BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[X] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[ ] 2. Interim Report
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Rey

B. Fire Number: CA-LPF-002809

C. State: CA

D. County: Santa Barbara

E. Region: 5

F. Forest: Los Padres National Forest

G. District: Santa Barbara Ranger District

H. Fire Incident Job Code: P5KMY416 (0507)

I. Date Fire Started: 8/16/2016

J. Date Fire Contained: not contained as of 9/14/16

K. Suppression Cost: 27 Million (approx.)

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 44.5
2. Fireline seeded (miles): 0
3. Other (identify): none

M. Watershed Number:

Watershed #	Watershed Name
180600100104	Indian Creek
180600100205	Lake Cachuma/Santa Cruz Bay
180600100105	Lower Mono Creek
180600100204	Middle Santa Cruz Creek
180600100106	Santa Ynez River/Gibraltar Reservoir
180600100202	Santa Ynez River/Kelly Creek
180600100201	Santa Ynez River/Oso Canyon

N. Total Acres Burned: 32,606
NFS Acres(19,710) Other Federal (0) State (0) Private (12,896)

O. Vegetation Types: grass, brush, oak canopy

P. Dominant Soils:

Agua Dulce-Botella-Argonaut families association 20 to 60 percent slopes
Livermore-Agua Dulce-Hambright families association, 30 to 80 percent slopes
Agua Dulce-Henneke-Cuesta families complex, 40 to 70 percent slopes
Toomes-Climara complex, 30 to 75 percent slopes
Shedd silty clay loam, 30 to 75 percent slopes, severely eroded
Climara-Toomes complex, 15 to 45 percent slopes
Lopez shaly clay loam, 15 to 75 percent slopes
Lodo-Hambright-Millsholm families association, 30 to 60 percent slopes

Q. Geologic Types:

The Rey Fire occurred in the eastern San Rafael Mountains, along the transition from the Transverse Range to the southeastern Coast Ranges Geologic Provinces. The Transverse Ranges are some of the most tectonically active mountains in the U.S., and are growing at a faster rate than they are eroding. This portion of the San Rafael Mountains is comprised of Cenozoic and late Mesozoic aged marine sedimentary deposited along the Ventura Basin that was elevated by local faulting (Little Pine fault) and by compressive folding (Dibblee, 1982).

The geology of the burned area is comprised of sedimentary rocks ranging in age from Eocene (63 million years old) to Miocene (5 million years old), overlying Jurassic and Cretaceous (200 to 63 million years old) sediments and serpentinite (Dibblee, 1986). Streams and tributaries are locally overlain by Quaternary alluvial and surficial sediments ranging from Holocene (10,000 years old) to present age. Marine sediments are comprised of sandstone, shale, and limestone units, with some conglomerate. Sedimentary units occur in three different northwest plunging synclines dipping shallowly to the northeast and southwest that are separated by two parallel thrust faults (Little Pine fault and the Camuesa fault).

R. Miles of Stream Channels by Order or Class:

Stream Class	Length (miles)
Ephemeral	No data
Intermittent	125.0
Perennial	10.9
Artificial Channel	0.2
Total	136.1

S. Transportation System

Roads:	1.9	miles Maintenance Level 1
	21.5	miles Maintenance Level 2
	0	miles Maintenance Level 3
	0	miles Maintenance Level 4

0.05 miles Maintenance Level 5
23.45 miles total

Trails: 3.0 miles trail
18.8 miles non-motorized trail
21.8 miles total

PART III - WATERSHED CONDITION

The Rey Fire burned over 32,000 acres. The soil burn severity was rated 0.7% high, 31.5% moderate, 63.3% low, and 4.5% unburned. (average for the burn, percent of moderate increase per sub-watershed in the eastern portion). The burned area was mostly chapparel (chamise, manzanita and grasses) with small patches of trees. The west end of the fire is entirely private consiting of one ranch.
Although there is a significant amount of low severity the fire consumed most vegetation leaving large areas now devoid of vegetation and groundcover and will significantly contribute to a high runnoff response.
Within the burned area evidence of past mass wasting as debris slide, debris flows and rockfall is widespread. Due to post fire conditions slope instability and mass wasting activities will increase during future storms. Also, with the cover removed by this fire large contiguous areas are vulnerable to rain and runoff impacts and mobilized sediments will frequently be delivered to streams. Large runoff producing storms will likely create increased surface flow volumes and velocities that can transport available sediment from the slopes and along the channel bottoms. These responses are expected to be greatest in initial storm events, and will become less evident as vegetation is reestablished providing ground cover, increasing surface roughness, and stabilizing and improving the infiltration capacity of the soils.

