

**BURNED-AREA REPORT**  
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. Accomplishment Report  
☐ 3. No Treatment Recommendation

**B. Type of Action**

- ☒ 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: **South Complex**                      B. Fire Number: **CA-SHF-002108**  
C. State: **California**                              D. County: **Trinity**  
E. Region: **05 – Pacific Southwest**              F. Forest: **Shasta-Trinity and Six Rivers**  
G. District: **Hayfork and Lower Trinity River**    H. Fire Incident Job Code: **P5J0MZ**  
I. Date Fire Started: **August 1, 2015**              J. Date Fire Contained: **Est. Oct 1, 2015**  
K. Suppression Cost: **\$31,800,000** (estimate from 09/13/2015)  
L. Fire Suppression Damages Repaired with Suppression Funds  
    1. Fireline waterbarred (miles): ongoing  
    2. Fireline seeded (miles): Approximately 1 acre  
    3. Other (identify):

M. Watershed Number: 6<sup>th</sup> field hydrologic unit code and burn severity (acres)

Subwatershed	High	Moderate	Low	Very Low Unburned	Total Inside Perimeter	Outside Perimeter	Total
Corral Creek (180102120304)	14	1,077	3,964	2,710	7,765	15,391	23,156
Eltapom Creek (180102120501)	617	2,125	3,022	3,845	9,609	2,939	12,548
McDonald Creek-Trinity River (180102111106)	1	66	143	204	415	19,422	19,838
Olsen Creek- Hayfork Creek (180102120305)	52	1,306	3,788	877	6,023	28,914	34,937
Pelletreau Creek-South Fork Trinity River (180102120503)	89	1,160	1,591	2,735	5,575	31,094	36,669
<b>Total</b>	<b>773</b>	<b>5,735</b>	<b>12,508</b>	<b>10,372</b>	<b>29,387</b>	<b>97,760</b>	<b>127,148</b>

N. Total Acres Burned: (as of 9/10/15)

- **29,387 Total**
- 27,625 USFS
- 26,961 Shasta-Trinity National Forest
- 664 Six Rivers National Forest
- 1,762 Private

O. Vegetation Types: The dominant vegetation communities within the fire perimeter include Conifer (gray pine, Douglas-fir, knobcone, incense cedar and ponderosa pine), Hardwood (bigleaf maple, alder, Pacific madrone, white oak, black oak, and canyon live oak), Mixed Conifer and Hardwood Forest/Woodland and Shrub (mixed and montane chaparral).

P. Dominant Soils: Nuens Family

Deadwood Family

Holland Family

Hohmann Family

Chaix Family

Dunsmuir Family

Beaughton Family

Q. Geologic Types: Bedrock within the boundaries of the South Complex is underlain predominantly by Paleozoic and Mesozoic metavolcanic and metasedimentary rock, along with minor amounts of Tertiary and Quaternary sediments. In the fire complex area some intrusions of granitic plutons exist, the largest of which is the Ironside Mountain batholith, encompassing the eastern part of the complex. Small outcrops of sedimentary rock, represented by the Weaverville Formation and Pleistocene/Holocene colluvial deposits, occur primarily in the Hyampom Valley.

R. Miles of Stream Channels by Order or Class:

Perennial: 49.8 Intermittent: 20.0

S. Transportation System (miles)

Roads: 52.7 miles Maintenance Level 1

23.3 miles Maintenance Level 2

6.6 miles Maintenance Level 4

2.0 miles County Road

Trails: 7.3 miles non-motorized trail

**PART III - WATERSHED CONDITION**

A. Burn Severity (acres):

Severity	Acres Burned	Percent
Very Low/Unburned	10,372	35%
Low	12,508	42%
Moderate	5,735	20%
High	773	3%
	29,387	100%

B. Water-Repellent Soil (acres): 4,525 acres

C. Soil Erosion Hazard Rating (acres): Pre-fire erosion hazard for burned area soils was obtained from existing soil erosion hazard rating information in the Shasta Trinity NF Soil Survey.

