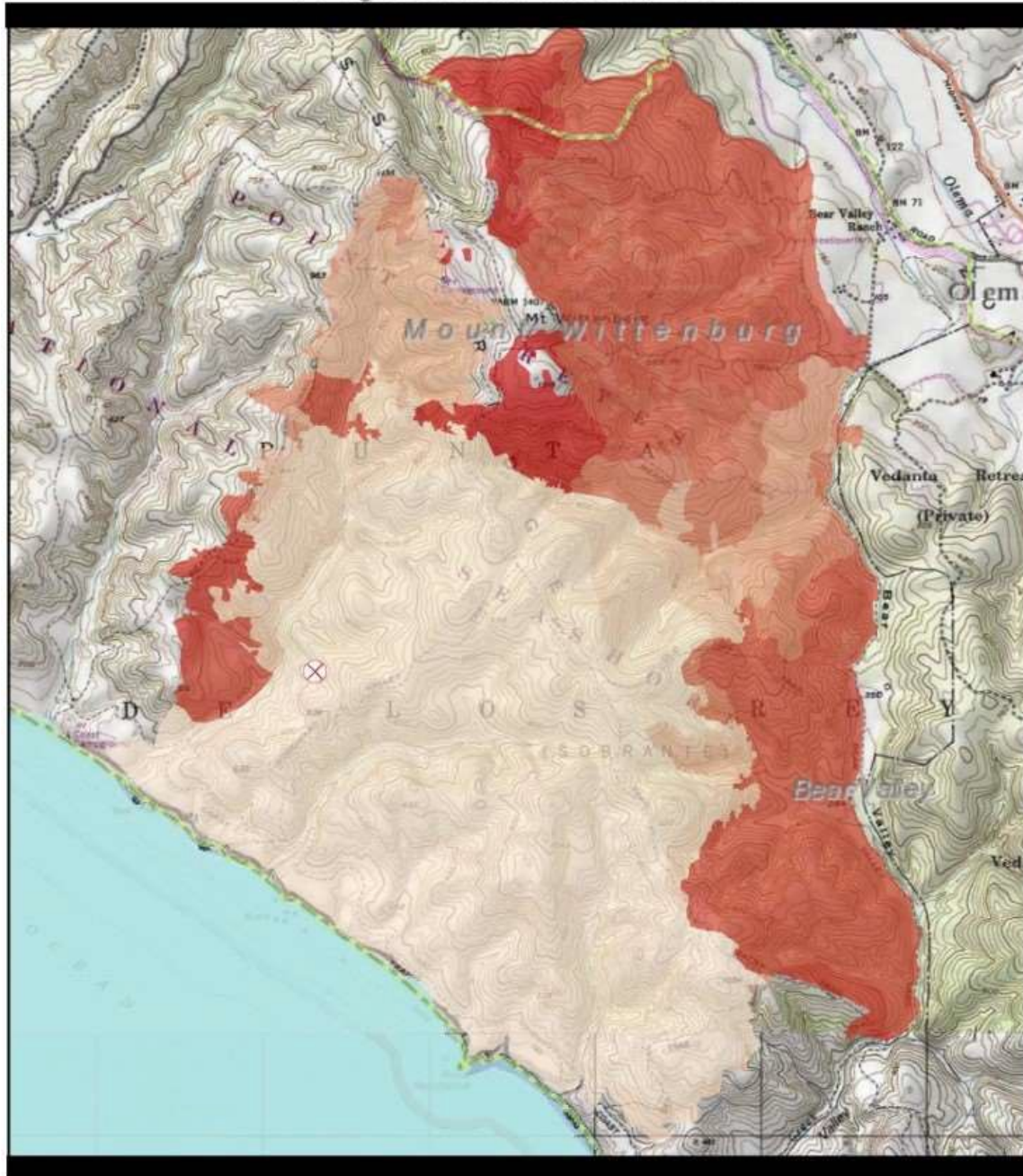


BAER - Woodward Fire Fire History





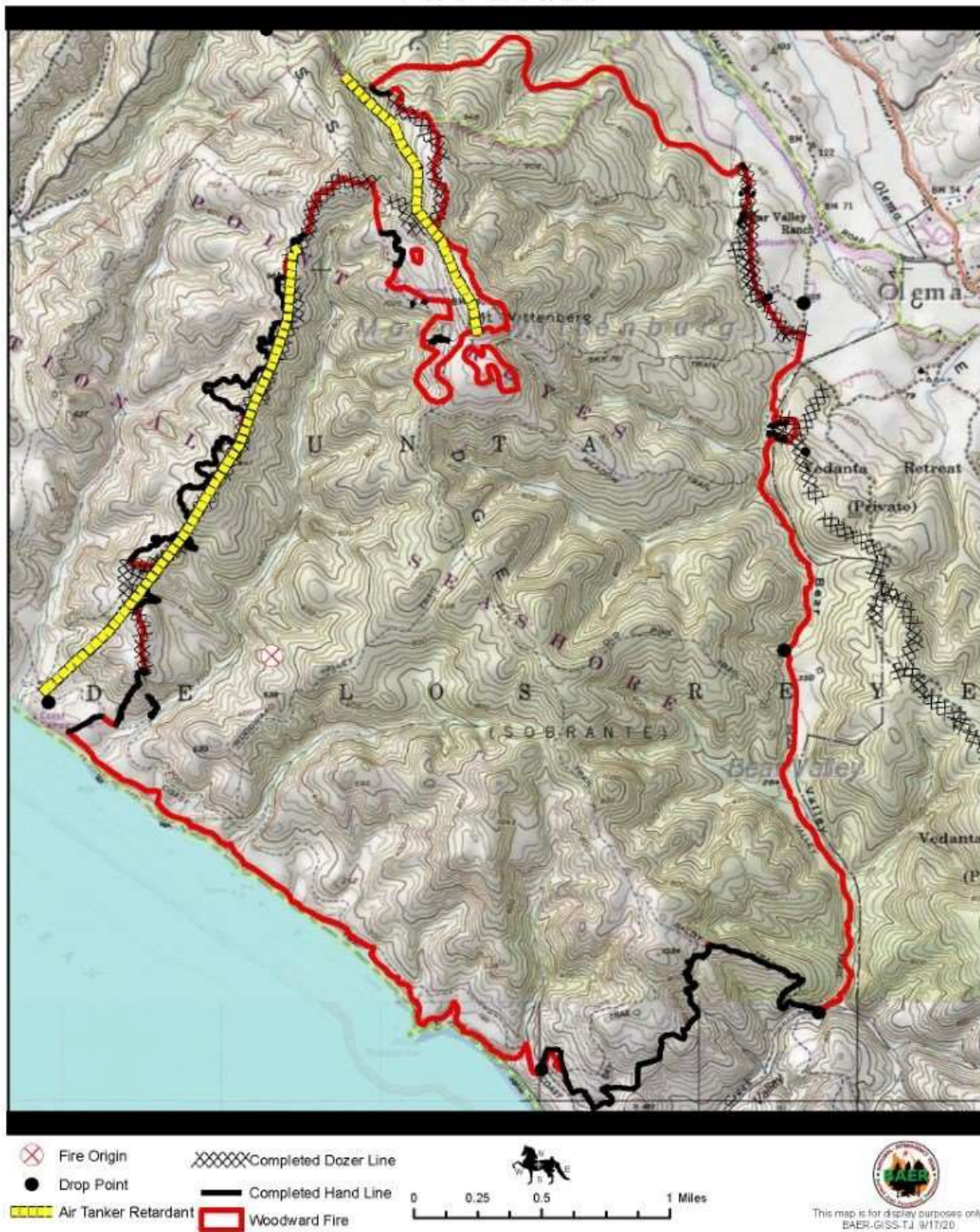
BAER - Woodward Fire Progression/Vision Fire



This map is for display purposes only
BAER-GISS-TJ 9/17/20



BAER - Woodward Fire Fire Rehab



Burned Area Assessments



Woodward Fire

Emergency Stabilization and Rehabilitation Plan

WATERSHED ASSESSMENT

OBJECTIVES

- Identify emergency stabilization and monitoring needs supported by specifications to protect life, property, and infrastructure
- Evaluate fire impacts on watershed response
- Assess values in and near streams to determine if they are at risk

ISSUES

Watershed

- Impact of Soil Burn Severity on the watershed
- Potential for increased runoff and sedimentation

Roads and Culverts

- Floatable woody debris in and near the channel can block culverts
- Debris (wood, rocks) rolling onto the road

Cultural Sites

- Increased runoff could negatively impact cultural sites on stream banks due to increased erosion

Suppression Repair

- With so many fires burning, fire crews are not available to complete suppression repair at this time

BACKGROUND

The Woodward Fire burned most of the area framed by Bear Valley Trail, Limantour Road, and the coastline. Most of the Bear Valley Creek watershed found within the Park is within the fire perimeter. The creek passes through several culverts as it crosses Bear Valley Trail and as it passes through Park headquarters. Additionally, there are several small tributaries to Bear Valley Creek that burned above Limantour Road. All of these culverts within the Bear Valley Creek watershed were mentioned as potential issues.

As time went on, we learned of two cultural sites that are situated low and near the stream channels in their respective drainages. Both sites had pre-existing issues with erosion. Increased runoff could lead to more rapid erosion at these sites.

RECONNAISSANCE METHODS

To rapidly assess the fire impacts to watersheds throughout the Woodward Fire, we began with an in-brief with Park staff and the BAER team. For the watershed assessment, we met with Brannon Ketcham - Management Assistant, Jeff Jewhurst – Roads Supervisor, and Levi McIsaac – Equipment Operator Lead. Together we discussed all of their concerns and a list of values they felt needed to be assessed.

When doing the watershed assessment for BAER, we use the Burned Area Reflectance Classification (BARC) map provided by the USGS to get an idea of the fire severity throughout the fire. (See Figure 1 below) Most of our reconnaissance is driven by information from the BARC map. The map breaks the area into four categories: unburned and low, moderate, and high Soil Burn Severity (SBS). An area with a low burn severity will behave very similarly to pre-fire conditions while high severity will behave much differently. Physical Scientist Kurtis Nelson, who is on the USGS Wildland Fire Science Team, creates these maps for post-fire assessments. Kurtis was with us for the four days of our field work. This was his first time on a fire, learning exactly how BAER teams utilize the BARC maps he creates so that he can improve and refine his processes.

The BARC map is also used as the key input into models that predict increases in runoff, sediment yield, and debris flow risk. We sent the BARC map to Dennis Staley – Physical Research Scientist with the USGS – so that he could use it to run a Debris Flow Hazard Tool. The BARC map was also sent to Scott Shepherd – Hydrologist with the BLM – so that he could run the Automated Geospatial Watershed Assessment Tool (AGWA) for our fire.

The watershed team immediately got to work using ArcGIS Collector to gather information on all of the culverts along Bear Valley Trail, around Park headquarters, and along Limantour Road. We looked at the watershed characteristics such as condition of the culverts, stream channels, and burned slopes above roads/streams. We had help from Levi McIsaac and Ryan Semorile inspecting culverts.

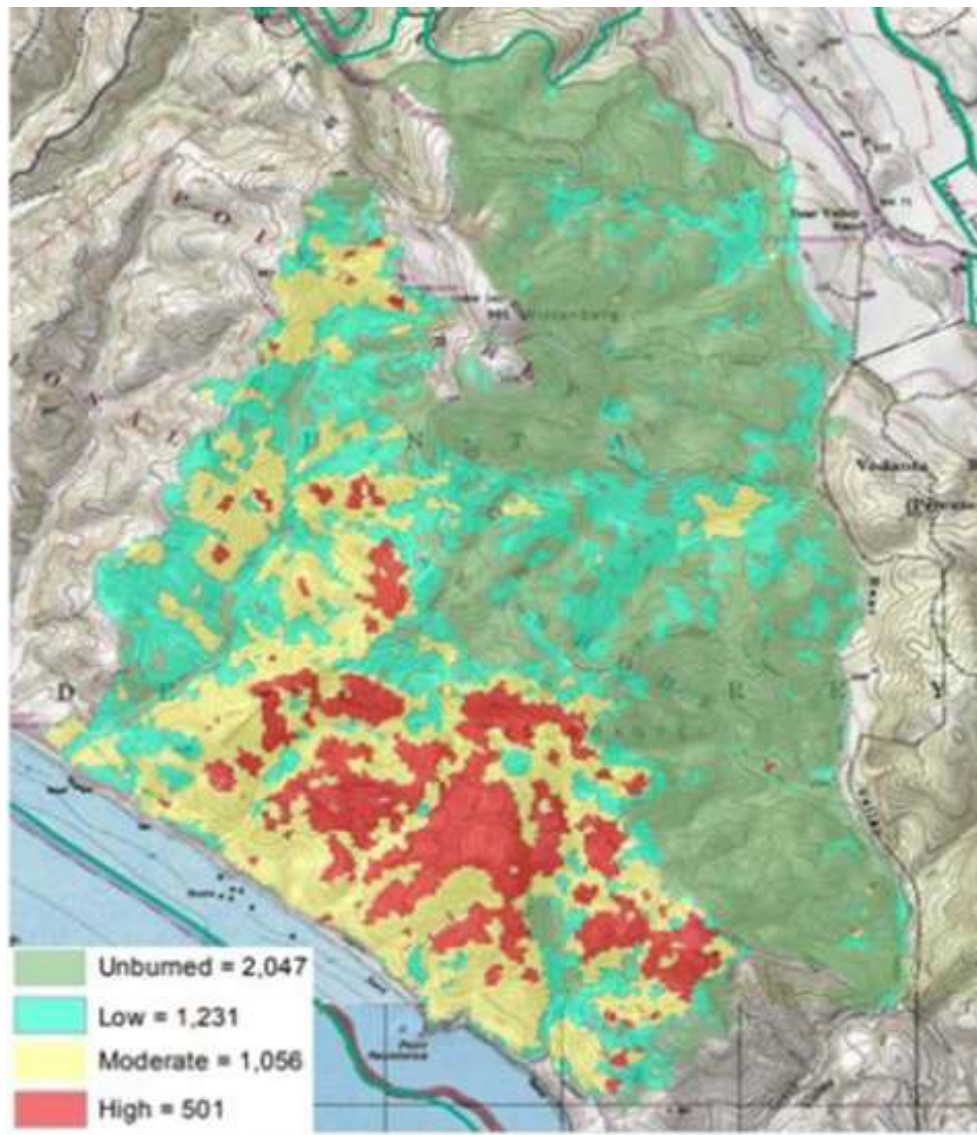


Figure 1. Burned Area Reflectance Classification (BARC) map

A few days into the assignment, we were asked to look at watershed impacts at two cultural sites. We went and inspected the erosive nature and size of the sites to determine if there were any options for stabilization. We were also asked to help create a plan for dozer line repair. We worked with Kevin Keeler – Lead READ – to determine the direction a plan of attack for the dozer line repair. We inspected the entire length of the dozer line on Vedanta Ranch to the east of the Park. We also went up to Sky Camp to inspect both the dozer line and the water treatment system.

FINDINGS

The BARC showed two distinct sides of the fire, split between the Bear Valley Creek watershed and those watersheds that empty along the coastline. The coastal drainages accounted for nearly all of the moderate and high SBS while Bear Valley Creek was almost exclusively low SBS. Dennis Staley's Debris Flow Hazard model showed that the Bear Valley Creek watershed and Coast Creek have a very low probability (0-20%) of a debris flow occurring in the watershed. The coastal drainages, on the other hand, all fall into 3 higher categories 40-60% (4 drainages), 60-80% (7), and 80-100% (2). (See Figure 2 below)

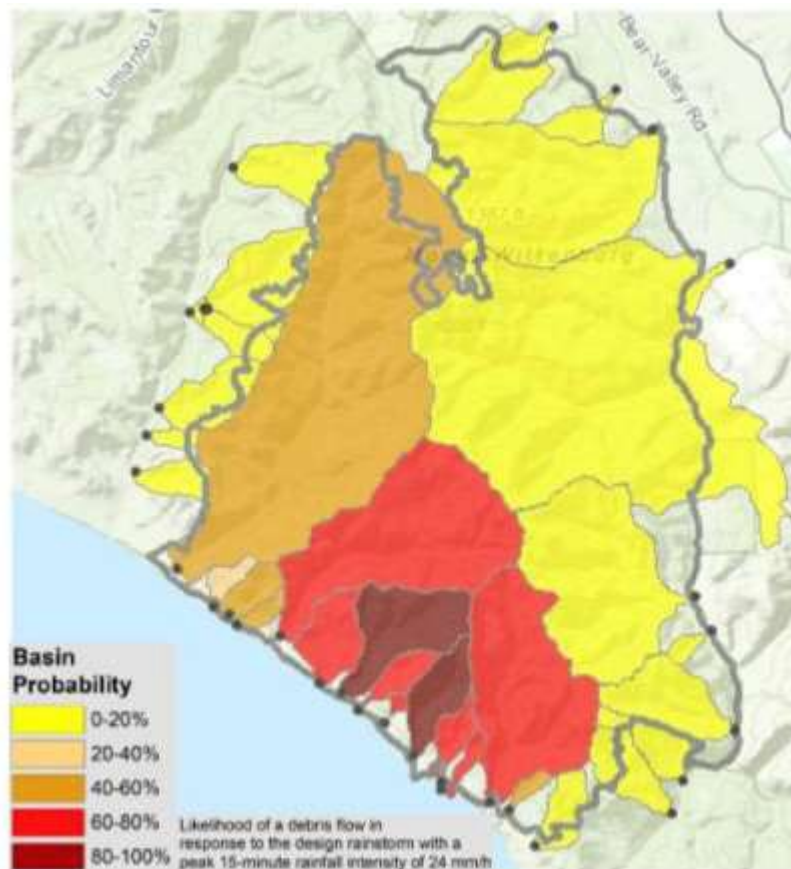


Figure 2. USGS Hazard Debris Flow Model – Probability of debris flow.

Similarly, the AGWA model results are similar to the debris flow model. We chose to model four points within the fire. These points were chosen based on the values located at each point.

The first two points we modeled were the culvert on Bear Valley Creek near the Administration building and a culvert where Coast Creek reaches the edge of the fire. The

model shows that the low SBS within the Bear Valley Creek and Coast Creek basins will cause only a slight increase (19%) in post-fire flows. (See Figure 3 below)

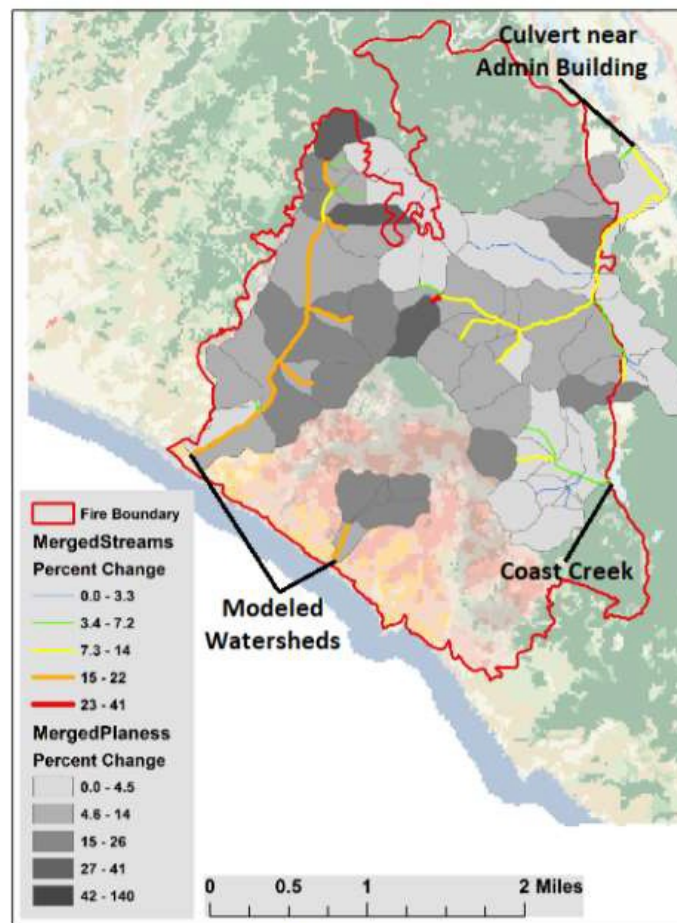


Figure 3. AGWA Watershed model results

Based on the AGWA and USGS modeling, we do not have much concern about flooding or sedimentation problems due to fire effects on Bear Valley Creek or the small, burned drainages that cross Limantour Road as long as drainage systems remain functional. Currently, Bear Valley Creek has floatable, woody debris in and near the channel at several locations along the creek within the fire. This wood needs to be removed before the rainy season arrives. If it is not, culverts could become non-functioning and cause damage to the road surface or even complete failure of the road structure. Specification ES 4 provides funding to complete the work of removing the floatable, woody debris from the creek. The work and time estimates were made with the help of Ryan Semorile in the Roads Department.