The risk of flooding and erosional events will increase as a result of the fire, creating hazardous conditions within and downstream of the burned area. Soils are exposed and have become weakened, and rocks on slopes have lost their supporting vegetation. Roads and trails are at risk from dry ravel, rolling rock, plugged culverts, debris slides and debris flows. Stream channels and mountainside ephemeral channels will be flushed of the sediment that in some places is loose and deep, in other places shallow. That sediment will deposit in some channels, choking flow, raising flood levels, then covering roads or eroding road prisms. Risks to human life, roads, trails, natural resources, and cultural resources are high to very high. As a result, values at risk are expected to be at an increased risk from post fire rock and debris flows, flooding, and sedimentation. Soil Burn Severity mapped for this fire reflects the relative degrees of soil heating effects and cover reduction as a result of this fire.

A. Burn Severity (acres):

Soil Burn Severity (Acres)	Acres	Percent
High	230.4	0.7%
Moderate	10,259.3	31.5%
Low	20,634.0	63.3%
Unburned	1,479.8	4.5%
Total	**32,603.5**	100%

B. Water-Repellent Soil (acres): 3,582

C. Soil Erosion Hazard Rating (acres):
1,508 (no data) 16 (low) 439 (moderate) 20,448 (high) 10,194 (very high)

D. Erosion Potential: 32.6 tons/acre

E. Sediment Potential: 16,701 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	2-7
B. Design Chance of Success, (percent):	N/A
C. Equivalent Design Recurrence Interval, (years):	5
D. Design Storm Duration, (hours):	1
E. Design Storm Magnitude, (inches):	1.02
F. Design Flow, (cfs per square mile):	16.3
G. Estimated Reduction in Infiltration, (percent):	20
H. Adjusted Design Flow, (cfs per square mile):	38.7

PART V - SUMMARY OF ANALYSIS

Overview:
The Rey Fire began August 16th, 2016 burning approximately 32,606 acres with 19,710 acres on the Santa Barbara (Los Prietos) Ranger District of the Los Padres National Forest and 12,896 acres on private property (San Fernando Rey & Ogilvy Ranches). The fire burned primarily within several sub-watersheds of the Santa Ynez watershed within the Western Transverse Range between Santa Ynez and San Rafiel Mountains. The area is characterized by moderately steep to very steep, rocky, mountainous basins.

The burned area is located just North of the Santa Barbara/Goleta area draining to the Santa Yenez River and Gibralter and Cachuma Reservoirs. Main drainages to Gibralter Reservoir include Buckhorn Creek, Indian Creek, Camussa Creek and Mono Creek. Main drainages to Cachuma Reservoir include outflow from Gibralter Reservoir, Oso Canyon, Horse Canyon, Red Rock Canyon, and Santa Cruz Creek.
The vegetation within the burned area was grasses, chaparel brush mix, and small patches of oak and sycamore trees. Almost all vegetation was consumed by the fire leaving behind mostly bare soil with the grass and light brush areas creating low soil burn severity, the thicker brush fields creating moderate soil burn severity, and the areas with a mix of brush and trees creating reletivily small areas of high soil burn severity. The risk of flooding and erosional events will increase as the result of the fire, creating hazardous conditions within and downstream of the burn area.

A BAER team began assessing the area for post-fire emergencies on September 8th.