EHR	Low	Moderate	High or Very High
Acres	6,024	9,786	13,602

D. Erosion Potential: Based on ERMIT model runs.

Average Erosion Potential (tons/acre)			
	10 Year Storm	5 Year Storm	2 Year Storm
Year 1	20.4	11.2	7.0
Year 2	15.4	7.7	4.3
24 month total	35.8	18.9	11.3

E. Sediment Potential: ERMiT outputs for hillslope erosion (preceding table) were adjusted for sediment delivery to stream channels. Based on topography and other factors, it was estimated that 60% of the hill-slope erosion described above could be delivered to the fluvial system.

Average Sediment Potential (tons/acre)			
	10 Year Storm	5 Year Storm	2 Year Storm
Year 1	12.2	6.7	4.2
Year 2	9.2	4.6	2.6
24 month total	21.5	11.3	6.8

USGS debris flow modeling estimates that within the Buckhorn watershed area some creeks present potential for debris flows with volumes ranging from 1,000 to 100,000 cubic meters with probability ranging from 0-20% in some segments to 60-80% in other segments. Beyond the upper watershed of the Eltapom Creek (including the Buckhorn watershed), the remainder of the South Complex presents, for the most case, low probability (0-20%) of debris flow initiation.

#### **PART IV - HYDROLOGIC DESIGN FACTORS**

- A. Estimated Vegetative Recovery Period (years): 3 – 5 years
- B. Design Chance of Success (percent): 75%
- C. Equivalent Design Recurrence Interval (years): 2 years
- D. Design Storm Duration (hours): 2 hours
- E. Design Storm Magnitude (inches): 0.779 inches
- F. Design Flow (cubic feet / second / square mile): 83.8 ft<sup>3</sup>/s/mi<sup>2</sup>
- G. Estimated Reduction in Infiltration (percent): 15%
- H. Adjusted Design Flow (cfs per square mile): 131.2 ft<sup>3</sup>/s/mi<sup>2</sup>

#### **PART V - SUMMARY OF ANALYSIS**

##### **Background:**

The South Complex Fire started on August 1, 2015 and had burned about 29,387 acres and was 95% contained on September 12, 2015. The fire burned in the South Fork Trinity River watershed. The burned area is predominantly within the Hayfork Ranger District on the Shasta-Trinity National Forest near the town of Hyampom. 664 acres of the fire are on the Lower Trinity Ranger District of the Six Rivers National Forest.

##### **A. Describe Critical Values/Resources and Threats (narrative):**

A list of critical values was discussed with the BAER team during September 9-11<sup>th</sup> 2015. The BAER team subsequently evaluated this list of values through field assessment and associated analysis to determine the critical values (Interim Directive No. 2520-2014-1 – 2523.1 – Exhibit 01) that may be treated within the BAER program. The risk (Interim Directive No. 2520-2014-1

– 2523.1 – Exhibit 02) to these critical values has been assessed by the BAER team and is described below. A list of treatment numbers has been included below each critical value description to ensure tracking between values and treatments.

1. Human Life and Safety (HLS)

- a. **High** risk to **forest visitors and Forest Service employees** within and adjacent to the burn area along roads, trails, and near recreation sites due to the increased threat of falling trees, rocks, flash floods and debris flows. The probability of damage or loss was determined to be **possible** and the magnitude of consequences was determined to be **major**. (*Treatment: T2 Safety Signs at road access points*)
- b. **Intermediate** risk is expected to forest visitors (recreational users, e.g. fishing, swimming) who utilize Big Slide and Slide Creek Campgrounds to gain access to Eltapom Creek and the South Fork Trinity River downstream from Eltapom Creek. Burned areas in upper Eltapom Creek pose the threat of debris flows and flash flooding to occur in these areas. The probability of damage or loss was determined to be **unlikely** and the magnitude of consequences was determined to be **major**. (*Treatment: T2 Safety signs at Big Slide and Slide Creek Campground kiosks*)
- c. **High** risk to **forest visitors** using the system trails (Pattison Peak 7E20 and Rays Peak 7E34) due to the threat of falling hazard trees, debris sliding, dry ravel, and burned stump holes. The probability of damage or loss was determined to be **possible** and the magnitude of consequences was determined to be **major**. (*Treatment: T3 Temporary Trail Closures*)
- d. **High** risk is expected to private residents within and adjacent to the fire perimeter. The potential for flash flooding, debris flows, falling rocks and trees poses the threat loss of ingress and egress to landowners if road systems are impacted. Several private residences exist within or adjacent to the fire with primary ingress and egress routes that cross areas which may be impacted by post fire conditions. Coordination and information sharing with landowners and emergency services is recommended.