Once the rainy season arrives, more wood and debris could come down onto Bear Valley Trail and Limantour Road and into the creek channels. Specification ES 3 provides funding for storm patrols to go out after each significant rain event to clear any debris that has come down on

roads or into creek channels. Funding provides for clearing debris by hand, with hand tools, or with heavy equipment.

The other two points are along coastal drainages where cultural sites are threatened by bank erosion. These cultural points and corresponding specifications will be discussed in the Cultural Assessment.

Due to the unavailability of crews for suppression repair, we were tasked with creating a repair plan for the dozer line. With input from Kevin Keeler (Lead READ), the Suppression Repair Plan, and the 1995 Vision Fire BAER Report, we created a document which detailed the design and scope of work for the 3.4 miles of dozer line on the western edge of the fire on NPS land as well as the 4.3 miles of dozer line on Vedanta land. The document was given to Greg Jones – Fire Management Officer for Point Reyes National Seashore.

RECOMMENDATIONS

Specifications

- ES 3 – Storm Patrol – During and after each significant rainfall event, Point Reyes National Seashore staff will inspect each culvert on the Bear Valley Creek and where burned drainages cross Limantour Road to ensure that the culverts are clear and functional. If culverts or channels are blocked by woody debris or sedimentation, the blockage must be removed to restore hydrologic function.
- ES 4 – Woody Debris Removal – During high flow events on Bear Valley Creek and the burned drainages that cross Limantour Road, floatable woody debris can be mobilized and plug culverts. If this were to happen, the impounded water could flow over the road and cause damage or complete failure of the road structure. To prevent this from happening, the woody debris must be removed from the stream channel and culvert catchment basins. This is to be accomplished before the rainy season begins.

REFERENCES

Staley, D.M., Negri, J.A., Kean, J.W., Tillery, A.C., Youberg, A.M., 2016, Updated logistic regression equations for the calculation of post-fire debris-flow likelihood in the western United States: U.S. Geological Survey Open-File Report 2016-1106, 13 p.

Staley, D.M., Negri, J.A., Kean, J.W., Laber, J.L., Tillery, A.C., Youberg, A.M., 2017. Prediction of spatially explicit rainfall intensity–duration thresholds for post-fire debris-flow generation in the western United States. *Geomorphology*, 278, 149-162.

Guertin, D.P., Goodrich, D.C., Burns, I.S., Korgaonkar, Y., Barlow, J., Sheppard, B.S., Unkrich, C.L., Kepner, W.G. 2015. Automated Geospatial Watershed Assessment Tool (AGWA) . American Society of Civil Engineering Watershed Management Conference Reston, VA, August 5-7, 2015, pp. 120-130.

CONSULTATIONS

Brannon Ketcham, Management Assistant, Point Reyes National Seashore

Jeff Jewhurst, Roads Supervisor, Point Reyes National Seashore

Levi McIsaac, Engineering Equipment Operator Leader, Point Reyes National Seashore

Ryan Semorile, Engineering Equipment Operator, Point Reyes National Seashore

David Press, Wildlife Ecologist, Point Reyes National Seashore

Greg Jones, Fire Management Officer, Point Reyes National Seashore

Kevin Keeler, Iditarod National Historic Trail Administrator, Bureau of Land Management - Anchorage, AK

Carolina Walbrun, Service Hydrologist, National Weather Service - Monterey, CA

Scott Shepherd, Hydrologist, Bureau of Land Management – Prineville, OR

Dennis Staley, Research Physical Scientist, US Geological Survey

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

PUBLIC SAFETY AND RESOURCE PROTECTION ASSESSMENT

OBJECTIVES

- Identify and prevent/mitigate threats to human safety when employees and the public enter burned areas
- Identify and prevent/mitigate threats to critical cultural and natural resources prior opening the burned area to the public.

ISSUES

- Burned landscapes that are easily accessible by the public exist around much of the perimeter of the Woodward Fire, along park roads and trails. These areas are a concern for public and employee safety as well as impacts to cultural and natural resources from visitor use.

BACKGROUND

The Bear Valley Trail forms much of the eastern boundary of the Woodward Fire, and Limantour Road is on the northern perimeter of the fire. Several trails are accessed off both primary visitor access routes, including Horse, Z Ranch, Morgan, Woodpecker, Mt Wittenberg, Meadow, Old Pine, Baldy, Sky, Coast, and Woodward Valley. All or parts of these trails lie within the burn perimeter.

The Bear Valley Trail is the most heavily used trail in the park and most equestrian users access the Horse Trail from the Bear Valley parking lot, in addition to the park headquarters and main visitor center being in this area.

Limantour Beach is one of the most accessible and visited beaches in the seashore and the road down to it has trailheads for two backcountry campgrounds, the hostel, the education center and employee housing.

Park visitation has averaged 2,411,848 visitors from 2015-2019, and given the proximity to the large metro area surrounding San Francisco and year-round climate that enables outdoor recreation and access, visitation is remarkably high virtually every month of the year. Even during the normal rainy, cooler months of Nov-March, monthly visitation routinely reaches 150,000-200,000 visitors, drawn to these locations in and around the Woodward Fire perimeter

to watch whales and enjoy less foggy conditions. The many visitor-use attractions in the Bear Valley area and coastal beaches accessed by the Limantour Road draw a considerable number of these visitors to these areas adjacent to and within the burn.

RECONNAISSANCE METHODS

When the Woodward Fire began on August 18, 2020, the park quickly closed public access into the area. At this writing (Sept 17, 2020) the following areas were closed to public entry, and presumably will remain closed until the area is considered safe to the public: “All areas and trails south of Limantour Road, south of Bear Valley Road, west of Highway 1, and north of Stewart Trail are closed to all access until further notice. Coast, Glen, Sky, and Wildcat Campgrounds are closed until further notice.” Park management will assess and adjust public closures as deemed necessary.

Findings

The Woodward Fire burned over 5,000 acres in a high visitor use part of the park.

Public Safety and Resource Protection concerns include:

- Limantour Road forms the northern perimeter of the fire, with 1.9 miles of the road along the burn perimeter.
- The eastern perimeter of the fire extends along roughly 3.1 miles of public trails, from the Morgan Trail at the north and then south along the Bear Valley Trail to the Baldy Trail trailhead.
- Over 23 miles of trail burned in the fire, including all or parts the following trails: Bear Valley, Coast, Woodward Valley, Sky, Horse, Z Ranch, Morgan, Woodpecker, Kule Loklo, Mt. Wittenberg, Meadow, Old Pine, and Baldy. All these trails have trailhead access within or along the fire perimeter.
- Hazards to the public include hazard trees, particularly along the wilderness trails within the burn perimeter. All known hazard trees along the Limantour Road, Sky Camp, and Bear Valley Trail have been mitigated following the BAER Team assessment, and future hazard tree surveillance and mitigation is called for in specification ES-8: Hazard Tree Surveillance and Mitigation.
- Although wilderness trails are not typically surveyed and mitigated for hazard trees because hikers are not stationary targets, there certainly is an elevated risk of higher numbers of windfallen fire-damaged trees within the burn. Other expected hazards along the trails could include rockfall.
- Depending on burn severity and vegetation type, large areas of open landscape exist within the burn. This open and visible landscape likely will be enticing for off-road, off-

trail travel by the public. Burned roots and stump holes are dangerous to the public. Resource concerns related to the public going off-trail into the burn include social trailing, exposed resources (natural and cultural) visible to the public and subject to looting or damage, opportunities for weedy species unknowingly being transported by visitors into the burn area, etc.

- In response to the increased risks to the public within and along the burn area, and elevated risk to natural and cultural resources from visitor access into the burned landscape, the park will keep all interior trails closed until Spring 2021 and further evaluation can be completed. Such closures will require additional park uniformed presence to enforce and educate the public about safety risks and resource protection concerns.

RECOMMENDATIONS

Specification-Related

One specification, ES-6, Increased Agency Presence, is proposed to mitigate potential safety risks to the public and threats to cultural and natural resources.

ES-6, Increased Agency Presence: It is recognized that whereas area closure signs or barricades can be effective for informing many park visitors, others will either ignore these signs or fail to understand the purpose of them. The need for routine, ongoing presence of uniformed NPS staff to interact with the public and patrol the many public entry points during much of the first year post-fire is recognized as necessary and often successful in keeping the public out of the burn area. Two Law Enforcement seasonal rangers will be hired to focus on patrols in and around the Woodward Fire. Additionally, two traffic control seasonal employees will be hired to be present in the Bear Valley Trail area near the park Visitor Center to interact with the public in this high use location. Finally, a seasonal Visual Information Specialist will be hired to provide real time communication regarding the Woodward Fire. This employee will be responsible for the creation of non-personal interpretive media including innovative strategies using social media (e.g. FB Livestreams where safe and appropriate), park website content, and curriculum-based education programming. A robust online presence has become a standard approach to reaching the public during the COVID pandemic.

CONSULTATIONS

Julie Byerly, Chief Ranger, Point Reyes National Seashore

Christine Beekman, Chief of Interpretation, Point Reyes National Seashore

PREPARER

Jack Oelfke, Chief, Natural and Cultural Resources, North Cascades NPS Complex, WA

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

CULTURAL ASSESSMENT

OBJECTIVES

- Assess significant archaeological sites for risks from post fire erosion, flooding, debris flows, or other fire related effects; and from emergency stabilization and rehabilitation actions prescribed to treat other values at risk.
- Conduct Assessments necessary to meet Federal legal mandates.
- Consult with appropriate Native American tribes as necessary to meet Federal legal requirements, agency policies, and agreements.
- Prescribe treatments, as appropriate, to stabilize avoid or mitigate adverse impacts to cultural resources that may occur from post fire effects or from emergency stabilization treatments prescribed to treat other values at risk.

ISSUES

- Post-fire effects from erosion due to flooding and/or debris flows on high value cultural resources.
- Two archaeological sites specifically identified by Park Staff as resources of concern, with as many as twenty-four additional sites that may be subject to the risks noted above.
- An elevated risk of unauthorized collection due to denuded surfaces thereby significantly increasing exposure of artifacts on the ground surface.
- Fire effects on the replica Miwok Village Kule Loklo.

BACKGROUND

This report addresses potential and actual effects to cultural resources within the Woodward Fire, Point Reyes National Seashore. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

□ □ □ □ □

[REDACTED]

Woodward Fire
Emergency Stabilization &
Rehabilitation Plan



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

A horizontal bar chart consisting of 11 black bars of varying lengths. The bars are arranged in a single column. The lengths of the bars, from top to bottom, are approximately: 65%, 95%, 90%, 100%, 95%, 15%, 35%, 98%, 10%, 92%, and 30%.

□ □ □ □ □

Jason Wright, READ Archeologist, (530) 333-3402, jwright@blm.gov

PREPARER(S)

Dan Hall, Bureau of Indian Affairs – Pacific Region (916) 978-6041, harold.hall@bia.gov

Paul Engel, NPS – Pt. Reyes National Seashore (415) 858-9666 paul_engel@nps.gov

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

VEGETATION ASSESSMENT

OBJECTIVES

- Assess and evaluate fire impacts to vegetation resources, including rare plant species, sensitive native plant communities, and critical habitat
- Assess and evaluate fire impacts to vegetation resources, including rare plant species, sensitive native plant communities, and critical habitat
- Recommend management actions to prevent the introduction and control any spread of invasive plant species
- Recommend management actions to mitigate any damage caused by fire suppression activities or equipment (including retardant drops, saltwater drops, hand and dozer lines, and staging areas) that might impede vegetation recovery and habitat protection and rehabilitation
- Assess potential impacts to vegetation from increased social trails within the burn area

ISSUES

- Establishment and spread of invasive plant species within the fire perimeter or into fire operations footprints (dozer lines, helispots, equipment staging areas, Incident Command Posts, and retardant drop zones)
- Increased erosion and slumping that could promote the establishment and spread of invasive plant species within the fire perimeter and the fire operations footprints
- Establishment and spread of new invasive plant populations outside the fire perimeter and within the park, caused by movement of equipment and vehicles during fire suppression
- Increased off-trail visitor access that could present hazards and result in damage to vegetation resources

BACKGROUND

Point Reyes National Seashore (PORE) manages 71,000 acres on the coastal peninsula and 20,000 acres just inland under Golden Gate National Recreation Area (GOGA)'s jurisdiction. Located on the coast of Marin County, PORE preserves some of California's last remaining native coastal habitat and is immediately accessible to the huge San Francisco Bay population.

PORE supports about 1,000 plant taxa, about two-thirds of which are native, comprising 17% of California's entire flora. The Seashore is ecologically diverse and includes beaches, dunes, mudflats, freshwater and saltwater marshes, estuaries, and tree-dominated plant communities (Bishop pine, Douglas-fire, coast redwood, and hardwood forests) as well as coastal scrub, ceanothus-dominated chaparral, riparian forests and shrublands, and grasslands and pastures.

Vegetation Communities

The Woodward Fire occurred primarily in Douglas-fir forest, with burning across significant amounts of coastal scrub, hardwood forest, and ceanothus-dominated chaparral communities (Figure 1; Table 1). The Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) communities, which dominate the northern and eastern portions of the fire area, may have a fairly low understory or contain native shrubs such as elderberry (*Sambucus racemosa*), coffeeberry (*Frangula californica*), thimbleberry (*Rubus parviflorus*), or huckleberry (*Vaccinium ovatum*). Sword fern (*Polystichum munitum*) is common in the forest understory. Particularly in the northern Sky Trail region, much of the more open understory has been heavily invaded by the non-native perennial veldt grass (*Ehrharta erecta*). Hardwood forest communities, primarily along the fire's northeastern edge on Inverness Ridge and dispersed southward between Bear Valley and Sky Trails, include coast live-oak (*Quercus agrifolia*) and California bay (*Umbellularia californica*). Riparian drainages typically are dominated by red alder (*Alnus rubra*) and arroyo willow (*Salix lasiolepis*). Much of the western side of the fire down to the southeastern edge is coastal scrub, dominated by coyote brush (*Baccharis pilularis* ssp. *consanguinea*) intermixed with poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*) and grasses, often non-native. The remainder of this section is a chaparral community dominated by California wild lilac (*Ceanothus thrysiflorus* var. *thrysiflorus*). Images of unburned and burned Douglas-fir forest and coastal scrub are shown in Figures 2-6.

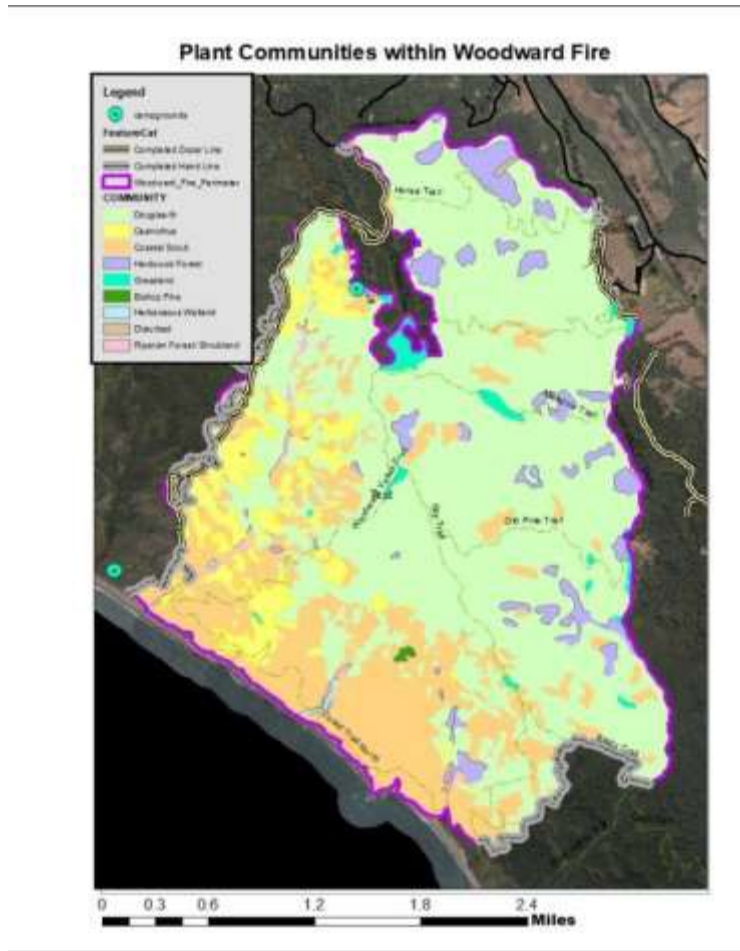


Figure 1. Map of plant communities within Woodward Fire.

Table 1. Acreage of plant communities within fire. Communities represented by less than an acre within the burned area are omitted from this table.

COMMUNITY	Acres	% of fire acres
Douglas-fir	2980.00	61.45%
Coastal Scrub	1102.91	22.74%
Ceanothus	373.35	7.70%
Hardwood Forest	252.97	5.22%
Grassland	79.73	1.64%
Riparian Forest/ Shrubland	40.79	0.84%
Herbaceous Wetland	7.94	0.16%
Disturbed	6.80	0.14%
Bishop Pine	4.29	0.09%
TOTAL	4849.8	



Figure 2. Unburned Douglas-fir forest behind Sky Camp, September 11, 2020. NPS photo/Ellen Hamingson



Figure 3. Douglas-fir forest, September 11, 2020 after Woodward Fire. NPS photo/Ellen Hamingson.



Figure 4. Mosaic of burned and unburned Douglas-fir forest, Sky Trail. September 15, 2020. NPS Photo/Ellen Hamingson.



Figure 5. Coastal scrub in 2015, prior to Woodward Fire. NPS photo/Eric Wrubel.



Figure 6. Coastal scrub after Woodward Fire, September 15, 2020. NPS photo/Ellen Hamingson.

Species Status Species

PORE supports 49 special status rare plant species, the majority of which are listed by the California Native Plant Society (CNPS). Four of the rare species are federally endangered, and

three are endemic to the Point Reyes peninsula. The four federally listed species have never occurred in the burn area, nor do its habitats support these dune and dune wetland species. The two CNPS-listed species that have historically been found or are likely to be present in the fire area are Marin manzanita (*Arctostaphylos virgata*) and California bottle-brush grass (*Elymus californica*). Marin manzanita, a perennial evergreen shrub in the Heath family is fire-adapted in its forest and chaparral habitats, and is threatened by fire suppression that results in its being shaded out. Thus, it responds well to opening up of the canopy above it, but physical damage to plants through fire suppression operations would be detrimental. This species, ranked as 1B.2 by CNPS, is considered eligible for state listing and meets the criteria of rare plants to be considered under the California Endangered Species Act. Its only known occurrences are within Marin County, and the vast majority of plants are on NPS lands. The perennial California bottle-brush grass is on a CNPS watch list (List 4.3) due to its limited distribution (Marin, Sonoma, San Mateo, and Santa Cruz counties). It may also be threatened by fire suppression.

Although it is not a rare species, PORE affords special protection to the western dog violet (*Viola adunca*), the sole larval host of the FE Myrtle's Silverspot Butterfly. No known populations of this violet are found within the burn area, and it occurs in open grassland/scrub communities, not the denser vegetation that characterizes the region burned.

Invasive plant species

Though not dominant, a substantial component of PORE's flora consists of non-native species, many, though not all, of which are invasive. Invasive plants constitute one of the most serious threats to the park's flora and fauna.

PORE targets invasive species management to the most problematic invaders that threaten natural communities, critical wildlife habitat, and ecosystem processes, and that are feasible to control. About a dozen high-priority invasive plant species are under annual management within high-value sites, and several low-abundance zero-tolerance species are removed whenever detected. Additional species are treated as they become problematic in specific areas. Manual, mechanical, and chemical treatments have been used as most appropriate and most efficient. Chemical treatments, if not part of large-scale projects undergoing EIR or EA processes, are reviewed as Categorical Exclusions through PORE's project review system and entered in PEPC. All chemical treatments are reviewed through the NPS Pesticide Use Permit system, and longer-term staff conducting herbicide applications maintain Qualified Applicators Certification through the California Department of Pesticide Regulation. PORE institutes extensive mitigations when conducting invasive species control in critical habitat and where it may impact listed species. Weather-related restrictions limit the degree to which chemical treatments are permissible.

The San Francisco Area Network (SFAN)'s Inventory and Monitoring Program conducts an early detection program, surveying PORE's trails every three years and mapping a wide suite of invasive species. New species and new infestations have been added during each round, and are likely to continue to be added under current high visitation levels at the Seashore, and with major road repairs in process in 2020.

