

**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: **Route Complex**
- B. Fire Number: **CA-SRF-001476**
- C. State: **California**
- D. County: **Trinity**
- E. Region: **05 - Pacific Southwest**
- F. Forest: **10 - Six Rivers & 14 - Shasta-Trinity**
- G. District: **Mad River (Six Rivers)  
S.F. Mgmt Unit (Shasta-Trinity)**
- H. Fire Incident Job Code: **P5JON7/0510**
- I. Date Fire Started: **July 30, 2015**
- J. Date Fire Contained: **September 2, 2015**
- K. Suppression Cost: **\$33,600,000** (projected from 9/3/2015 Incident Narrative)
- L. Fire Suppression Damages Repaired with Suppression Funds
  - 1. Fireline waterbarred (miles): **ongoing**
  - 2. Fireline seeded (miles):
  - 3. Other (identify):

M. Watershed Number:

HUC (6 <sup>th</sup> level)	Watershed Name	Percent Watershed Burned
180101020302	Bear Creek-Mad River	<1
180102120502	Grouse Creek	2
180102120503	Pelletreau Creek-South Fork Trinity River	31
180101020301	Pilot Creek	59
180102120406	Sulphur Glade Creek-South Fork Trinity River	20
180101050902	Little Van Duzen River	<1
180101050703	Mill Creek-Van Duzen River	9
180101050702	Shanty Creek-Van Duzen River	<1

N. Total Acres Burned: NFS – 23,862 Private – 11,679 Unclassified - 134

Buck Fire – 1,669 acres			
NFS – 1,318	Other Federal - none	Private - 329	Unclassified - 22
Johnson Fire – 34,006 acres			
NFS – 22,544	Other Federal - none	Private – 11,350	Unclassified - 112
(Six Rivers NF: 16,141 acres; Shasta-Trinity NF: 6,403 acres)			

O. Vegetation Types: For mixed evergreen and montane forest zones the timber species are California Red fir (*Abies magnifica*), Coastal Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), ponderosa pine (*Pinus ponderosa*), Jeffrey pine (*Pinus jeffreyi*), Pacific madrone (*Arbutus menziesii*), golden chinquapin (*Chrysolepis chrysophylla*), tanoak (*Notholithocarpus densiflorus*), California black oak (*Quercus kelloggii*), Oregon white oak (*Quercus garryana*), bigleaf maple (*Acer macrophyllum*), California big laurel (*Umbellularia californica*). The shrub component consists of green leaf manzanita (*Arctostaphylos patula*), buckbrush (*Ceanothus cuneatus*), oceanspray (*Holodiscus discolor*), poison oak (*Toxicodendron diversilobum*), Oregon Grape (*Berberis nervosa*), California blackberry (*Rubus ursinus*), salal (*Gautheria Shallen*), kinnikinnick (*Arctostaphylos uva-ursi*) and bear grass (*Xerophyllum tenax*).

P. Dominant Soils: Major soils include: Melbourne-Holland (Fine, mixed, mesic Ultic Haploxeralfs - Fine loamy, mixed, mesic Ultic Haploxeralfs); Albus-Race Deep (Loamy skeletal, micaceous, frigid Ultic Haploxeralfs-Fine loamy, micaceous, frigid, Dystric Xerochrepts); and Hecker Deep (Loamy skeletal, mixed, mesic Mollic Haploxeralfs). The dominant soil association on the Buck Fire was Skalan-Kistirn-Holland, deep (Loamy-skeletal, mixed mesic Ultic Haploxeralfs-Loamy skeletal, mixed, mesic Typic Haploxeralfs- Fine loamy, mixed, mesic Ultic Haploxeralfs). The majority of the soils had loam surface textures with varying degrees of gravel. Rock outcrops occur throughout the various fire perimeters. Many of the soils formed from weathering metasedimentary rocks, which have naturally high erosion hazard ratings. Although all four hydrologic soil groups are represented within the Route Complex, the vast majority of the soils would be rated as “low” or “low-moderate” run-off potential on the Shasta-Trinity and Six Rivers NFs, respectively.

Q. Geologic Types: Dominantly metasedimentary rocks consisting of mica schist, graywacke sandstone and conglomerate; argillaceous mélangé; highly mixed diamictite; minor chert, ultramafics and metavolcanics. Geologic characteristics also include pervasive shearing and widespread deep-seated landsliding, with debris slides common in inner gorge settings.

