

Date of Report: August 5, 2012

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

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

**B. Type of Action**

- ☒ 1. Initial Request  
☐ 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:** Peak Fire**B. Fire Number:** CA-PNF-000998**C. State:** California**D. County:** Plumas**E. Region:** 05**F. Forest:** Plumas**G. District:** Beckwourth**H. Fire Incident Job Code:****I. Date Fire Started:** July 28, 2012**J. Date Fire Controlled:** 100 percent contained 8/2/12 not  
controll at the time of this report**K. Suppression Cost:** Currently estimated at \$842,500**L. Fire Suppression Damages Repaired with Suppression Funds**

1. Fireline waterbarred (miles): 3.5
2. Fireline seeded (miles): 0
3. Dozer line rehabed (miles): 7

**M. Watershed Number:** 180201220204 180201220205**N. Total Acres Burned:**NFS Acres 756      Other Federal 0      State 44      Private 0

**O. Vegetation Types:** East side pine type (Jeffery) with white fir, manzanita, sierra juniper, mountain mohogany, deer brush, bitter brush, service berry, mountain snowberry, squaw carpet, mules ear, and mesic forbs in the riparian areas. Mixed conifer/fir forest type was present on the east end of the fire on the slope up to the ridgetop. Some drainages contain aspen and willow.

**P. Dominant Soils:** Bonta-Toiyabe, Shepan-Polecreek, Sattley-Shepan-Trojan, Waca-Woodseye, Families

**Q. Geologic Types:** Teritary pyroclastic rocks and volcanic mudflow deposits with Cenezoic volcanic rocks

R. Miles of Stream Channels by Order or Class: perennial 0 intermittent 1.3 ephemeral 6.8

S. Transportation System: Trails: N/A miles Roads: System 1.8 nonsystem 0.7

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): Unburned 4 low 246 moderate 386 high 164

B. Water-Repellent Soil (acres): 49

C. Soil Erosion Hazard Rating (acres): 324(low) 259(moderate) 90(high) 127(very high)

D. Erosion Potential: In the moderate burn severity there is 20 percent chance that 4.7 ton per acre could be generated.

E. Sediment Potential:    cubic yards / square mile Not calculated

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

A. Estimated Vegetative Recovery Period, (years): 2 to 5

B. Design Chance of Success, (percent): 85

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 1.8

F. Design Flow, (cubic feet / second/ square mile): 136 (Squaw Valley Peak watershed), 57 (Siegfried Canyon) and (Little Stoney) 51

G. Estimated Reduction in Infiltration, (percent): <1 percent

H. Adjusted Design Flow, (cfs per square mile): Not used

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

A. Describe Watershed Emergency

#### **Summary**

The BAER assesement team has determined that an emergency does exist in regard to increased erosion and runoff from the burned area and road system which threatens to increase sedimentation and lower water quality in the Squaw Queen Watershed. The Peak fire burned a total of 800 acres.

Soil and water quality impacts within the Peak Fire were rated predominately low to moderate, with some areas of high and very high along the upper slopes, by the assessing hydrologist and soil scientist. Their assessment was based on amount of hydrophobic soils, and the intensity at which the vegetation burned. Impacts to soils from erosional loss will impact soil productivity. As a result, vegetation regeneration and reestablishment of conifer forest within the burned area are negatively affected.

Burn severity for most of the fire was rated moderate to high, with islands of low severity and unburned patches. The high burn severity was concentrated in patches of timber on the South aspect and in the upper 150 feet of the ridgeline on the North aspect. Drainage density is very low and all drainages in the fire area were intermittent or ephemeral.

It is **critical** that all emergency treatments are accomplished prior to late summer thunderstorms. Intense rain storms on the fire area are predicted to generate surface erosion and movement of soil and ash into the stream system.