Values at Risk:

Description of Critical Values/Resources and Threats (narrative):
The BAER team, through consultation with local management and resource specialists, evaluated values within the burned area and created a comprehensive list of potential values at risk within or directly downstream of the Rey burned area. Following guidance in Interim Directive 2520-2013-1, the BAER assessment team evaluated this list of values through field assessment and subsequent analysis to identify the critical values (FSM 2523.1 – Exhibit 01) that may be treated under the BAER program (See Attachment). The

critical values were then assigned a level of risk defined by the probability of damage or loss coupled with the magnitude of consequences using the risk assessment matrix (FSM 2523.1 – Exhibit 02). The critical values with unacceptable risks signify a burned-area emergency exists. The characterization of the probability of damage or loss is based on the watershed response analysis completed by the BAER Assessment. Critical values having a "Very High" or "High" risk rating include recommended emergency stabilization actions known to mitigate potential threats or minimize expected damage where possible.

1. Human Life and Safety (HLS)
    a. **Very High** risk to Forest visitors, permittees, private in-holders, and Government employees using and working in the National Forest. This includes but is not limited to Roads, Trails, Administration sites, Campgrounds and other facilities within and outside the Rey Fire perimeter. Loss of control of water resulting in flooding on roads, trails and facilities occupied by users. Debris flows, rock fall, tree fall, landslides, road washouts, and entrapment, are hazards and risk to users. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **major**. *(Treatment: PS1 Fire Area Closure & Signage)*

2. Property (P):
    a. **High to Very High** risk to road and associated infrastructure with substantial damage expected due to flooding, debris flows, and erosion. The road is considered the value at risk when there is a loss of function, access is denied, and the cost to repair the damaged anticipated is greater than the cost to mitigate that damage. On National Forest Lands there are approximately 23.3 miles of National Forest System Roads (NFSR) within the Rey Fire perimeter. Roads and infrastructure are a government asset and safe passage is necessary for long term administrative use, emergency access, recreational opportunities (camping, hiking and OHV), permittees, and private in-holder accessibility during and after the fire recovery period. Road 5N15.2 Romero Camuesa from Upper Oso camp ground to the SE edge of the fire in section 36, and 9N11.4 Buckhorn road from Hidden Potrero Primitive Camp Ground to Happy Hollow Primitive Camp ground are at the highest risk, although these road segments are inventoried in Infra as maintenance level-2 high clearance they are used administratively for fire access and recreation and are an important part of the road infrastructure on the Los Padres National Forest. The probability of damage or loss was determined to be **likely to very likely** and the magnitude of consequences was determined to be **moderate to major**. *(Treatment: R1 – Storm proofing & Storm Inspection and Response)*

    a. **High** risk to the **trail segments**
    Some segments of the system trails are at high risk of damage and/or loss. These findings are based on on-the-ground surveys, their proximity to moderate and high burn severity areas, and erosion hazard modeling based on slope, soil characteristics, and burn severity. As a direct consequence of the fire there is a large risk of damage to the trail caused by the loss of water control. Increased flow rates can be expected following the loss of vegetation. This increased flow rate will result in trail tread eroding flow patterns and/or mid slope trails becoming covered by dry ravel and debris.

    Not only will this increased flow rate result in increased trail erosion and potential loss of trail, but it will also obscure trail definition, causing users to wander off established trail, especially in trails with switchbacks. Repeated off trail travel will eventually re-define a new trail that will most likely be non-conducive to the natural water flow and be subject to erosion.

    Trails that follow and repeatedly cross intermittent stream channels are subject to washouts and loss of trail segments.
    The probability of damage or loss was determined to be **likely** and the magnitude of consequences is determined to be **moderate**. (Treatment T1: Storm proofing/improving trail drainage)