RECONNAISSANCE METHODS

PORE Restoration Biologist Ellen Hamingson, assisted by San Francisco Area Network Lead Fire Effects Monitor Wende Rehlaender, conducted ground reconnaissance of the fire perimeter on September 11, 2020. Reconnaissance was done from vehicles from Sky Trailhead to Sky Camp, and along the full length of the Bear Valley Trail and then north on Coast Trail to the fire's edge. Inspections on foot covered the main Sky Camp Area and the northern section of the western (Santa Maria) dozer line from its upper edge (near the junction between Sky and Fire Lane Trails) down approximately 1.2 miles from the start. Additionally, observations were made, on foot, from the section of Coast Trail between Coast Camp and Santa Maria drainage, to assess the hand lines and retardant drops from Coast Camp to Santa Maria Creek.

Due to safety concerns, access to the fire interior was substantially restricted while this Vegetation Assessment was in preparation. However, Ellen Hamingson was permitted to conduct a survey from Sky Camp, along Sky Trail to its intersection with Woodward Valley Trail, and down to Coast Camp, on September 15, 2020.

Resource Advisors conducted a survey for invasive plant species at the former San Geronimo Valley golf course that served as the Incident Command Post for the Type 1 firefighting team, following detection of a high-priority species at the camp.

The Seashore's spatial data on invasive plants, rare plant populations, vegetation communities and associations, and fire severity for the 1995 Vision Fire gave information essential to the findings, as did historic documentation of post-Vision-Fire vegetation management, and consultations with current and former PORE staff involved in either work following the 1995 fire, or in recent operations.

FINDINGS

Rare Plant Species

With limited time and restricted access on a still-uncontrolled fire, no rare plant searches or surveys were conducted.

The park's GIS data of rare plant populations mapped 1980-2019 indicates that only California bottle-brush grass is known from within the fire perimeter, primarily along or near the Horse, Morgan, Bear Valley, and Old Pine Trails. PORE does not currently have resources to conduct systematic rare plant surveys; monitoring is primarily project-driven with additional opportunistic mapping for species not federally listed. The distribution of California bottle-brush grass is likely more widespread than represented in the GIS data. Populations have apparently expanded in a localized manner following both manual and chemical treatments of invasive species. Protection of this species was not recommended under the READ plan during fire suppression.

Marin manzanita apparently has not been detected within the fire perimeter, although it does occur on rocky slopes adjacent to Douglas-fir forests. The nearest known population is about 600 meters from the western edge of the fire. No plants were observed during READ surveys.

Threats to rare plants species from the Woodward Fire appear unlikely at present, although it will be important to monitor and re-map the historic California bottle-brush grass locations, as well as any new occurrences, to better understand the impact of fire behavior on this species.

Plant Communities, Fire History, and Burn Severity

About 1200 acres of the Woodward Fire was previously burned in the October 1995 Vision Fire, within a 1900-acre zone running from the northwestern corner near Sky Camp down the western perimeter and across the Santa Maria drainage to near the junction of Sky and Coast Trails. The remainder of the Woodward Fire, including all areas east of Sky Trail, has not been burned to any substantial extent in at least 70 years, and possibly considerably more years.

About half of this twice-burned landscape burned at low severity and half at moderate severity, with 17 acres just below Sky Camp burning at high severity. Prior to Vision Fire, most of the twice-burned areas supported largely Douglas-fir forest and, to lesser extent, coastal scrub dominated by coyote brush stands, with the latter particularly prevalent along the coast. Following the Vision Fire, most of these areas converted to -- or back to -- coastal scrub, with the latter again particularly prevalent along the coast, and ceanothus stands, with coastal scrub stands being approximately 50% higher in abundance than ceanothus-dominated stands. The riparian forest along the Santa Maria drainage burned in both fires. Some remnant Douglas-fir stands that appeared to withstand the Vision Fire (due to being unburned or burning at low to moderate severity) were also within the Woodward Fire perimeter.

In the Woodward Fire, as expected, the hottest burns occurred within the southern half of the fire, closer to the ignition source, and primarily within coastal scrub communities. Preliminary analyses based on Burned Area Reflectance Classification (BARC) data indicate that

approximately the following amounts of these vegetation community types burned with high intensity: 241 acres of coastal scrub, 135 acres of Douglas-fir forest, 44 acres of ceanothus stands, 4 acres of Bishop pine stands, and 1 acre of hardwood forest (Figure 7). Less than an acre each burned at high severity in grassland, herbaceous wetland, and riparian forest communities.

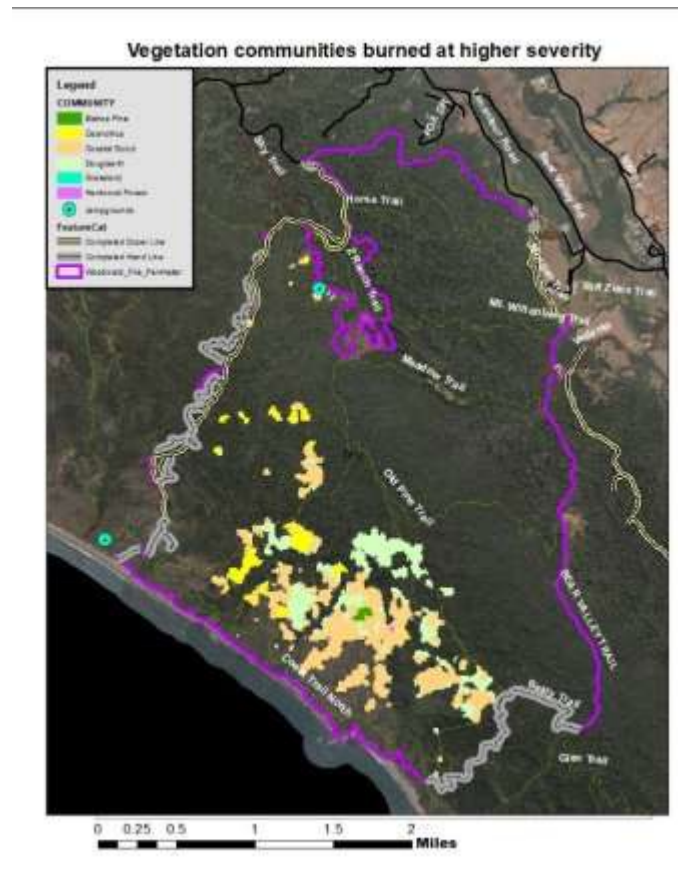


Figure 7. Vegetation communities burned at high severity, based on preliminary BARC data as of September 14, 2020. Communities with less than 1 acre are excluded.

Invasive Plants

The establishment and spread of invasive plant species, particularly in areas of high fire severity or fire suppression impact, is the greatest threat to the native vegetation at risk. Areas of high erosion potential, especially steep sections of hand and dozer lines, and intensive suppression operations (retardant drops, helispots, extensively cleared areas), are of particular concern. Both establishment and spread can be expected due to the presence within the fire zone of high-priority species known to have a positive response to fire, or to the opening of previously densely vegetated areas. Fortunately, significant patches of unburned native vegetation are

present that will provide propagules for the regeneration of native communities if invasive species are appropriately managed. Resprouting and germination of both native and non-native plants was observed during the September 2020 site visits. (In the first three months following the much higher severity Vision Fire, native species that re-emerged included coyote brush, coffeeberry, chinquapin, huckleberry, coast live oak, California blackberry, bracken fern, and sword fern.)

The predominant invasive plant species documented (Figure 8; Table 2) within the burn area prior to the fire are:

- Jubata grass (*Cortaderia jubata*)
- Panic veldt grass (*Ehrharta erecta*)
- Ox-eye daisy (*Leucanthemum vulgare*)

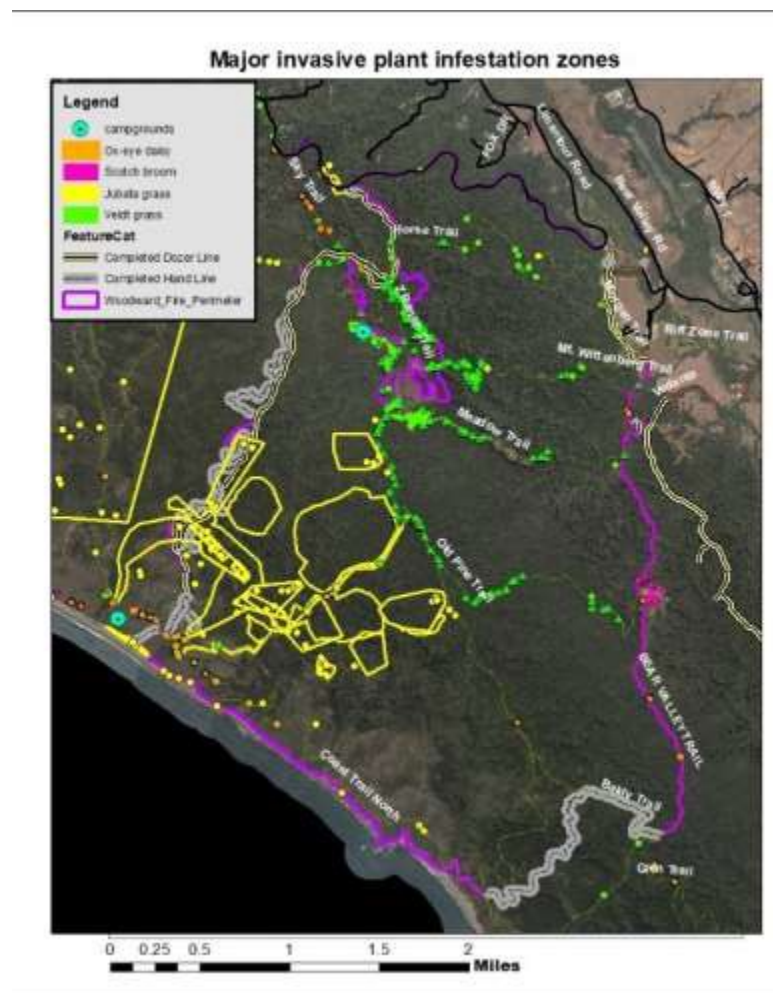


Figure 8. Major invasive plant populations within and near the Woodward Fire.

Table 2. Priority invasive plant species within fire perimeter and staging areas

Common name	Sci. name	Locations	Recommendation/notes
Jubata grass	<i>Cortaderia jubata</i> (also <i>C. selloana</i> , present at very low levels	Entire western half of fire, especially Santa Maria & Woodward Valley drainages; Coast Camp Bluffs; outliers along all trails; present but poorly mapped in Douglas-fir forest below Sky; difficult access	Immediate treatment (chemical & manual) prior to chaparral regeneration; fire increases habitat; will need ongoing surveys on/off trail especially in dozer & hand lines, TRAs, and Santa Maria retardant drop
Scotch broom	<i>Cytisus scoparius</i>	Divide Meadow, outliers on Coast Trail and possibly Limantour Rd	Low abundance in area; fire can promote germination; long seedbank; remove all found
Ox-eye daisy	<i>Leucanthemum vulgare</i>	Fairly substantial on Coast Trail; isolated elsewhere; major source near Limantour residences	Immediate treatment of outliers; ongoing management of more abundant Coast Trail infestations
Stinkweed	<i>Diuriscus graveolens</i>	1 plant found at San Geronimo Valley ICP, may be at other staging/camp areas; not known from Point Reyes peninsula	Zero-tolerance species: new invader that should be eliminated immediately. Repeated surveys in staging, equipment areas
Barbed goat grass	<i>Aegilops triuncialis</i>	Bear Valley Area (also McIsaac Ranch and Drakes Beach Road, so introduction of new infestations is possible)	Zero-tolerance; 1 infestation known from Bear Valley parking area; immediate removal and repeated surveys
French broom	<i>Genista monspessulana</i>	Bear Valley Road, Limantour Road	Long seedbank, treat immediately; but few infestations in burn
Blue gum eucalyptus	<i>Eucalyptus globulus</i>	Sky Camp	Remove regeneration of previously treated infestation while accessible

Jubata grass (*Cortaderia jubata*), a clumping perennial grass, rated in the highest threat category by the California Invasive Plant Council and by PORE, has invaded PORE's relatively

undisturbed coastal scrub, chaparral, grassland, and forest habitats, primarily within the Phillip Burton Wilderness and often in densely vegetated, steep, remote areas. Jubata grass invasion can reduce native plant diversity and abundance; creates a fire hazard due to its dense thatch build-up; eliminates damp riparian scrub habitat for the rare Point Reyes mountain beaver, and reduces herbaceous diversity that supports native insects. About 300 acres with the Woodward Fire (predominantly within the twice-burned area) have historically been invaded by jubata grass and are likely to experience establishment of new infestations and spread of existing small patches from the current very low cover.

Though considered by PORE to be controlled by the early 1990s, the species expanded its distribution dramatically after the 1995 Vision Fire. The fire opened up the vegetation canopy and allowed wind-assisted seed dispersal and colonization of new populations downwind of established populations. Even in that fire, which was more severe than the Woodward Fire, most jubata grass survived burning, so fire may sometimes promote its growth. A significant amount of the Vision Fire's emergency stabilization and rehabilitation work comprised mapping and treatments of jubata grass. As the canopy began to close (very quickly in ceanothus-dominated areas), there was less opportunity for new seed dispersal, but the recently-established populations continued to flourish even in shade and with native competition. Workers involved in the 1995 fire stressed the urgency of treating jubata grass as soon as possible, given the rapidity at which dense native vegetation, particularly ceanothus, re-established and made access to plants extremely challenging.

PORE received \$210,000 in competitive FY16-18 funds to treat jubata grass within the Phillip Burton Wilderness. Very little was treated within the Woodward Fire zone; the focus was on controlling infestations at the northern end of the Vision Fire area, given the prevailing northwest winds and the presence of large infestations in the major perennial drainages. Over 80% of the treatment was conducted manually, due to restrictions on and challenges to chemical treatments. Both methods succeeded in significantly reducing jubata grass cover and bringing some patches, especially smaller outliers, to eradication. Retreatment of larger patches in the two years following initial treatment is effective, given the species' abundant but short-lived seedbank. While PORE has kept jubata grass at much lower levels than in other coastal areas with significant open ground and slumping, the dense native vegetation that limits spread also poses major challenges to accessing and efficiently treating this species.

Though present at much lower abundance, both Scotch broom (*Cytisus scoparius*) and French broom (*Genista monspessulana*) are of concern, due to their positive response to fire and their ecological impacts. These species have seedbanks that persist for decades, and germinate readily following all but the hottest fires. Currently the largest Scotch broom infestations outside of the central core populations on ranchlands are found within the Vision Fire footprint,

particularly adjacent to the still-noticeable northern dozer line. Known broom patches within the Woodward Fire are small and primarily limited to Divide Meadow and the Limantour Road corridor.

Veldt grass is extremely widespread, and expands rapidly due to its frequent germination and easily transported, abundant seeds. The Sky Trail region is the epicenter of this species' distribution at PORE, and it is well beyond feasible control. While veldt grass does not typically establish in open, sunny zones, even in areas without heavy canopy it can persist in the presence of frequent fog. PORE manages this species only in the most isolated outlier patches, particularly if rare plants are present, and cannot control it in most of the Douglas-fir forest, although spraying along the lower edges may slow its spread. Veldt grass has been found far off-trail in the wilderness. (As with certain other invasive species, although spread may be promoted by ungulates, there is also some correlation with areas heavily disturbed by large illegal marijuana grow operations in the three largest drainages. No grow operations are known to have occurred within the Woodward Fire footprint).

Ox-eye daisy (*Leucanthemum vulgare*) has expanded noticeably in the central Estero region over the last 10 years, and exists as a large seed source around the Limantour residences. Present at lower abundances along the Coast Trail heading to the southeast from Limantour, it is at a level where it could be controlled, though probably not eradicated, at a site level. This species can grow year-round, has a large and long-lived seedbank, can resprout from root fragments, and can outcompete and exclude low-growing vegetation. Though well-adapted to disturbance, it can also expand into relatively undisturbed sites.

A single stinkweed (*Dittrichia graveolens*) plant was detected and removed immediately at the San Geronimo Valley fire camp. Stinkweed has never been found in the Point Reyes peninsula and is a zero-tolerance species; it has expanded exponentially in other parts of Marin and Sonoma counties.

Areas within the fire perimeter, especially on the hand and dozer lines, around the weed wash station, and at the areas used as Incident Command Posts (San Geronimo golf course and Bear Valley Visitor Center/parking area) should be closely monitored for these and the other watch list invasive species (Table 3). Additional high-priority invasive species may be present on the privately owned Vedanta Retreat, where the eastern dozer line was created, just outside the park boundary; this area has not been surveyed by park staff.

Based on its explosion at Home Ranch following the 1995 fire, the watch list species of highest concern is giant plumeless thistle (*Carduus acanthoides*), a California Department of Food and Agriculture A-rated weed, mandated for eradication. Though currently at very low levels there

and on Inverness Ridge, isolated plants have occasionally been detected far off-trail and away from these seed sources, in scrub communities within the wilderness.

Table 3. Watch list: Invasive plant species that are either a) not known from within the Woodward Fire but could invade and should be tracked; or b) are within the burn area but not feasible for control

Common name	Sci. name	Locations	Recommendation/notes
Giant plumeless thistle	<i>Carduus acanthoides</i>	Outside burn area; within Vision Fire footprint from Home Ranch to Panoramic Creek drainage	Survey repeatedly for immediate manual removal; exploded after Vision Fire; A-rated
New Zealand nightshade	<i>Solanum aviculare</i>	Limantour Road area just outside burn, also Chimney Rock and Lighthouse area	Expanding in recent years; bird-dispersed seeds. Immediate removal.
Glandweed (yellow & pink)	<i>Parentucellia viscosa</i> , <i>P. latifolia</i>	Roadsides and grasslands well outside burn	Establishment probably due to contaminated equipment (<i>P. viscosa</i>); <i>P. latifolia</i> found in relatively undisturbed scrub and grasslands
Napa star-thistle	<i>Centaurea melitensis</i>	Roadsides and grasslands well outside burn, but equipment could transport	Has been introduced in areas of maintenance projects; fire may promote its spread
Purple star-thistle	<i>Centaurea calcitrapa</i>	Isolated infestations on PORE peninsula; none known within fire; problematic on Hwy 1 side	Has appeared following larger-scale road maintenance activities and in high-visitation areas
Gorse	<i>Ulex europaea</i>	1-2 plants found along Coast Trail and	Immediate removal if detected

		eliminated years ago	
Parrot feather	<i>Myriophyllum aquaticum</i>	Aquatic weed found in stock ponds	Check Bear Valley Creek for possible infested water drop, but requires slow-moving water
English holly	<i>Ilex aquifolium</i>	Isolated but not rare in Douglas-fir and Bishop pine forests including Sky region; can be well off trail	May be promoted by fire; bird-dispersed seeds.
Panic veldt grass	<i>Ehrharta erecta</i>	Widespread in burn area especially. Sky Trail zone; more scattered on most trails within burn; has been found far off trail; only establishes in open areas if high moisture	Monitor noticeable expansion Year 1; treat only very isolated outliers, ideally chemically; easily transported and germinates repeatedly each year
English ivy	<i>Hedera helix</i>	Extensive in Douglas-fir and Bishop pine forests including Sky region; can be well off trail	Monitor noticeable expansion Years 1-2; treat outliers. Fire may promote, rarely kills it.
Perennial pea	<i>Lathyrus latifolia</i>	Scattered adjacent to trails within and outside the fire perimeter	Managed following the 1995 Vision Fire; remove manually
Montbretia	<i>Crocasmia x crocosmiiflora</i>	Widespread bulb species along trails esp. Sky region	May have been spread in Vision Fire; difficult control; monitor expansion
Rosy sand-crocus	<i>Romulea rosea</i> var. <i>australis</i>	Grasslands, detected along Woodward Valley Trail recently; widespread on	Monitor expansion into Morgan/Horse/Z-Ranch trail area

		ranches; present around Bear Valley HQ	(grasslands) and northern dozer line
Yellow toadflax	<i>Linaria vulgaris</i>	Only 1 known infestation (Muddy Hollow Road), outside burn	Very low abundance in Marin; survey for and remove
Yellow star-thistle	<i>Centaurea solstitialis</i>	A few small infestations on GOGA Hwy 1 side, but isolated plants found occasionally on peninsula	Remove immediately if detected

Fire suppression operations

The very steep dozer and hand lines and the bare ground created by firefighting parking areas, camps, and temporary rescue areas provide an opportunity for rapid spread and establishment of invasive plant species. In addition to watch list species (Table 3), additional new invaders may have been brought in. Bare ground, especially where steep, will need to be a major focus of emergency stabilization and rehabilitation efforts. Extensive brushing along Coast and Bear Valley Trails may also promote invasive species spread. Evaluation of the post-1995 weed program determined that too much time was devoted in the first year to annuals that would have been outcompeted by native perennial species. However, typical annuals and ruderal species are likely to remain problematic within the currently bare areas more than they would in the burned plant communities.