2. Property (P):

- a. **High to Intermediate** risk is expected to **road prisms** due to an increased threat of erosion damage from accelerated storm water runoff and velocity across road templates from runoff originating on moderate and high burn severity. Secondary threats to adjacent watersheds and fisheries habitat exist from the potential for road erosion and failure. Public safety is also at risk due to the threat of loss of ingress and egress for residents living at private inholdings. The probability of damage or loss and magnitude of consequences varies by road segment throughout the fire. See Appendix A of the Roads Assessment for complete description of probabilities and magnitudes by road segment. (*Treatments: T5 Dips and Waterbars, T6 Clean Culvert Inlets, Outlets, and Channel, T7 Install Culvert Ends, T8 Armor Ford/Culvert, T9 Install Gate and Barrier, T10 Storm Patrol*).
- b. **Low** risk is expected to the **trail prisms** of the Pattison Peak trail (7E20) and Rays Peak Trail (7E34). Threats to this infrastructure include increased runoff and erosion and loss of drainage features resulting in deterioration of trail conditions. The probability of damage or loss was determined to be **likely** and the magnitude of consequences is determined to be **minor**. No treatments related to property

recommended. Treatments for temporary trail closures are recommended under human life and safety.

3. Natural Resources (NR):

- a. **High** risk is expected to **native and naturalized plant communities** 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: wild oats (*Avena barbata*), star thistle (*Centaurea solstitialis*), cheatgrass (*Bromus tectorum*), Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*) and orchard grass (*Dactylis glomeratus*). The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **moderate**. (Treatment: T1 Invasive plants, T4 Protective Barrier Installation)
- b. **High to low risk** expected to **critical habitat or suitable occupied habitat for ESA-listed Coho salmon** (*Oncorhynchus kisutch*). High risk is associated with critical habitat located within the Eltapom watershed and low risk is associated with all other critical habitat adjacent to the fire area. 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 adjacent to the fire** and the magnitude of consequences was determined to be **moderate in the Eltapom watershed and minor in all other areas adjacent to the fire area**. No treatment recommended.
- c. **High** risk is expected to **water quality**. Threats to 303d-listed 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 ESA-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. **High Risk** is expected to **critical habitat and suitable occupied habitat for ESA-listed northern spotted owl** (*Strix occidentalis caurina*) from additional tree mortality due to trees that have been stressed by the fire. The fire is estimated to have removed about 17% of the suitable owl habitat on Forest Service lands and about 21% of the suitable habitat in Critical Habitat within the fire perimeter. Three of 6 owl activity centers (PACs) in the fire perimeter were heavily impacted by the fire. It is likely that substantial additional tree mortality will occur post-fire from the stress of the fire and the drought and that additional suitable habitat will be lost and functionality of at least two owl home ranges may decline as a result. No effective treatments to reverse this mortality are known. The probability of damage or loss was determined to be **likely** and the magnitude of consequences was determined to be **moderate**. No treatments are recommended.
- e. **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

- a. **Low** risk to **cultural resource sites** from post-wildfire conditions. Threats to critical cultural resource values from erosion, falling rocks and trees, and/or vandalism and looting were analyzed and determined not to warrant emergency treatments due to having a low risk. The probability of damage or loss to cultural resources was determined to be **unlikely** and the magnitude of consequences was determined to be **moderate**. No treatments recommended.

#### B. Emergency Treatment Objectives:

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

- Reduce threats to personal injury and/or human life of visitors using forest system roads.
- Protect or minimize damage to National Forest System investments within the burned area. Minimize damage to key system travel routes within and adjacent to the fire boundary.
- Protect or mitigate potential post-fire impacts to critical natural resources and significant cultural resources within or downstream from the burned area.
- Control expected invasion of noxious weeds within and adjacent to the area where soils/vegetation were disturbed as a result of suppression activities.
- Warn users of Forest roads and trails of hazards present in the burned area. Recommend temporary closure to protect public users of NF lands.