3. Natural Resources (NR):
    a. **High** risk is expected to **native plant communities and Region 5 sensitive plant habitat** in all areas effected by fire suppression activities due to the threat from the spread of noxious weeds and invasive plant species. Invasive weed species that exist within and adjacent to the fire area include: Yellow starthistle (*Centaurea solstitialis*), Perennial pepperweed (*Lepidium latifolium*), Spanish broom (*Spartium junceum*), and Tamarisk (*Tamarix ramosissima*). The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **moderate**. *(Treatment: L1 Invasive plants)*

    b. **High Risk** is expected to **critical habitat or suitable occupied habitat for T&E-listed Red Legged Frog and Arroyo Toad**. High risk is associated with critical habitat located within the occupied habitats in all drainages influenced by the fire. Potential threats include short and long-term modification of suitable and occupied habitat due to channel scouring from increased stream flows, increased sediment, and debris flows. Impacts to water quality include increased sediment and ash. Modifications of streamside vegetation and streambank conditions can increase water temperatures due to loss of shading in watersheds. The probability of damage or loss was determined to be **likely for all critical habitat in and adjacent to the fire** and the magnitude of consequences was determined to be **moderate**. No treatment recommended.

    c. **High** risk is expected to **water quality**. Threats to streams include increased sediment delivery and elevated water temperatures. Impacts to watershed process and functions that regulate erosion, sediment delivery, and stream shade are expected in areas that burned at moderate to high severity. Threats to water quality can potentially impact beneficial uses that includes habitat for listed aquatic species and domestic water supply systems. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **moderate**. No treatments recommended.

    d. **Low** risk to **soil productivity and hydrologic function**. Although very high rates of post fire soil erosion are expected to occur, **an emergency for long-term soil productivity was not caused by the direct effects of fire in this fire adapted ecosystem.** Despite high rates of post-fire soil erosion, burned area soils will support recovery of native fire adapted vegetation in the burned area. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **minor**. No treatments recommended.

4. Cultural Resources

    This area is known through historical records and archaeological investigation to contain abundant prehistoric and historical era heritage resources. A total of 45 heritage sites are recorded within the burn area. Twenty-one heritage resources were inspected within the burn area for potential BAER treatments. Twenty-four sites within the burn area were not assessed due to safety concerns or lack of potential BAER issues. Of the heritage resources assessed, 18 are within areas where increased runoff, erosion, flooding, or debris flow pose a significant threat. In addition, a large number of heritage resources in the burn area are now at an increased risk of being destroyed through looting due to the decrease in foliage, duff, and other natural visual barriers

a. **Very High** risk is expected at Historic Property 0507-54-052. Existing hardscape waterbars along the access trail to the campground and within the site boundary burned and are now nonfunctional putting the site at further risk. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **major**. *(Treatment: L2 Heritage Protection, Erosion Control)*

b. **Intermediate** risk is expected at seventeen heritage sites along the Indian Creek drainage. These sites are situated along the drainage within the burn area and immediately downstream of the southern burn perimeter. These sites are at risk from exposure by erosion and overland runoff that may displace or damage site integrity. The probability of damage or loss was determined to be **possible** and the magnitude of consequences was determined to be **moderate**. *(No treatment recommended)*

c. **Very High** risk is expected to heritage sites within the burn area due to looting at sites exposed by the burn. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **major**. *(Treatment: L4 Heritage Site Protection, Signage & Patrol)*

B. Emergency Treatment Objectives:

The goal of the burned area emergency response treatments are to:

As noted above, threats to life, property, and natural and cultural resources from loss of water control, increased sediment delivery, increased debris flow potential, establishment of invasive weeds, and habitat degradation for Federally Threatened species exist as a result of the Rey Fire. For these reasons the primary treatment objectives are:

- Mitigate, to the extent possible, threats to personal injury or human life of forest visitors and Forest Service employees at recreation facilities or while traveling select roads and trails on NFS lands within or downstream of the burned area.
- Protect or minimize damage to high-value NFS investments within the burned area. Minimize damage to key NFS travel routes and recreation sites within and downstream the fire boundary.
- Treat invasive plants that are a threat to naturalized ecosystems by minimizing the expansion of existing populations in the burned area and control of expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of fire suppression activities.
- Assist cooperators with the interpretation of the assessment findings to identify potential post-fire impacts to communities and residences, domestic water supplies, public utilities (including power transmission facilities, cellular towers, roads, and other infrastructure).
- Mitigate effects of changed post-fire watershed response on natural resources such as federally listed species and historic properties and cultural resources.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land **80** % Channel **N/A** % Roads/Trails **80** % Protection/Safety **90** %