R. Miles of Stream Channels by Class:

Perennial: 70      Intermittent: 56      Ephemeral: 112

S. Transportation System (miles)

Roads: 119      Trails: 30

### PART III - WATERSHED CONDITION

A. Burn Severity:

<b>Soil Burn Severity (SBS) - Acres</b>					
<b>Fire</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Very Low/Unburned</b>	<b>Total</b>
Buck	2	98	1,349	220	1,669
Johnson	2,392	6,768	22,469	2,376	34,006
<b>Total</b>	<b>2,395</b>	<b>6,866</b>	<b>23,818</b>	<b>2,596</b>	<b>35,675</b>

<b>Soil Burn Severity (SBS) - Percent</b>				
<b>Fire</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Very Low/Unburned</b>
Buck	<1	6	81	13
Johnson	7	20	66	7

B. Water-Repellent Soil (acres):

<b>Fire</b>	<b>Strong</b>	<b>Medium</b>	<b>Weak</b>	<b>Total</b>
Buck	0	167	1,502	1,669
Johnson	9,118	0	3,957	33,957
<b>Total</b>	<b>30,000</b>	<b>167</b>	<b>3,502</b>	<b>35,626</b>

C. Soil Erosion Hazard Rating (acres):

<b>Fire</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Total</b>
Buck	635	653	362	1,650
Johnson	19,120	8,379	6,366	33,865
<b>Total</b>	<b>19,755</b>	<b>9,032</b>	<b>6,728</b>	<b>35,515</b>

D. Erosion Potential:

Pelletreau 7th field watershed: 28.4 tons/acre

Average for other dominant 7th field watersheds: 27.2 tons/acre

E. Sediment Potential: 21,528 cubic yards/square mile

### PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period (years): 8-10
- B. Design Chance of Success (percent): 75
- C. Equivalent Design Recurrence Interval (years): see table below
- D. Design Storm Duration (hours): 12
- E. Design Storm Magnitude (inches): 3.63
- F. Design Flow (cubic feet / second/ square mile): see table below
- G. Estimated Reduction in Infiltration (percent): 37

H. Adjusted Design Flow (cfs per square mile): see table below

**Design and Adjusted Design Flows**

HUC 7 Watershed	Qp2			Qp5			Qp10		
	Pre	Post	Ratio	Pre	Post	Ratio	Pre	Post	Ratio
Upper Pilot Creek	1,723	2,247	1.30	2,788	3,636	1.30	3,524	4,596	1.30
Middle Pilot Creek	1,439	1,844	1.28	2,419	3,101	1.28	3,101	3,975	1.28
East Creek	956	1,098	1.15	1,640	1,883	1.15	2,117	2,431	1.15
County Line-School House	1,098	1,098	1.00	1,948	1,948	1.00	2,545	2,545	1.00
Hitchcock Creek-Oak Flat	1,489	1,588	1.07	2,634	2,810	1.07	3,437	3,668	1.07
Winton Flat-Deep Gulch	434	476	1.10	827	907	1.10	1,110	1,218	1.10
Upper Grouse Creek	1,487	1,488	1.00	2,414	2,414	1.00	3,055	3,055	1.00
Middle Grouse Creek	884	885	1.00	1,515	1,517	1.00	1,955	1,959	1.00
Bear Creek-Grouse Creek	768	802	1.04	1,309	1,367	1.04	1,688	1,763	1.04
Pelletreau Creek	1,127	2,065	1.83	1,957	3,586	1.83	2,538	4,651	1.83
Hyampom Valley	1,155	1,216	1.05	2,064	2,173	1.05	2,704	2,846	1.05
Big Creek-Hyampom	955	1,275	1.34	1,613	2,153	1.34	2,071	2,765	1.34
Browns Canyon	467	467	1.00	826	826	1.00	1,079	1,080	1.00
Tierney Canyon	426	438	1.03	762	783	1.03	1,000	1,028	1.03
Dinsmore-Kuntz	1,091	1,106	1.01	1,932	1,959	1.01	2,523	2,558	1.01

At Qp2, increases range 0 to 83 percent. Average across the watersheds for post-fire Qp2 is 173 cfs, roughly a 16% increase.

**PART V - SUMMARY OF ANALYSIS**

Background: The Route Complex consists of the Johnson Fire (34,007 acres) and Buck Fire (1,668 acres) and burned portions of both the Six Rivers (17,459 acres) and Shasta-Trinity 6,403 acres) National Forests. There are also 11,813 acres of private/other lands within the complex perimeter.

