BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

[] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
[X] 2. Interim Report (3) (edits in red)
    [X] Updating the initial funding request based on more accurate site data or design analysis
    [X] Status of accomplishments to date
[ ] 3. Final Report (following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: **Kelley**

B. Fire Number: **ID-STF-000423**

C. State: **Idaho**

D. County: **Camas & Elmore**

E. Region: **04 - Intermountain**

F. Forest: **14-Sawtooth**

G. District: **Fairfield**

H. Fire Incident Job Code: **P4HXM6**

I. Date Fire Started: **August 24, 2013**

J. Date Fire Contained: **October 3, 2013**

K. Suppression Cost: $9,503,314

L. Fire Suppression Damages Repaired with Suppression Funds (NFS lands only)

1. Dozerline water barred: 3.7 miles
2. Handline water barred: 2 miles
3. Fireline seeded (miles): 0

M. Watershed Number:

Table 1

Sub watershed (Hydrologic Unit)		
6th Code Number	**6th Code Name**	**Percent of Watershed Burned***
170501130404	Beaver Creek - South Fork Boise River	5%
170501130402	Boardman Creek	47%
170501130405	Kelley Creek - South Fork Boise River	73%
170501130601	North Fork Lime Creek	<1%

N. Total Acres Burned:
NFS (17,342)

O. Vegetation Types:
The Kelley fire burned in the South Fork Boise River drainage on the south side of the river in steep terrain. The elevation in the burn perimeter ranges from 4900' along the South Fork Boise River, to 8900' in upper Deadwood Creek. Primary vegetation types are made up of conifer forests (13,196 acres) with Douglas-fir, subalpine fir and ponderosa pine making up the dominant species. Whitebark pine and aspen stands are also found within the burn area. Mountain big sagebrush and bunchgrass communities make up the secondary vegetation types (2,268 acres) found within the burn area.

P. Dominant Soils: Typic Cryoboroll, sandy skeletal mixed, 36-60 inches deep, coarse sandy loam surface texture with 15-25% gravel; Lithic Ultic Haploxeroll, sandy skeletal mixed, 20-36 inches deep, gravelly sandy loam surface soil texture with 20-35 percent gravel; Ultic Haploxeroll, sandy skeletal mixed, gravelly sandy loam or loamy sandy surface soil texture with 20-35 percent gravel.

Q. Geologic Types: The burned area is located in Soldier Mountain range that defines the southern boundary of the Idaho Batholith, a major geologic uplift of granitic intrusive material. The parent material consists of quartz monzonite and granodiorite derived from the igneous granitics. Glaciation and fluvial actions are the geomorphic processes that shaped the current landscape.

R. Miles of Stream Channels by Order or Class:
Perennial: 33.4 Intermittent: 28.7

S. Transportation System (miles)
Roads: 3.04 miles Trails: 25.8

PART III - WATERSHED CONDITION

A. Burn Severity (acres)
Very Low/Unburned 1,555 (9%) Low 6,791 (39%) Moderate 5,485 (32%) High 3,508 (20%)

B. Water-Repellent Soil (acres): 4,574 acres

C. Soil Erosion Hazard Rating (acres):
525 acres (low) 4,077 acres (moderate) 12,737 acres (high)

D. Erosion Potential: tons/acre
Soil Erosion Potential = average of 6.0 tons/acre (range from 2.7 to 10.2)

E. Sediment Potential: 2,334 cubic yards/square mile.
The first-year post-fire sediment potential for forested lands is 3,411 yd^3mi^2, second year is 1,256 yd^3mi^2. (Based on ERMiT estimates of erosion potential in tons per acre converted to cubic yards per square mile.)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 4-5

B. Design Chance of Success (percent): 85

C. Equivalent Design Recurrence Interval (years): 10

D. Design Storm Duration (hours): 1

E. Design Storm Magnitude (inches): .63”

F. Design Flow (cubic feet / second/ square mile): see table 3

G. Estimated Reduction in Infiltration (percent): 23%

H. Adjusted Design Flow (cfs per square mile): see table 3

Table 2. Sub watersheds in the Kelley Burned Area

Sub watershed (HUC6#)	Sub watershed Name (HUC6 Name)	Total Acres	Acres in Fire Perimeter	% in Fire Perimeter
170501130404	Beaver Creek - South Fork Boise River	12,561	803	6%
170501130402	Boardman Creek	21,938	11,225	51%
170501130405	Kelley Creek - South Fork Boise River	19,774	5,307	27%
170501130601	North Fork Lime Creek	10,988	7	<1%

To refine estimates of watershed response, 16 drainages within the fire perimeter were selected for analysis (Table 3). These pour points were selected based on locations relative to major drainages and values.

Table 3. Estimates of storm runoff for 2 and 10 year rainfall events

	Drainage Area (mile^2)	***% of Catchment Burned***	***Design storm (2 yr 1 hr) 0.44”***		***Design storm (10 yr 1 hr) 0.63”***	
Catchment Name			**Pre-Fire ft^3/s**	**Post-Fire ft^3/s**	**Pre-Fire ft^3/s**	**Post-Fire ft^3/s**
Kelley Creek	10.5	61%	0	35	0	144
West Fork Kelley Creek	4.7	30%	0	7.6	0	32
East Fork Kelley Creek	5.5	85%	0	31	0	125
Kelly Dispersed	0.8	91%	0	7.0	0	28
Unnamed Drainage 1	0.3	100%	0	3.9	0	16
Unnamed Drainage 2	0.2	100%	0	1.9	0	7.6
Unnamed Drainage 3	0.1	99%	0	0.4	0	1.5
Gardner Gulch	0.4	100%	0	4.1	0	17
Hot Springs	0.1	99%	0	0.4	0	1.7
Beaver Creek	9.5	69%	0	56	0	203
Beaver Creek above E Fk	7.0	59%	0	47	0	163
East Fork Beaver Creek	1.8	100%	0	25	0	86
Unnamed Drainage 4	0.3	100%	0	3.4	0	13
Deadwood Creek	7.1	75%	0	39	0	151
Unnamed Drainage 5	2.1	100%	0	9.6	0	40
Unnamed Drainage 6	1.5	83%	0	9.5	0	41

PART V - SUMMARY OF ANALYSIS

Background: The Kelley Wildland Fire was a reported lightning-caused ignition on August 24, 2013 seven miles south of Featherville, Idaho. The fire burned in a steep, remote area not easily accessible to fire fighters. The fire started at about 10 acres and had low to moderate growth over the first week of the fire. Weather conditions beginning about the 30th of August set the stage for large fire growth, with the fire growing from just under 1,000 acres on the 30th to well over 14,000 acres by September 2nd. Cooler temperatures and localized rain showers towards the end of the first week of September aided firefighters in making significant progress towards containment of the fire. The highest percentage of burned area was on NFS lands within Camas County. The majority of the fire burned at a moderate burn severity with localized areas of high burn severity. The fire has not yet been declared contained as several localized hot spots well within the black still exist.

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

A comprehensive list of potential values at risk within or directly downstream of the Kelley Burned Area was compiled from Sawtooth National Forest personnel and field review of the burned area.

Following guidance in Interim Directive 2520-2013-1, the BAER assessment team evaluated potential values at risk through field assessment and subsequent analysis to identify the critical values (FSM 2523.1 – Exhibit 01) that may be treated under the BAER program. The critical values were assigned a level of risk defined by the probability of damage or loss coupled with the magnitude of consequences using the risk assessment matrix (FSM 2523.1 – Exhibit 02). Critical values with unacceptable risks signify a burned-area emergency exists. The probability of damage or loss is based on the watershed response analysis completed by the BAER Assessment Team.