Two edges of the fire had aerial application of the long-term fire retardant, Phos Chek®. At the northwest edge along the Sky and Z Ranch trails, 8691 gallons were dropped on August 24, 2020, along a flight line estimated at 5198 feet. On the western edge parallel to the Santa Maria drainage, 14 loads totaling 42,952 gallons were dropped August 20 and 21, along a line totaling 9223 feet.

The phosphorous-based retardant typically acts on vegetation as a fertilizer. A flush of annual species can be expected in the first season. The area of particular concern is a region of roughly 100 acres in the southwestern corner of the western drop. Retardant was still visible on September 15, 2020. This zone has historically been a hotspot for jubata grass invasion, and currently contains more bare ground and low-growing or burned vegetation than found further

up the ridge. It is covered with numerous animal or social trails, as well as hand line, and is likely to be an area where weeds could establish easily prior to scrub regeneration. Though perennial non-native grasses such as tall fescue (*Festuca arundinacea*) and harding grass (*Phalaris aquatica*) were observed during field visits, native grass species are also present. Should the retardant promote immediate growth of not only exotic annual grasses and forbs, but also these invasive perennial grasses, the native grass component could be impacted negatively. As of September 15, retardant was not highly visible in the low wet area between ridges adjacent to Santa Maria Creek, but may have been present. The northern retardant drop, visible just below Sky Trail, occurs where invasive veldt grass is already moving into the burned area and is beyond control.

Water drops may also have an impact on vegetation communities. Most of the drops were saltwater or brackish water from Tomales Bay. While fire itself changes soil chemistry, the effect of increased salinity on soil chemical and physical properties is not well understood, particularly if combined with fire. Freshwater dropped along the Bear Valley edge came from the Five Brooks pond, which is invaded by parrot feather (*Myriophyllum aquaticum*), a highly invasive aquatic weed. Though this species is present in several PORE stock ponds, it is not known from the creeks and could pose a threat, unless the stream flow is strong enough to prevent its establishment, which is likely. A total of 18,240 gallons was dropped over an oblong zone centered on Bear Valley Creek and mapped as 770 acres.

Photopoints

Following the 1995 Vision Fire, 29 photo-documentation points were established. Four of these plots are located within the current fire area.

Vegetation monitoring plots

In addition to the Vision Fire photopoints, other monitoring plots, some with photo-documentation collected, are located with the Woodward Fire and, if feasible for relocation and re-reading, can be used to increase data available for understanding vegetation recovery that will be reported in annual accomplishments and monitoring reports. These plots include:

- Vegetation plots used for ground-truthing of the 1994 vegetation map
- Vegetation transects in Northern Spotted Owl territories
- Recently established plant community monitoring plots that are read according to protocols of the SFAN Inventory and Monitoring program.

The Woodward Fire burned over three long-term San Francisco Bay Area Network (SFAN) Inventory & Monitoring vegetation monitoring plots: one of these plots is in the Northern

Coastal Scrub vegetation community, the other two are in Douglas-fir forest (Figure 9). The scrub plot was established and read in August 2015, and read again in August 2019. The Douglas-fir plots were established in August and September 2018 and read once at that time.

Figure 9. I&M Plant Community Monitoring Plots within and adjacent to the Woodward Fire. DGFR = Douglas-fire plots; SCR = Coastal scrub plots

Two additional long-term Douglas-fir forest monitoring plots are adjacent to the fire perimeter and one falls between the fire perimeter and the dozer line. These were established in August and September 2018 and read once at that time.

SFAN staff collect data at these sites on a rotating periodic basis according to procedures outlined in the network's 2016 peer-reviewed protocol (<https://irma.nps.gov/DataStore/Reference/Profile/2232001>) in order to track long-term changes in vegetation composition and structure at the park. Data collected include a complete species list per plot, cover estimates for the most-abundant species, tree and seedling density estimates for forest plots, and fuel loads for forest plots. In addition, observers collect a set of three repeat-photography images of the plot.

The plant community monitoring protocol states: If future disturbances to sample sites occur, especially natural disturbances like fire, this monitoring program will adjust the observation schedule to better understand recovery rates and to assess if interventions are required to assist in recovery. When a disturbance occurs at a study site, an assessment by I&M staff in consultation with park managers, and in light of available resources, should be performed to determine if supplemental monitoring should be conducted to understand recovery rates and post-disturbance vegetation dynamics. The recommended sampling schedule for post-disturbance situations is to sample annually for the first three years, then once at three years post-disturbance, then every additional three years afterwards up to 20 years post-disturbance.

RECOMMENDATIONS

Two specifications are recommended to address invasive plant issues post-fire for the Woodward Fire.

ES-5, Invasive Plants

Detection surveys of invasive non-native target species should be conducted concurrently with the eradication of target species in areas with high infestation potential in the year following the Woodward Fire. Management of target species should occur during the first year post-fire as appropriate to cover varying weed phenologies and treatment windows. The goal is to deplete weed propagules and allow natural recruitment of native species without competition from invasive species. Treatment should include a combination of chemical and mechanical methods, selected to treat each infestation most efficiently while protecting sensitive habitat. Treatments in each season will be adjusted to ensure that only the most effective tools and methods of control are used. Existing and newly established photopoints and vegetation monitoring plots will be used to track both treatment effectiveness and post-fire vegetation community changes.

Emphasis on the Woodward Fire will be placed on zones of potential invasion on and adjacent to all roads, trails, dozer and hand lines, facilities, and vector corridors within the burn

perimeter (Figure 8), as well as on zones where dropped retardant could promote invasive plant establishment and spread.

Standard protocols for mapping and eradication of invasive plant populations will be used:

- Invasive species points or polygons will be mapped using NPS methodology.
- Area and cover class and/or number of plants (depending on target species) will be recorded for each site, and quantified reports on treatments will be entered in the PORE Exotics database.
- Integrated Pest Management strategies will be utilized. Mechanical or manual methods will be used where appropriate.
- Herbicide use will be approved by the regional, and (if appropriate) WASO, Integrated Pest Management Coordinator and amounts used will be documented and reported through the IRMA Pesticide Use Permit database.
- Best Management Practices for herbicide use (outlined in compliance documents and PORE Vegetation Management standard protocols) will be followed to ensure that the overall effectiveness of herbicides is maximized and the potential for negative impacts is minimized.
- Where feasible, invasive plant propagules will be removed off-site; in areas where removal is not possible, BMPs for limiting seed and rhizomes dispersal will be followed

Timeline for invasive plant control, ES-5 Invasive Plants - Woodward Fire:

Fall 2020/Winter 2021

Complete preliminary detection surveys along all impacted trails, disturbed areas, facilities, and zones of high invasion probability, particularly on the western edge of the fire perimeter, for species that can be detected immediately. Establish photo documentation and vegetation monitoring points. Initiate targeted treatments of outlier infestations that need to be removed prior to regeneration of dense vegetation.

Early Spring/Summer 2021

Conduct additional surveys for newly germinating invasive species and those not detectable in fall and winter. Initiate control where appropriate for species phenology, based on 2020-2021 surveys. Evaluate efficacy of early-season treatments, and adjust treatment plan based on results of efficacy evaluation treatments.

Late Summer 2021

Initiate control of infestations that could not be treated during bird nesting season. Evaluate efficacy of treatments implemented in late 2020 and early 2021. Conduct additional detection surveys along all impacted trails, disturbed areas, facilities, and zones of high invasion probability for species most detectable in late summer/early fall. Adjust treatments based on results of efficacy evaluation.

BAR-1-Invasive Plants

Detection surveys of invasive non-native target species should be conducted concurrently with the eradication of target species in areas with high infestation potential for three years following the Woodward Fire. Management of target species should occur as appropriate to cover varying weed phenologies and treatment windows. This will deplete weed propagules and allow natural recruitment of native species without competition from invasive species. Treatment should include a combination of chemical and mechanical methods, selected to treat each infestation most efficiently while protecting sensitive habitat. Treatments in each season or year will be adjusted to ensure that only the most effective tools and methods of control are used. Existing and newly established photopoints and vegetation monitoring plots will be used to track both treatment effectiveness and post-fire vegetation community changes.

Emphasis on the Woodward Fire will be placed on zones of potential invasion on and adjacent to all roads, trails, dozer and hand lines, facilities, and vector corridors within the burn perimeter (Figure 8), as well as, in this phase, non-NPS lands impacted by fire suppression operations, where invasive plants could have been brought in and established (San Geronimo ICP) and immediately adjacent to park boundaries, where invasive plants could spread into park land (Vedanta retreat dozer line).

Standard protocols for mapping and eradication of invasive plant populations will be used:

- Invasive species points or polygons will be mapped using NPS methodology.
- Area and cover class and/or number of plants (depending on target species) will be recorded for each site and quantified reports on treatments will be entered in the PORE Exotics database.
- Integrated Pest Management strategies will be utilized. Mechanical or manual methods will be used where appropriate.
- Herbicide use will be approved by the regional, and (if appropriate) WASO, Integrated Pest Management Coordinator and amounts used will be documented and reported through the IRMA Pesticide Use Permit database.
- Best Management Practices for herbicide use (outlined in compliance documents and PORE Vegetation Management standard protocols) will be followed to ensure that the overall

effectiveness of herbicides is maximized and the potential for negative impacts is minimized.

- Where feasible, invasive plant propagules will be removed off-site; in areas where removal is not possible, BMPs for limiting seed and rhizomes dispersal will be followed.

August-September 2021

Conduct additional detection surveys of all impacted trails, roads disturbed areas, facilities, and zones of high invasion probabilities as needed for species most detectable in late summer/early fall. Surveys will also be conducted on impacted non-NPS lands. Initiate control of infestations whose phenology makes this season most effective for treatment. Conduct treatments of larger infestations identified during earlier surveys that could not be treated during migratory bird nesting season. Evaluate efficacy of treatments implemented in 2021. Evaluate vegetation monitoring and photo-documentation data, as well as treatment effectiveness data, to adjust treatments based on results of evaluation.

FY2022-FY2023

PORE will seek two additional years of BAR funding to cover further actions necessary to allow natural recruitment of native species without competition from invasive species: Continued annual detection surveys of all impacted trails, disturbed areas, facilities, and zones of high invasion probability; adjustments to treatment plans based on results of efficacy evaluations; retreatment of infestations not yet at a controlled level, and treatment of newly discovered infestations in the impacted areas that could establish and spread in native plant communities.

Non-Specification Recommendations

- Implement seeding of dozer and hand lines and isolated burned meadows with native species during fire suppression repair, prior to installation of any erosion control materials.
- Develop a plan for seed collection to establish a source of local native plant seed that could be used for restoration of the most disturbed zones during the rehabilitation phase.
- Ensure that during suppression repair, lines are visually obliterated to the greatest extent possible to minimize invasive species spread caused by increased social trails. Lines originating from the popular Coast and Sky Trails present a particularly inviting access route for new social trails.
- Coordinate with VRP and Interpretation divisions to target increased ranger patrol to areas where social trails are most likely to promote weed spread.

- Conduct additional rare plant surveys of known California bottle-brush grass to increase understanding of the effects of fire and other disturbance events on this species.
- Obtain updated aerial imagery at several time points to assess vegetation change post-fire.
- Investigate the compliance and permitting needed for drone mapping of infestations in most topographically challenging areas.
- Additional vegetation monitoring and surveys should be conducted in the years immediately following the fire. This monitoring is important to capture changes in vegetation composition, and compare burned and unburned areas, as well as to increase access to usually dense chaparral and forest systems over the short term. Collaborate with the SFAN Inventory and Monitoring program to identify funding sources for relocation and increased reading frequency of plant community monitoring plots, and full early detection surveying of all trails within the fire area in 2021. Furthermore, vegetation transects established at Northern Spotted Owl territories in 1997-1998, as well as plots used to ground-truth the 1994 vegetation map, should be revisited to obtain data on long-term vegetation changes with and without recent fires.

REFERENCES

Allen, L.J. et al. 1999. Post-Fire Erosion Control and Vegetation Recovery Monitoring at Point Reyes National Seashore. Proceedings of the George Wright Society conference.

Bogunovic, I. et al. 2015. Influence of wildfire and fire suppression by seawater on soil properties. *Applied Ecology and Environmental Research*. 13(4): 1157-1169.

Bossard, C. et al., edited. 1999. *Invasive plants of California's wildlands*. Berkeley: University of California Press.

California Invasive Plant Council (Cal-IPC). 2006. *California Invasive Plant Inventory*. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Available at: www.cal-ipc.org

Point Reyes National Seashore. 2011. *Draft Invasive Plant Prioritization List*. Unpublished document. Point Reyes Station, California.

Point Reyes National Seashore. 1989. *Exotic plant management plan*. Unpublished document. Point Reyes Station, California.

CONSULTATIONS

- Leslie Allen*, Senior Regulatory Permitting Specialist, WRA, Inc.

- Timothy Babalis*, Ph.D., Cultural Resource Manager, Pinnacles NP
- Marie Denn, Aquatic Ecologist, NPS Water Division
- John Eleby, PORE Supervisory Visitor & Resource Protection Ranger
- Mischon Martin*, Chief of Natural Resources and Science, Marin County Parks
- Kathryn Mazaika*, long-time PORE Habitat Restoration Program volunteer
- Wende Rehlaender, SFAN Lead Fire Effects Monitor
- Sarah Wakamiya, Acting National Inventory & Monitoring Data Manager
- Eric Wrubel, current GOGA biologist, former SFAN I&M Botanist

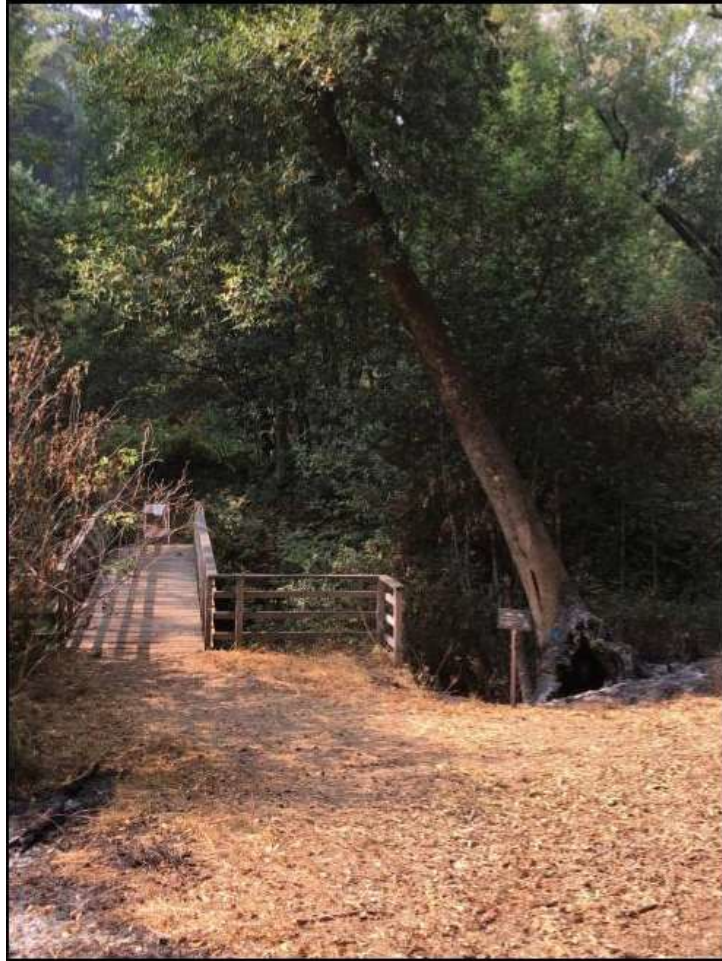
* Involved in post-fire rehabilitation following the 1995 Vision Fire

PREPARER(S)

Ellen Hamingson, Restoration Biologist, Point Reyes National Seashore

Woodward Fire Emergency Stabilization and Rehabilitation Plan

HAZARD TREE ASSESSMENT



Hazardous California bay tree with burned out burl leaning over footbridge, Horse and Morgan Trail Jct.

OBJECTIVES

- Identify immediate (imminent) and short-term tree hazard threats to life and property and recommend mitigation measures
- Determine future tree hazard surveillance needs that were not completed during the BAER assignment due to safety and access constraints
- Prescribe treatments to mitigate (tree removal) along roads or abate (target removal or closure) at rec sites/trail heads identified tree hazards

ISSUES

- Tree hazards along Limantour Road, principal trail corridors (Bear Valley Trail) and in Sky Camp sites
- Trees hazards on the south edge of Morgan Horse Ranch, Morgan and Woodpecker Trails in non-designated wilderness area
- Delayed mortality of fire impacted trees along the above-mentioned corridors and locations

BACKGROUND

The Woodward fire burned primarily two major vegetation types throughout the fire area. The fire burned mostly in a Douglas fir dominated mixed evergreen plant community, with areas of mixed conifer, oak woodland and coastal chaparral species, as well as riparian vegetation along the many creeks that run through the drainages of Point Reyes National Seashore. Coniferous tree species found in the area include Bishop pine, Douglas fir, and coast redwood. Hardwood tree species include coast liveoak, tanoak, interior live oak, madrone, California bay and California buckeye along with red alder, and willow in the riparian areas.

Three species of the mixed evergreen forest were of particular concern, California bay (*Umbellularia californica*), Douglas fir (*Pseudotsuga menziesii*), and red alder (*Alnus rubra*), because of their size and dominance in the vegetation and proximity to roads and trails outside of designated wilderness. The bay trees grow to large size with multiple tall trunks and a basal burl that develops cavities over time that can burn out and cause catastrophic failure of the trunks onto roads and trails. Mature Douglas firs are generally fire tolerant (Wagener, 1961) but smaller individuals are subject to delayed mortality where the effects of the fire on the trees are not immediate. Along the steep road shoulders there are dense stands of younger Douglas fir trees (4-12+” dbh) that will become hazardous, months to years after the fire as they die and fall across the roads or trails.

RECONNAISSANCE METHODS

Field assessments were conducted from September 9-12, 2020 by a BAER Forester accompanied by a park maintenance or trail crew staff after consultation with the park. Potential areas of concern to be surveyed for tree hazards were identified by staff. They identified developed/recreational sites, roads, and main trail corridors not in designated wilderness within the burned area as primary areas of interest for threats to life and property due to the high visitation.

The most heavily used road is Limantour Road, surveyed September 10, that runs along the northwestern edge of the fire. The Bear Valley Trail, also a maintenance access road and surveyed September 9 and 10, runs from the Visitor Center to the coast along the eastern edge of the fire and provides access to most of the trails in the designated wilderness of the park. Sky Camp, the one campground in the burn area, was surveyed on September 11 along with the access road in from Limantour Road. Morgan and Woodpecker Trails were surveyed on September 12 given they are in close proximity to the Visitor Center, in non-wilderness, and likely to be heavily used if other trails are closed due to safety concerns.

The field assessments were conducted to identify any imminent hazard trees based on the 7-Point Rating System utilized by the NPS which rates hazard on a combination of defect (including lean) and target. Both tree and the target are each given a rating from 1-3 (with an extra point for lean) for a possible total rating of 7 for the most severe hazards. Although trees were not individually rated for this assignment, each was evaluated on this basis to confirm defect and potential to inflict property damage or physical injury.

The trees determined to present an emergent hazard were recorded using Collector noting location, species, defect(s) and recommended action for mitigation or abatement. The trees were marked with blue tree marking paint to indicate removal for mitigation.

The purpose of tree hazard surveillance monitoring is to identify and evaluate potential hazards--i.e. determine if a tree is dead or likely to die and/or has a structural defect and poses a threat to life/property. In the case of Bear Valley Trail where it was not possible to fully evaluate the trees for immediate hazards due to the steep slopes above the trail and actively falling trees in the days following fire, follow up surveillance is necessary.

FINDINGS

Imminent tree hazards associated with the fire around trailheads, roads, campgrounds and infrastructure were relatively few within the fire perimeter. The forester of the BAER team spent 4 days assessing and designating tree hazards around campgrounds, limited trails and

trailheads and roads on National Park Service-managed lands (Table 1) after consultation with park staff about their concerns. Except for the trails included below none of the remaining 23 miles of trails within the burn perimeter were evaluated due to safety concerns and the fact that they are in designated wilderness.

There is still a need to assess more tree hazards within Bear Valley Trail corridor and Sky Camp campground as delayed mortality of fire damaged trees occurs. There were sections of Bear Valley Trail corridor which were inaccessible for evaluation due to debris and safety concerns due to the fire. All of the accessible imminent tree hazards were marked with blue paint for mitigation purposes.