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

Land 70%    Channel -- %    Roads/Trails 80-70%    Protection/Safety 90%

#### D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	80	70	--
See VAR; treatment design life is 3 years			
Channel	--	--	--
High Risk Roads	90%	90%	70%
Intermediate Risk Roads	80%	80%	70%
See VAR; road treatments are designed for increased runoff which will decrease as vegetation recovers.			
Protection/Safety	60	60	60
See VAR; Visitors will pay attention to the new signs.			

#### E. Cost of No-Action (Including Loss): See VAR;

Overall, the summary of the three map zones identified that the total treatment cost is estimated at \$199,412 with an expected benefit of \$636,400. The summary implied minimum value of protecting non-market resource critical values is justified for the treatments proposed in this

BAER assessment. Map zone A has an expected benefit/cost ratio of 1.4; map zone B is designated for human life/safety and cultural resource protection; and map zone C has an expected benefit/cost ratio of 4.0. SEE ATTACHED VAR ANALYSIS

F. Cost of Selected Alternative (Including Loss): See VAR and summary statement in section E, above.

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Range	<input type="checkbox"/> HAZMAT/Mineral
<input checked="" type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input checked="" type="checkbox"/> GIS	<input type="checkbox"/> Landscape Arch	

Team Leader: Brian Anderson

Email: [banderson@fs.fed.us](mailto:banderson@fs.fed.us)

Phone: 208-392-3709

Team Members:

Brian Anderson	Hydrologist/ Team Lead
Mason Bindl	GIS Specialist
George Butler	Engineer
Jason Dierberg	GIS Specialist
Joe Doerr	Wildlife Biologist
Jeremy Haines	Archeologist
Erich Huebner	Recreation Specialist
Kerry Johnston	Botanist
David Lebanc	Forester
David McComb	Soil Scientist
Vince Pacific	Hydrologist
Yvette Paroz	Fisheries Biologist
James Schmidt	GIS Specialist
Eric Schroder	Soils Scientist
Jonathan Schwartz	Geologist

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:**

### **T1 – Invasive Plants**

**General Description of Treatment:** Invasive plants and weed assessments will begin in 2016 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of inventory and treatments along roads, dozer lines, known sensitive and invasive plant populations and rare plant suitable habitat will be the primary focus. The secondary survey priorities will be along meadows, riparian areas, handlines, drop points and helispots. Surveys of the general habitats in the burned area will be the lowest priority. All locations of weed species will be mapped, using the Shasta-Trinity NF, "Invasive Weeds" lists (See Appendix B of Weed Detection Survey Plan). Surveys would be completed using the NRIS protocol available at the national website:

[http://fsweb.nris.fs.fed.us/products/TESP\\_Invasive\\_Species/documentation.shtml](http://fsweb.nris.fs.fed.us/products/TESP_Invasive_Species/documentation.shtml). Results would be entered into the NRIS database.

**Suitable Sites:** In and along roads, dozerlines, handlines, helispots, drop points, incident camp, riparian areas, meadows and adjacent to known sensitive and invasive plant populations and rattlesnake serpentine soil areas. Refer to the Weed Detection Survey map, Appendix A of Weed Detection Survey Plan.

#### **Design/Construction Specifications:**

Surveying will include documentation and hand pulling new weed occurrences at the time of inspection, where practical. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed.

Documentation of new infestations will include:

- Mapping perimeter of new infestations
- Filling out Weed Element Occurrence Form
- Treatment method
- Dates of treatment
- Incorporating data into local GIS spatial database
- Entering data into National Resource Information System (NRIS) database
- Entering data into FACTS database
- Evaluating success of treatment in subsequent inspections

**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 moderate and high burn severities 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**

<b>Item</b>	<b>Unit</b>	<b>Unit Cost</b>	<b># of Units</b>	<b>Cost</b>
1 GS-11 botanist	Days	\$385	5	\$1,925
2 GS-7 weed technicians	Days	\$440	50	\$22,000
Supplies	Each	\$2,000	1	\$2,000
Vehicle gas mileage	Miles	\$0.22	4,000	\$880
Vehicle FOR	Month	\$5.00	50	\$250
<b>Total Cost</b>				<b>\$27,055</b>