Critical values having a “Very High” or “High” risk rating include a treatment identification number(s) that corresponds to recommended emergency stabilization actions known to mitigate potential threats or minimize expected damage, which are described in Section H. No treatments were identified for values when the analysis resulted in an “Intermediate” or lower risk rating.

Post Fire Watershed Response
Precipitation events during the early part of September produced minor watershed response within the Kelley Fire area. Three separate storms occurred on September 3rd, 5th, and 12th -13th and estimates for the three storms totaled approximately 0.6”, 0.5”, and 1.0” respectively. While total precipitation was likely over 2” for the three storms, the maximum estimated rainfall intensity was between 0.1”/hour and 0.2”/hour, based on radar model estimates. Storms of this intensity are frequent (< 2 yr recurrence interval) and are very likely to occur regularly. Runoff response from the events was evident on hillslopes, where some runoff occurred with minor rilling, transport of fine grained soil, ash, and soil organic material. Evidence of slightly higher stream flows and minor sediment deposition into streams and into the South Fork Boise River was observed during field reviews on September 21st and 22nd. Coarse material (sand, gravel) was deposited in headwater streams and fine ash/fine grained sediment carried downstream to the river.

During the month of August 2014, numerous severe, high intensity storms brought record rainfall amounts across areas burned in the Kelley Creek fire. These major storms triggered massive debris flows and sediment deposition across much of the burned area, compromising many of the stabilization treatments designed for protection of values at risk - human health and safety, and property - including campgrounds and trails. (12/17/2014)

1. Human Life and Safety (HLS):

a. **Very High Risk** to Forest Service employees and recreationists along the Gardner Gulch Trail, West Fork Beaver Creek Trail, East Fork Beaver Creek Trail, Deadwood Creek Trail, Iron Mountain Trail, West Fork Kelley Creek Trail, and Kelley Flats Learners Loop Trail. These trails are motorized use trails and are very popular with the motorized community. Increased threat of falling trees/snags, rocks and other debris within or downslope from hillslopes burned at moderate to high severity pose a serious threat to employees implementing BAER treatments as well as recreationists along 16.6 miles of trail within the burned area. Visible and concealed burned stump holes within the trail tread in low, moderate and high burn severity areas have compromised trail stability posing a very high risk to safety for both Forest employees and trail users. There is a high probability that increased potential for hillslope erosion and sediment in moderate and high burn severity areas, or in areas downslope of hillslopes burned at moderate to high severity could result in loss of egress thereby posing a serious threat to Forest employees and recreationists. (Treatments TR01, TR05, TR06, TR08)

Rock, debris and hazard trees across Deadwood Trail

b. **Very High Risk** to Forest Service employees and campers in the Baumgartner Campground and hot springs resulting from falling trees/snags, rocks and other debris in designated sites, at the hot springs and along the campground access road. The campground, developed hot springs and access road are located downslope from hillslopes burned at low and moderate severity. Although the hillslopes in these areas burned at low and moderate severity, they are high landslide prone areas and the fire removed the majority of stabilizing vegetation. Post fire, the Baumgartner Campground has already experienced rolling debris that could have resulted in serious if not fatal injuries had the sites been occupied at the time. (Treatments TR01, TR04 TR09)
c. **Very High Risk** to Forest Service employees and recreationists in the 35 designated dispersed sites resulting from falling trees/snags, rocks and other debris in designated sites and along the access road downslope from hillslopes burned at low, moderate and high severity. There is also a high risk to Forest employees and recreationists in dispersed sites and along the Ketchum-Featherville road from flooding, debris flow and loss of egress. These sites are located directly below MBS and SBS hill slopes. (Treatments TR01, TR03, TR04, TR08, TR09)
d. **Intermediate Risk** to Forest Service employees and recreationists using developed and dispersed sites associated with the 071 Road, on the 071D Road and the Kelley Creek crossing from potential flooding, debris flow and loss of egress. (Treatments TR01, TR03, TR04, TR08, TR09)

2. Property (P):

a. **Very High Risk** to the Baumgartner/Kelley Flats plantation. The majority of the plantation burned at moderate to high severity. Tree mortality within the plantation exceeded 90% and all seed trees were lost. No specific treatment for the plantation is recommended through BAER, however the Forest should pursue funding for reforestation to reestablish the plantation.

b. Low Risk to Baumgartner water system and well. The location of these facilities make them less susceptible to potential impacts from rolling debris, rocks and trees/snags. The underground portion of the system is at risk for damage from heavy equipment used to implement treatments in areas where pipes are located. Should the facilities be damaged either as a result of falling/rolling debris or as a result of BAER treatments, repair/replacement costs could be substantial. While no treatments are recommended, maps displaying locations of buried pipelines need to be available and reviewed during design and implementation of any BAER treatments that may occur in the area of these facilities.

c. **High Risk** to the Gardner Gulch, West Fork Beaver Creek, East Fork Beaver Creek, Deadwood Creek, Iron Mountain, West Fork Kelley Creek, and Kelley Flats Learners Loop Trails infrastructure due to increased threat for loss of trail tread from rolling rocks, logs and other debris, and hillslope erosion and sediment. There are 25.8 miles of trail located within the burned area perimeter and approximately 16.6 miles of trail located within or downslope from hillslopes burned at low to high severity are at risk. Of particular concern, are areas where tree stumps burned directly adjacent to or under the existing trail, making these areas more susceptible to capture of flows coming off hillslopes, resulting in significant erosion and loss of trail tread. (Treatments TR01, TR05, TR06)

Holes in West Kelley Creek trail tread from burned out stump directly adjacent to the trail.

d. **Very High Risk** to recreation and administrative infrastructure at Baumgartner campground, developed hot springs and access roads from falling trees/snags, rocks and other debris in designated sites, at the hot springs and along the campground access road. Damage directly attributed to burned hillslopes immediately upslope of these facilities has already occurred and is likely to continue for the next 2 to 3 years. While many of the hillslopes directly above the facilities burned at low severity, ground cover holding soil and rock in place has been removed making these areas extremely susceptible to debris movement. Similarly, numerous hazard trees with potential to impact existing facilities are located within or adjacent to the sites. (Treatments TR04, TR08, TR09)

Shortly after Labor Day, 2013, a large granitic boulder measuring about 5 feet x 3 feet x 2 feet rolled down the hill and bounced across the asphalt trailer pad and 2 tent sites in the Baumgartner Campground and came to rest on the north side of the access road. Because of the unstable hillside, this popular developed recreation site was closed and has remained closed until a hazard analysis could be completed. On August 15, 2014 a rock fall hazard analysis was conducted by Bio-West, Inc., an environmental, engineering and geologic consulting firm, to determine hazards and identify mitigation measures to protect infrastructure

within Baumgartner campground and provide for public safety. The analysis utilized CRSP-3D software to model potential rock falls along two slope profiles and to evaluate the potential hazard from rock falls in the area of the central camp sites in the family/group spur. The draft report, prepared on September 2, 2014, determined that four family (double) campsites that include picnic tables, fire rings, tent pads and asphalted camping spurs, one double sided vault toilet and a water faucet are at high risk for damage or loss from potential rock fall. The report recommended construction of a boulder and timber berm to capture falling rock and scaling of the upper rock outcrop area to remove loose rock thereby reducing the rock fall hazard to the structures in the high risk area. They also recommended additional signing to warn the public that they are in a rock fall prone area where dangerous conditions from rock fall could exist. Replacement costs of a double campsite is $15,000 ($60,000), one double vault $30,000 and one water faucet $500 for total of $95,000. *Interim Request #2 9/23/2014*

e. Low Risk to the Kelley Creek Ford on the Kelley Flats road from post-fire high flows that could wash out the ford. There is little potential that the ford will washout however, if it does washout it would trap recreationists at dispersed campsites and/or the Deadwood Trail trailhead.
f. Low Risk to Virginia Gulch, Abbott Gulch and Boardman Creek Trail bridges for scour from increased flows anticipated post-wildfire.
g. Low risk to the Baumgartner Bridge for scour from increased flows anticipated as a result of post-wildfire conditions. While the potential for abutment scour is low, should high flow events occur causing scour, the cost of replacement of the abutments would be substantial.
h. Low risk to infrastructure of the 227 Road from potential debris flows off uphill slopes burned at moderate to high severity. Should these flows be large enough, they could enter the South Fork Boise River to an extent that could cause the river to overtop its banks and run down the road causing potential damage or washouts to the road.