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

(formatted to incorporate "Critical Values and Risk Assessment" from WO ID 2520-2014-1, effective December 17, 2014)

**1. Human Life and Safety:**

**Very High Risk** (very likely, major) to the public and agency personnel traveling on the 5E14 and 5E39 trails; **High** (possible, major) to human life and safety when traveling the 5E41 and 5E56 trails from hazard trees. (PS-02, PS-03)

**Intermediate - Very High Risk** to the public and agency personnel from hazard trees along roadways, fire-damaged road infrastructure, and flooding/debris flow caused by accelerated overland flow from moderate to high burn severity lands, especially along roads 2N12, 2N12A, 2N16, 2N17, 2N18, 2N19, 2N62, 3N10, 3N14, 3N30, 3N44, and 6N01. (PS-01, PS-03, RT-01, RT-02, RT-03, RT-04)

**Intermediate Risk** (unlikely, major) to the public and agency personnel at Little Rock Picnic Area and Big Slide Campground from flooding and debris flow caused by accelerated overland flow from moderate and high burn severity land in the Lower South Fork Trinity River watershed. (PS-02)

## 2. Property

**Very High Risk** (likely, major) to the 3N10, 3N30 roads; **Very High Risk** (very likely moderate) to 2N12, 3N44, and 6N01 roads; **High Risk** (likely, moderate) to the 2N17, 2N19, and 3N14 roads; **Intermediate Risk** (likely, moderate) to the 2N16 and 2N62 roads due to anticipated accelerated flow and sediment delivery into culvert inlets, ditch lines, roadway dips, and associated run outs, especially along the 3N10 road. The 3N10 road is in the Forest Cost Share program and is critically important to the cooperator and Forest Service because it is the main ingress/egress to surrounding areas and Hyampom. The road segments in the Route Complex are expected to receive the bulk of logging traffic related to salvage activities. (RT-01, RT-02, RT-03, RT-04)

**Intermediate Risk** (possible, moderate) to the 5E14 and 5E39 trail infrastructure due to accelerated overland flow concentrating on trails lacking adequate tread drainage or with unstable cut- and fill-slopes. This can indirectly affect natural resources through sediment delivery from the trail to ephemeral drainages above Pilot Creek. (Management Recommendation for trail patrols and trail drainage.)

**Low Risk** (unlikely, moderate) to facilities at Little Rock Picnic Area and Big Slide Campground from flooding and debris flow caused by accelerated overland flow from moderate and high burn severity land in the Lower South Fork Trinity River watershed. (No treatments recommended.)

**Low Risk** (possible, minor) to trail infrastructure due to hazard trees along the 5E14, 5E39, 5E41, and 5E56 trails. Property damage from the fire includes a burned barricade and burned signage on the 5E14 trail, which may lead to trail user confusion and unauthorized trail use by 4WD vehicles. (Management Recommendation to replace directional signs.)

## 3. Natural Resources:

**Very High Risk** (very likely, moderate) to soil quality due to accelerated erosion from areas burned at moderate and high severity. To be consistent with the BAER matrix, eight to ten years was the estimated length of time for recovery from the loss of effective ground cover and above ground organic matter. The loss of effective ground cover and surface horizon organic matter will leave the soil resource susceptible to erosive forces. The decrease in site productivity has increased susceptibility to spread of invasive plant species, since noxious weeds may establish more readily on degraded sites. In the short term, unauthorized OHV intrusions can continue the degradation of soil productivity in localized areas of use, due to the loss of litter cover associated with the fire. Over the long term, the loss of surface soil horizon can lead to decreased commodity production (e.g. timber or livestock forage). In addition, No treatments were recommended for soil productivity, because the various fires within the complex sustained predominately low to very low soil burn severities as a mosaic on unburned areas within the fire perimeters; consequently a relatively small proportion of the burned area will suffer reduced soil productivity. (No treatments recommended.)

**High Risk** (likely, moderate) to native plant diversity, native plant communities or naturalized communities due to the threat of introduction and spread of noxious and non-native invasive plant species from known populations that exist within and adjacent areas of high and moderate burn severity and in association with fire suppression activities. This can occur due to alteration of habitat and loss of competitive pressure from native plant species due to the

fire, and introduction of weed seeds from transport by fire suppression equipment. Displacement of native species by non-native invasive plant species can result in a loss of viability for Region 5 Sensitive plant species that occur within the burned area, degradation of range and recreational values, reduction of water availability to native plants, negatively impacts to community ecology. (L-01. L-05)

**High Risk** (likely, moderate) to water quality of 303d-listed streams due to 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 habitat for ESA-listed aquatic species, and capacity and productivity of hydropower facilities. (Road treatments will address some threats, otherwise no treatments recommended.)