All the hazard trees identified were mitigated on September 14 with a faller crew (Brian Coach, Brett Yonkers) accompanied by the BAER forester. The tree adjacent to the bridge at Morgan and Horse trail intersection was not removed because it could not be done without damaging the bridge and the park decided to mitigate it later, likely with the use of rigging or bucket truck.



Hazardous fire damaged bay trees along Limantour Road before mitigation



Hazardous fire damaged by trees along Limantour Road after mitigation

Location	California Bay*	Douglas Fir	Red Alder
<u>Limantour Road</u>	5	1	
Bear Valley Trail	2		1
Morgan Trail			
Woodpecker Trail	1		
Morgan/Horse Trail intersection	1		
Sky Camp			

*number indicates individual trees that may have multiple trunks, trunks marked with blue paint



Bay tree above Bear Valley trail resting on lower tree both could hit the trail



Steep road cut along Limantour Road with fire damage Douglas fir, possible delayed mortality

RECOMMENDATIONS

The Woodward Fire, encompassing 5011 acres, has created an environment of increased risk for park users. Visitors will continue to be exposed to increased risk and potential injury due to tree hazards falling on Limantour Road as well as Bear Valley Trail corridor and Sky Camp within the fire perimeter for many years.

Trees will continue to die over time (delayed mortality) which will require repeated monitoring, regular surveillance and mitigation to assure that the park is safe to visit and work in. Roads, trails and developed areas should be closed until areas are determined to be safe and hazard trees mitigated or posted with appropriate signage.

General Recommendations:

- Mitigate identified tree hazards by road/trails identified by tree hazard surveillance
- Complete tree hazard surveillance along sections of Bear Valley Trail inaccessible during suppression due to safety concerns
- Mitigate identified tree hazards prior to re-opening roads/sites within the burn area.
- Post appropriate signage warning the public of the potential risk associated with unidentified tree hazards along the trails once they are opened for access

One Emergency Stabilization specification is prescribed to address post-fire Hazard Tree issues.

ES-8 Hazard Surveillance and Mitigation

Complete surveillance for short-term tree hazards due to delayed mortality along sections of Limantour Road, Bear Valley Trail corridor and Sky Camp. None of the trails in designated wilderness were assessed for hazards, thus surveillance and mitigation will be necessary for the trails crew to safely access and repair trails prior to opening to visitors. There are approximately 23 miles of trails in designated wilderness within the fire perimeter.

REFERENCES

Mills & Russell, 1980. U.S. Forest Service, 7 point rating system for hazardous trees.

Wagener, W.W. 1963. Judging Hazard from Native Trees in California Recreational Areas. PSW-P1

Wagener, W.W, 1961. Guidelines for Estimating the Survival of Fire-damaged trees in California, PSW-MP 20

CONSULTATIONS

Tom Warner, Forester, Sequoia and Kings Canyon National Park, Three Rivers, CA

Shawn Maloney, Trails Division Supervisor; Jeff Jewhurst, Levi MacIsaac, Maintenance Division Point Reyes National Seashore, Point Reyes Station, CA.

PREPARER(S)

Clark Cowan, Biological Technician, ISA Certified Arborist, Channel Islands National Park, Ventura, CA

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

WILDLIFE ASSESSMENT

OBJECTIVES

- Assess effects of the fire and suppression tactics to rare and/or Federally-listed Threatened and Endangered species and their habitats.
- Prescribe emergency stabilization and rehabilitation measures and/or monitoring.
- Assess effects of proposed emergency stabilization and rehabilitation actions to rare and/or listed species and habitats.

ISSUES

- Habitat for the federally-threatened northern spotted owl (*Strix occidentalis*) occurs with the perimeter of the Woodward Fire. Fire occurred within six known spotted owl territories.
- Designated critical habitat for the federally-threatened California red-legged frog (*Rana draytonii*) occurs within the perimeter of the Woodward Fire. An estimated 3,582 acres of critical habitat were burned.
- Three streams within the Woodward Valley fire perimeter are occupied by federally-threatened steelhead trout.
- Habitat for the endemic Point Reyes mountain beaver (*Aplodontia rufa phaea*), a CDFW Species of Special Concern, occurs within the perimeter of the Woodward Fire. The fire burned through at least six known mountain beaver colonies.

BACKGROUND

Point Reyes National Seashore is home to a diversity of wildlife species, including approximately 35 species of terrestrial mammals, 12 reptiles, 10 amphibian species, and 20 non-marine fish. In addition, Point Reyes hosts the greatest avian diversity of any national park unit in the United States, with 490 bird species recorded so far. Six species on the Federal Threatened and Endangered species list that occur in Point Reyes have the potential to be affected by fire management actions with the park (NPS 2004). These species are:

- Northern spotted owl (*Strix occidentalis*)
- California red-legged frog (*Rana draytonii*)
- Central California Coast steelhead (*Oncorhynchus mykiss*)

- Central California Coast Coho salmon (*Oncorhynchus kisutch*)
- Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*)
- California freshwater shrimp (*Syncaris pacifica*)

The Woodward Fire did not burn within the known range of coho salmon, Myrtle's silverspot butterfly, or the California freshwater shrimp. These species are therefore not considered further. In addition, while an estimated 3,582 acres of critical habitat for the California red-legged frog were burned, no known breeding sites occurred within the fire perimeter. In addition, fire retardant was not dropped in any freshwater streams where California red-legged frogs may be residing at this time of year. The California red-legged frog is therefore not considered any further.

RECONNAISSANCE METHODS

Northern Spotted Owl

The northern spotted owl has been listed as a federally threatened species under the Endangered Species Act since 1990. They reach the southern limit of their range in Marin County, California, north of San Francisco, where they occur on NPS lands (GOGA, MUWO, PORE), and other public and private lands in Marin County. In Marin County, they inhabit second growth and old growth Douglas fir (*Pseudotsuga menziesii*), coast redwood (*Sequoia sempervirens*), bishop pine (*Pinus muricata*), mixed conifer-hardwood, and evergreen hardwood forests. The Marin population of spotted owls is geographically and genetically distinct from populations to the north in Napa and Sonoma Counties (Barrowclough et al. 2005). Wildfire has been identified as one of six significant threats to spotted owls in Marin County (Press et. al 2010). Spotted owls in Marin County forage primarily on dusky-footed woodrats (*Neotoma fuscipes*), which make up over 75% of their diet by weight (Chow and Allen 1997, Fehring 2003).

Following an inventory in 1997-1998 of all evergreen forest habitat located on federal lands within Marin County, a spotted owl monitoring program has been in operation continuously as part of NPS San Francisco Area Network Inventory and Monitoring Program (Press et. al 2010). The monitoring is a collaborative effort with other land management agencies in Marin where spotted owls occur.

Maps from the Woodward Fire show that approximately 4300 acres of spotted owl habitat may have burned. Spotted owl habitat within the fire boundary primarily occurs within the mature Douglas fir forests through the Bear Valley Trail corridor and within areas on the northeast side of Inverness Ridge. The fire appears to have burned entirely through three known NSO

territories and partially through another three territories. Fire suppression activities did not occur within any of these known territories.

Steelhead Trout

The Central California Coast (CCC) steelhead trout designated population segment (DPS) was listed as a federally threatened species in 1997. Steelhead may be resident, freshwater fish (i.e., nonmigratory, referred to as rainbow trout) or may migrate to the open ocean (anadromous). Steelhead are indistinguishable from rainbow trout during the three-year period they typically spend in freshwater. The CCC steelhead DPS includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek and drainages of San Francisco and San Pablo Bays.

Steelhead found in park streams are referred to as “winter steelhead” because their timing of upstream adult migration for spawning occurs during winter when stream flows are highest and water temperatures are lowest. Mainstems, tributaries, and intermittent streams may be used for spawning. Steelhead exhibit great variation in life history, but in California, they usually live in freshwater for one to two years, then typically spend two to four years in the ocean before returning to their natal stream to spawn.

Assessments for and monitoring of steelhead trout within PORE began in 1997 and is now a component of the NPS San Francisco Area Network Inventory and Monitoring Program (Reichmuth et. al 2010). The monitoring program focuses on the Olema Creek, Pine Gulch, and Redwood Creek (GOGA) drainages.

Steelhead trout are known to occur within three creeks within the perimeter of the Woodward Fire – Bear Valley Creek, Coast Creek, and Santa Maria Creek. Data on steelhead habitat and populations were collected from Bear Valley Creek during the mid-2000s and can serve as a useful reference point. Steelhead information for Coast Creek and Santa Maria Creek is less readily discoverable with only limited data believed to have been collected in the late 1990s.

Point Reyes Mountain Beaver

The mountain beaver is notably the most evolutionarily primitive rodent in North America. The Point Reyes mountain beaver is endemic to Point Reyes and is listed as a Species of Special Concern by the California Department of Fish and Wildlife. Mountain beavers feed on a variety of vegetation and live in burrow colonies that are dug in forest openings or dense thickets. The Point Reyes mountain beaver has predominantly been found on north-facing slopes in moderately dense northern coastal scrub and openings in Bishop Pine or Douglas-fir forests.

Mountain beavers must consume 1/3 of their body weight in water every day which restricts them to areas near water, or areas with extensive summer fog.

The Point Reyes mountain beaver was a subject of intense study following the 1995 Vision Fire within Point Reyes National Seashore. From Fellers and Osbourne (2009):

In most of the non-forested areas, the fire effectively cleared the ground of both litter and standing vegetation, revealing thousands of Mountain Beaver burrow openings, which are the most conspicuous evidence of Mountain Beaver activity. In the first 6 mo after the fire, Fellers and others (2004) surveyed burned coastal scrub and riparian habitat and estimated that only 0.4 to 1.7% of Mountain Beavers within the burn area survived the fire and immediate post-fire period.

Ten years following the Vision Fire, the habitat at 11 mountain beaver study sites had recovered to pre-fire conditions with a well-developed canopy of coyote brush and an herbaceous understory typical of mountain beaver sites. Conditions were much improved from surveys in 2000 when these sites were dominated by impenetrable thickets of ceanothus. However, the number of mountain beaver burrows documented in 2005 at these sites declined from previous surveys, representing only 52% of what was documented prior to the Vision Fire (Fellers and Osbourne 2009).

Maps indicate that the Woodward Fire burned through at least six known mountain beaver cites, four of which were also burned during the 1995 Vision Fire.

FINDINGS

Northern Spotted Owl

While not monitored every year, the six northern spotted owl territories within the Woodward Fire were documented as occupied within the last three years. Nesting pairs were documented at all of these sites within the last eight years. The Woodward Fire occurred outside of the NSO nesting season, so no impacts to actively nesting birds or recently fledged young occurred.

The degree to which the fire impacted owl habitat and these particular territories remains to be seen as direct observations within the interior of the fire have not yet been possible.

Preliminary burn severity maps show that, with the exception of an area on Meadow Trail, the owl territories experienced a low intensity burn. Post-fire mortality of trees and other vegetation may increase impacts to northern spotted owls. Northern spotted owls will be most impacted if favored nesting and roosting stands of trees are lost due to the fire, if extensive light gaps in the forest canopy are created through the loss of understory bay and oak trees, and/or if the fire has a significant impact on prey populations, such as the woodrats.

Steelhead Trout

As noted, steelhead trout are known to occur within three creeks within the perimeter of the Woodward Fire – Bear Valley Creek, Coast Creek, and Santa Maria Creek. Both fire activity and fire suppression efforts resulted in significant amounts of woody debris accumulating within the channels of Bear Valley Creek and Coast Creek in particular. While much of this woody debris will be removed under the Woodward Fire Suppression Repair Plan and a separate specification detailed within this BAER report (ES-4, Woody Debris Removal), many larger tree falls will

remain in place within these stream channels. Leaving the larger woody material in place will create habitat for steelhead trout and help to prevent soil erosion into the creek by holding back the recently burned banks and uphill slopes of the creeks. Even so, increased erosion is expected until stream vegetation recovers and the system stabilizes. With increased erosion, and with stream flows estimated to rise by 19% in the short-term (through modeling conducted by the BAER Team), steelhead redds may be at risk of loss due to scour and sedimentation. Neither fire retardant or salt-water drops occurred over any freshwater streams within the fire perimeter, and so there are no concerns regarding impacts to steelhead trout from these suppression efforts.

Point Reyes Mountain Beaver

As previously noted, maps indicate that the Woodward Fire burned through at least six known mountain beaver cites, four of which were also burned during the 1995 Vision Fire. Fire intensity at these sites appears to range from low to medium severity based on preliminary maps. Fire severity will impact the survivorship of mountain beavers during the fire event and the ability of mountain beaver habitat to recover to suitable conditions.

None of the mountain beaver sites located within the Woodward Fire perimeter are included in the 11 sites monitored post-Vision Fire, so comparisons to surveys conducted between 1995 and 2005 will not be possible. We know that the six sites in Woodward Fire were mapped and documented by the USGS at some point between 1984 and 1994 but no other information is available at this time.

RECOMMENDATIONS

No BAER or BAR specifications are presented. Non-management specification recommendations are provided to address wildlife impacts and recovery.

Specifications

Burned Area Emergency Response - NONE

Burned Area Rehabilitation - NONE

Non-Specification Management Recommendations

Northern Spotted Owl

The Woodward Fire represents the first time in modern history that a large wildfire has burned through northern spotted owl habitat in Marin County. Our long-term monitoring program allows for a unique opportunity to observe how spotted owls in Marin respond to fire. These six territories should be targeted for monitoring each year for the next 10 years. Call routes can be established if owls are not detected within their historic territories to see if owl pairs have moved to areas impacted less by the Woodward Fire. Comprehensive vegetation survey transects completed in 1997 and 1998 at nest tree sites can be re-visited to document how the fire has impacted these owl territories and how the vegetation communities recover over time. Assessments of small prey populations, particularly woodrats, would further help in our understanding of how the Woodward Fire has impacted northern spotted owls.

Steelhead Trout

Following the Woodward Fire, systematic sampling of Bear Valley Creek should be repeated following previous efforts in the mid-2000s. Habitat typing will help to determine the loss, or potential increase, in critical cover and other important habitat components for steelhead. Population assessments through electrofishing and snorkel counts may further determine how the Woodward Fire affected steelhead within the creek, although recent population estimates have not occurred within recent years. Systematic sampling of Bear Valley Creek should continue at five year intervals, at a minimum, in order to document the recovery of the creek from the fire and related suppression efforts

Within Coast Creek and Santa Maria Creek, presence/non-detect surveys are recommended in order to determine steelhead trout presence within these watersheds. These baseline efforts may identify a need for further sampling and assessment work.

Point Reyes Mountain Beaver

Immediate post-fire surveys should be conducted at the six mountain beaver locations known to occur within the Woodward Fire. To our knowledge, these sites have not been visited in more than 25 years, making an assessment of the impacts of the Woodward Fire at these specific locations difficult. Given that the Woodward Fire burned into areas that were not burned in the Vision Fire a unique opportunity is now available to survey for additional Point Reyes mountain beaver colonies in areas where they have not been documented before the burned vegetation recovers and colony detection becomes more difficult. These efforts should

be included in a broader re-assessment of Point Reyes mountain beaver throughout the entire park given that most known locations have not been re-visited in over 25 years. Within the past several years park staff have received several credible reports of Point Reyes mountain beaver in locations not previously documented, indicating that there are perhaps many other mountain beaver locations than previously known. Development of a Point Reyes mountain beaver habitat model, as was developed for the federally-endangered Point Arena mountain beaver (Zielinski et. al 2015), is highly recommended for the park. A verified habitat model would help guide the park through management decisions and compliance processes related to internal infrastructure projects (roads, trails, and water systems), PG&E infrastructure repairs and maintenance, and future emergency wildlife suppression efforts.

CONSULTATIONS

On August 20th, 2020 the park Wildlife Ecologist contacted Leif Goude of the USFWS to inform him of the Woodward Fire and to discuss potential issues with Threatened and Endangered Species.

On August 21st, 2020 the park Wildlife Ecologist contacted Jodi Charrier of the NMFS to inform her of the Woodward Fire and to discuss potential issues with Threatened and Endangered Species.

Michael Reichmuth, Fisheries Biologist, NPS SFAN Inventory and Monitoring Program

REFERENCES

Barrowclough, G. F., J. G. Groth, L. A. Mertz, and R. J. Gutiérrez. 2005. Genetic structure, introgression, and a narrow hybrid zone between northern and California spotted owls (*Strix occidentalis*). *Molecular Ecology* 14: 1109-1120.

Chow, N. and S. Allen. 1997. Assessment of northern spotted owl after the Vision Fire wildfire 1996. Unpublished report. Point Reyes National Seashore, Point Reyes, CA.

Fehring, K. E. 2003. Dusky-footed woodrat monitoring in Point Reyes National Seashore: Final report. Unpublished report. PRBO Conservation Science, Stinson Beach, CA.

Fellers, G. M. and M. S. Osbourne. 2009. Fire effects on the Point Reyes mountain beaver (*Aplodontia rufa phaea*) at Point Reyes National Seashore, 10 years after the Vision Fire. *Northwestern Naturalist* 90:189-193.

National Park Service. 2004. Final Fire Management Plan Environmental Impact Statement: Point Reyes National Seashore and North District of Golden Gate National Recreation Area. 578 pgs.

Press, D., D. Adams, H. Jensen, K. Fehring, W. Merkle, M. Koenen, and L. A. Starcevich. 2010. San Francisco Bay Area Network northern spotted owl monitoring protocol : Version 6.4. Natural Resource Report NPS/SFAN/NRR—2010/245. National Park Service, Fort Collins, Colorado.

Reichmuth, M. L., B. J. Ketcham, D. Fong, S. Carlisle, E. Brown, and M. Koenen. 2010. Salmonid Monitoring Protocol for the San Francisco Bay Area Network Narrative and Appendices and Standard Operating Procedures - Version 4.0. Natural Resource Report. NPS/SFAN/NRR—2010/202. National Park Service. Fort Collins, Colorado.

Zielinski, W.J., F. V. Schlexer, J. R. Dunk, M. J. Lau, and J. J. Graham. 2015. A range-wide occupancy estimate and habitat model for the endangered Point Arena mountain beaver (*Aplodontia rufa nigra*). Journal of Mammalogy, 96(2):380–393.

PREPARER

David Press, Wildlife Ecologist, Point Reyes National Seashore

Woodward Fire

Emergency Stabilization and Rehabilitation Plan

MINOR FACILITIES AND TRAILS ASSESSMENT

OBJECTIVES

- Identify and assess minor facilities, including trails, that have burned within the fire perimeter

ISSUES

The Woodward Fire burned primarily through designated Wilderness within the park, including burning over or along many park trails. The fire also burned close to the park headquarters complex in Bear Valley and other areas with minor facilities, such as the campground at Sky Camp. These facilities provide park visitors with camping opportunities and access into the rugged, densely forested mountains via the trails. These trails and facilities in turn provide for resource protection by concentrating and directing visitor use into managed facilities

BACKGROUND

DOI policy for Burned Area Rehabilitation issues allows for the repair or replacement of minor improvements and facilities that have burned within a fire. At Point Reyes National Seashore, minor facilities within the Woodward Fire perimeter include several trails, trail signs, bridges, stairways, hitchrails, retaining walls, and the Sky Camp campground (which includes picnic tables, restroom, and small potable water system). Many of these facilities are constructed of wood or plastics-based materials.

The park also has approximately 135 miles of trails throughout the Seashore; 23.3 miles of these trails lie within the burn perimeter. Most trails lie on old roadbeds. Trails provide not only visitor access to different features of the park but also serve as an excellent resource protection measure by generally confining visitors to the linear corridor of the trail itself.

The Philip Burton Wilderness was created within the park in 1976 and covers roughly 33,373 acres, or 51% of the federal lands within the park.

RECONNAISSANCE METHODS

Assessments of locations within the fire perimeter that had minor facilities potentially burned was accomplished in multiple ways, including:

- Prior to the arrival of the BAER Team (September 9, 2020) park staff and fire Resource Advisers had scouted most frontcountry facilities and some trails and had a general idea of where burn impacts had occurred. Similarly, where accessible, fireline Resource Advisers had some information about fire impacts to minor facilities. Combined, that knowledge enabled a focused BAER assessment by the BAER team.
- On Sept 10-11, park Trails staff accompanied the BAER Team Leader to formally assess burned minor facilities on trails and the Sky Camp area. Park staff involved included Shawn Maloney (Trails Supervisor), Brady Greene (Trails Maintenance Worker), and Michael Wasielewski (Trails Maintenance Worker). Specific areas surveyed include the Bear Valley Trail; Coast Trail from each end of it to the extent of seeing all four trail bridges; Sky Trail from Limantour Road to Sky Camp; roughly ½ mile in each direction from the Sky Trail along the Fire Lane, Z Ranch, and Horse trails; Sky Campcampground; and one mile of the Baldy Trail from the Bear Valley Trail.
- On Sept. 12 BAER team members assessed the Morgan, Horse, and Kule Loklo trails and facilities in the vicinity of Bear Valley Visitor Center/Headquarters.
- On Sept. 15 BAER team members assessed the Woodward Trail, and included two park employees (Ellen Hamingson, Restoration Ecologist, and Wende Rehlaender, Lead Fire Effects Monitor).
- In general, access to the trails within the interior of the burn was denied to BAER Team members due to significant safety hazards from falling trees. As such, the only trail within the interior of the burn perimeter assessed was the Woodward Trail.
- Cost estimates for replacement or repair of facilities was provided by TrailsSupervisor Shawn Maloney. That information provided the basis for development of the specification within this assessment.