3. Natural Resources

a. **Very High Risk** to native plant communities and plant diversity due to the threat from spread of noxious and invasive plant species. There are 13 noxious Idaho plant species and 6 non-native plant species known to occur within or adjacent to the burned area. Leafy spurge *(Euphorbia esula)*, rush skeletonweed (*Chondrilla juncea*), diffuse knapweed (*Centaurea diffusa*) Canada thistle *(Cirsium arvense*), and cheatgrass are the most widespread species with the highest risk of potential spread into the burn. These species are very aggressive and have a very high potential to adversely affect hundreds of acres. Kelley Flats Helibase, ICP, Marsh Creek staging area, Forest Road #227 and Kelley spike camps were located within areas of known infestations that were in seed disperal stage during fire suppression activities. Field observations along trails within the burned area found evidence of suppression related ground disturbance through known infestations. Evidence of seed dispersal most likely resulting from fire related activities was noted in at least one area where a large population of leafy spurge seedlings but no mature plants where documented in a burned area. Failure of natural regeneration of native species within burned and/or disturbed areas could result in substantial infestations severly impacting native plant communities. (Treatment TR01, TR02)
b. **Very High Risk** and high risk to soil productivity within areas that burned at moderate to high severity. The probability for accelerated erosion is very likely with subsequent mass erosion, hillslope sedimentation, and mud flows. The loss of overstory vegetation, effective ground cover, and surface organic matter will leave the soil resource susceptible to erosive forces for 5 to 7 years. Considerable impacts to soil productivity are expected from the erosion of exposed soil and nutrient-rich ash off-site. The increased potential for the spread of invasive plant species and noxious weeds from known populations within and adjacent to the more susceptible burned area will further intensity the impacts to soil productivity over the long term. Additional, indirect threats to soil productivity include impacts from failures of roads and trails with high volumes of

eroded materials delivered onto generally stable or productive soils, and unauthorized motorized vehicle access across NFS lands will likely increase due to the loss of physical and vegetative screens that previously limited access. (Treatment TR01, TR02, TR04, TR05, TR06)

c. **Very High Risk** to listed bull trout and bull trout critical habitat from increased sedimentation, channel instability, loss of in-channel large woody debris, debris flows, streambank instability, loss of riparian vegetative cover, degraded in-channel habitat integrity, increased stream temperature, and decreased water quality. While most streams in the burn area provide either suitable or occupied bull trout habitat, Deadwood Creek is key spawning habitat and has been designated as Critical Habitat. Loss of riparian vegetative cover and changes in soil productivity could affect stream shading, water temperature and bank stability in the SBS reaches in Deadwood Creek for several years. Post-fire sediment and debris flows are likely as in Deadwood Creek with the potential to compromise bull trout spawning, food availability and water quality. (Treatments TR07)

d. **High Risk** to hydrologic function resulting from potential large flood events that could create debris flows and scour of stream channels leading to loss of riparian soil and related hydrologic function. This risk is specific to channels downslope of moderate/high burn severity areas where channel gradient is steep enough for scour to occur given a large enough event. (Treatments TR01)

4. Cultural and Heritage Resources

There are no cultural or heritage resources at risk.

B. Emergency Treatment Objectives:

- Mitigate, to the extent possible, threats to personal injury or human life of forest visitors, permit holders and Forest Service employees at administrative and recreation facilities or while traveling select roads and trails on NFS lands within or downstream of the burned area.
- Warn users of Forest facilities, roads and trails of hazards present in the burned area. Consider temporary closure to protect public users of NF lands.
- Protect or mitigate potential post-fire impacts to critical natural resources within or downstream from the burned area.
- Protect or minimize damage to high-value NFS investments within the burned area. Minimize damage to key NFS travel routes within and downstream of the fire boundary.
- Treat invasive plants that are a threat to naturalized ecosystems by minimizing the expansion of existing populations in the burned area and control of expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of fire suppression activities.

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

Land - 75% Channel – 80% Roads/Trails - 60% Protection/Safety - 80%

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	90	70	--
Channel	--	--	--
Roads/Trails	70	75	80
Dependent on Regional approval for treatments less than $500,000.			
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):

Refer Values at Risk Analysis for the Cost of No-Action and Cost of Selected Alternative (Including Loss).

Benefit:Cost ratio is 1.1. Very high probability of post fire loss is based on field observations of loss accrued after 2 damaging rainstorms. For most treatments, there is a high probability of some loss even if the treatment is applied but a low probability the loss would be as large as it would be if treatments were applied. The VAR analysis focused primarily on market values. Benefits such as lowering risk of impacts to life/safety, and natural resources were recognized in this BAER assessment but not included in the benefit:cost calculation. The accumulated benefits are not considered in the cost analysis.

F. Cost of Selected Alternative (Including Loss): See above and Attached VAR analysis.

G. Skills Represented on Burned-Area Survey Team:

[**X**] Hydrology	[**X**] Soils	[ ] Geology	[ ] Range	[**X**] Recreation
[X] Forestry	[**X**] Wildlife	[ ] Fire Mgmt.	[**X**] Engineering	[ ] Wilderness
[ ] Contracting	[ ] Ecology	**[X]** Botany	[**X**] Archaeology	
[X] Fisheries	[ ] Research	[**X**] GIS	[ ] Public Information Officer	

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Team Members:

Terry Hardy – Soils	Mark Dallon – Hydrology	Steve Frost – Recreation
Bret Guisto – Archeology	David Skinner – Wildlife	Sharon LaBrecque – BAER Coordinator
Brenda Geesey – GIS	Erika Phillips - Fisheries	Deb Taylor – Botany
John Pine - Forester	Brian Anderson - Hydrologist	

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.)

The treatments were developed by resource specialists as part of a specification sheet that helped guide narrative and cost considerations. Each treatment proposal is captured within this document. Since the development of specification sheets, the team leader has communicated with BAER Coordinators at forest, regional, or national levels to ensure consistency with BAER authority.

Land Response Actions

#1. Response Action – Invasive Species/Natural Regeneration Monitoring and Treatment to determine need (if any) for seeding

General Description: Seeding with native plant species was considered as a treatment alternative to reduce the risk of invasive plants to the BAER value of native or naturalized communities and reduce the risks of soil loss to the value soil productivity . A second alternative was chosen which is to monitor the natural recovery in early spring and determine if seeding would be an effective treatment to reduce the threat of invasive plant species. Natural regeneration will be monitored on 852 acres within the burned area that are at very high susceptibility to invasive species. Level 1 monitoring will be conducted in the spring in identified areas to estimate measure the establishment of native and non-native plant species in areas at high risk. The areas will be monitored to determine if natural regeneration of native vegetation is sufficient to stabilize soils, reduce potential for establishment of invasive species, support native, naturalized vegetative communities and maintain soil productivity. An interim BAER Treatment request for broadcast seeding (aerial and hand) will be submitted for those areas determined not to have sufficient natural regeneration or where abundance of noxious weeds is greater than 30% of the native vegetation.