**High Risk** (likely, moderate) to Coho salmon at Pelletreau Creek, Intermediate Risk to FS sensitive steelhead and Chinook salmon in the South Fork Trinity River and to ESA-listed Northern California steelhead in the Mad River, especially in Pilot Creek which is designated critical habitat. Low Risk to Coho and Chinook salmon in the Mad River, and Very Low risk to ESA-listed steelhead, Coho salmon, and Chinook salmon in the Van Duzen River, which are found downstream of the Forest boundary. This risk is posed by short and long term modification of suitable and occupied habitat due to scouring, sediment and debris flows, modifications to water quality due to sediment and ash, modification of streamside vegetation and stream bank conditions, and possible increased water temperature due to loss of shading. These changed conditions will also impact aquatic invertebrates and other FS sensitive species such as pacific lamprey and native mussel populations in both drainages. (Road treatments will address some threats, otherwise no treatments recommended.)

Intermediate Risk (possible, moderate) to ESA-listed northern spotted owls from BAER activities extending into the 2016 nesting season, which could disrupt nesting, cause loss of productivity, decrease the survival of young, and result in ESA take. The critical nesting period is Feb. 1 to July 31 and mechanical activities that occur within 0.25 miles of active owl nest sites have the potential to disturb and disrupt owls, depending on a variety of factors including the type of noise and the frequency and duration of the activity. BAER activities should be scheduled outside the nesting period near known and likely nest sites, where possible, and should be coordinated with the local wildlife biologists. (Address through consultation.)

Low Risk (possible, minor) to critical habitat and suitable occupied habitat for ESA-listed northern spotted owl (*Strix occidentalis caurina*) from post-fire mortality of trees that have been stressed by the fire. The fire is estimated to have removed approximately 13% of the suitable owl habitat on Forest Service lands and 7% of the critical habitat within the fire perimeter. Four of 14 owl protected activity centers (PACs) in the fire perimeter were heavily impacted by the fire. While some additional tree mortality will occur post-fire, it is not thought to be of a magnitude that would significantly affect additional owl habitat at the stand or home range scale. (No treatments recommended.)

#### **4. Cultural and Heritage Resources:**

**Very High Risk** (likely, major) for degradation of historic properties. Damage will likely occur from flooding as increased overland flow and hillslope erosion is expected to affect individual sites. Additionally flooding through the site will likely erode surface and subsurface artifacts and result in the loss of data and site integrity if not mitigated. (L-02, L-03, L-04)

**High Risk** (likely, moderate) of degradation to three historic properties. Damage will likely occur from flooding as increased overland flow and hillslope erosion is expected to affect the site. The lack of ground cover increases visibility of artifacts and the potential for site looting. Additionally flooding through the site will likely erode surface artifacts and result in the loss of data and site integrity if not mitigated. (L-02, L-03, L-04)

**Very High Risk** (very likely, major) for degradation of 18 historic properties due to looting. Many of these sites consist of lithic scatters. There is a heightened risk for looting at these sites because the fire has exposed the previously hidden artifacts. The archaeological district, determined eligible for inclusion on the National Register of Historic Places, has some of the oldest dated sites in the region. (PS-04)

#### **5. Other Values:**

Other values are non-BAER Critical Values that are potentially at risk due to the fire. These values may be NFS values or non-NFS values that may be threatened from post-fire effects originating primarily on NFS lands. Activities to address other non-BAER NFS values have been identified as 'Management Recommendations' and can be considered for discretionary program funding. Threats to non-NFS values should be communicated to the appropriate parties through interagency coordination procedures. These recommendations are described after the BAER Treatments Narratives (Section H; page 12).

**High Risk** to seeps and springs at Pelletreau Creek and Intermediate Risk throughout the burned area, especially at high altitudes due to long term sedimentation or incision, short term water quality degradation, and impacts to vegetation.

Low - Intermediate risk to non-listed fish and recreational fisheries throughout the burned area due to short and long term modification of stream-sport fisheries from channel scouring, sediment and debris flows, modification of streamside vegetation and stream bank conditions, and reduction of sportfish populations due to ash flow.