D. Probability of Treatment Success

Years after Treatment

Treatment	1	3	5
Land	90		
Roads	90		
Trails	90		
Protection/Safety	90		

E. Cost of No-Action (Including Loss): **Loss of life, loss of segments of roads and trails, increase rate of spread of noxious weeds, loss of historical property.**

F. Cost of Selected Alternative (Including Loss): **$144,224.00**

G. Skills Represented on Burned-Area Survey Team: See appendix for team member list.

[✓] Hydrology	[✓] Soils	[✓] Geology	[ ] Range	[ ] HAZMAT/Mineral
[ ] Forestry	[✓] Wildlife	[ ] Fire Mgmt.	[✓] Engineering	[ ]
[ ] Contracting	[ ] Ecology	[✓] Botany	[✓] Archaeology	[ ]
[ ] Fisheries	[ ] Research	[✓] GIS	[ ] Landscape Arch	

Team Leader: Randy Westmoreland

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Team Members:

Randy Westmoreland	*Team Lead*
Cait Woods	*Team Lead Trainee*
Kelsha Anderson	*Team Lead Trainee*
Jim Schmidt	*GIS*
Paula Wills	*GIS Trainee*
Alex Janicki	*Soils*
Mary Flores	*SoilsTrainee*
Brian (Scott) Sheppard	*Hydrology*
Tayanna Blaschak	*Hydro Trainee*
Patrick Lieske	*Wildlife Biology*
Eric Huebner	*Recreation/Trails*
David Annis	*Geology*
Jonathan Schwartz	*Geology*
Steve Galbraith	*Archeology*
Lloyd Simpson	*Botany*
Rusty LeBlanc	*Engineering*
Deborah Evans	*Engineering Trainee*
Marilyn Porter	*GIS*
Kevin Cooper	*Forest BAER Coordinator*

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

L1 – Invasive Plants

This treatment is noxious weed detection surveys of all roads, dozer lines, drop points, and safety zones affected by the Rey Fire on NFS lands. These areas will be surveyed for evidence of introduction or spread of noxious weeds. If any new or outlying populations are found, these will be mapped and documented for future treatment and where possible hand treatments will be applied during at the same time the surveys are conducted.

Suitable Sites: In and along roads, dozer lines, drop points, and safety zones affected by the Rey fire on NFS lands.

Design/Construction Specifications:
Inspect all areas and monitor for newly established weed occurrences or the introduction of new invasive species. Monitoring will include documentation and hand pulling small new weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastics bags, and properly disposed. Additionally, tamarisk infestations can be treated with herbicide as per the soon to be completed tamarisk removal EIS.

Documentation of new infestations will include:

- GPS negative and positive inspection results
- Incorporate data into GIS spatial database - NRIS
- Establish photo points
- Map perimeter of new infestation
- Estimate number of plants per square meter
- Treatment method
- Dates of treatment
- Evaluate success in subsequent inspection

Inspections and monitoring should be accomplished during April/August 2017. Based upon the first year's survey, additional surveying may be requested for up to three years. BAER funding is only requested for the first year after fire.

Purpose of Treatment: This treatment is necessary to prevent the establishment and to control the spread of new noxious weeds and non-native invasive species in the burned area where burned ground in conjunction with fire suppression activities have created the threat of re-colonization by invasive and noxious weeds. Early detection dramatically increases the likelihood of successful treatment. If weeds are detected within the burn during inventory they will be documented and/or removed within year one post-fire.

Weed Detection and Rapid Response:

GS –11 Botanist/Resource Officer	$465/day x 10 days =	$4,650
GS – 9 Botanist/Biologist	$291/day x 2 pay periods (20 days) =	$5,820
GS – 5 Bio Tech	$225/day x 3 pay periods (30 days) =	$6,750
Mileage:	500 miles @ 0.45/mile =	$225
	Total Cost Estimate for FY 2017 =	**$17,445**

L2 – Heritage Protection, Erosion Control

Install treated timber waterbars and wattles to reduce down cutting at the site.