Purpose of Response Action: The BAER team considers this treatment necessary to reduce the **Very High** risk to the accumulated critical values of **Native and Naturalized Vegetative Communities**, **Hydrologic Function**, **Soil Productivity, Human Life and Safety, and Property**. The primary objective of this treatment (if determined that it is needed) is to provide rapid stabilization of the soil, minimize the spread and/or establishment of new noxious and non-native invasive plants, and protect soil productivity in specific areas where natural regeneration has been compromised by moderate and high burn severity. This treatment will provide root systems and vegetative ground cover to stabilize slopes, reduce potential for debris movement off steep slopes and prevent establishment of noxious plant species in highly susceptible areas that burned at moderate and high severity. This treatment, in combination with EDRR treatment, would maintain or establish stable soils, native plant communities and hydrologic function.

Location/Suitable Sites: Treatment is recommended for moderate and high soil burn severity areas within the fire perimeter where soil stability is highly compromised and there is a significant risk to soil/debris movement, reduced natural revegetation and/or potential for establishment or spread of noxious weeds. The treatment sites are located within or adjacent to popular recreation areas including Baumgartner Campground, West and East Fork Kelley Creek trails, Gardner Gulch Trail, Kelley Flats, and Beaver Creek Trail. Seeding as determined necessary is recommended for the following areas:

- **Kelley Flats, West and East Fork Kelley Creek**: Identified areas with existing rush skeletonweed and leafy spurge along the #050 and #038 trails totaling 686 acres that would be monitored and treated as necessary.

- **Gardner Gulch**: Identified areas with existing rush skeletonweed and leafy spurge in Gardner Gulch east of the system trail #7980 totaling 114 acres that would be monitored and treated as necessary.

- **Beaver Creek -** Identified areas totaling 52 acres along trail # 052 and the bench at the mouth of Beaver Creek drainage that would be monitored and treated as necessary.

Design/Construction Specifications:

1. Establish walk through transects with ocular vegetation plots in potential treatment areas.
2. Estimate vegetative composition and cover in the ocular plots.
3 Monitoring would be conducted by EDRR crew or District personnel
4. Sites where noxious species are greater than 30% or recovery is not providing sufficient ground cover, consideration will be made on whether to seed the site to reduce risks. If determined an unacceptable risk to BAER values exists, an interim BAER treatment request will be submitted to treat the identified areas through broadcast seeding (aerial and hand) with grasses to stabilize the soil and increase the probability of success for reestablishment of native plant species communities.

Treatment Implementation and Effectiveness Monitoring: Implementation monitoring would be conducted by implementation team personnel at treatment sites to determine:

- Was the treatment implemented as designed?
- Are invasive species comprising 30% or greater of the site?

Effectiveness Monitoring would be conducted by SNF personnel (botanist, wildlife biologist) one and five years post implementation. Effectiveness monitoring would focus on:

- Monitoring for noxious weed establishment and cheatgrass invasion.
- Sampling vegetation using transects and fixed plots to determine if seeding/treatment is necessary.

Implementation - Monitoring was completed in July and it was determined there is a need for additional weed treatment in W.Fk. Kelly and Gardner. Native grasses are recovering and some bitter brush re-sprouting is occurring. Based on monitoring results at that time, it was determined that no seeding of burned areas was necessary. Significant rain events over the burned area in August 2014 resulted in mass soil and debris movement in two drainages. This resulted in the S. Fk. Boise River being completely dammed in two locations, with the river being completely relocated on to the main access road (Road 227). A section of road was completely washed away resulting in loss of access along road 227. As was described in the Beaver Creek BAER report, there was reluctance by the BAER team to request aerial seeding and/or mulching for the Kelly fire. Whether or not such a treatment would have prevented or reduced the severity of the debris flow that occurred as a result of the heavy rains is unknown.

River diverted on to Road 227

Emergency trench dug to move the river off the road and back to the river channel

#2. Response Action – Early Detection and Rapid Response for Treatment of Noxious Weeds

General Description: Forest Service and Camas County Cooperative Weed Management Area weed management treatment efforts will continue in the area and will include an emphasis on managing the potential for spreading weed infestations in the burned area and rehabilitated suppression activity areas. EDRR for the burned area needs to be an inherent part of the Fairfield

District weed management program. It should also include an intensive public and grazing permitte education element. Treatment for noxious plant species includes current management activities; annual spring/summer monitoring and herbicide treatments and follow up in the fall. This treatment will take place in accordance with the Forest Noxious Weed Management Plan. The treatment will focus on preventing the spread of the known noxious weed areas into the burned area. EDRR will also be conducted on Forest roads and trails, dispersed campsites and pullouts used during suppression activities, fireline constructed during suppression, and other sites used during suppression activities.

Purpose of Response Action: To identify and effectively treat noxious species to reduce the spread of the existing or establishment of new noxious and non-native plant species. The spread of noxious and non-native plant species could result in a reduction in the diversity of the native plant communities, and loss of soil productivity that would affect forage for wildlife and livestock in the area. EDRR treatment implemented within the next growing season and through three consecutive growing seasons would reduce the risk of spread and introduction in the Kelley fire.

Location/Suitable Sites:

Locations for EDRR include developed and dispersed camp sites, trails, and roads within and adjacent to the Kelley Fire including:

- Baumgartner Campground
- Kelley Flats
- Numerous dispersed campsites
- 26 miles of Forest designated roads
- 54.5 miles of Forest system trails

Kelley Fire suppression activities and sites

- Fireline –Dozer and handline approximately 15 miles
- 5 spike camps
- 6 drop points
- Kelley Flats helibase
- 15 helispots
- ICP at Kelly corrals and Chaparral Campground
- 7 sling sites
- Marsh Creek staging area
- Water sources – pumpkins and blivets
- 3 miles of trail re-opened between Tango and Sierra spike camps

Design/Construction Specifications:

The Fairfield District Noxious Weed Program Management personnel would conduct systematic ground surveys on Forest roads, and trails used during fire suppression activities, and in burned areas adjacent to known noxious weed infestation. Surveys would be done by vehicle, ATV and foot.

Treatment Effectiveness Monitoring:

- Monitor noxious weed infestations treated with herbicide.
- GPS occurrences, size of areas of infestation, and use either transect or fixed plots to record relative abundance or coverage (to build species trend (stable, increasing) data for area.
- Monitor the seeding treatment areas (if approved) for the spread and introduction of noxious/invasive and for the success of native species recovery based on species presence and cover percent.

Implementation - Inventories for noxious weed establishment were completed in developed and dispersed camp sites, along trails, and in areas at risk from fire suppression activities. In total, 37 acres of noxious weeds were detected and treated. As previously described, additional treatment will be needed in the W.Fk. Kelly and Gardner drainages. While the BAER treatments do successfully address

invasive plants and noxious weeds that germinate the first growing season post-fire, there are significant concerns about the inability to ask for EDRR for more than one year. Depending on the severity of the burn, post-fire weather conditions, juxtaposition of burned areas to established infestations, etc. most burned areas remain susceptible to invasive species for more than just one-year post-fire.

Road and Trail Response Actions

#3. Response Action - Road Drainage Treatments

General Description: Some road stabilization treatments have been prescribed for Forest Service Roads located on the Fairfield Ranger District that will be directly impacted by post fire events. These treatments are for the transportation infrastructure and protect life, safety, property, and critical natural or cultural resources.

Purpose of Response Action: Watersheds burned in the Kelley Fire will show the effects of the fire via increased runoff rates, erosion, sediment, and debris transport creating a future concern for roads, culverts, bridges, and channels along the drainage paths of the burned watersheds. These improvements may be plugged, overtopped or washed away more frequently than in pre-fire condition. There is also increased danger to structures that remain in the flood plains due to the increased risk for debris slides and flooding.