## **Protection/Safety Treatments:**

### **T2 – Safety Warning Signs**

**General Description:** This treatment is for the installation of burned area warning signs.

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:**

Locations on FS lands for burned area warning signs on major entry points are:

- County Road 237 near the southern end of the fire perimeter
- Forest Road 60 near the Northwest end of the fire perimeter
- Junction of Forest Road 5N60 and 4N47

Locations on FS lands for burned area warning signs or safety placards at designated recreation areas and/or trails are:

- Big Slide Campground
- Slide Creek Campground

#### **Detailed Design/Construction Specifications:**

Burned Area warning signs along the roads shall be specified by the Hayfork 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 for the campgrounds should include specific information about the potential for flash floods and debris flows that may originate in upper Eltapom Creek and impact areas immediately downstream of the confluence with the South Fork Trinity River. (Note: impacts are not expected/very unlikely to affect the campground areas (campsites, restrooms, parking areas) due to the elevation above the channel, however, people using the river to fish, swim, or boat may be at risk)

**Purpose of Treatment:** The purpose of the Burned Area signs is to provide safety to the motorists and forest visitors of potential dangers and/or objects.

**Hazard Warning Signs and Temporary Closures Cost Estimate.**

Hazard Warning Signs	Materials	Labor	QTY	UOM	Total
Roadside Entering Burned Area Warning Signs	\$900	\$660	3	each	\$1,560
Trail/Recreation Burned Area Hazard Warning Signs	\$125	\$145	2	each	\$540
<b>Total</b>					<b>\$2,100</b>

### **T3 – Temporary Trail Closures**

**General Description:** Temporarily close the Pattison Peak 7E20 and Rays Peak 7E34 trails to public use due to the threat of falling trees, rolling rocks, and debris, as well as the threat for trail users of becoming lost due to lack of defined tread.

**Suitable Sites:** The closure would include the entire length of the Rays Peak 7E34 trail from the junction with the 3N46 road to the south to the junction of the 3N05 road to the north and the Pattison Peak 7E20 trail from the junction with the 3N46 road to the south and the junction of the 3N46/33N68 intersection to the north.

**Design/Construction Specifications:** This closure will be accomplished by a signed closure order and installation of signage. Law enforcement patrols would be employed during busy seasons to enforce the closure.

**Purpose of Treatment:** As a direct consequence of the fire, the greatest risk at this time for user safety is from hazard trees. The fire has left numerous hazard trees or potential hazard trees adjacent to these trails. This treatment will mitigate the risk associated with the potential for hazard trees to fall and injure or kill forest visitors. Additionally, the condition of these trails present a post-fire hazardous situation where the loss of trail tread definition due to infrequent use and maintenance puts users at risk of becoming lost in a dangerous and difficult terrain.

Temporary Closures and Enforcement	Materials	Labor	QTY	UOM	Total
Forest Order Preparation (GS-9 Rec)		\$300	1	days	\$300
Forest Order Signs	\$20		4	each	\$80
Closure Order Enforcement (FPO, GS-5 Tech)		\$162	10	days	\$1,620
LE Patrol (GL-9, 10 hr day)		\$310	5	days	\$1,550
Vehicle-GS-5 Rec Tech	0.55		774	miles	\$425
Vehicle-LEO	0.55		386	miles	\$212
<b>Total</b>					<b>\$4,207</b>

### **T4 – Protective Barrier Installation**

**General Description:** Barrier rock and informational signage will be installed in 2 locations to help aid in vegetation recovery as well as allow recently placed native seed to germinate and become established in disturbed areas of the burn (refer to botany treatment area map). Both areas have been seeded with native grasses during suppression repair and the temporary barriers/closure would also protect those costly treatments. Treatment enforcement patrols would be conducted to ensure that OHVs and livestock are being excluded from the burn area.

**Suitable Sites:** The rocks will be placed at an unclassified road to the east of Young Gulch west of Hayfork creek in southwest portion of the fire. See treatment map for exact location.

**Detailed Design/Construction Specifications:** When Class 6 rock is placed it will need to be placed approximately 1 foot below the soil surface approximately buried at a depth of 1/3 the height of the rock with a space no larger than 8" between boulders. Signs will be placed informing the public)-"Post-fire vegetation recovery in process; please remain on designated roads and trails".