FINDINGS

There are over 23 miles of trail within or along the edge of the Woodward fire perimeter. Sky Camp is well within the burn perimeter.

Of the total fire acreage of 5,011 acres, 90% (4,507 acres) lie within designated wilderness, which, in general, limits the number of potential facilities exposed to fire to trails and those structures/facilities along trails or camps.

Facilities

The table below indicates where burned minor facilities were located and generally what the burned facility or asset included.

Location	Facilities or Asset Burned/Damaged
Old Pine Trailhead	one Adopt a Trail informational sign
Coast Trail, "Secret Bridge", unnamed creek	30' wooden bridge burned
Coast Trail, Woodward Creek bridge	Bridge is unburned, but burned, steep slope immediately adjacent to the south side of bridge may experience soil erosion that could impact the bridge. Many rocks have come down off this slope immediately south of the bridge beneath this same burned slope.
Coast Trail, Santa Maria creek, wooden bridge	30' wooden bridge burned
Woodward Trail	30' retaining wall completely burned; separate retaining wall lost 4 upright posts and 4 burned planks. One burned out root hole has damaged the tread. In general, all trail sections in high burn severity and some of the moderate burn severity will be susceptible to increased erosion. There was a considerable amount of downed burn material across the trail in the moderate and high severity areas.
Sky Camp	Burned picnic tables in sites 4 and 9; burned site marker posts in sites 4 and 7.
Kule Loklo village replica	Burned wooden fence (roughly 50' length); burned wooden box and plastic drip system parts in Garden
Horse Trail bridge	Burned 2 planks and 4 upright posts

Trails

All trails within the burn perimeter are abandoned roadbeds, and thus typical impacts along burned trails of tread collapse due to root burnout were minimal and likely are limited on those trails that could not be surveyed. Because most of the trail acreage lies within forested areas, an increase in downed trees is expected, as is seen in other fires, and it can be expected there

will continue to be an increased number of downed trees for a few years post-fire within this burn. The one trail interior to the burn that was surveyed (Woodward) had a considerable amount of burned woody material across the trail.

Although not a part of normal BAER assessments, some sections of trails were dozed over as part of the dozerline along the Fire Lane trail and Horse and Z Ranch trails. Those sections of trail will need suppression repair to be completed, particularly to reestablish drains.

Information relative to BAER concerns associated with the dozer lines , such as soil erosion, likelihood of invasive species establishment, and attraction of the dozer lines for off-trail travel, and thus social trail establishment, were provided to the park to aid justifications for rapid dozer line repair. Good drainage of trails is necessary to prevent or mitigate erosion impacts. The table below summarizes the number and locations of drains on trails throughout the burn perimeter. These drains need cleaning before heavy winter rains come, due to the expected increase in soil erosion from the slopes above the trails. Although burn severity varies across these trails, 23 miles of trails represents a substantial facility asset for the park.

Trails within the burn perimeter			
Trail Name	Trail Segment	Mileage	Drainage Devices
Baldy	Bear Valley - Sky	1.1	31
Bear Valley	Baldy - Coast	0.9	0
Coast	Bear Valley - <u>Kelham Beach</u>	1	8
Coast	<u>Kelham Beach</u> - Sculptured Beach	2	11
Coast	Sculptured Beach - Coast Camp	1.3	12
Fire Lane	top of trail	0.3	4
Horse	Sky - Z Ranch	0.4	3
Horse	Z Ranch - Morgan	2.4	30
<u>Kule Loklo</u>	Morgan - <u>Kule Loklo Village</u>	0.2	0
Meadow	Bear Valley - Sky	1.6	27
Morgan	Woodpecker - Horse	0.5	11
Mt Wittenberg	Bear Valley - Z Ranch	1.8	61
Mt Wittenberg	Z Ranch - Sky	0.4	11
Old Pine	Bear Valley - Sky	1.9	49
Sculptured Beach	Coast - shore	0.2	0
Sky	Sky Camp - Woodward Valley	1.3	22
Sky	Woodward Valley - Baldy	1.6	38
Sky	Baldy - Coast	1.5	42
Woodpecker	Forested area	0.2	4
Woodward Valley	Sky - Coast	2	29
Z Ranch	Horse - Mt Wittenberg	0.7	5
		23.3	398

RECOMMENDATIONS

Specification-related:

Two specifications are recommended to address the repair/replacement of burned facilities and trails within the Woodward Fire. BAER-1, Repair Trails and BAR-2, Increased Trail Maintenance and Facility Replacement are proposed to mitigate the effects of the fire on park trails and infrastructure impacted by the fire.

BAER-9, Repair Trails: This specification identifies emergency funding needs to ensure drains are cleaned (and where necessary, built or rebuilt) to handle the expected increase in soil erosion onto and down trails. This work needs to be done before extensive fall/winter rains begin. Although, in general, hazard trees are not cut along wilderness trails, some obviously precarious and dangerous trees will need to be removed before the trail crew can safely conduct their work and the public can access the trails. Hazard tree surveillance and mitigation will be addressed under specification ES-8, Hazard Tree Surveillance and Mitigation. Extensive woody debris that now is across trails will need to be removed.

BAR-2, Increased Trail Maintenance and Facility Replacement: This specification identifies funding needs for expected increased trail maintenance needs and facility repair or replacement for the coming 1-3 years following the fire. Some 23 miles of trail in the park burned over. Experience has shown that the post-fire out-years bring increased trail erosion, increased windfall of burned trees, and sections of damaged tread that collapse if roots within the trail tread have burned out. Costs identified for this specification are to pay for additional seasonal trail employees to work with current career trail crew employees to complete this work. Work will typically focus on cleaning drains and/or constructing drains if needed, removing windfall, removing additional soil and rock that has fallen onto the trail, and assisting in the replacement of the burned wooden structures on the trails. The two trail bridges that burned will be reconstructed in-kind, and the two retaining walls that were burned will be replaced. In Sky Camp, two picnic tables and two signposts will be replaced, and at the Kule Loklo, site approximately 50' of burned wooden post and plank fencing will be replaced.

Non-specification management recommendation:

The trails at Point Reyes National Seashore are roadbeds which were administratively converted to trails in the 1960's, and as such have a larger footprint than a designed trail. The PORE Trails Inventory and Condition Assessment of 2006 addresses this problem by prescribing Road to Trail conversion and reroutes. These ex-roadbeds carry much more water than a properly designed trail would carry and there is little that can be done to

address the erosion caused by them. Drainage devices that have been and will be installed and maintained on these trails only act to slow the process of erosion and entrenchment but cannot resolve erosion issues.

Properly designed trails follow an oblique path to the contour of the landscape and can facilitate proper drainage and longevity of a trail. Rerouting the trails to an oblique to the topographic contour route and converting the sections of roadbed that are suitable to trail should be a priority for funding requests going forward.

REFERENCES

Trails Inventory and Condition Assessment, 2006. Point Reyes National Seashore.

CONSULTATIONS

Shawn Maloney, Trails Supervisor, Point Reyes National Seashore

Brady Greene, Trails Maintenance Worker. Point Reyes National Seashore

Michael Wasielewski, Trails Maintenance Worker, Point Reyes National Seashore

PREPARER

Jack Oelfke, BAER Team Leader, North Cascades National Park Service Complex, WA

Specifications

Emergency Stabilization

ID	Specification Name	FY20	FY21	FY22	FY23	Totals
ES-1	Plan Preparation	\$39,741	--	--	--	\$39,741
ES-2	Implementation Leader	--	\$13,845	\$10,170	\$10,390	\$34,405
ES-3	Storm Patrol	--	\$19,040	\$19,040	\$19,040	\$57,120
ES-4	Woody Debris Removal	--	\$26,160	--	--	\$26,160
ES-5	Invasive Plants	--	\$87,905	--	--	\$87,905
ES-6	Increased Agency Presence	--	\$151,991	--	--	\$151,991
ES-7	Cultural Site Stabilization	--	\$2,652	--	--	\$2,652
ES-8	Hazard Tree Surveillance and Mitigation	--	\$18,345	\$18,908	\$19,496	56,749
ES-9	Trails Repair	--	\$40,480	--	--	\$40,480
Totals		\$39,741	\$360,418	\$48,118	\$48,926	\$497,203

Burned Area Rehabilitation

ID	Specification Name	FY21	FY22	FY23	Total
BAR-1	Invasive Plants	\$41,385	TBD	TBD	\$41,385
BAR-2	Trails Repair/Infrastructure Replacement	\$64,500	\$40,135	\$41,400	\$146,035
Totals		\$105,885	\$40,135	\$41,400	\$187,420

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	BAER Plan Preparation	PART E SPECIFICATION #	ES-1
NFPORS TREATMENT CATEGORY*	Planning	FISCAL YEAR(S) (list each year):	FY20
NFPORS TREATMENT TYPE*	ES/BAER Plan	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Specialists from Point Reyes National Seashore and the incoming BAER team developed the BAER Plan for the Woodward Fire Incident. The team assembled at the Point Reyes National Seashore headquarters to conduct the assessments and coordinate the plan with the PWR BAER Coordinator.

Location/ (Suitable) Sites: Point Reyes National Seashore within the fire perimeter of the Woodward Fire.

Design/Construction Specifications: The plan was prepared in accordance with DOI, NPS, and interagency Burned Area Emergency Response and Burned Area Rehabilitation policy and guidance, including:

- (1) Office of Wildland Fire (OWF) Policy Memorandum 2016-01 (Post-Wildfire Recovery Program and Policy Changes)
- (2) Interagency Standards for Fire and Fire Aviation Operations, 2020
- (3) NPS Reference Manual 18 (Chapter 18)
- (4) NPS Wildland Fire & Aviation Management Business Rules, FY20
- (5) Interagency Burned Area Emergency Response Guidebook (Version 4.0)
- (6) Interagency Burned Area Rehabilitation Guidebook (Version 1.3)

Purpose of Treatment Specifications (relate to damage/change caused by fire): The plan was prepared to meet DOI and NPS policy requirements.

Treatment Reasonableness and Cost Effectiveness: N/A

Treatment Effectiveness Monitoring Proposed: N/A

Treatment consistent with Agency Land Management Plan (identify which plan): N/A

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Incoming BAER Team (Oelfke, Higginson, Cowan) FY20	1	\$33,335.00	\$33,335.00
+ -	Local Park Staff (Press, Hamingson) FY20	1	\$3,256.00	\$3,256.00
TOTAL PERSONNEL SERVICE COSTS				\$36,591.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL MATERIALS AND SUPPLY COSTS				

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Travel (Lodging and perdiem) for Oelfke, Higginson, Cowan FY20	1	\$3,150.00	\$3,150.00
TOTAL TRAVEL COSTS				\$3,150.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2020	09/07/2020	09/20/2020	F	plan	\$39,741.00	1	\$39,741.00
	SUMMARY COST TOTAL							\$39,741.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$39,741.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ T	E C	M F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ T	E C	M F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ T	E C	M F
4.	Estimates based upon government wage rates and material cost.	☒ P ☒ T	E C	M F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ T	E C	M F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Implementation Leader	PART E SPECIFICATION #	ES 2
NFPORS TREATMENT CATEGORY*	Administration	FISCAL YEAR(S) (list each year):	2021, 2022, 2023
NFPORS TREATMENT TYPE*	Administration	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: This specification will fund salary, travel and miscellaneous expenses for personnel responsible for overseeing implementation of proposed BAER treatments and activities associated with the Woodward Fire in FY21, FY22 and FY23, as applicable.

Location/ (Suitable) Sites: Woodward Fire, Point Reyes National Seashore, California

Design/Construction Specifications: Among the tasks to be performed under this specification include (as applicable):

- (1) Develop and amend specifications with park staff program managers
- (2) Develop scopes of work
- (3) COTR
- (4) Interagency coordination
- (5) Implementation monitoring
- (6) Budget tracking
- (7) Communication and education
- (8) Accomplishment reporting
- (9) Environmental compliance

Purpose of Treatment Specifications (relate to damage/change caused by fire): Woodward Fire created a variety of emergency post-fire issues on NPS lands. The purpose is to provide quality control and accountability over project implementation of treatments designed to respond to damage directly caused by the fire.

Treatment Reasonableness and Cost Effectiveness: N/A

Treatment Effectiveness Monitoring Proposed: N/A

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes National Seashore Foundation Document (2020); Operational Strategy for the Fire Mgmt Plan, PORE and GOGA (2006)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	FY21 Implementation Leader FY21 GS-12 Step 5 Base Salary @ \$4105/PP X 3PP	3	\$4,105.00	\$12,315.00
+ -	FY22 Implementation Leader FY21 GS-12 Step 5 Base Salary @ \$4320/PP X 2 PP	2	\$4,320.00	\$8,640.00
+ -	FY23 Implementation Leader FY22 GS-12 Step 5 Base Salary @ \$4430/PP X 2 PP	2	\$4,430.00	\$8,860.00
TOTAL PERSONNEL SERVICE COSTS				\$29,815.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL MATERIALS AND SUPPLY COSTS				
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Implementation Leader Site Visit FY21 Lodging + Per Diem @ \$765 x 2	2	\$765.00	\$1,530.00
+ -	Implementation Leader Site Visit FY22 Lodging + Per Diem @ \$765 x 2	2	\$765.00	\$1,530.00
+ -	Implementation Leader Site Visit FY23 Lodging + Per Diem @ \$765 x 2	2	\$765.00	\$1,530.00
TOTAL TRAVEL COSTS				\$4,590.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	09/30/2021	F	N/A	\$13,845.00	1	\$13,845.00
+ -	2022	10/01/2021	09/30/2022	F	N/A	\$10,170.00	1	\$10,170.00
+ -	2023	10/01/2022	09/30/2023	F	N/A	\$10,390.00	1	\$10,390.00
	SUMMARY COST TOTAL							\$34,405.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$34,405.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F
4.	Estimates based upon government wage rates and material cost.	☒ P	☒ E	☒ M
		☒ T	☒ C	☒ F

5. No cost estimate required - cost charged to Fire Suppression Account

☐ P ☐ E ☐ M
☐ T ☐ C ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Storm Patrol	PART E SPECIFICATION #	ES-3
NFPORS TREATMENT CATEGORY*	Human Life and Safety	FISCAL YEAR(S) (list each year):	FY21, FY22, FY23
NFPORS TREATMENT TYPE*	Hazard Removal – Other	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	Point Reyes National Seashore	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: The Woodward Fire burned much of the area contained within the perimeter formed by Limantour Road, Bear Valley Trail, and the coastline. All of the culverts of concern are located in the Bear Valley Creek watershed which drains the northeast portion of the fire. The culverts are located on the main channel of Bear Creek and on several small tributaries to Bear Valley Creek along Limantour Road. The burn within the Bear Valley Creek watershed was almost entirely low soil burn severity (SBS). Most of the canopy and much of the vegetation remain intact and will continue to provide rainfall catchment which will limit and delay runoff. Although there will be an increase in runoff and sediment movement, increases are expected to be minor because of the low SBS and remaining vegetation.

While the increase in runoff and sediment movement are not expected to be significant, there is still a threat to the road system. Woody debris in the channel can be mobilized and block culverts creating, in essence, a dam. Blocked water will pool and ultimately flow across/down the road surface causing damage and/or failure of the road. A spec (ES-4 - Woody Debris Removal) was written to remove all floatable, woody material from the stream channel. Even after that work is completed, woody debris and rolling rocks from the fire, can still make their way into the stream channel or onto the road surface over time.

To mitigate this problem, storm patrols will be dispatched following every significant rainfall event. These patrols are to identify the sections of road within the burn area that are in need of work to prevent degradation in storm-water drainage and road hazard.

If/when the storm patrol finds a problem, steps will be taken to mitigate the issue. This may be as simple as removing rock fall from the road surface or using a shovel to remove sediment and debris from ditches and culverts. This could also include bringing in heavy equipment to clear roads or restore hydrologic function to drainage systems. These mitigating actions must be completed right away as storms are frequent and heavy during the winter months.

Location/ (Suitable) Sites: Culverts and bridges along Bear Valley Creek. Culverts where burned drainages cross Limantour Road.

Design/Construction Specifications:

1. Immediately after receiving heavy rain, Point Reyes National Seashore will send out storm patrols to Bear Valley Trail and Limantour Road within the burn area to assess hazard conditions such as rock fall, sediment plugged culverts, and washouts.
2. When possible, storm patrols will remedy the hazard conditions with hand tools.
3. When necessary, the storm patrols will bring in heavy equipment to mechanically remove any obstructions from roads, ditches, and culvert inlets. Equipment used could include, a backhoe, excavator, dozer, and/or dump truck depending on the impact to the road.
4. All excess material and debris removed from the drainage system shall be placed outside of the bank-full channel and floodplain where it cannot re-enter stream channels. Preferably, the material will be moved off-site.
5. The storm patrols will keep records of the locations(s) along the road and drainage systems where debris and sedimentation occurs to guide and prioritize future patrols.

Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose of this treatment is to remove hazards from the road and prevent failure of drainage systems. If this treatment is not completed after each significant rainfall event, the effects will compound until there is a significant failure of infrastructure which also poses a threat to human life. If done correctly and routinely, the storm patrol treatment will prevent significant financial impacts due to the loss of infrastructure or human life.

Treatment Reasonableness and Cost Effectiveness: The storm patrol treatment will prevent the compounding effects of storms that impact this region frequently during the winter rainy season. These initial costs will be insignificant compared to the costs of major road repair/replacement resulting from the lack of maintenance following storms.

Treatment Effectiveness Monitoring Proposed: The storm patrol will verify that the work has been completed and the infrastructure is ready for the next rain event. Storm patrols can also recommend changes to, or additional treatment, in the first year after the fire.

Treatment consistent with Agency Land Management Plan (identify which plan): The treatment is consistent with the Foundation Plan for Point Reyes National Seashore, 2006.