Suitable Sites: Site # 0507-54-052 (19 Oaks Camp Ground)

Design/Construction Specifications:
To control runoff and debris flow along the access trail within the site 8 treated timber waterbars with anchors will be installed to trail construction standards; wattle will be installed at various locations east of the site perimeter.

Purpose of Treatment:
This treatment will stabilize heritage sites preventing unacceptable alteration of any National Register of Historic Places (NRHP), qualifying characteristics. These characteristics include the location, design, setting, materials, workmanship, or association from increased erosion, storm runoff, debris flow, or looting.

Erosion Control for Cultural Resource Protection for at risk heritage site :

Line Item	Units	Unit cost	SULT $
GS-9 Archaeologist	3 Days	$360	$1,080.00
GS-5 Specialist Tech	2 Days	$250	$500.00
Pressure Treated 4x4 (8 ft)	8	$15	$120.00
5/8" Rebar (10 ft)	8	$6.75	$54.00
Straw Wattle 8" (25 ft)	4	$29.97	$120.00
Wooden Grade Stakes 2 (2 ft)	4	$4.50/12	$18.00
GSA Vehicle Mileage	50 miles	$0.16/Mile	$8.00
Total			$1,900.00

L4 – Heritage Site Protection Signage & Patrol

Install signage related to the Archaeological Resource Protection Act and other policy to help protect exposed sites of being looted.

Suitable Sites: Signs will be installed at campgrounds, trailheads, and access points located around and within the burn area.

Design/Construction Specifications: 11 ½" x 16" plastic educational signs that inform the public about the importance of heritage resources and the laws protecting them. Signs will be both in English and Spanish. Informational signs increase the viability of criminal prosecution through the Archaeological Resource Protection Act of 1979 (ARPA). Patrolling is required to assess the effectiveness of signage and that educational and awareness signage remains present and legible. It's proposed to conduct these patrols using both a volunteer workforce from the Forest's Site Steward Program and Forest Recreation Technicians. The Forest Heritage Program Manager will supervise the volunteer patrol crew and be responsible for final report preparation, site records, maps, and other documentation. Forest Service Law Enforcement will be contacted to respond to any illicit activities pertaining to cultural resources.

Purpose of Treatment:
Provide an avenue to prosecute looters within the burn area and prevent the destruction of important heritage resources.

Heritage Signage & Patrol:

Line Item	Units	Unit cost	SULT $
GS-9 Archaeologist	5 Days	$360	$1,800.00
GS-5 Recreation Tech	2 Days	$250	$500.00
GSA Vehicle Mileage	500 miles	$0.16/Mile	$80.00
11 ½ " x 16" Plastic Signs	25	$17.75	$444.00
Total			$2,824.00

Heritage Treatment Totals:

Line Item	SULT $
Site 0507-54-052	$1,900.00
Exposed Heritage Resources - signage	$2,824.00
Total	$4,724.00

Protection/Safety Treatments:

PS1 – Fire Area Closure & Signage

General Description: This treatment will support the Forest closure order and ensure safety for Forest visitors and protection to Forest resources during the recovery period. Gates and BAER signage (closure, warning, information, and rock fall warning) will be placed around the fire perimeter at main entry points, interior roads, trailheads, and other strategic locations.
The trail system should be closed for the first winter following the fire. Conditions following the first winter should be evaluated to judge if additional time is needed to provide for user safety. After closure has been lifted warning signs should be placed at each trail access point stating post-fire trail hazards.

Burned area signs warn the public identifying of the possible dangers associated with a burned area on major entry points into the burned area and recreational areas. They shall contain language specifying items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods.

Suitable Sites:

- Gate Installation: at the beginning of 5N15.3 Romero Camuesa at the junction with 5N18.2 Santa Ynez River Road.
- Pipe Rail fence installation site: at the existing gate beginning of 5N15.2 Romero Camuesa at the end of Upper Oso camp ground.
- BAER warning signs to be installed at the beginning of 5N15.2 Romero Camuesa near Upper Oso camp ground and at 5N15.1 Romero Camuesa at the end of the road near the gate near Mono Camp Ground, and at the existing gate on 9N11.4 Buckhorn road located in section 3 north entry point of the fire.
- BAER closure and information signs to be installed at the beginning of 5N15.2 Romero Camuesa, near Upper Oso camp ground, 5N15.1 Romero Camuesa at the end of the road near the gate near Mono Camp Ground, and at the existing gate on 9N11.4 Buckhorn road located in section 3 north entry point of the fire.
- Rock Fall signs installed on each side of the hazardous half mile segment of road 5N15.2 Romero Camuesa road.
- Flash flooding signs installed at low water crossings and other strategic locations around the Upper OSO camp ground and rec residences.