**Purpose of Treatment:** Placement of protective barriers will restrict access for OHV users that would otherwise spread noxious and invasive weeds into the fire area and areas that have been rehabilitated from fire suppression damage. This road provides direct access to the south perimeter of the burn and may be an avenue for invasive weed introduction and illegal OHV use. This area is also suitable habitat for numerous serpentine endemic FSS plant populations (refer to attached map).

#### **Rock Barrier Purchase and Installation**

Item	Unit	Unit Cost	# of Units	Cost
Rock Barrier Purchase	Tons	\$60	24	\$1,440
Signage (includes installation cost)	Signs(includes posts)	\$200	2	\$400
1 GS-9 Engineer	Days	\$300	3	\$900
1 Excavator Operator	Days	\$720	3	\$2,160
1 Excavator	Days	\$860	3	\$2,580
Excavator Transport	Trip	\$500	1	\$500
Vehicle gas mileage	Miles	\$0.22	500	\$110
Vehicle FOR	Days	\$5.00	3	\$15
<b>Total Cost</b>				<b>\$8,105</b>

#### **Temporary Closure Enforcement Patrol**

Item	Unit	Unit Cost	# of Units	Cost
1 GS-9 LEO or Range Specialist	Days	\$300	5	\$1,500
Vehicle gas mileage	Miles	\$0.22	500	\$110
Vehicle FOR	Days	\$5.00	5	\$25
<b>Total Cost</b>				<b>\$1,635</b>

## **Road Treatments:**

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

### **T5 – Dips and Waterbars**

**General Description:** The goal is to provide an armored drivable surface that will collect drainage that has been captured in the roadway prism as well as drainage in an inside ditch and channel it to the downhill side of the road. Due to having moderate and high burn severity upslope, roads are anticipated to capture drainage either in the roadway prism or in an inside ditch with no adequate means for allowing the water to exit the roadway prism. Construction of

armored and/or rolling dips will force the water off the roadway before allowing it to concentrate flows and establish velocity such that the roadway is damaged or washed out.

**Suitable Sites:** The proposed treatments are located on the following roads:

- 3N05: 1 armored dip, 2 rolling dips
- 3N36: 2 waterbars,
- 3N45B: 2 rolling dips
- 4N09: 1 armored dip, 4 rolling dips
- 4N24: 2 rolling dips,

Armored dips are shown on the treatment map, while waterbars and rolling dips should be designed by local engineering staff while in the field.

**Design/Construction Specifications:** Create an armored drivable contoured surface that will channel water from the road surface and/or inside ditch to the downhill side of the road. Armor the road surface. Construct waterbars where needed.

**Purpose of Treatment:** The purpose of this treatment is to allow expected increases in runoff from moderate and high burn severity slopes to flow over a road without damaging the road surface, while providing a drivable surface.

## **T6 – Clean Culvert Inlets, Outlets, and Channels**

**General Description:** The goal is to minimize the potential for drainage culverts to become plugged with sediment, ash, and debris. Proper inlet and outlet drainage is needed to ensure that drainage features do not get plugged and risk eroding the road prism.

**Suitable Sites:** The proposed treatment is located on the 3N05, 3N45B, 3N46, 4N24, 4N25, and 4N30 roads. See treatment map.

**Design/Construction Specifications:** clean out culvert inlets, outlets, and channels using a backhoe and dump truck. Ensure proper drainage of roadside ditches.

**Purpose of Treatment:** The purpose of this treatment is to maintain adequate drainage function where roads have drainage culverts and prevent blockage with sediment, ash and debris. Maintaining drainage features is expected to reduce the potential for more costly repairs if drainage becomes blocked and roads fail.

## **T7 – Install Culvert Ends (risers and inlets)**

**General Description:** Install culvert risers and inlet flares on existing culverts for improved drainage and ability to handle potential sediment, ash and debris from moderate and high burn severity areas upslope from the culvert.

**Suitable Sites:** The proposed treatment is located on the following roads: 4N24 and 4N30.

**Design/Construction Specifications:** Attach risers and flares to existing culverts. See Roads analysis Appendix B for sizes and treatment map for locations.