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Storm Patrol Assessors: (WG-06 @ \$250/day X 1 team of 2 people X 8 events X 3 years)	1	\$12,000.00	\$12,000.00
+ -	Storm Patrol Leader: (WG-07 @ \$350/day X 4 days X 3 years)	1	\$4,200.00	\$4,200.00
+ -	Operator (excavator, dump truck): (WG-10 @ \$55/hour X 16 hours X 2 operators X 2 events X 3 years)	1	\$10,560.00	\$10,560.00
TOTAL PERSONNEL SERVICE COSTS				\$26,760.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	Excavator @ \$140/hour X 16 hours X 2 events X 3 years	1	\$13,440.00	\$13,440.00
+ -	10-wheel, 10-yard Dump Truck @ \$150/hour X 16 hours X 2 events X 3 years	1	\$14,400.00	\$14,400.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$27,840.00
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL MATERIALS AND SUPPLY COSTS				
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	4WD pickup (Assessors) @ \$70/day X 1 day X 8 events X 3 years	1	\$1,680.00	\$1,680.00
+ -	4WD pickup (Leader) @ \$70/day X 4 days X 3 years	1	\$840.00	\$840.00
TOTAL TRAVEL COSTS				\$2,520.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	09/30/2021	F	Each	\$2,380.00	8	\$19,040.00
+ -	2022	10/01/2021	09/30/2022	F	Each	\$2,380.00	8	\$19,040.00
	SUMMARY COST TOTAL							\$57,120.00

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2023	10/01/2022	09/30/2023	F	Each	\$2,380.00	8	\$19,040.00
	SUMMARY COST TOTAL							\$57,120.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$57,120.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ T	E C	M F
2.	Documented cost figures from similar project work obtained from local agency sources.	☒ P ☐ T	☒ E C	M F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ T	E C	M F
4.	Estimates based upon government wage rates and material cost.	☒ P ☒ T	E C	M F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ T	E C	M F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Woody Debris Removal	PART E SPECIFICATION #	ES-4
NFPORS TREATMENT CATEGORY*	Riparian	FISCAL YEAR(S) (list each year):	FY21
NFPORS TREATMENT TYPE*	Channel Debris Removal	WUI? Y/N	
IMPACTED COMMUNITIES AT RISK	Point Reyes National Seashore	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Most of the Point Reyes National Seashore portion of the Bear Valley Creek watershed was burned by the Woodward Fire. Bear Valley Creek is the largest watershed within the fire and therefore sees the highest flows. The BARC map, which represents burn severity within a fire, shows that Bear Valley Creek saw mostly low severity burns. Most of the canopy and much of the vegetation remain intact and will continue to provide rainfall catchment which will limit and delay runoff. Because of the low-intensity burns, pre- and post-fire models show that the increase in runoff and sedimentation are not expected to be significant; about 18% for a 25-year storm. All of the culverts in the Bear Valley Creek watershed, along the main channel of Bear Valley Creek and on several small tributaries to Bear Creek along Limantour Road, should be able to handle the amount of water without issue as long as they remain functional and efficient. Erosion is persistent throughout the Park, so sediment yield will be an issue as it always has. While the increases in runoff and sediment movement are not expected to be significant, there is still a threat to the road drainage systems. There is floatable, woody debris that is in or will make its way into the stream channel. This debris in the channel will be mobilized and can block culverts. Blocked or plugged culverts cause water to pool and ultimately flow across/down the road surface causing damage and/or failure of the culvert and the road. To mitigate this problem, all floatable debris within the channel or that can fall into the channel must be removed. Location/ (Suitable) Sites: Floatable, woody debris within the stream channel or that could make their way into the stream channel along Bear Valley Trail (on both sides of Divide Meadow) and within the culvert catchment basins along Liomantour Road below the burned drainages. Design/Construction Specifications: All floatable, woody debris must be removed from the stream channel and banks. Depending on its size, the woody debris can be chipped or hauled offsite. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose of this treatment is to remove floatable, woody debris that could disrupt the functionality of road drainage systems. Treatment Reasonableness and Cost Effectiveness: Removing problematic floating debris is relatively inexpensive, especially when compared to the cost of repairing damage to culverts and roads or complete road failure. Treatment Effectiveness Monitoring Proposed: At the completion of the woody debris removal, a designee of the implementation leader will inspect the identified areas to insure the areas have been cleared of all woody debris that poses a threat to the drainage system. Treatment consistent with Agency Land Management Plan (identify which plan): This treatment is consistent with the Foundation Plan for Point Reyes National Seashore, 2006.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Operator: WG-10 @ \$55/hour X 64 hours X 2 operators (transport, dozer, grader, compactor)	1	\$7,040.00	\$7,040.00
TOTAL PERSONNEL SERVICE COSTS				\$7,040.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	Excavator @ \$140/hour X 64 hours	1	\$8,960.00	\$8,960.00
+ -	10-wheel, 10-yard dump truck @ \$150/hour X 64 hours	1	\$9,600.00	\$9,600.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$18,560.00

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL MATERIALS AND SUPPLY COSTS				
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	4WD pickup (project supervisor) @ \$70/day C 8 days	1	\$560.00	\$560.00
TOTAL TRAVEL COSTS				\$560.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	12/01/2020	F	each	\$26,160.00	1	\$26,160.00
	SUMMARY COST TOTAL							\$26,160.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$26,160.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☒ E M ☐ T C F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P E M ☐ T C F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P E M ☐ T C F
4.	Estimates based upon government wage rates and material cost.	☒ P E M ☒ T C F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P E M ☐ T C F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

See Appendix map. Estimates of cost for equipment were received from Hertz Rental through their Park contract.

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Invasive Plants	PART E SPECIFICATION #	ES-5
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	FY21
NFPORS TREATMENT TYPE*	Noxious Weed Detection	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Northern Spotted Owl

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Invasive plant control and associated surveying and monitoring in areas impacted by the Woodward Fire.

Location/ (Suitable) Sites: Primary focus will be the west side of the fire in and around Santa Maria drainage (coastal scrub; more burn severity; more likely to become inaccessible once scrub regrows; historically more invaded by high-priority invasive plant species; has steepest hand and dozer lines). Additional targeted surveys and treatments as necessary will focus on other areas impacted by fire suppression, especially dozer lines and areas used for staging and ICPs. Surveys for new encroaching weeds will be conducted along main trails that could be vectors (Coast, Sky, Bear Valley). Surveys and treatments as needed will be conducted where retardant was dropped, especially early in the season.

Design/Construction Specifications: Park standard environmental mitigations and BMPs required for work around special status species and critical habitat will be followed during all treatments. All chemical treatments will be approved through the IRMA Pesticide Use Permit system, overseen by applicators certified by the California Department of Pesticide Regulation, and subject to strict weather-related restrictions.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Surveys and treatments are needed to locate and stop any establishment or spread of priority invasive species in burned areas cleared or otherwise altered during fire suppression. Targeted monitoring will be implemented to document vegetation response following fire.

Treatment Reasonableness and Cost Effectiveness: Teams of 2-3 seasonal technicians have been used to safely and cost-efficiently document and treat invasive plants in previous PORE projects, particularly in remote wilderness areas with challenging terrain. Through an existing cooperative agreement, we will employ a restoration crew with extensive local experience working in sensitive habitats and certified as qualified pesticide applicators. This cost-effective crew will be employed for weed control that needs to be implemented early in the season, prior to regrowth of dense scrub vegetation, possibly before the seasonal staff's EOD, and while infestations are still small enough for a mid-sized crew to treat efficiently but may require a concentrated focus that could be quickly carried out by 2 or 3 seasonal technicians.

Treatment Effectiveness Monitoring Proposed: Photo points and vegetation composition plots will be established in a sample representative of plant communities, burn severity levels, and degree of impacts expected. Requested NPS staff will document all invasive plant infestations of concern spatially and work conducted will be recorded in PORE's Exotics database, so that costs and output can be tracked. A representative sample of treated infestations will be selected for post-treatment monitoring. PORE's permanent vegetation staff will oversee the design, implementation, and analysis of monitoring. An accomplishment will be provided at the end of the fiscal year. It will contain monitoring data and a report on treatment efficacy.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes NS Exotic Plant Management Plan; Point Reyes NS Foundation Document (2020)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	GS-09-01 Vegetation Biologist, 11PPs @ \$3230/PP	11	\$3,230.00	\$35,530.00
+ -	GS-11-7 Restoration Biologist 2 PPs @ \$4860/PP	2	\$4,860.00	\$9,720.00
+ -	GS-07-10 Lead Fire Effects Monitor, 1 PP @ \$3420/PP	1	\$3,420.00	\$3,420.00
+ -	GS-12-8 Supervisory Plant Ecologist, 1 PP @ \$5770/PP	1	\$5,770.00	\$5,770.00
+ -	GS-05-01 Biological Science Technician (2.5 positions), 5 PPs each @ 2130/PP	12.5	\$2,130.00	\$26,625.00
TOTAL PERSONNEL SERVICE COSTS				\$81,065.00

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	4WD truck, GSA, monthly lease + mileage @ \$275/month	5	\$275.00	\$1,375.00
+ -	SPOT tracker annual license @ \$225	1	\$225.00	\$225.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$1,600.00
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Herbicide (Round-up Custom, 2.5-gal jug) @ \$90/jug	2	\$90.00	\$180.00
+ -	Herbicide (Habitat, 2.5-gal jug) @ \$300/jug	1	\$300.00	\$300.00
+ -	Surfactant (Competitor, 2.5-gal jug) @ \$110/jug	2	\$110.00	\$220.00
+ -	Set of manual weed removal tools (Pulaski, lopper, hand pick, hand clippers) for field staff @ \$230	3	\$230.00	\$690.00
+ -	Field backpack @ \$150/backpack	2	\$150.00	\$300.00
+ -	SPOT GPS satellite messenger @ \$150	1	\$150.00	\$150.00
TOTAL MATERIALS AND SUPPLY COSTS				\$1,840.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Golden Gate National Parks Conservancy restoration crew, 10-hr crew day with 5 people @ \$2250	1	\$2,250.00	\$2,250.00
TOTAL CONTRACT COSTS				\$2,250.00

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
	SPECIFICATION TOTAL							\$86,755.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	E	M
		☐ T	C	F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	☒ E	☒ M
		☐ T	☒ C	F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	E	M
		☐ T	C	F
4.	Estimates based upon government wage rates and material cost.	☒ P	E	M
		☐ T	C	F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	E	M
		☐ T	C	F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

See Appendix Maps

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Increased Agency Presence	PART E SPECIFICATION #	ES-6
NFPORS TREATMENT CATEGORY*	Monitoring	FISCAL YEAR(S) (list each year):	FY21
NFPORS TREATMENT TYPE*	Treatment Effectiveness Monitoring	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: The Woodward Fire burned in an area of very high visitor use in the park. The park annually receives almost 2.5 million visitors/year, with high usage spread out throughout all 12 months. The areas of highest visitor use include the Bear Valley trail and Limantour road, both areas that include access to many trails, including 23 miles of trails that burned in the fire. Public use of these facilities has been extraordinarily high during the COVID pandemic, and the curiosity of a fire will again draw many visitors to and into the fire, if they are permitted. Public safety hazards are high from hazard trees, burned root/stump holes, etc, and potential impacts to natural and cultural resources from social trails, looting, etc are high in the open, burned landscape. An increased agency presence and signage is needed to address these concerns, to include Law Enforcement rangers, Traffic Control Aides, and a Visual Information Specialist (VIS).

Location/ (Suitable) Sites: Limantour Road; Bear Valley Creek trail; trailheads and road pullouts along the fire perimeter; particular emphasis at the Bear Valley Visitor Center.

Design/Construction Specifications: NPS staff will be supervised by existing staff supervisors well familiar with park operations and visitor management. Signs and barricades will be according to NPS sign standards and of sturdy materials.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Increased agency presence has proven to be an effective method for managing visitors for their own safety and to protect potentially vulnerable park resources, natural and cultural. Traffic Control Aides will be strategically located to interact with the public in primary access locations, and coupled with the Visual Information Specialist, will provide direct visitor contact. The VIS will also produce considerable content for social media and monitor/respond to interactions and inquiries about the fire, post-fire effects, etc.

Treatment Reasonableness and Cost Effectiveness: NPS staff will interact directly with the public where access issues might occur; an online presence will reach a much greater audience. Law Enforcement rangers provide the opportunity to directly address negative interactions or illegal activity/entry into the burned area.

Treatment Effectiveness Monitoring Proposed: NPS supervisors will oversee all these activities; evaluation of success/difficulties will be addressed on a routine basis.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes National Seashore Foundation Document (2020).

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Visual Information Specialist, GS-7/1: 13 PP @ \$2070/PP FY21	13	\$2,070.00	\$26,910.00
+ -	Law Enforcement Ranger, GL-5 seasonal: 13 PP @ \$2402/PP + 120 training hours FY21	14.5	\$2,402.00	\$34,829.00
+ -	Law Enforcement Ranger, GL-7 seasonal: 13 PP @ \$2758/PP + 80 training hours FY21	14	\$2,758.00	\$38,612.00
+ -	Park Ranger GL-9, Career Seasonal, 5 PP @ \$4234/PP FY21	5	\$4,234.00	\$21,170.00
+ -	GS-4 Traffic Control Aides, 2 positions, \$1039/PP x 13 PP each FY21	26	\$1,039.00	\$27,014.00
+ -				
TOTAL PERSONNEL SERVICE COSTS				\$148,535.00

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Road and trail barricades to indicate closures and prevent access FY21	12	\$56.75	\$681.00
+ -	Material and supplies for Visual Information Specialist FY21	1	\$500.00	\$500.00
+ -	Metal area closed signs + sign posts/materials - \$30/each x 20 sets FY21	20	\$30.00	\$600.00
+ -	Signboards, poster paper/materials FY21	1	\$1,675.00	\$1,675.00
TOTAL MATERIALS AND SUPPLY COSTS				\$3,456.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	21	10/04/2020	06/05/2021	F	1	\$151,991.00	1	\$151,991.00
	SUMMARY COST TOTAL							\$151,991.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$151,991.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	☐ E	☐ M
			☐ C	☐ F

	☐ T
--	----------------------------

4.	Estimates based upon government wage rates and material cost.	☒ P	E	☒ M
		☐ T	C	F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	E	M
		☐ T	C	F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Cultural Site Stabilization	PART E SPECIFICATION #	ES 7
NFPORS TREATMENT CATEGORY*	Cultural and Heritage Resources	FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE*	Protect Cultural/Heritage Sites	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	Point Reyes National Seashore	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Site CA-MRN-280 is a small shell midden, known to contain burials. It is located on a small low terrace near the mouth of Santa Maria Creek. That portion of the creek has meandered over time and now flows adjacent to the toe of the cut bank, causing erosion and destabilization. The cut bank is fairly steep and continued erosion will likely result in a slump failure which would ultimately result in the total loss of a high value cultural resource. To prevent a slump failure, an erosion control measure is needed to stabilize the cut bank. As this site is located in a national park designated as wilderness, options for erosion control structures are limited to avoid being obviously man-made and using non-native materials. Another consideration is that the work must be completed with hand tools because of the remote nature of the site. It was determined that the best option is to construct a living wall that will provide the erosion control needed while utilizing native source material and ultimately appear to be a natural feature in the landscape.

Location/ (Suitable) Sites: Site CA-MRN-280 is located approximately 300 feet above the mouth of Santa Maria Creek.

Design/Construction Specifications: The live willow wall should be built between two large alder trees that anchor the upstream and downstream edges of the site. The distance between the alders is about 40 feet. Large willow "posts" (made from cuttings) measuring 2-4 inches in diameter and 3 feet long must be found and cut. There is a willow tree in the drainage, roughly 300 feet upstream. The posts should be as straight as possible, and driven vertically into the toe of the bank slope, ideally to a depth of at least 1 foot and up to 2 feet. The extreme end posts should flank the alders in a way that the alders will protect the posts from flowing water. The posts should be spaced 18-24 inches apart. Another row of smaller cuttings, should be driven in a row, about 3 feet up the bank. These cuttings should be placed every 14 inches for the length of the bank. This second row will add additional root structure to the bank slope. Willow branches should then be woven tightly between the large posts from the base to within 6 inches of the top of the posts. This will create a wall that should keep erosive energy of the water off of the slope.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Post-fire runoff is expected to exacerbate the already significant erosion problem occurring at site CA-MRN-280. A live willow wall will protect the site against the increased potential for a slump failure of the bank.

Treatment Reasonableness and Cost Effectiveness: There are few options to stabilize the embankment that can be completed by hand. Of those options, most involve obviously man-made structures, some even non-native materials. A willow wall would take native source material from within the drainage or adjacent drainage and be placed in such a way as to look natural while providing the desired stabilization of the bank.

Treatment Effectiveness Monitoring Proposed: A willow wall uses material cut from willow trees and formed into a protective structure with the goal of the willows re-establishing and forming a stable, rooted wall of living material. The willow posts should sprout within a month of being placed. The wall should be inspected monthly for the first four months to ensure the willow posts have sprouted. Any posts that have not sprouted should be replaced to ensure a continuous wall of living vegetation.

Treatment consistent with Agency Land Management Plan (identify which plan):

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	WG-7 @ \$2780/PP X .3 PP X 3 person crew	3	\$834.00	\$2,502.00
TOTAL PERSONNEL SERVICE COSTS				\$2,502.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Miscellaneous supplies (saw gas, mix oil, bar oil, spare chain) @ \$150 X 1 FY	1	\$150.00	\$150.00
TOTAL MATERIALS AND SUPPLY COSTS				\$150.00

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	12/01/2020	F	Each	\$2,652.00	1	\$2,652.00
	SUMMARY COST TOTAL							\$2,652.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$2,652.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	E	M
		☐ T	C	F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	E	M
		☐ T	C	F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	E	M
		☐ T	C	F
4.	Estimates based upon government wage rates and material cost.	☒ P	E	☒ M
		☐ T	C	F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	E	M
		☐ T	C	F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

Appendix - See Map

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Hazard Tree Surveillance	PART E SPECIFICATION #	ES-8
NFPORS TREATMENT CATEGORY*	Human Life and Safety	FISCAL YEAR(S) (list each year):	FY21, FY22, FY23
NFPORS TREATMENT TYPE*	Hazard Removal – Other	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	Point Reyes National Seashore	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Survey Limantour Road, Park trails, and Sky Camp for tree hazards that are threats to life and property. The principal tree species of concern: Douglas-fir, Red Alder and California bay laurel. None of the trails in designated wilderness were assessed for hazards, thus surveillance and mitigation will be necessary for the trails crew to safely access and work on trails repair prior to opening to visitors as well as delayed mortality along Limantour Road and Bear Valley trail corridor. There are approximately 23 miles of trails in designated wilderness.

Location/ (Suitable) Sites: Tree hazards identified during the BAER assessment have been identified and mitigated along Limantour Road and Bear Valley trail corridor. Hazards due to delayed tree mortality from fire may occur along these locations: Limantour Road, Bear Valley Trail, Sky Camp, and 23 miles of trails in designated wilderness and require identification and mitigation.

Design/Construction Specifications: Tree hazards at these locations will be surveyed using experienced Foresters or arborists from NPS tree crews. Tree hazards will be identified as: any tree killed outright by the fire, trees with significant crown or bole scorch, trees with cracks, cat faces, broken limbs, or severe lean towards the target as a result of fire damage. Hazard trees will be marked with blue paint for mitigation.

Purpose of Treatment Specifications (relate to damage/change caused by fire): This treatment will identify and mitigate tree hazards due to delayed mortality and damage caused by the fire beyond those identified as imminent and mitigated in the preliminary BAER surveys.

Treatment Reasonableness and Cost Effectiveness: This treatment addresses the human-safety related tree hazards along the non-designated wilderness corridors for public access as well as those in designated wilderness where they impact the activities of trail crew staff doing post fire repairs. Having experienced NPS foresters/arborists is more cost effective than contracting out the assessments due to the high cost of contracting private foresters or arborists.

Treatment Effectiveness Monitoring Proposed: The Implementation Leader will oversee the surveillance effort with the Forester/arborist directing mitigation operations with felling crew.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes National Seashore Foundation Document 2020; Operational Strategy for the Fire Management Plan, 2006 Point Reyes National Seashore.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	GS-9-5 + 35% (benefit rate) Forester / arborist 1 pay period @ \$3914/pp FY21	1	\$3,914.00	\$3,914.00
+ -	Contract Falling crew, Hotshot crew for Los Padres NF, 1 -8 day tour @ \$7210/pp FY21	1	\$7,210.00	\$7,210.00
+ -	GS-9-5 + 35% (benefit rate) Forester / arborist 1 pay period @ \$4031/pp FY22	1	\$4,031.00	\$4,031.00
+ -	Contract Falling crew, Hotshot crew for Los Padres NF, 1 -8 day tour @ \$7426/pp FY22	1	\$7,426.00	\$7,426.00
+ -	GS-9-5 + 35% (benefit rate) Forester / arborist 1 pay period @ \$4152/pp FY23	1	\$4,152.00	\$4,152.00
+ -	Contract Falling crew, Hotshot crew for Los Padres NF, 1 -8 day tour @ \$7649/pp FY23	1	\$7,649.00	\$7,649.00
TOTAL PERSONNEL SERVICE COSTS				\$34,382.00

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Miscellaneous supplies (saw gas, mix oil, bar oil, spare chain, gloves, flagging) \$500 FY21	1	\$500.00	\$500.00
+ -	Miscellaneous supplies (saw gas, mix oil, bar oil, spare chain, gloves, flagging) \$515 FY22	1	\$515.00	\$515.00
+ -	Miscellaneous supplies (saw gas, mix oil, bar oil, spare chain, gloves, flagging) \$530 FY23	1	\$530.00	\$530.00
TOTAL MATERIALS AND SUPPLY COSTS				\$1,545.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Crew (3 individuals) @ \$267 day x 8 days x 1 FY (FY21) = \$6408	1	\$6,408.00	\$6,408.00
+ -	Transportation @ \$.575/mile x 560 miles x 1 FY (FY21) = \$322.	1	\$322.00	\$322.00
+ -	Crew (3 individuals) @ \$275 day x 8 days x 1 FY (FY22) = \$6600.	1	\$6,600.00	\$6,600.00
+ -	Transportation @ \$.60/mile x 560 miles x 1 FY (FY22) = \$336	1	\$336.00	\$336.00
+ -	Crew (3 individuals) @ \$284 day x 8 days x 1 FY (FY23) = \$6816	1	\$6,816.00	\$6,816.00
+ -	Transportation @ \$.62/mile x 560 miles x 1 FY (FY23) = \$348.	1	\$348.00	\$348.00
TOTAL TRAVEL COSTS				\$20,830.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	23	10/01/2022	09/30/2023	F	Each	\$19,495.00	1	\$19,495.00
	SUMMARY COST TOTAL							\$56,757.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$56,757.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ T	E C	M F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ T	E C	☒ M F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ T	E C	M F
4.	Estimates based upon government wage rates and material cost.	☐ P ☐ T	E C	M ☒ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ T	E C	M F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

See Appendix Treatment Map

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Trails Repair	PART E SPECIFICATION #	ES-9
NFPORS TREATMENT CATEGORY*	Asset Repair and Replacement	FISCAL YEAR(S) (list each year):	FY21
NFPORS TREATMENT TYPE*	Repair Minor Trail Asset	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Roughly 23 miles of trails burned over in the Woodward Fire. These trails are highly popular visitor use facilities in a park that receives 2.5 million visitors, and these trails provide a recreational outlet in this near-urban park. Significantly, visitor use is high in virtually every month of the year, and trail use is high during every month of the year. Nearly 400 water drains exist in these 23 miles of trail, and expected increases in soil erosion requires they be cleaned ahead of and during the fall/winter precipitation events. Additionally, there is now considerable burned material lying across the trails that will need to be cleared ahead of visitor use or considerable social trailing and related impacts will occur as visitors move around this material. Although most trails are in designated wilderness, some amount of hazard tree work will be necessary to remove the obvious, precarious trees along these trails. Heavier amounts of windfall post-fire are expected as winter storms pass through the park.