**Table 1. Summary of Emergency Determination by Values at Risk**

VALUES	EMERGENCY DETERMINATION
<b>Human Life and Safety</b>	
<b>Safety of Forest Visitors</b>	<u>An emergency exists</u> to the public as a result of the Peak Fire in the form rock and tree fall and increased erosion that has the potential to clog culverts and cause damage to roads
<b>Private Property</b>	<u>No emergency exists.</u> There is no private property within the fire boundary. There is State Game Refuge land SW of 26N70 it is unlikely this land would be impacted by effects of the fire.
<b>Forest Roads</b>	<p><u>An emergency exists</u> based on the following threats:</p> <p><b>Life and Safety</b>—tree and rock fall, loss of road function</p> <p><b>Loss of Control of Water</b>—blocked or plugged drainage features</p> <p>Impacts to Water Quality both on and off site</p> <p>The dominant road features on the landscape are maintenance level 2 roads 26N29 Siegfried Canyon Road and 26N05 McClellan Canyon Road. Reconnaissance of 1.8 miles of ML-2 roads and 0.7 miles of non-system routes were conducted. The system roads are at minimal risk to post-burn runoff although two specific locations will likely experience increased sediment and or debris delivery. Emergency treatments are recommended to reduce the impacts from post fire effects to preserve property, public safety, and water quality.</p>
<b>Water Quality &amp; Fisheries</b>	<p><u>No emergency</u> exists from increased sedimentation due to hillslope erosion and increased runoff from roads.</p> <p>There are no fish bearing streams within the fire perimeter. There is no Mountain Yellow-legged Frog habitat in the area.</p>
<b>Soil Productivity</b>	<u>No emergency exists.</u> Most of the fire (87%) resulted in a high to moderate severity burn. Litter fall in the moderate severity burn is expected to produce adequate ground cover to protect the soil where tree canopy is abundant (the typical condition). Hydrophobic conditions are present but of limited extent and only found in the high severity portion of the fire.
<b>General Flooding and Debris Flow</b>	<u>No emergency exists.</u> No debris flow or debris slide features were noted during the field and aerial recon. The potential for flooding and high runoff is low; therefore the risk to life is low. See hydro report for a complete discussion of this issue.
<b>Ecosystem Structure and Function</b>	
- Noxious Weeds	<u>An emergency exist.</u> The wash station was cancelled before it reached the fire. The threat is invasion of new noxious weed species. Dozer line and hand line within the fire perimeter make good colonization areas.
- TES Plants	<u>No emergency exists</u> for TES plants. A search of the district data base, files and GIS system showed that no Plumas National Forest Sensitive Plants were documented from within the fire area.
- TES Wildlife	<u>No emergency exists.</u> A Protected Activity Centers (PAC) is located in the vicinity; however input from the district biologist indicates the fire had no negative effect.
<b>Heritage Resources</b>	There are archaeology sites within the fire, however <u>there is no emergency</u> related to runoff and erosion issues.

## B. Resource Impacts

### Values at Risk by resource

**Soils:** The fire burned in the Squaw Queen and Willow creek watersheds of the Beckwourth Ranger District. Field reconnaissance of the Peak fire was conducted on August 4, 2012. Burn severity was determined through field verification. Hydrophobic transects were done in the high burn severity areas on both sides the ridge. Spot checks were also conducted in the moderate and low severity areas. Data was collected on existing ground cover, litter fall potential and hydrophobic conditions. Ground cover is expected to increase significantly in the moderate burn areas once the burned trees contribute needle fall.

Burn severity was 31 percent low, 48 percent moderate, and 20 percent high. Slopes are 3 to 50 percent (not including rock outcrop areas). Soil hydrophobic conditions are present but do not dominate the landscape. Approximately 6 percent of the watershed is estimated to be hydrophobic. Typically the water repellant layer was shallow at 0 to 1/2 inch depth. The hydrophobic layer was found to be more extensive in dispersed pockets of soil. Uneven heating occurred on the North slopes where more down woody material was available for consumption. Some natural hydrophobicity was found within the soil.

With the exception of the Rock Outcrop-Rubble land complex (Map unit 143), all soil map units within the fire had instances of moderate and high burn severity acres (USDA, 1989). The soils have a moderate and high EHR and a B or C hydrologic class. Map unit 143 is located on the ridge separating the North and South sides of the fire and is predominately Rock Outcrop. This map unit is listed as having a very high erosion hazard rating. With the exception of two saddles where the fire passed through, the ridge line was effectively unburned or had a low fire severity.

Modeling was not run for these soils since there is little to no risk of any detrimental downstream impacts. Erosion may occur as a result of high intensity storms but may be of short duration and length as it feeds into non-burned areas that have a high ground cover. Needle cast from the firs and pines will provide effective groundcover to minimize any erosion. The soils have a high surface rock cover, 30-60 % which will effectively reduce surface erosion.