These treatments identify roads and structures that will continue to be impacted by post-fire debris flows and flooding, assesses their current condition and vulnerability, and where necessary, recommend treatments to minimize the risks to public safety and protect the investment of the transportation system from the expected increased post-fire runoff. Loss of water control from drainage structures and channels can cause a safety risk to the public and property loss risk.

Locations/Suitable Sites: The roads listed below were found to have road drainage issues and at a minimum will require some or all of the treatments listed in section below. Road segments included are those located below or within burned slopes with moderate to high burn severity.

Ketchum-Featherville Road FR# 70227
Culvert Installation: 1 @ 24”x40’
Culvert Cleaning: 2 Each
Ditch Cleaning: 1 Mile
Road Reshape: 0.5 miles

Kelley Creek Corral Spur A FR#70071A
Water Bars: 14 bars to clean and/or reconstruct
Armor Downhill slope: 1 of the water bars with 20 yards of rip rap

Design/Construction Specifications:

1. Reshape Road - provide positive drainage to ditches and culverts by in-sloping or out-sloping as directed by the Engineer. Repair large ruts in the middle of the roadbed that channel water downgrade.

2. Water bars – Purpose and function is similar to rolling drain dips except the length of the structure is more abrupt and is recommended for roads that do not receive any or very little traffic.

3. Fill Slope Armoring – Install rip-rap along fill slopes along steep grades or channels. Place rip rap below the drain outlet to dissipate the energy from the flow. In areas of fill slope erosion that have occurred as a result of stream encroachment, armor fill slopes using riprap and geotextile material to secure slope and prevent fines from washing out of fill slope

4. Ditch Cleaning – All drain ditches along the length of the roads shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event.

5. Culvert Cleaning – Remove any blockages from inlet, outlet and inside barrel. Straighten bent or replace inlets. Catchment-basins shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event. Install carsonite posts when necessary. See item #7 below.

6. Upsize Culverts - Pipe crossings were identified as being undersized due to the anticipated increase in flows from the burned watersheds above the crossings. These culverts will be replaced with larger culverts. Non-functioning culverts will also be removed and replaced. Install carsonite posts when necessary. See item #7 below.

7. Carsonite Posts – Purchase and install per Forest Service standards carsonite posts that are white and contain a self-adhesive solid yellow, diamond grade, Type 2 Object marker.

Treatment Effectiveness Monitoring: Monitoring shall be performed while construction is in progress and re-inspected during "Storm Inspection and Response" periods.

Implementation – Road treatments began in late April/May and, with the exception of the installation of water bars on Road 70017A, were completed in June, 2014. A salvage sale has been approved in the burned area and it was decided that water bars would not be installed on Road 70017A until after the sale was complete.

While work on the Forest maintained road segment successfully protected the road, significant storm events over the burned area in August resulted in two very large debris flows that completely dammed the S. Fk. Boise River, diverting the river on to the County owned portion of Road 227. A segment of road was completely lost as a result of the upper most debris flow requiring significant reconstruction before access on this road could be restored. Further field review has determined that lower debris flow represents a significant risk for loss of the segment of road adjacent to that debris flow during spring runoff events. Given limited funding from both the Forest and County sources, the Forest is working to take preventative measures in an attempt to reduce the risk to this primary access route. However, it is recognized that these measures will most likely not provide a long term solution for the risk to the road at either debris flow location.

#4. Response Action – Road, Campground and Bridge Storm Inspection and Response (Storm Patrol)

General Description: Roads within the Kelley Creek Fire contain drainage structures that cross streams located in watersheds that have areas of high burn severity. These streams now have the potential for increased runoff and debris flows. The predicted increased flows are a direct cause from the lack of vegetation to slow down the water flow, hydrophobic soil conditions that can prevent surface water infiltration and the steepness of the hill slopes. These flow increases pose a threat to the existing crossings which may result in plugging culverts or exceeding their maximum flow capacity. If these flows plug drainage structures the result could be massive erosion across and/or down the road due to the failure of the fill slope. Erosion from flows running down the road pose a danger to travelers as there is only one way in and out for most of the roads.

The Baumgartner Campground, developed hot springs and access road are located downslope from hillslopes burned at low and moderate severity. Although the hillslopes in these areas burned at low and moderate severity, they are high landslide prone areas and the fire removed the majority of stabilizing vegetation. Post fire, the Baumgartner Campground has experienced rolling debris that could have resulted in serious if not fatal injuries had the sites been occupied at the time. With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate rill and gully erosion on the slopes and it is likely that this runoff will cover the roads or cause washouts. These events make for hazardous access along steep slopes and put the safety of users at risk. A geo-technical engineer will check hillslopes above the developed campground, hot springs and access road to determine if it is safe to open the facilities to public use.

There are multiple bridge crossings of the South Fork of the Boise River adjacent to the fire perimeter that could be affected by the expected increased flow. While the probability of damage from debris coming down the river is unlikely, there is some concern of the abutments scouring during the high flow events. While on the storm patrols the bridge abutments should be checked to see if scouring of the abutments has occurred.

Purpose of Response Action: The purpose of the patrols is to evaluate the condition of roads for motorized access and to identify and implement additional work needed to maintain and/or repair damage to road surfaces and flow conveyance structures across roads in order to provide safe access across FS lands. An additional purpose of the patrol is to evaluate the condition of the developed facilities (Baumgartner Campground, hot springs and access road) for public use and to identify and implement work that may be needed to allow for safe use of these developed facilities on FS lands.

The patrols are used to identify road problems such as plugged culverts and washed outs, and to clear, clean, and/or block those roads that are or 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 any road receiving severe surface erosion. The patrol will also identify potential hazards from rolling rock and debris into the developed sites. Until such time that it is determined that the campground, hot springs and access road are safe, the sites will remain closed to public access.

Forest Engineering, District, and Camas County personnel will survey the roads within the fire perimeter after high-intensity summer thunderstorms in 2013, 2014 and 2015. Survey will inspect road surface condition, ditch erosion, rolling drain dip failure and culverts/inlet basins for capacity to accommodate runoff flows. Camas County maintains the 70227 road from the Elmore/Camas County boundary upstream until the road leaves Forest Service land. The 70227 travels along the fire perimeter through this section and while unlikely, there is a slight potential for issues if a large debris flow blocks the South Fork of the Boise River at Deadwood Creek, Beaver Creek, or any of the other smaller watersheds along that corridor.

Forest and Regional Engineering and District personnel will survey hillslopes directly above the Baumgartner Campground, hot springs and the campground access road, Survey will inspect stability of the hillslope and potentially mobile material (large rocks, logs, ect.) on the hillslope above the sites as well as materials that have moved off slopes into the developed sites.

Location/Suitable Sites: The patrols should first focus on the Forest Service roads that receive the most traffic and are of more value to the transportation system. The patrol should check where the highest rain intensities occurred when a storm passes through the fire area and concentrate their efforts on the areas receiving the most precipitation. The bridges that need to be checked during the storm patrols are Baumgartner Road Bridge, Virginia Gulch Trail Bridge, Abbot Gulch Trail Bridge,

and Boardman Creek Trail Bridge. The Baumgartner Campground, hot springs and access road will be checked during storm patrols.

Design/Construction Specifications:

- FS personnel will direct the work.
- Immediately upon receiving heavy rain and Spring snowmelt the USFS 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 motor vehicle 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 flood prone areas where it cannot re-enter stream channels**.**
- Developed site patrols shall bring in heavy equipment necessary to mechanically remove any obstructions or materials from campground spurs, access road or the developed hotsprings.