Location/ (Suitable) Sites: Bear Valley Trail, Coast Trail, and all other trails within the burn perimeter - 23 miles of trail in total.

Design/Construction Specifications: Clean water drains before winter storms set in; remove burned debris from trails; fall obvious and precarious hazard trees/limbs prior to visitor use.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Cleaning and maintaining water drains is one of the most important trail maintenance tasks to protect the trail asset, and with burned slopes above the trails there will be increased material passing along trails - getting it off the trail as quickly as possible is essential. Burned material must be removed from trails to allow safe passage and prevent social trailing around the material. Those hazard trees/limbs that are extremely precarious need to be removed before visitors are allowed on trails to ensure visitor safety.

Treatment Reasonableness and Cost Effectiveness: Seasonal trail crew workers are both trained in local trail maintenance practices and cost effective compared to the local community.

Treatment Effectiveness Monitoring Proposed: Trail workers will revisit various trails on a periodic basis to ensure drains remain clear and trees and woody debris are removed from trails.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes National Seashore Foundation Document (2020)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Trails Maintenance Worker, WG-5/3, \$2250/PP, 9 PP FY21	9	\$2,250.00	\$20,250.00
+ -	Trails Maintenance Worker, WG-5/2, \$2165/PP, 9 PP FY21	9	\$2,165.00	\$19,485.00
TOTAL PERSONNEL SERVICE COSTS				\$39,735.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Miscellaneous supplies (hand tools, saw gas/oil) FY21	1	\$745.00	\$745.00
TOTAL MATERIALS AND SUPPLY COSTS				\$745.00

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	21	10/01/2020	12/12/2020	F	trail miles	\$1,760.00	23	\$40,480.00
	SUMMARY COST TOTAL							\$40,480.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$40,480.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ T	E C	M F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ T	E C	M F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ T	E C	M F
4.	Estimates based upon government wage rates and material cost.	☒ P ☐ T	E C	☒ M F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ T	E C	M F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Invasive Plants	PART E SPECIFICATION #	BAR-1
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	FY21, FY22, FY23
NFPORS TREATMENT TYPE*	Noxious Weed Detection	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	Point Reyes National Seashore	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Invasive plant control and associated surveying and monitoring in areas impacted by the Woodward Fire, to be conducted in beginning September 2021, and continuing through FY23. Costs associated with work in FY22 and FY23 will be determined based on findings in FY21.

Location/ (Suitable) Sites: Primary focus will be the west side of the fire in and around Santa. Maria drainage (coastal scrub; more burn severity; more likely to become inaccessible once scrub regrows; historically more invaded by high-priority invasive plant species; has steepest hand and dozer lines). Additional targeted surveys and treatments as necessary will focus on other areas impacted by fire suppression, especially dozer lines and areas used for staging and ICPs. Term and seasonal staff will work throughout the burn area to conduct necessary later-season surveys and weed treatments, while the contracted crew will conduct treatment of the largest, most problematic infestations mapped and assessed during the earlier-season BAER-funded work.

Design/Construction Specifications: Park standard environmental mitigations and BMPs required for work around special status species and critical habitat will be followed during all treatments. All chemical treatments will be approved through the IRMA Pesticide Use Permit system, overseen by applicators certified by the California Department of Pesticide Regulation, and subject to strict weather-related restrictions. Assessment of safety records and experience protecting sensitive habitat will be considered in bid evaluations.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Surveys and treatments are needed to locate and stop any establishment or spread of priority invasive species in burned areas or areas cleared or otherwise altered during fire suppression. Targeted monitoring will be implemented to document vegetation response following fire.

Treatment Reasonableness and Cost Effectiveness: Teams of 2-3 seasonal technicians have been used to safely and cost-efficiently document and treat invasive plants in previous PORE projects, particularly in remote wilderness areas with challenging terrain. Estimated contractor costs reflect the prevailing wages in Marin County and the impact of PORE's remote location and extensive environmental protections on bid prices. PORE has experience with and will seek bids from professional companies that have experience working in challenging site conditions to implement treatments that are likely to require specialized skills (e.g. safe chainsaw use; herbicide application in steep and environmentally sensitive sites; and possibly use of ropes to put personnel on target plants safely).

Treatment Effectiveness Monitoring Proposed: Photo points and vegetation composition plots will be established in a sample representative of plant communities, burn severity levels, and degree of impacts expected. Requested NPS staff will document all invasive plant infestations of concern spatially and work conducted will be recorded in PORE'S Exotics database, so that costs and output can be tracked. A representative sample of treated infestations will be selected for post-treatment monitoring. PORE's permanent vegetation staff will oversee the design, implementation, and analysis of monitoring.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes NS Exotic Plant Management Plan; Point Reyes NS Foundation Document (2020).

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	FY21: GS-09-01 Vegetation Biologist, 2 PPs BAR @ \$3230/PP	2	\$3,230.00	\$6,460.00
+ -	FY21: GS-05-01 Biological Science Technician 2.5, 2 PPs @ \$2130/PP	5	\$2,130.00	\$10,650.00
+ -	FY22: TBD			
+ -	FY23: TBD			
TOTAL PERSONNEL SERVICE COSTS				\$17,110.00

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	FY21: Lease 4WD truck, GSA monthly lease + mileage @ \$275/mo. X 1 mo.	1	\$275.00	\$275.00
+ -	FY22: TBD			
+ -	FY23: TBD			
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$275.00
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL MATERIALS AND SUPPLY COSTS				
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	FY21: Professional restoration/weed mgt. 5 person crew @ \$60/hr X 10 crew days	400	\$60.00	\$24,000.00
+ -	FY22: TBD			
+ -	FY23: TBD			
TOTAL CONTRACT COSTS				\$24,000.00

[illegible]

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
	SPECIFICATION TOTAL							\$41,385.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	E	M
		☐ T	C	F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	☒ E	M
		☐ T	☒ C	F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	E	M
		☐ T	C	F
4.	Estimates based upon government wage rates and material cost.	☒ P	E	M
		☐ T	C	F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	E	M
		☐ T	C	F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

Appendix - See Maps

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Trails Repair/Infrastructure Replacement	PART E SPECIFICATION #	BAR-2
NFPORS TREATMENT CATEGORY*	Asset Repair and Replacement	FISCAL YEAR(S) (list each year):	FY21, FY22, FY23
NFPORS TREATMENT TYPE*	Repair Minor Trail Asset	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Roughly 23 miles of trails burned over in the Woodward Fire. These trails are highly popular visitor use facilities in a park that receives 2.5 million visitors, and these trails provide a recreational outlet in this near-urban park. Significantly, visitor use is high in virtually every month of the year, and trail use is high during every month of the year. Nearly 400 water drains exist in these 23 miles of trail, and expected increases in soil erosion requires they be cleaned ahead of and during the fall/winter precipitation events. Heavier amounts of windfall of fire-killed trees will occur for the next several years, and increased amounts of sediment will need to be routed off of trails through frequent drain maintenance. Several trail structures that were burned in the fire - 2 trails bridges, all or part of 2 retaining walls, 2 picnic tables in Sky Camp, and 50' of burned fence at Kule Loklo village will be replaced.

Location/ (Suitable) Sites: Bear Valley Trail, Coast Trail, Woodward Trail, and all other trails within the burn perimeter - 23 miles of trail in total; Sky Camp; Kule Loklo village replica.

Design/Construction Specifications: Increased out-year trails maintenance will involve the need to clean water drains before winter storms set in; remove burned debris from trails; remove windfallen trees. Replace Secret Creek and Santa Maria Creek bridges; replace burned retaining walls on Woodward Trail; replace burned picnic tables at Sky Camp; replace burned wood fencing at Kule Loklo village replica.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Cleaning and maintaining water drains is one of the most important trail maintenance tasks to protect the trail asset, and with burned slopes above the trails there will be increased material passing along trails - getting it off the trail as quickly as possible is essential. Increased windfallen trees need to be removed promptly to prevent social trailering that occurs when visitors go off-trail to get around them. The two burned bridges need to be replaced both to enable safe passage across creeks and also to prevent damage to the streambanks that would occur (especially by horses) by trampling of the soft soils on banks. The retaining walls hold the trail tread in place in narrow sections of the Woodward Trail. The picnic tables concentrate visitor use in small designated campsites, and the burned fencing provides a barrier structure that defines the village replica boundary.

Treatment Reasonableness and Cost Effectiveness: Seasonal trail crew workers are both trained in local trail maintenance practices and cost effective compared to the local community.

Treatment Effectiveness Monitoring Proposed: Trail workers will revisit various trails on a periodic basis to ensure drains remain clear and trees and woody debris are removed from trails. Bridges will be replaced in kind and according to NPS standards, and will be inspected by the Trails Supervisor and his trail leaders.

Treatment consistent with Agency Land Management Plan (identify which plan): Point Reyes National Seashore Foundation Document (2020)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	Trails Maint. Worker - drainage and trees, three WG-5/2, \$2165/PP, 3 PP/ea = 9 PP FY21	9	\$2,165.00	\$19,485.00
+ -	Trails Maint. Worker - 2 bridges, 2 retaining walls, Kule Loklo fencing: three WG-5/2, \$2165/PP, 4.8 PP/ea = 14.4 PP FY21	14.4	\$2,165.00	\$31,176.00
+ -	Trails Maint. Worker - out-year drainage and trees, three WG-5/2, \$2230/PP, 6 PP/ea = 18PP FY22	18	\$2,230.00	\$40,140.00
+ -	Trails Maint. Worker - out-year drainage and trees, three WG-5/2, \$2300/PP, 6 PP/ea = 18PP FY23	18	\$2,300.00	\$41,400.00
+ -				
TOTAL PERSONNEL SERVICE COSTS				\$132,201.00

EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Secret Creek Bridge materials: Glue lam beams, decking, rails, hardware - 30' bridge FY21	1	\$4,950.00	\$4,950.00
+ -	Santa Maria Creek Bridge materials: Glue lam beams, decking, rails, hardware - 30' bridge FY21	1	\$4,950.00	\$4,950.00
+ -	Woodward Trail, 2 retaining walls: 6"x6" posts; 3" x 12' planks; hardware FY21	1	\$2,400.00	\$2,400.00
+ -	Replace 2 picnic tables for Sky Camp, \$500/ea FY21	2	\$500.00	\$1,000.00
+ -	Replace 50' burned wooden fencing: 10 upright posts, 18 10'-length planks FY21	1	\$534.00	\$534.00
TOTAL MATERIALS AND SUPPLY COSTS				\$13,834.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -				
TOTAL CONTRACT COSTS				

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
	SPECIFICATION TOTAL							\$146,035.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P	E	M
		☐ T	C	F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P	E	M
		☐ T	C	F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P	E	M
		☐ T	C	F
4.	Estimates based upon government wage rates and material cost.	☒ P	E	☒ M
		☐ T	C	F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	E	M
		☐ T	C	F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

Woodward Fire
Emergency Stabilization and Rehabilitation Plan

Appendix

APPENDIX A

Environmental Compliance

WOODWARD FIRE POST-FIRE RESPONSE PLAN

Point Reyes National Seashore

Environmental Compliance Considerations and Documentation

A. Federal Environmental Compliance Responsibilities

All projects proposed in the Woodward Fire Post-Fire Response Plan, which includes recommendations for Burned Area Emergency Response (BAER) and Burned Area Rehabilitation (BAR) mitigation actions, that are prescribed, funded, or implemented on park lands are subject to compliance with the *National Environmental Policy Act* (NEPA) in accordance with the guidelines provided by the *Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)*. This Appendix documents the BAER Team considerations of NEPA compliance requirements for prescribed emergency stabilization, rehabilitation and monitoring actions described in this plan for NPS lands affected by the Woodward Fire, Point Reyes National Seashore, California.

This plan identifies specific emergency stabilization, rehabilitation, and monitoring actions and recommendations designed to mitigate damages to resources as a result of the Woodward Fire and associated fire suppression activities. The park must complete separate NEPA analyses and compliance for fire response activities not addressed in this plan.

Agency Specific Guidance: This NEPA documentation has been developed in accordance with National Park Service specific guidelines. Emergency stabilization and rehabilitation actions proposed on National Park Service lands, involving the agencies permitting, funding, or implementation, must comply with regulations set forth in the *Department of the Interior Manual Part 516 (DM 12)*.

B. Related Plans and Cumulative Impacts Analysis

Point Reyes National Seashore Foundation Document, 2020. This parkwide plan provides a broad overview of the park purpose, significance, and fundamental values that underpin the broad goals of ecosystem management and resource preservation for the Seashore.

Operational Strategy for the Fire Management Plan for Point Reyes National Seashore and Northern Lands of Golden Gate National Recreation Area, 2006. This document 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 the Seashore and the 19,265 acres in the northern district of Golden Gate National Recreation Area (GGNRA) that is managed by the Seashore through an agreement with Golden Gate. This plan covers all elements necessary for a typical unit fire management plan, but also speaks at length about the need and expectations for BAER and BAR planning following a significant fire incident on these NPS lands.

Cumulative Impact Analysis: The emergency stabilization and rehabilitation treatments for the Woodward Fire, as proposed in this plan, do not result in an intensity of impact (i.e., major ground disturbance, etc) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above park management plans and associated environmental compliance documents of the NPS, and categorical exclusions presented below.

No direct or indirect unavoidable adverse impacts to the biological or physical environment would result from the implementation of the Woodward Fire Post-Fire Response Plan.

Summary of Compliance Documentation Relevant to the Woodward Post-Fire Response Plan

The following table summarizes the existing NEPA or NHPA compliance in place for the BAER/BAR treatments proposed for the Woodward Fire. Several treatments may involve ground disturbance, may be near known cultural sites, or involve cultural site stabilization or repair and thus would require archeological/NHPA consultation.

Treatment or Action	NEPA documentation (EIS, EA, or Cat Ex)	Reference to Assessment	Findings of Significance
ES-1: BAER plan preparation	DO-12 CE: 3.3 G.1	N/A	No Significant Impact; NHPA No Potential to Cause Effect
ES-2: BAER Implementation Leader	DO-12 CE 3.2 A	N/A	No Significant Impact; NHPA No Potential to Cause Effect
ES-3: Storm Patrol	DO-12 CE: 3.3 G.1	Watershed	No Significant Impact; NHPA No Potential to Cause Effect
ES-4: Woody Debris Removal	DO-12 CE: 3.3 G.1	Watershed	No Significant Impact; NHPA No Potential to Cause Effect
ES-5: Invasive Plants	DO-12 CE: 3.3 E.2	Vegetation	No Significant Impact; NHPA No Potential to Cause Effect
ES-6: Increased Agency Presence	DO-12 CE: 3.3 C.5	Public Safety/Resource Protection	No Significant Impact; May require NHPA consultation (for sign installation, if ground disturbance)
ES-7: Cultural Site Stabilization	DO-12 CE: 3.3 G.1	Cultural	No Significant Impact; Will require NHPA consultation and tribal consultation
ES-8: Hazard Tree Surveillance and	DO-12 CE 3.2 E	Hazard Tree Assessment	No Significant Impact; NHPA No Potential to

Mitigation			Cause Effect
ES-9: Trails Repair	DO-12 CE 3.3 C.3; DO-12 CE: 3.3 G.1	Minor Facilities and Trails Assessment	No Significant Impact: May require NHPA consultation regarding ground disturbance
BAR-1: Invasive Plants	DO-12 CE: 3.3 E.2	Vegetation	No Significant Impact; NHPA No Potential to Cause Effect
BAR-2: Trails Repair and Infrastructure Replacement	DO-12 CE 3.3 C.3; DO-12 CE: 3.3 G.1	Minor Facilities and Trails Assessment	No Significant Impact: May require NHPA consultation regarding ground disturbance

Point Reyes National Seashore has numerous mitigations for work conducted within its boundaries; these mitigations and “best management practices” will be identified and applied as appropriate for any individual actions undertaken through the Woodward Fire Post-Fire Response Plan.

C. DOI EXCEPTIONS TO CATEGORICAL EXCLUSIONS

Council on Environmental Quality Regulations at 40 CFR 1508.4 require agencies to consider whether fairly routine actions involve extraordinary circumstances that, per NEPA, trigger an agency to prepare additional assessment and consideration. If it is determined that any of the exceptions listed in the table below apply to a proposed action, that action may not be categorically excluded, and an EA or an EIS must be prepared. The list below is a Department of the Interior list that applies to all DOI agencies (516 DM 2, Appendix 2); agencies often have additional items on their own list of Departmental exceptions, appendix 2). All treatments that are proposed as a Categorical Exclusion for Point Reyes National Seashore have been compared against the list of Extraordinary Circumstances listed below and were found not to trigger any exceptions.

Yes	No	Extraordinary Circumstance. Would this action...
	X	2.1 Have significant impacts on public health or safety?
	X	2.2 Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?
	X	2.3 Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)]?
	X	2.4 Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?

	X	2.5 Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?
	X	2.6 Have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects?
	X	2.7 Have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by either the bureau or office?
	X	2.8 Have significant impacts on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?
	X	2.9 Violate a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment?
	X	2.10 Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?
	X	2.11 Limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?
	X	2.12 Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?

D. Consultations

National Park Service:

- Paul Engel, Acting Cultural Resource Manager, Point Reyes National Seashore
- Dale Dualan, Environmental Protection Specialist, Point Reyes National Seashore
- David Press, Wildlife Biologist, Point Reyes National Seashore
- Brannon Ketcham, Management Assistant, Point Reyes National Seashore

All BAER and BAR treatments will be presented to Point Reyes compliance team for discussion of the recommended compliance requirements described above prior to initiation of any of the actions.

US Fish and Wildlife Service, National Historic Preservation Act, and tribal consultations:

Acting Cultural Resources Manager Paul Engel consulted with the CA State Historic Preservation Officer (SHPO) on August 21 and 26, 2020 regarding the active fire. Consultation with the SHPO will continue as part of this Post-Fire Response Plan effort, particularly for any treatments involving ground disturbance.

Acting Cultural Resources Manager Paul Engel contacted Buffy Mcquillen, Tribal Heritage Preservation Officer for the Federated Indians of Graton Rancheria, on numerous occasions during the fire and during

this Post-Fire Response Plan process, ranging from August 19, 2020 through Sept. 15, 2020. As with the SHPO, those consultations will continue.

On August 20, 2020 the park Wildlife Ecologist David Press contacted Leif Goude of the USFWS to inform him of the Woodward Fire and to discuss potential issues with Threatened and Endangered Species.

On August 21, 2020 the park Wildlife Ecologist David Press contacted Jodi Charrier of the NMFS to inform her of the Woodward Fire and to discuss potential issues with Threatened and Endangered Species.

CONCLUSION

I have reviewed the treatments in the Woodward Fire Post-Fire Response Plan in accordance with the criteria above. Those actions which require additional environmental review will be analyzed and appropriate NEPA and/or NHPA compliance completed before they can be implemented; those actions with approved existing compliance would not involve any significant environmental effect and are approved for initiation. Applicable park-identified mitigations will be applied to individual actions undertaken as part of this Plan. Point Reyes National Seashore staff will review the proposed projects identified in the Woodward Fire Post Fire Response Plan and coordinate to ensure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements.

Prepared by: Jack Oelfke, Woodward BAER Team Leader, September 18, 2020

CAREY

Digitally signed by CAREY
FEIERABEND

Approved: FEIERABEND Date: 2020.09.25 11:17:14 -07'00' Date: 9/25/2020

Acting Superintendent, Point Reyes National Seashore