Low Risk (possible, low) to Forest Service Sensitive raptors from BAER activities that extend into the 2016 nesting season, which could disrupt nesting, cause loss of productivity, and decrease the survival of young. One bald eagle and three goshawk nest sites are known to occur in or near the fire perimeter. The eagle nesting period is January 1 - August 15 and the goshawk nesting period is February 1 - Aug. 15, with a disturbance buffer of 0.5 miles. BAER activities should be scheduled outside the nesting period near known nest sites, where possible, and should be coordinated with the local wildlife biologists.

#### **B. Emergency Treatment Objectives:**

- Mitigate and protect, to the extent possible, threats to personal injury or human life of forest visitors and Forest Service employees by raising awareness through posting hazard warning signs on roads, trails, and recreation facilities to communicate hazards of burned trees, flooding, debris flows, and rock fall, and by repair and maintenance of roads that would pose a threat to safety if damaged. Communicate risks to cooperating agencies and community groups. Consider temporary closures to protect public users of NFS lands and recreation facilities.

- Protect or minimize damage to NFS investments in roads by installing drainage features capable of withstanding potential increased stream flows and/or debris flows. Minimize damage to key NFS travel routes. Protect BAER road work through temporary wet-season closures.
- Protect or mitigate potential post-fire impacts to critical natural and cultural resources within the burned area.
- Treat invasive plants, which are a threat to native or naturalized ecosystems, by minimizing the expansion of existing weed populations in the burned area where soil and/or vegetation was disturbed as a result of fire suppression activities.
- Assist cooperators, including local, State, and Federal agencies with the interpretation of the assessment findings to identify potential post-fire impacts to communities and residences, domestic water supplies, and public utilities (including hydropower facilities, power lines, roads, and other infrastructure).

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

Land 75%    Channel NA    Roads/Trails 80%    Protection/Safety 90%

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	80	75	-
Channel	NA	NA	NA
Roads/Trails	80	80	75
Protection/Safety	80	70	60
Initially, visitors will heed the warning signs. Complacency is expected after the initial year unless there is a damaging event.			

E. Cost of No-Action (Including Loss): **REDACT**

F. Cost of Selected Alternative (Including Loss): **REDACT**

Implementation of recommended response actions is based on market resources only and is economically justified with a 1.4 benefit:cost. The likely probability of loss if treatments were not applied is based on field observations and expert opinion for potential damage or loss from activities likely to be implemented on adjacent private lands. For the recommended treatments there is a reduced probability of damage or loss with implementation. The expected loss would not be as costly when implementing the recommended treatments. The VAR analysis focused primarily on market values so potential benefits such as lowering level of risk to human life and safety, natural resources, and cultural resources were recognized in this BAER assessment, but not included in the cost basis for Values at Risk analysis.

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 checked="" type="checkbox"/> Recreation |
| <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: Terry Hardy

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**Route Complex BAER Assessment Team**

- Fred Leviton, Assistant Team Lead, Geology, Six River NF-R5
- Chuck Jachens, Hydrology, BIA, Sacramento
- Angela Coleman, Hydrology, Chugach NF-R10
- Mary Flores, Soils, Modoc NF-R5
- Kit McDonald, Soils, Kiabab NF-R3
- Hannah Stone, Recreation & Documentation, El Dorado NF-R5
- Jason Pollard, Recreation, Lake Tahoe Basin MU-R5
- John McRae, Botany, Six Rivers NF-R5
- Lisa Hoover, Botany, Six Rivers NF-R5
- Caitlin Cuddihy, Engineering, Pike-San Isabell NF/Cimarron-Comanche National Grasslands-R2
- Craig Kusener, Engineering, Plumas NF-R5
- Celia Yamagiwa, GIS, Modoc NF-R5
- Karla Knapek, GIS, Six Rivers NF-R5
- Yvette Paroz, Fisheries, RO-R3
- Alden Neel, Heritage and Cultural Resources, Lassen NF-R5
- Glenn Martin, Forestry, Modoc NF-R5
- Joe Doerr, Wildlife, Willamette NF-R6
- Dave Young, BAER Coordination, Shasta-Trinity NF-R5
- Cathy Carlock, Logistics, Modoc NF-R5

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:

**L-01 EDRR (Early Detection Rapid Response):** Reduce the potential for establishment of new noxious weed infestations in native or naturalized communities, particularly in highly susceptible burned areas, and prevent or decrease the rate of spread of existing infestations.