**Table 2. Peak fire major soil map units and Erosion Hazard Ratings with fire effects**

Map Unit	Name	EHR (burn soil)
243	Rock Outcrop-Rubble land complex	VH
251	Sattley-Fopiano families complex, 30-50% slopes	H
258	Sattley-Shepan-Trojan families complex, 0-30 percent slopes	M
259	Sattley-Shepan-Trojan families complex, 30 to 50 percent slopes	M
260	Shepan-Polecreek families complex, 0 to 30 percent	M

**Vegetation:** The wash station ordered for the fire was cancelled and no weed prevention measures were implemented at this incident. Dozer line, hand line and the fire itself create conditions that are highly vulnerable to noxious weed invasion. The incident command post created several acres of bare soil immediately adjacent to a sensitive plant population that is now vulnerable to noxious weed invasion. Suppression vehicles and equipment are likely vectors of transport of noxious weeds. There is a high risk to the native plant community. There are two known noxious weed sites in the area around the fire perimeter, spotted knapweed (*Centaurea maculata*) and dyer's woad (*Isatis tinctoria*). The spotted knapweed is less than one mile from the fire perimeter; the dyer's woad is approximately three miles from the fire perimeter. Both of these noxious weeds are B-rated by the California Department of Food and Agriculture.

([http://www.cdffa.ca.gov/plant/ipc/weedinfo/winfo\\_list-pestrating.htm](http://www.cdffa.ca.gov/plant/ipc/weedinfo/winfo_list-pestrating.htm)). At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action.

**Hydrology:** The threat is intense thunder storms will cause accelerated erosion before vegetation can fully recover. There is also the threat that sediment storage on slopes and within ephemeral drainage features within the burn area could be mobilized during high precipitation events and ultimately be transported decreasing water quality and putting culverts and roads at risk. Table 3 displays the modeled changes to peak flow.

**Table 3. Estimated flow increases for the Peak Fire subwatersheds**

Subwatershed Name	Flood Frequency Return Interval	Drainage Area (acres)	Pre-Fire Peak Flow (Cfs)	Post Fire Peak Flow (Cfs)	Flow Increase above Normal
Squaw Valley Peak	2 years	5937	136	157	1.15
Siegfried Canyon	2 years	2284	57	66	1.16
Little Stony	2 years	2615	51	60	1.18

Impacts to soils from erosional loss could potentially impact water quality through aggradation and deposition of sedimentation and ash. The greatest threat is from rill and gully erosion resulting from lost of infiltration and ground cover.

### C. Planned Treatment Narratives

**Land Treatments:** Only noxious weed detection survey is proposed.

**Channel Treatments:** No treatments proposed.

**Road Treatments:** The following emergency treatments were identified:

- A. Restore and Improve Drainage Function
- B. Install Roadway Dips
- C. General Maintenance Culvert Inlets and Outlets
- D. Install Drainage Armor
- E. Install BAER Warning and Information Signs
- F. Storm Patrol

Estimated cost of the proposed road treatments are approximately \$7,450 for those roads assessed and summarized in this report. The treatments proposed will help reduce the risk to life and property, the effects on water quality and soil productivity, the infrastructure (roads) investments, adjacent resource values and assure future availability for access and administration of the fire area.

### Discussion/Summary/Recommendations

- A. Implement road treatments to restore the drainage function as shown on the treatment map and as recommended above.
- B. Mitigate Roadside Hazard Trees for safety concerns by signing the area to inform the public of the potential for falling limbs and trees.

**D. Emergency Treatment Objectives:** The primary objective of the proposed emergency rehabilitation is to take prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to property and prevent unacceptable resource degradation.

**Road Treatments:** Burned slopes above road culverts have the potential to produce woody debris and sediment that may plug the culverts and cause road washouts. Road treatments will reduce the amount of sediment transported to ditches and stream channels. Threats to life and property, effects on water quality, and the Forest Service Infrastructure (roads and trails) are considered the values at risk. The Forest Service developed roads and trails are considered a government investment or asset which are documented in Infra,

and are needed for emergency, administrative, and recreational access. Proposed road treatments are estimated at \$7,450.00. The value of the existing road system varies depending on individual road designs, maintenance and service levels. With an estimated value of \$150,000 per mile, the road system within the fire perimeter is valued at approx. \$270,000. The proposed road treatments if implemented as prescribed will reduce risks to life, property, and water quality. See appendix C of roads report for road treatment specifications.