See treatment map for specific treatment locations.

Detailed Design/Construction Specifications:
Burned Area warning signs, temporary gates, and pipe rail fence shall be specified by the Santa Barbara Ranger District and SO Engineering Staff to be the minimum necessary for safety considerations.

Examples of signs are:
BURNED AREA

Potential Hazards Include:
Loose Rock, Falling Trees and Limbs, Flash Flooding and Debris Flows

Signs should be bi-lingual (English and Spanish).

Signs for the campground/rec residences should include specific information about the potential for flash floods and debris flows that may originate in Oso Canyon and impact areas immediately downstream. (Note: impacts are not expected to affect the campground/rec residence areas (campsites, restrooms, parking areas, corrals, rec residence structures) due to the elevation above the channel, however, people using the low water crossings for access may be at risk).

Purpose of Treatment: The purpose of the Burned Area closure and signage is to provide safety Forest visitors of potential dangers and/or objects.

Hazard Warning Signs and Temporary Closures Cost Estimate:

Item	Unit	# of Units	Unit Cost	Total
Install Gate	Each	1	$13,000	$13,000
Install Pipe Rail Barriers	LF	250	$39	$9,750
Install BAER Warning Signs	Each	8	$650	$5,200
Road Closure Signs & Info.	Each	8	$325	$2,600
Install Rock Fall Signs	Each	4	$195	$780
Install Flash Flooding Signs	Each	10	$195	$1,950
Total				**$33,280.00**

PS2 –Trail Storm Proofing

General Description: The loss of property, vulnerable trail segments (approximately 18.8 miles of trail), can be mitigated by STORM PROOFING.
Storm proofing is the minimum necessary trail work activity which will protect the trail investment in its current state for a minimum of two years.
Sections of trails found within drainages should be ignored and dealt with after winter storm events due to cost efficiency. Sections of trail found to be already covered in dry ravel should be ignored until after winter storm events unless the dry ravel poses safety risk to implementation crew. In this case only minimal bench cut may be performed to ensure crew safety.

Suitable Sites: All trail runoff work should be focused on midslope trails found in areas of moderate to high burn intensity. Armoring priorities are determined using Debris Flow Hazard modeling (see maps)..

Design/Construction Specifications: Storm Proofing measures relevant to fire related concerns found on the Rey Fire trail system include the cleaning of sediment capture basins and flow control of existing water bars and rolling dips in anticipation of post-fire increased runoff. Install grade stabilizing checkdams in areas vulnerable to further incision. Install additional rolling dips and over-side drains in trails sections where necessary. Increase out board drainage (berm removal) where possible. (See BAER Treatment Catalog, Trail Stabilization, page 153). ARMORING key ephemeral drainages and trail water diversion structures to prevent undercutting and loss of trail tread. This will require the placement of rock in a rip-rap fashion below drainages to dissipate the energy of off trail water flows and decrease the possibility of down bank erosion. Trail stabilization will also reduce detrimental effects to downstream values at risk.

Purpose of Treatment: Protect trail segments from capturing/concentrating water and washing out trail prism.

Line Item	Units	Unit cost	SULT $

GS-5 Recreation Tech	5 Days	$250	$1,250.00
CCC Crew	2 pay periods	$20,000	$40,000.00
GSA Vehicle Mileage	500 miles	$0.16/Mile	$80.00
2X4 Signs/4X4 posts/hardware/labor	18	$350.00	$6,300.00
Total			$47,630.00

Road Treatments:

See Road Treatment costs table at the bottom of treatment descriptions for detailed costs for individual roads.