Treatment includes an initial detection survey combined with treatment at time of discovery, if possible. Surveys would begin in 2016 at times when the target species are the most visible. Because of differences in flowering times for potential species, two visits may be required during the growing season. Completion of surveys in roads, dozer lines, drop points, helispots, trailheads, staging areas, and safety zones would be the first priority.

L-01 EDRR Treatment Cost	Detection Survey Area (acres - dozer line, drop points, etc)	Labor	Mileage	Total
Six Rivers NF	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>
Shasta Trinity	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>
<b>Total</b>	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>	<b>REDACT</b>

All locations of noxious weeds discovered would be mapped and entered into the National Resource Inventory System (NRIS) according to national protocol. Treatment would be recorded as directed by the same national protocols. Treatment would consist of hand pulling to root depth and, if seed is present, plants would be bagged and disposed of properly.

**L-02 Straw and Wattle Erosion Mitigation:** Weed-free straw wattles and bales would be placed at a historic site to reduce water and debris flows into the site boundaries, and straw would be hand strewn to provide mulch and mitigate erosion. These treatments are intended to prevent the site surface from washing into a seasonal stream that drains the bowl landform in which the site is located. Erosion would likely affect site context and integrity. If not mitigated, prehistoric cultural material would erode from the surface and potentially from the subsurface if the water channelizes. Site monitoring would be necessary to ensure that the treatment methods are successful and to clear the sediment from behind the wattles, but the wattles could be allowed to decompose as natural vegetation returns to the area.

**L-03 Straw Bale Mitigation:** Straw bales would be placed below a culvert to disperse the water and debris flowing onto a historic site and prevent the destruction of subsurface integrity and context. Site monitoring would be necessary to ensure that the treatment methods are successful and to clear the sediment from behind the bales. The bales would be allowed to decompose as natural vegetation returns to the area.

**L-04 Seeding:** Native seeds would be spread over two historic sites in order to reduce splash erosion that could damage site integrity and to provide vegetation that would camouflage the sites and reduce potential impacts from looting. The seed would meet local seeding guidelines and the species type would be determined by the Forest botanist. The seed would be applied at a rate of 10lbs/acre.

Cultural-Heritage Site Stabilization	In House	Contract
L-02: Straw and Wattle Erosion Mitigation	<b>REDACT</b>	<b>REDACT</b>
L-03: Straw Bale Mitigation		
L-04: Seeding		
<b>Total Cost</b>		

**L-05 Natural Native Community (NNC) Stabilization:** Twenty-five high priority non-native invasive plant treatment sites would be mulched with weed free straw and seeded with locally collected native grass seed to lower the risk of spread and reduce or retard the potential for subsequent germination of non-native invasive plant species.

L-05 NNC Stabilization Treatment	Acres Treated	Materials
Six Rivers NF	<b>REDACT</b>	<b>REDACT</b>
Shasta Trinity		
<b>Total Cost</b>		

Channel Treatments:

None recommended.

Road and Trail Treatments:

The majority of roads within the Route Complex area are expected to see a post-fire increase in stormflow over the next few years. Of the 119 miles of maintenance level 2, 3, and 4 roads

assessed, it was determined that 40 miles are at risk of damage that could result in threats to human life and safety, loss of road function, denial of access, and increased sediment and debris movement that could pose a risk to adjacent resources. (See Burned Area Emergency Response Treatments Catalog Chapter 4, Rolling Dips pages 109-112, Low-Water Stream Crossings pages 121-126, Catchment-Basin Cleanout pages 145-148 and BAER Specification, Road Drainage Reconstruction for more information.)

**RT-01 Road Storm Proofing:** Prevent road damage through berm removal, maintenance of rolling dips, cleaning of ditches, culverts, and catch basins; installation of culvert inlet end sections, slotted inlet riser pipes, and debris racks.

**RT-02 Riprap Placement:** Install riprap below culverts and at the outlet of rolling dips for energy dissipation.

**RT-03 Culvert Replacements:** Remove and replace culverts identified as undersized or compromised by fire damage, where feasible. This treatment would include installation of new relief culverts in locations determined by the Engineer to enhance the capacity of existing culverts. Undersized culverts should be replaced with larger pipes, where feasible, appropriate, and cost effective.

**RT-04 Gate Maintenance:** Maintain non-functional gates on Level 2 roads in order to close the gates during wet-weather conditions to protect BAER road work.