Describe Treatment Effectiveness Monitoring: Monitor the storm-patrol response time to ensure objectives are being met. Identify the type of storm event that mobilizes material**.**

Implementation - This treatment is one that we will always request and, especially this past summer given the severe storm events experienced, was a high value. The Forest C&M crew was able to correct some of the damage to the road drainages caused by the many storms this past summer thus helping to prevent further harm to the surrounding resources.

#5. Response Action – Trail Drainage Treatments

General Description: Many of the trails in the burned area are at high risk due to the burning of stabilizing brush, stumps, roots and logs. Treatments include filling in voids in the trail surface that may channel runoff underneath the trail surface, installing rolling dips, waterbars, and rock waterbars. Treatments are needed to provide for human health and safety, sustainability of the trail, and to prevent off-site impacts should the trails erode or fail.

Purpose of Response Action: Treatment would provide immediate protection to the trail system and address Human Health and Safety concerns by reducing the potential for loss of trail integrity/stability resulting from post-fire events. Sections of trails routed through or adjacent to steep burned areas (both moderate and high soil burn severity) are at high risk for increased surface runoff caused by the presence of water repellent soils and lack of effective ground cover to inhibit excessive flow. Flows will intercept system trails and cause severe tread erosion and initiation of soil rutting adjacent to the trails. Sections of trail within low to high soil burn severity experienced numerous visible as well as hidden cavities in the tread from burned out stumps. These “cavities” not only destabilize the trail tread, they act as a conduit for water to flow under the trail causing further loss of trail tread and posing safety hazards as a result of loss of egress to Forest employees and recreational trail users. Additional hazards caused by the fire such as hazard trees, burned out stumpholes and rockfall will create unsafe conditions at trail access points and worksites along the trails to workers. Accelerated erosion that is channelized downslope and into streams may cause damage to the federally-listed bull trout habitat. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

- **Human life and safety of visitors, private residents, and agency personnel**
- **Forest trails (property)**
- **Critical Habitat – Bull Trout**
- **Water quality**

Treatments would position the trails to withstand increased runoff and protect property, workers and users, and critical habitat for bull trout.

Location: Trail sections located primarily within or directly down slope from high / moderate severity burned areas. Trails within the burn area intersect approximately 16.6 miles of high and moderate burn severity. Treatments will be focused in areas with the greatest potential for flow onto the trail surface, such as drainage bottoms and areas of past flows. Trail treatments located within low severity burn areas will focus on filling voids in the trail tread caused by burned out stump holes that are large enough to capture water and may cause further loss of the trail investment.

Design/Construction Specifications: According to USFS Trails Handbook 2309.18. Installation should be designed to last no more than 3 years. Permanent structures are not part of this treatment. If safety risks (e.g. hazard trees) cannot be mitigated for work crews, work will be delayed until threat is reduced or stabilized. Treatment will include:

- Maintenance of 75 existing rolling dips/water bars and drainage features and construct approximately 10 new rolling dips/water bars with a trail dozer on the East Fork Kelley Trail #7050.
- Maintenance of approximately 28 existing rolling dips/water bars and drainage features and construct approximately 5 new rolling dips/water bars with a trail dozer on the West Fork Kelley Trail #7038.
- Maintenance of approximately 10 existing rolling dips/water bars and drainage features and construct approximately 5 new rolling dips/water bars with a trail dozer on the Learners Loop Trail #7609/#7610/#7611.
- Maintenance of 12.79 miles of single track motorized trail at an average of 18 rolling dips/water bars and drainage features per mile on the Trail #7980, #7052, #7053, #7054, #7822.
- Filling voids in or directly adjacent to the surface of trails surface of 28 miles of single track motorized trail at an average of 5 voids per mile on 16.6 miles of single track or ATV trails.

Purpose of Treatment: Trails within the Kelley fire are located within and downslope of moderate to high soil burn severity slopes. Predicted increased runoff due to water repellant soils and lack of effective ground cover will be intercepted and captured by trails, leading to severe trail tread erosion rendering trails unusable or dangerous to use. Motorcyclists and ATV users are the primary users. Additional hazards caused by the fire such as hazard trees, burned out stumpholes and rockfall will create unsafe conditions at trail access points and worksites along the trails to workers. Accelerated erosion that is channelized downslope and into streams may cause damage to the federally-listed bull trout. If treatment is not performed damage will likely (90% chance) occur to the trail tread resulting in increased cost for reconstruction of damaged trail sections. The cost to reconstruct damaged or destroyed trail sections could be as high as $10,000 per mile for new trail. If constructed correctly in appropriate locations, rolling dips/water bars are very effective (90% probability of success) at protecting the trail way and removing water from the trail The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

- **Human life and safety of visitors, private residents, and agency personnel**
- **Forest trails (property)**
- **Critical Habitat – Bull Trout**
- **Water quality**

Treatment Effectiveness Monitoring: Visual inspection during spring runoff and in the fall prior to next snow season. Monitoring will be conducted by district recreation staff.

Implementation – All approved trail drainage treatments were completed on the West Fork Kelley #038, East Fork Kelley #050, West Fork Beaver #052, East Fork Beaver #053, and Gardner Gulch

#980 trails. The storm proofing of trails seemed to work well in most areas with the exception of areas impacted by isolated, very heavy rain. The Forest experienced one of the wettest Augusts on record, including a series of hundred year storm events occurring over the burned area. In most cases treated trail segments did not sustain major damage although treatments had to be maintained several times. The intense storms did result in loss of some small to very long sections of trail. The majority of damage came from smaller drainages that typically only carry water during spring runoff where no pretreatment was done and major washouts happened. Had the Forest not experienced these significant storm events it is assumed that the treatments would have been very successful in providing the needed protection.

Severe storm events completely blew out the bottom third of the Deadwood Creek drainage. The event happened before the Deadwood Trail was storm proofed. Because of unstable conditions in the area, the trail has not been examined in the field. However, reports received by the Forest indicate that several miles of the trail are completely gone. Given the intensity of the storm, it is highly likely that the trail would have been lost regardless of whether or not it had been treated.

Overall, implementation of the BAER treatments helped to prevent more extensive damage to the majority of the trail system. Given burn severity, combined with the 100-year storm events that occurred in August 2014, the burned areas are still very unstable. As a result, there continues to be a very high risk potential for severe erosion to cause further damage or loss of existing trail tread on several trails in or directly adjacent to the burned area. More specifically, there is a need to maintain the treatments on the East Fork Kelley trail, the West Fork Kelley trail, and Trail #'s 7980, 7052 and 7053. Treatments on the Learners Loop trail remain in good condition and it does not appear any additional maintenance of the treatments will be required. The Deadwood trail was almost completely obliterated after the August storm events and will require complete reconstruction, therefore no maintenance of treatments is being recommended for this trail. As previously described, the cost to reconstruct damaged or destroyed trail sections could be as high as $10,000 per mile for new trail. To reduce the risk for future damage or loss of additional trail, it will be necessary to continue to maintain treatments into FY 2015. *Interim request #3 12/17/2014*. We are requesting funding to maintain previously installed BAER approved trail treatments. The treatments include water bars and cross drains that have filled with sediment and are no longer functioning to reduce risks to trail loss due to runoff. Given the low amounts of ground cover and we are anticipating additional runoff due to rainfall in the summer months. Maintenance of BAER approved treatments will occur as soon as possible in the spring. This request is for $12,240 for maintenance of 60-120 water crossings.

#6 Trail storm Patrols

General Description: The patrols are used to identify hillslope erosion that may be causing damage to the trail and to monitor the effectiveness of the trail drainage and stabilization treatment (T05) to ensure sustainability of trail facility. The patrol will also monitor trail tread for effectiveness of treatments to address safety concerns associated with burned out stump holes to ensure that the trail tread is stable for trail users. The objective is to determine if excessive erosion events are occurring from concentrated trail runoff. Areas of concern will be prioritized where accumulated values increase the magnitude of consequences of loss from damage.