R1 – Storm-proofing & Storm Inspection and Response

General Description: This treatment will minimize the risk of road failure in the burn area through the placement and maintenance of effective water control measures. Prevent the channeling of water on roads. Ensure the diversion of runoff in controlled intervals to reduce erosion and further watershed degradation. Storm inspection and response monitors and maintains the function of drainage features, and ensure road access for FS administration, permitees, and private in-holders.

Suitable Sites:

- 5N15.2 Camuesa Romero
- 9N11.4 Buckhorn

See treatment map for specific treatment locations.

Design/Construction Specifications:

- Install Critical Dips at or below culvert locations with high diversion potential.
- Install Culvert Inlet Treatment (metal end section) on culvert inlets which will experienced increased flows and sediment transport.
- Install Drainage Armor (12"-24" riprap rock) on fill slopes susceptible to erosion and/or fill slope failure due to increased flows and/or potential culvert failure.
- Install Overside Drains with Flumes on fill slopes susceptible to erosion and/or mass wasting due to increased flows.
- Excavate Culvert Inlet/Outlet & Catch Basins to increase hydraulic capacity within the pipe and sediment storage capacity within the catch basin.
- Flush out culvert with water to increase hydraulic capacity within pipes.
- Storm Inspection and Response to identify those road problems such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that have received damage.

Purpose of Treatment: This treatment will minimize the risk of road failure in the burn area and protect investment in Forest infrastructure.

Road Treatment Costs Estimate:

Item	Unit	# of Units	Unit Cost	Total
Road Critical Dips	Each	12	$585	$7,020
Install culvert inlet treatments 18" – 24" (metal end section)	Each	2	$3,250	$6,500
Install Drainage Armor (12"-24" Riprap	Cubic Yard	75	$260	$19,500
Install Overside drains / flume	Each	3	$4,550	$13,650
Excavate culvert inlet / outlet & Catch Basin, flush pipe w/ high water pressure. 18"- 36" cmp's	Each	15	$845	$12,675
Storm Inspection and Response Upper Oso C.G.	Days	2	$1,300	$2,600
Storm Inspection & Response 5N15 Upper Oso C.G. to Hidden Potrero C.G. 3.5 miles	Days	3	$4,160	$12,480
Total				$74,425

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Note: Protection and Safety Treatments were proposed in the 2500-8 Form but the costs itemized in the request were omitted from the Cost Table (Part VI). The omitted amounts were:

Protection/Safety

Closure gate and barriers	$22,750
Warning and safety signs	$10,530

The Request is approved with the inclusion of these treatments and costs, bringing the Total Treatment Cost to $177,504.

2. for Regional Forester (signature) — 10/7/16 Date

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

Line Items	Units	Unit Cost	# of Units	BAER $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
Nx./Invasive weed detection survey	L.S.	17445	1	$17,445	$0		$0		$0	$17,445
Heritage Signage	L.S.	2824	1	$2,824	$0		$0		$0	$2,824
Heritage Erosion Control	L.S.	1900	1	$1,900	$0		$0		$0	$1,900
			0		$0		$0		$0	$0
Insert new items above this line!										
Subtotal Land Treatments				$22,169	$0		$0		$0	$22,169
B. Channel Treatments										
None				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
Storm Proofing Rds	L.S.	74425	1	$74,425	$0		$0		$0	$74,425
Storm Proofing Trls	L.S.	47630	1	$47,630	$0		$0		$0	$47,630
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$122,055	$0		$0		$0	$122,055
D. Protection/Safety										
Warning&Closure Signs				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
BAER Team	LS	155000	1	$155,000		1	155000		$0	$155,000
Insert new items above this line!				—	$0		$0		$0	$0
Subtotal Evaluation				—	$0		155000		$0	$155,000
F. Monitoring										
Weed treatment				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0
G. Totals				$144,224	$0		155000		$0	$299,224
Previously approved				$0	$0		$0		$0	$0
Total for this request				**$144,224**			155000			**$299,224**

PART VII - APPROVALS

1. R N Brunt
Forest Supervisor (signature)

9/27/16
Date