Roadway drainage structures are at risk of losing their function and diverting water onto the roadway when becoming clogged with debris during post-burn storm events. To prevent this risk it is necessary to restore and improve drainage function, construct road dips and armor fill slopes to protect the road prism from anticipated increased post burn runoff and sediment / debris delivery.

To improve public safety and awareness, it is recommended that the fire area be posted with warning signs informing the public of the hazards associated with burned areas. This posting would be through the erection of signs on the affected system

**C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:**

Land \_\_ % Channel \_\_ % Roads 90 % Other \_\_ %

**D. Probability of Treatment Success**

	Years after Treatment		
	1	3	5
Land			
Channel			
Roads	90	90	100
Other			

**E. Cost of No-Action (Including Loss): See roads discussion above**

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

**G. Skills Represented on Burned-Area Survey Team including non ordered specialist:**

[X] Hydrology    [X] Soils    [ ] Geology    [ ] Range    [X] Forestry    [X] Wildlife  
 [x] Engineering    [ ] Ecology    [X] Botany    [X] Archaeology    [ ] Fisheries

Soils – Jim Hurja

Hydrologist – Brendan Waterman

Transportation System - Ryan Nupen

Archeology – Mary Kliejunas

Botany support– Michael Friend

Wildlife Support -Russel Nickerson

Soils Trainee – Kelby Gardiner

Team Leader: Barbara Drake, Humboldt-Toiyabe NF Email: [bdrake@fs.fed.us](mailto:bdrake@fs.fed.us) Phone: [775-355-5313](tel:775-355-5313)

**H. Treatment Narrative**

Road Treatments

**26N05, McClellan Canyon**

26N05 is a native surface, maintenance level 2, forest development road 8.9 miles in length. Install one 24" culvert, clean one inlet, and outlet, riprap outlet of both culverts. Approximately 0.7 miles of hazard trees are present on this road. Install 2 BAER information signs informing the road users of the hazard.

## 26N29 Siegfried Canyon

26N29 is a native surface, maintenance level 2, forest development road 6.7 miles in length. Clean the inlet and outlet of 1 culvert and install 1 diversion potential dip, riprap both outlets. Approximately 0.1 miles of hazard trees are present on this road. Install 2 BAER information signs informing the road users of the hazard.

### Nonsystem Roads

A total of 3 miles of nonsystem roads were surveyed. None of these routes can be found on the current MVUM. Within the perimeter there were 0.7 miles and downslope of the southern perimeter of the fire were another 2.3 miles of road. No drainage structures were found and no treatments are recommended.

I. Monitoring Narrative: Monitoring for new populations of noxious weeds within the fire perimeter is requested. Monitoring is proposed for one year.

### Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			NFS Lands		
		Unit	# of	WFSU	Other
Line Items	Units	Cost	Units	SULT \$	\$
<b>A. Land Treatments</b>					
None Recommended					
<i>Subtotal Land Treatments</i>				\$0	
<b>B. Channel Treatments</b>					
None Recommended					
<i>Subtotal Channel Treatment</i>				\$0	
<b>C. Road and Trails</b>					
Relief Dip at Culvert Crossings	each	\$500	1	\$500	
Drainage Armor	Cubic yrd	\$15	150	\$2250	
culvert cleaning	each	\$300	2	\$600	
Install 24" CMP	Linear ft.	\$40	40	\$1600	
<i>Subtotal Road and Trail Treatments</i>				<b>\$4950</b>	
<b>D. Protection/Safety</b>					
Storm Patrol	each	\$500	1	\$500	
Warning Signs	each	\$500	4	\$2000	
<i>Subtotal Protection/Safety</i>				<b>\$2500</b>	
<b>E. BAER Evaluation</b>					
assessment team	each	\$5,340	1		
<i>Subtotal BAER Evaluation</i>				<b>\$5,300</b>	
<b>G. Monitoring Cost</b>					
noxious weed survey	each	2000	1	\$2000	
<i>Subtotal Monitoring</i>				<b>\$2000</b>	
<b>H. Totals</b>				<b>\$14,750</b>	
<b>Total Request</b>				<b>\$9450</b>	

### PART VII - APPROVALS

1. /S/ EARL W. FORD  
Forest Supervisor (signature)

August 9, 2012  
Date

2. Bernie T. Dyant  
Regional Forester (signature)

8/21/2012  
Date