**RT-05 Temporary Closures and Enforcement:** Close Level 2 roads with existing gates during wet periods to protect BAER road work treatments. This would also mitigate risks to human life, safety and natural resources by preventing road use within a burned area during increment weather, decreasing potential for erosion and sedimentation from the road, and decreasing transport of non-native invasive species.

**RT-06 Road Storm Patrols:** The roads at risk from increased stormflow runoff and erosion within the burned area are primarily located below areas of high to moderate burn severity. There is an immediate and future threat to travelers along the roads within the burned area due to the increased potential for culverts to plug with sediment and debris which could washout sections of the roads. With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate erosion on the slopes, and it is likely that this runoff will inundate the roads or cause washouts at drainage facilities (culverts) or stream crossings. These events create hazardous conditions on forest roads and put the safety of users at risk.

Monitor road drainage structures and debris flow treatment structures after significant storm events to ensure the maximum drainage capacity is maintained until the natural re-vegetation of the burned area has occurred. Maintain and/or repair any damage to road surfaces. Remove sediment and debris from drainage and treatment structures and repair headcutting in streams and drainages to prevent further degradation of channels. Monitor the movement of large woody debris and determine whether the material should be removed before it contacts bridge piers, abutments, or culverts. Mitigate hazard trees at treatment locations to provide for worker safety.

See Burned Area Emergency Response Treatments Catalog Chapter 4, Storm Inspection and Response pages 149 -152 and BAER Specification for Storm Patrols for more information.

**RT-07 Install Gates:** The goal is restrict access on level 1 roads where 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. Gates will also be installed on level 2 roads having BAER authorized storm proofing treatments implemented to ensure BAER objectives are achieved. The gates will also contribute to increased public safety, allow for vegetative recovery, reduce sedimentation, and prevent damage to the road system within moderate and high burn severity areas.

Engineering Treatments		Cost
RT-01 Road Storm Proofing	Remove berm, install rolling dips; clean ditches, culverts, and catch basins; install culvert inlet end sections, slotted inlet riser pipes, and debris racks.	REDACTED
RT-02 Riprap Placement	Install riprap below culverts and at the outlet of rolling dips.	
RT-03 Culvert Replacements	Remove and replace, where feasible, the culverts identified as being undersized or damaged where critical values are at risk and vehicle access is needed. Replace culverts with structures that meet the anticipated post-fire flows. Structures shall comply with Forest Plan standards.	
RT-04 Gate Maintenance	Maintain non-functional gates on Level 2 roads.	
RT-05 Temporary Closures and Enforcement	Obtain Forest Order for temporary closure of Level 2 roads with existing gates during the wet periods after completion of BAER roadwork, close the roads, and enforce the closure.	REDACTED
RT-06 Storm Patrols	Storm patrols to identify problem areas such as clogged culverts, washed out roads and damaged drainage and treatment structures. Storm patrols will complete limited maintenance by removing debris from treatment structures to ensure they continue to function during future flood events.	
RT-07 Install Gates or Barriers	Combined with RT-05 (temporary closures), restrict access on level 2 roads to maintain functionality of authorized and implemented storm proofing treatments (RT-01). This treatment will also decrease the probability for expected increases in expansion of noxious weed populations and mitigate some of the risk to human life and safety.	
<b>Total Cost</b>		

**Protection/Safety Treatments:**

Potential threats to the public and agency personnel include flooding and debris flows, hazard trees, and rockfall along roads, trails, and at recreation facilities that are downstream or downslope of areas with moderate to high burn severity.

**PS-01 Hazard Warning Signs - Roads:** Purchase and install burned area hazard warning signs, road route markers, and road closure signs at roads that enter or are within the burned area.

**PS-02 Hazard Warning Signs - Recreation:** Purchase and install burned area hazard warning signs at the Big Slide Campground, the Little Rock Picnic Area, and the trailheads and junctions of the 5E14, 5E39, 5E41, and 5E36 trails.

**PS-03 Temporary Trail Closure:** Obtain Forest Order for temporary closure of the 5E14 and 5E39 trails until hazard trees are mitigated, close the trails, and enforce the closure.

Public Safety Treatments	Materials	Labor	QTY	UOM	Cost
PS-01 Hazard Warning Signs – Roads	<b>REDACT</b>				
PS-02 Hazard Warning Signs – Recreation					
PS-03 Temporary Trail Closure					

**PS-04 Resource Protection Patrols - Heritage:** Patrol historic areas identified by the SRF Forest archeologist within the burned area to minimize the risk of looting.