**Purpose of Treatment:** The purpose of this treatment is to provide reinforcement to culvert inlets and allow for culverts to function after sediment deposition to reduce the potential for road fill failure from expected increased flows coming from moderate and high burn severity areas and potential overtopping of the roadway.



### **T8 – Armor Ford and Culvert with Rock/Riprap**

**General Description:** The goal is to provide reinforcement to one drivable ford and one culvert inlet and outlet to reduce the potential for road fill failure from expected increased flows originating from moderate and high burn severity slopes and potential overtopping of the roadway.

**Suitable Sites:** The proposed treatment is located on the following roads: 4N09 and 3N05

**Design/Construction Specifications:** **Armor drivable ford with riprap.** Place riprap around one culvert inlet and outlet. Place riprap within and surrounding one drivable ford. See Roads Analysis Appendix B and treatment map for more information.

**Purpose of Treatment:** The purpose of this treatment is to provide reinforcement to a drivable ford and culvert inlet and outlet to reduce the potential for road fill failure and potential overtopping of the roadway from expected increased flows originating on moderate and high burn severity areas upslope. The above listed roads are open system roads providing access to forest land for administration, as well as private land. Therefore a loss of this segment of road would be a significant impact to the community.

### **T9 – Install Gate and Barrier**

**General Description:** The goal is restrict access on level 1 roads where continued vehicle traffic combined with burned conditions (increases in runoff, falling trees, rocks, and debris) is likely to result in significant damage to the road, increase sedimentation to adjacent drainages, spread noxious weeds, and pose threats to public safety.

**Suitable Sites:** The proposed treatment is located on the 3N36 road.

**Design/Construction Specifications:** Install temporary closure with a gate at the 3N36 and 4N24 intersection with a standard gate. The area behind the gate accesses private land. Coordinate with landowner for access. Install permanent closure with a log or earthen berm at the 3N36E road. Travel beyond the 3N36E is expected to be hazardous due to high burn severity and steep road grade.

**Purpose of Treatment:** The purpose of this treatment is to maintain public safety, allow for vegetative recovery, reduce sedimentation, and prevent damage to the road system within moderate and high burn severity areas.



## **T10 – Storm Patrol**

**General Description:** The patrols are used 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. The storm patrollers shall have access to at least a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged, and to repair roads which are exhibiting severe surface erosion.

### **Location/(Suitable) Sites:**

<b>Road</b>	<b>Miles</b>
3N05	3.4
3N45B	1.4
3N46	2.5
4N09	11.3
4N24	4.6
4N30	1.7
5N60	10.4
<b>Grand Total</b>	<b>35.4</b>

**Design/Construction Specifications:** FS personnel will direct the work. Immediately upon receiving heavy rain and during significant spring snowmelt the FS will send out patrols to identify road hazard conditions – obstructions such as rocks, sediment, washouts, and plugged culverts, so the problems can be corrected before they worsen or jeopardize forest road users. The road patrols shall bring in heavy equipment necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins where necessary. All excess material and debris removed from the drainage system shall be placed outside of the bank-full stream channel where it cannot re-enter the stream.

### **Purpose of Treatment:**

The purpose of the monitoring is to evaluate the condition of roads within and adjacent to moderate and high burn severity areas that may need repairs or preventative maintenance due to increased runoff, erosion, and debris deposition. Road patrols would implement work needed to maintain and/or repair damage to road surfaces and flow conveyance structures (culverts) across roads in order to provide safe access across FS lands. Engineering and District personnel will survey the roads within the fire perimeter after damaging storms or high runoff events. Survey will inspect road surface condition, ditch erosion, and culverts/inlet basins for capacity to accommodate runoff flows.

## Roads Cost Breakdown by road number and work items

South Complex BAER Road and Safety Sign Cost Estimate Break Down																					

### South Complex BAER Roads Costs by Treatment

T5 Dips and Waterbars	\$34,560
T6 Clean Culvert Inlets, Outlets, and Channels	\$36,458
T7 Culvert End Sections (Flared Inlets)	\$13,440
T7 Culvert End Sections (Risers)	\$12,960
T8 Rock/Riprap	\$13,222
T9 Barriers and Gates	\$8,460
T2 Safety Signs	\$2,100
T10 Storm Patrol	\$27,720
<b>TOTAL</b>	<b>\$148,920</b>

**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.)

Associated activities obligated under ID-FSM2520-2014-1 need to be considered in the BAER funding request when emergency response actions are authorized. These are accumulated tasks above the normal program of work and generally not accounted for in out-year program planning. Because implementation of approved BAER response actions trigger these required tasks and the unit's allocated budget does not account for these obligations, BAER funding is the appropriate authorization to ensure this coordination and consultation is completed.