Purpose of Response Action: The purpose of this treatment is to monitor the effectiveness of BAER trail treatments. Trail treatments are intended to reduce damage to the trail and negative resource effects from increased post fire flows and without monitoring, it would be unknown whether that original objective is being met. This treatment would provide monitoring to identify trail sections

where treatments were ineffective and where additional work may be necessary to reduce trail damage and negative effects to aquatic resources.

Location/Suitable Sites: Monitoring would be done on the 16.6 miles of trail that will receive trail drainage and reconstruction treatments. This work is on trails in moderate and high soil burn severity areas, mostly in the Beaver Creek and Deadwood Creek drainages.

Design/Construction Specifications: Trail work implemented following the fire would be inspected to determine effectiveness at protecting the trail from erosion and scour and at minimizing runoff and sediment delivery from the trail to off trail resources.

Treatment Effectiveness Monitoring: District trail crew will revisit trail sections where BAER trail tread and drainage work was implemented following precipitation events that have the potential to impact trails.

Implementation - The storm proofing of trails seemed to work well in most areas. The Forest experienced one of the wettest Augusts on record and had to clean drains multiple times. In most cases trails did not sustain major damage, just required simply maintain the drainage and waiting for the next storm. This held true to both hand work on single track trails and dozer work on ATV trails. As discussed above, isolated very heavy rain was a different outcome where some small to very long sections of trail were lost.

Channel Treatments

#7 Response Action - In Channel Tree Felling

General Description: This treatment will be used to maintain channel stability, replace large woody material consumed by the fire, and protect and stabilize fish habitat for ESA-listed bull trout in designated Critical Habitat.

Purpose of Response Action: The purpose of this treatment on Deadwood Creek is to reduce the risks to ESA-listed bull trout populations from excess sediment, turbidity, and loss of critical spawning and rearing habitat due to mobilization and erosion of the streambed and banks within and downstream of the high severity burn area. In-channel tree felling reduces effects to critical natural resources (ESA-listed bull trout and Critical Habitat PCEs) by replacing burned large woody debris in the channel, dissipating stream energy, and capturing excess sediments during high runoff that would pose a risk to spawning habitat and egg survival.

Felled in-channel trees will trap suspended sediment and debris mobilized from burned out log jams and streambanks. The large woody material also replaces burned off cover for rearing juvenile bull trout and reduces the risk of storm events destroying or degrading resting and foraging habitats in the burned area as well as the occupied stream channel below. Over time, this woody material can also promote sediment deposition and channel aggradation.

Location/Suitable Sites: In-channel tree felling will be used on Deadwood Creek in the stream reaches with moderate to high soil burn severity and where in-stream woody debris was consumed by the fire. There are approximately 1.1 linear miles of bull trout-occupied, active stream channel where this treatment would be needed and appropriate. In this stretch of designated critical habitat, the fire has created channel instability with a high probability of channel erosion, streambank loss, channel widening, pool loss and degradation or loss of rearing habitat.

Design/Construction Specifications:

- The District Fisheries Biologist will define the treatment areas by staking, GPS coordinates, and flagging.

- Candidate trees will be identified and marked. Appropriate trees are those that are dead and within the size class representative of the stream reach.
- Felled trees will be left in one piece with the top attached.
- Trees will be felled directionally upstream at a diagonal along designated channel reaches so that the tops of the trees are in the channel.
- Felled trees will be staggered from side to side along the stream channel.
- Spacing will be 2 trees per 50 to 100 feet of channel, with 1 tree on each side of the channel (approximately 100 to 200 trees per mile).
- Where needed and appropriate, two trees may be felled from each side of the channel on top of each other to improve stability.
- Trees will be felled so that the top quarter to half of the tree is below the high-water mark.

Key design considerations are the availability of suitable trees and ability to safely implement the treatment. Prior to implementation, the District Fisheries Biologist will work with the District Wildlife Biologist to identify trees that should not be felled due to potential or existing values to wildlife.

Treatment Effectiveness Monitoring: District personnel will monitor immediately after installation and again the following summer after spring run-off/high flows. This monitoring will be used to ensure that the felled trees are stable and have remained in-place, and that the woody material is trapping sediments and debris, protecting downstream spawning and rearing habitats. Monitoring will include large woody debris counts, pool counts, substrate assessments above, below and within the treated reach, and fish population monitoring.

Implementation – A crew was assigned for this treatment and the crew leader received required chainsaw training necessary to complete the treatment. Plans were that stream conditions would be assessed, and trees identified and marked for felling would occur after flows in the S. Fk. Boise River had subsided to the point that safe crossing of the river would be possible. Storm events over the burned area rendered completion of this project not feasible given the safety risks, hillslope failures and channel washouts that occurred.

Protection/Safety Response Actions

#8. Response Action - Road and Trail Warning Signs

General Description: This treatment will design and install burned area warning signs to caution forest visitors recreating within or adjacent to the burned area. It is consistent with the language provided in the BAER Treatments Catalog. The treatment is a component of the overall travel control devices for the burned area (USDA Forest Service-EM7100-15, 2005). The warning signs will identify the types of hazards to watch for at recreation sites and on Forest roads.

Purpose of Response Action: The purpose of “Burned Area Warning Signs” is to reduce the risks to human life and safety by warning motorists of existing threats while traveling the authorized routes within the areas susceptible to flooding, debris flows, hazards trees, and all other risks attributable to post fire events on the landscape. Road closure signs are needed to alert the travelers of closed roads which will be necessary to protect all users from driving into areas that have been determined to be more susceptible to hazards caused by the fire.

Trail signing will be used to warn the public of hazards on trails and recreation sites in the burned area and to minimize erosion caused by cross-country travel through the burned area.

Location/Suitable Sites: Burned Area warning signs will be located at all points of entries by use of forest system roads into the burned areas. These locations are as follows:

- Beginning of the fire perimeter along Ketchum-Featherville Road near Little Water Gulch – 1 each

- The east end of the fire perimeter along the Ketchum-Featherville Road near River Bend Campground – 1 each

Trails signs will be located at all trailheads and trails that enter or are within the burned area. These locations are as follows:

- Deadwood Creek (2),
- Beaver Creek (2),
- Gardner Gulch (1),
- Kelley Flats Learners Loop (2),
- East Fork Kelley Creek (2),
- West Fork Kelley Creek (4),
- Blue Ridge (2).

Design/Construction Specifications: Burned Area warning signs along the roads shall measure, at a minimum, 30 inch by 36 inch and consist of 0.08" aluminum, sheeted in high intensity yellow with black letters, which is shown in the photo below. The "BURNED AREA" lettering shall be a minimum of 5 inches in height and all remaining lettering shall not be less than 3.5 inches in height.

Traffic Warning, Road Closure, and Barricade Markers Signs shall conform to the M.U.T.C.D. standards and shall be installed per Federal Highway Safety Standards.

Trail warning signs shall be Vinyl reflectorized 12"X18" trail signs, mounted on 4"x4"x8' posts at heights and distances mandated in USFS Handbook.

Treatment Effectiveness Monitoring: All locations of signs shall be directed by the Recreation Staff Officer and Engineer and checked to ensure they have been installed per MUTCD or Forest Service standards and will be periodically checked to ensure they are still in place.

Implementation - Trail closure signs were installed and worked about as well as most trail closed signs. While the Forest still had a few people violate the closures, at least they should have been informed about what they were getting into. Metal closure gates worked really well on ATV trails with only one known violation. The Baumgartner gate stopped vehicles but the closure signs seemed to be a mere suggestion to pedestrian onlookers.