PS-04 Resource Protection Patrol	Materials	Labor	QTY	UOM	Cost
Patrol Personnel (GS-9)	<b>REDACT</b>				
Patrol Personnel (GS-5)					
Patrol Personnel (GS-12)					
Vehicles (FOR and mileage)					

Other Treatments and Response Actions

**Management Recommendations**

Complete a changed condition assessment of impacts to fish and fish habitat stemming from the effects of fire, fire suppression operations, and BAER activities at a larger scale than an individual BAER assessment. A primary concern for land managers of the Six Rivers and Shasta-Trinity National Forests is the potential cumulative impacts from all the wildfire complexes that have burned within the S.F. Trinity River and Trinity River watersheds. The accumulated impacts of increased peak flows, with increased sediment delivery to stream channels and channel scour from hillslope erosion, debris flows, road/culvert failures, and loss of over-story stream shading components that will occur at a larger scale than an individual fire complex are more likely to impact the Coho population as well as other anadromous salmonid populations.

Replace road mileage, road directional signs, and 'road closed' signs (on level 1 roads) either burned in the fire or damaged/removed as part of fire suppression operations. The road and direction signs are important for navigation by the general public. The 'road closed' signs provide resource protection (decrease prism damage, reduce sediment delivery and noxious weed spread) by discouraging unauthorized motor vehicle travel.

Maintain and construct drainage features on trails within the fire perimeter to prevent property damage caused by increased overland flow from burned areas concentrating on and eroding the trail tread.

The following roads have infestations of diffuse and spotted knapweed: 02N19, 02N16, 02N17, 02N18, AND 03N06. The most effective means of preventing the spread of these highly aggressive non-native invasive plant species is by closing existing gates along the infected Forest Service roads for one year following BAER treatment in order to promote initial recovery of natural communities. (see RT-07)

**Coordination, Communication, and Consultation**

Over the next year it is critical that appropriate agencies maintain due diligence and continue to inform the public, private land owners, and operators of hydro power and power transmission lines of the potential threats resulting from post-fire watershed response.

Areas or features of concern:

Communicate to local law enforcement and emergency management services that routes providing ingress and egress throughout the burn area may become compromised. This may result in loss of access by emergency response vehicles.

Communicate to owner/operator of hydro power facility in Big Creek drainage the potential for damage and likelihood for increased maintenance to clean sediment from diversion/intake (point of contact for operator information: Larry Winters, **REDACT**)

Communicate to operator of power transmission line located along CR 311 the potential for damage to towers/poles that are located within flow paths of floods or debris flows.

Coordination with owners and operators of private lands for their acknowledgement of the potential for cumulative impacts to road infrastructure, hillslope soil-hydrologic function, water quality, and downstream fish habitat from post-fire timber salvage activities. The greatest concern is within the Pelletreau watershed where substantial BAER funding is being invested in road treatments to address expected increases in erosion, overland flow, and sediment delivery. Cooperation and agreement on road maintenance objectives is needed to ensure the BAER treatments remain functional to protect the invested funding and preserve the integrity of the road prism. In addition, cooperation to establish ground cover in harvest units will contribute to more rapid recovery of vegetation in the burned area leading to reduced soil erosion, decreased overland flow and sediment delivery to nearby streams and adjacent roads.

**Coordination**

	Rate	Days	Cost
Staff Officer (GS-13)	<b>REDACT</b>		
Forest BAER Coordinator (GS-12)			
BAER Specialist (GS-12)			

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

	Rate	Days	Cost
Forest BAER Coordinator (GS-12)	<b>REDACT</b>		
PIO (GS-11)			

In addition, associated emergency consultation required under the Endangered Species Act (ESA) for 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 cannot recognized 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.

Although the Consultation activity is listed in Six Rivers NF funding request, the intent is for the appropriate specialists from both the Six River and Shasta-Trinity NFs to utilize the authorized funds. The funding request for consultation/coordination in the Route Complex BAER assessment is expected to cover the majority of consultation for BAER activities across multiple fire complexes. Funding requests for consultation in upcoming BAER assessments will occur only when extra ordinary conditions that have not already been acknowledged exist.

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

	Rate	Days	Cost
Forest Fish Biologist (GS-11)	<b>REDACT</b>		
Forest Wildlife Biologist (GS-11)			

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

	Rate	Days	Cost
Forest Archeologist (GS-11)	<b>REDACT</b>		

I. Monitoring Narrative:

None recommended.