**Interagency Coordination**

	Rate	Days	Cost
Staff Officer (GS-13)	\$450	2	\$900
Forest BAER Coordinator (GS-12)	\$350	5	\$1,750
BAER Specialist (GS-12)	\$350	5	\$1,750
<b>Total Cost</b>			<b>\$4,400</b>

**Implementation Tracking and Required Reporting of Authorized Emergency Response Actions**

	Rate	Days	Cost
Forest BAER Coordinator (GS-12)	\$350	5	\$1,750
PIO (GS-11)	\$300	2	\$600
<b>Total Cost</b>			<b>\$2,350</b>

**Emergency Consultation on Implementation of Authorized Emergency Response Actions**

	Rate	Days	Cost
Forest Fish Biologist (GS-12)	\$350	5	\$1,400
Forest Wildlife Biologist (GS-12)	\$350	5	1750
<b>Total Cost</b>			<b>\$3,150</b>

**NHPA Compliance for Implementation of Authorized Emergency Response Actions**

	Rate	Days	Cost
Forest Archeologist (GS-12)	\$350	5	\$1,400
<b>Total Cost</b>			<b>\$1,400</b>
<b>Grand Total Cost</b>			<b>\$11,300</b>

Date of Report: September 15, 2015

**Part VI – Emergency Stabilization Treatments and Source of Funds – Shasta Trinity  
National Forest**

Initial Request

		NFS Lands					Other Lands			All	
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
T1-Weed Detection & Rapid	acre	11	2469.4	\$27,055	\$0			\$0		\$0	\$27,055
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$27,055	\$0			\$0		\$0	\$27,055
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
T5- Dips and Waterbars	each	2,469	14	\$34,560	\$0			\$0		\$0	\$34,560
T6- Clean Culvert Inlets Out	each	588	62	\$36,458	\$0			\$0		\$0	\$36,458
T7 - Install Culvert Ends	each	2,031	13	\$26,400	\$0			\$0		\$0	\$26,400
T8-Armor Ford/Culvert	each	6,611	2	\$13,222	\$0			\$0		\$0	\$13,222
T9-Install Gate and Barrier	each	4,230	2	\$8,460	\$0			\$0		\$0	\$8,460
T10-Storm Patrols	miles	783	35.4	\$27,720	\$0			\$0		\$0	\$27,720
								\$0		\$0	\$0
								\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Road and Trails				\$146,820	\$0			\$0		\$0	\$146,820
D. Protection/Safety											
T2-Warning Signs	each	525	4	\$2,100	\$0			\$0		\$0	\$2,100
T3-Temporary Trail Closure	each	2,104	2	\$4,207	\$0			\$0		\$0	\$4,207
T4- Protective Barrier Place	each	4,870	2	\$9,740	\$0			\$0		\$0	\$9,740
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Protection/Safety				\$16,047	\$0			\$0		\$0	\$16,047
E. BAER Evaluation											
Initial Assessment	Report	\$62,254	1	---	\$0			\$0		\$0	\$0
Insert new items above this line!				---	\$0			\$0		\$0	\$0
Subtotal Evaluation				---	\$0			\$0		\$0	\$0
F. Monitoring											
Coordination/Consultation	lump sum	\$11,300	1	\$11,300	\$0			\$0		\$0	\$11,300
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$11,300	\$0			\$0		\$0	\$11,300
G. Totals											
Previously approved				\$201,222	\$0			\$0		\$0	\$201,222
Total for this request				\$201,222							

**PART VII - APPROVALS**

1. *Teri Jensen-Jackson*  
Shasta Trinity National Forest Supervisor (signature)

9/21/2015  
Date

2. Not applicable, no funds requested  
Six Rivers National Forest Supervisor (signature)

                      
Date

3. *Bonnie T. Dyant*  
Regional Forester (signature)

9/22/15  
Date