#9. Response Action - Administrative Closures at Campsites to Lower Potential Threats to Life and/or Safety

General Description: Administrative Closures at Developed Campground Spurs and Designated Dispersed Campsites – This treatment would construct barricades to be placed as barriers at the entrance to Designated Dispersed Camp Sites and Developed Campground spurs and other recreational facilities as needed. Signs will be placed on each barricade that will say "Due to Unsafe Conditions AREA CLOSED For Public Protection From Burned Area Hazards". In addition, the current tent and site number decals on the fiberglass post that identify the campsite will be covered with "Due to Unsafe Conditions AREA CLOSED For Public Protection From Burned Area Hazards" decals.

May 22, 2014 Interim 1 Request: A follow-up review of the Designated Dispersed camp sites and developed camp sites was completed in April, 2014 by engineering, recreation, and geological specialists. The April field assessment showed that post-fire conditions in these high use areas are more unstable than previously predicted warranting additional and more substantive closures to lower risk to human health ns safety.

Purpose of Response Action: This response consists of temporary closures expected to reduce risk to human life and safety from floods, debris flows, rolling rock and hazard trees by discouraging use within or adjacent to specific areas within and downstream or downslope of the

burned area during periods considered to support hazardous conditions. These treatments will allow for public access when conditions stabilize enough to allow for day-uses such as mushroom and firewood gathering, sightseeing, hunting, fishing, hiking, etc. from the drainage's main road. Removing burned fiberglass posts will clean-up potentially hazardous waste from NF lands.

Locations:

- 39 developed campsites in the Baumgartner Campground.
- 35 designated dispersed campsites in the Kelley Flats area.

Design and Construction Specifications:

- Construct and place barricades with appropriate signage at the entrance to developed campsites and designated dispersed campsites to effectively close access to each campsite by wheeled vehicles.
- Cover surviving fiberglass marker post's tent symbol and campsite number decals with the decal described above.
- May 22, 2014. Placement of 66 concrete barriers at the entrance of highest safety risk developed campsite loops and designated dispersed campsites to effectively close access to each campsite by wheeled vehicles.
- Installation of 12 campground closure signs

Treatment Effectiveness Monitoring: District and SO personnel will monitor or check barriers and signs periodically and after storm events to ensure that they continue to be effective. Once a determination is made that high flood, debris flow, rolling rock and hazard tree risks have abated, camping can be allowed again in these sites by by removing the barricades and covering the "…AREA CLOSED…" decals with new tent and unit number decals.

Implementation – An on-site review of the Baumgartner Campground was conducted on April 26, 2014. Conducting the review were a geotechnical engineer, hydrologist and geologist/minerals specialist. Based on the review, it was recommended that several sites within the campground should be barricaded due to high safety concerns related to potential for falling rock. Twenty-two concrete barriers and twelve closure signs were purchased and installed in Baumgartner Campground in late May. Installation of gates and concrete barriers effectively prevented recreationists from driving vehicles into closed areas however some violation of the closures did occur by people entering the areas on foot. Several designated dispersed sites in the Kelley Flats area were also closed through signing and installation of barriers to mitigate safety concerns associated with potential rockfall and flooding. Overall, these treatments were relatively effective however, as previously noted, some people continued to access the areas despite closures and warning signs.

#10. Response Action – Campground Infrastructure Protection Treatments (interim request September 23, 2104)

General Description: Administrative Closures at Developed Campground Spurs and Designated Dispersed Campsites – This treatment would involve placing a boulder and timber berm at the edge of camp sites 15-16 and 17-18 to reduce the risk from rock falls to infrastructure associated with these sites; scaling of the upper outcrop areas to remove potential loose rock and test the berms after they have been emplaced; and signing trails and the campground to warn the public that they are in a rock fall prone area where dangerous conditions from rock falls could exist The family/group spur sites would remain closed during scaling operations. Forest personnel would inspect the campground infrastructure and slopes above the sites after spring thaw to determine the need for future maintenance scaling.

Purpose of Response Action: This response action is expected to reduce risks to infrastructure and public safety due to rock fall by creating berms to stop rolling rock, scaling rock outcrops to remove loose rock and informing campers of dangers through signing.

Locations:

- Facilities associated with the central campsites, sites 15-16 and 17-18, in Baumgartner Campground

Design and Construction Specifications:

1. Place boulder and timber berms about 5 feet high and 10 feet wide at the edge camp sites 15-16 and 17-18 to reduce the risk from rock fall to these sites. The berms would consist of a core of stacked large boulders with timbers i.e. fallen trees on the upslope side to cushion blows from impacting rocks.
2. Scale the upper outcrop areas to remove potential loose rock and test the berms after they have been constructed.
3. Install signs on trails and in the campground to warn the public that they are in a rock fall prone area where dangerous conditions from rock falls could exist.

Treatment Effectiveness Monitoring: District and SO personnel will monitor or check the berms, hill slope and signs annually after spring runoff and after storm events to ensure that they continue to be effective.

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.)

Beyond the implementation monitoring for each treatment, the extent of proposed effectiveness monitoring is incorporated into the storm patrol and administrative closure treatments.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #__

			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											
					$0			#REF!		#REF!	#REF!
T02 - EDRR	acres	$12	3,020	$36,663	$0			$0		$0	$36,663
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$36,663	$0			#REF!		#REF!	#REF!
B. Road and Trails											
T03 - Road Drainage	miles	$ 5,729	2	$11,457	$0			$0		$0	$11,457
T03- Ketchum-Featherville F	miles	$ 4,478	1	$4,478							$4,478
T05 - Trail Drainage	water bar - dozer	$ 140	118	$16,499	$0			$0		$0	$16,499
T05 - Trail Drainage	water bar - trail crew	$ 91	230	$20,953							$20,953
T05 - Trail Drainage - Void	Void filling - trail crew	$91	83	7,561							$7,561
T05 -Trail Drainage -Mainter	water bar-maintenance	$204	60	12,240							$12,240
T04 - Road Storm Patrols	weeks	$ 3,465	4	13,860							
T04 - Storm Patrols Baumga	weeks	$ 2,291	1	2,291							
T06 - Trail Storm Patrols	weeks	$ 1,126	4	4,504							
Subtotal Road and Trail Treatments				$93,843	$0			$0		$0	$73,188
C. Channel Treatments											
T07 In channel tree felling	stream miles	7,120	1	$7,120							$7,120
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treatments				$7,120	$0			$0		$0	$7,120
D. Protection/Safety											
T08 - Trail Warning Signs	sign	177	15	$2,655	$0			$0		$0	$2,655
T08 - Road Warning Signs	sign	$772	3	$2,316	$0			$0		$0	$2,316
T09 - Admin Closure	campsite	$84	74	$6,216							$6,216
T09-Campground closure	barricades	$75	60	$4,500							
T10-Campground Infrastruct	berms	$4,831	2	$9,662							$9,662
T10-Campground Infrastruct	scaling	$30,425	1	$30,425							$30,425
T10-Campground Infrastruct	signs	$373	5	$1,865							$1,865
T09-Campground closure	signs	$167	12	$2,004							
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Protection/Safety				$59,643	$0			$0		$0	$53,139
E. BAER Evaluation											
Initial Assessment	report		1	$42,358	$0			$0		$0	$42,358
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				---	$0			$0		$0	$42,358
F. Monitoring											
T01 - Native Regeneration R	days	$500	5	$2,500							
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$2,500	$0			$0		$0	$0
G. Totals				$199,769	$0			#REF!		#REF!	#REF!
Previously approved				$187,529							
Total for this request				**$12,240**							

PART VII - APPROVALS

1.	Kit Mullen Forest Supervisor (signature)	12/18/2014 Date
2.	/s/ Chris Iverson (for) Regional Forester (signature)	1/16/2015 Date