BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
[X] 2. Interim Report (#1)
    [X] 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: **Elk Complex**

B. Fire Number: **ID-BOF-001053**

C. State: **Idaho**

D. County: **Elmore**

E. Region: **04 - Intermountain**

F. Forest: **02 - Boise**

G. District: **Mountain Home**

H. Fire Incident Job Code: **P4HUL0**

I. Date Fire Started: **August 9,)**

J. Date Fire Contained: **August 31, 2013**

K. Suppression Cost: **$10,000,000** (estimate from I209 on 09/06/2012)

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles):
2. Fireline seeded (miles):
3. Other (identify):

M. Watershed Number:

Watershed	Area (acres)
Bird Creek	778
Cannon Creek	1,132
Lester Creek	2,190
Dog Creek	6,608
Green Creek	2,747
Aden Creek	2,007
Smith Creek	15,750
Fall Creek	34,962
Pierce Creek	8,867
Rock Creek	18,454

N. Total Acres Burned:

Ownership	Area (acres)
USFS	101,117
Other Federal lands	1,503
Private	21,759
State	6,581
Total	130,960

O. Vegetation Types: Elevation throughout the fire area ranges from 3,800 to about 9,400 feet. Vegetation in this geographic area ranges from mixed brush and grasslands in lower elevations and dry southern slopes, mid-elevation mixed conifer forests, and high elevation subalpine forests. Primary conifer species include ponderosa pine, Douglas-fir, subalpine fir, lodgepole pine and Engelmann spruce, with small amounts of whitebark pine. Aspen also occurs throughout most forest types. Brush and grass areas primarily consist of sagebrush, bitterbrush, and a variety of grasses (Idaho fescue, bluebunch wheatgrass).

P. Dominant Soils: Soils on the Elk Complex Fire can be characterized by two primary areas. Landtypes 120b-3 and 120c-8 are commonly found across the southern areas of the Elk Complex Fire, primarily draining south into the South Fork of the Boise River. Most areas across the southern portion of the fire are sagebrush/grass with isolated stands of Ponderosa Pine, dominantly on north aspects. These landtypes are dominated by coarse loamy and loamy skeletal textures that have moderately deep to deep soil depths depending on slope. Landtypes 120b-4, 120c-3, 120c-11 and 120e-2 are commonly found across the northern areas of the Elk Complex Fire. These soils are quite variable as to depth, but generally have sandy or loamy surface textures, mixed skeletal conditions. Erosion hazards range from moderate on the lower gradient loamy soils to high on the steep, coarse-textured sandy soils across all landtypes.

Q. Geologic Types: Geology across the Elk Complex Fire is derived from Idaho Batholith granitic parent material with moderately to very steep well-rounded ridge tops with drainages that have been formed by fluvial or stream cutting action.

R. Miles of Stream Channels by Order or Class:
Perennial: 155 Intermittent: ?

S. Transportation System (miles)
Roads:301 Trails: 60 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): Unchanged (7,808), Low (26,845), Moderate (63,022), High (33,285)

Jurisdiction	Soil Burn Severity (acres) (not including unburned)		
	High	Moderate	Low
USFS	28,143	45,851	20,807
BLM	183	781	281
Private	3,248	12,635	4,688
ID Dep. Of Lands	1,712	3,733	969
BOR	0	22	100
Total	33,285	63,022	26,845

B. Water-Repellent Soil (acres): 96,307

C. Soil Erosion Hazard Rating (acres):

Hazard	Percent (acres)
Unavailable	6% (7,664)
Very Low to Low	2% (2,158)
Low to Moderate	21% (27,127)
Moderate to Very High	72% (94,011)

D. Erosion Potential: Soil erosion potential averages 3.0 tons/acre for the first two years following the fire (1.5 tons/acre for the moderate SBS and 4.0 tons/acre for the High SBS).

E. Sediment Potential: 1,160 yds3/mi2

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 3 - 5

B. Design Chance of Success (percent): 85

C. Equivalent Design Recurrence Interval (years): 10

D. Design Storm Duration (hours): 2

E. Design Storm Magnitude (inches): 0.75

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

Drainage	Basin Size (sq. mi.)	Q Pre (cfs)	Q Post (cfs)	Percent Change
Aden	3.1	3	307	7,302
Bird	1.3	23	143	533
Cannon	1.8	38	240	532
Dog	9.5	78	476	512
Fall	56.3	248	1,551	525
Green	4.3	18	318	1,633
Lester	3.4	30	249	731
Pierce	5.1	88	741	742
Rock	28.8	71	815	1,055
Smith	24.6	555	2,143	286

G. Estimated Reduction in Infiltration (percent):

H. Adjusted Design Flow (cfs per square mile): Refer to Table XXX

PART V - SUMMARY OF ANALYSIS

This BAER report addresses effects resulting from the Elk Complex Fire that burned on lands managed by the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). This report has been prepared in cooperation with the U.S. Department of the Interior and in accordance with Departmental Manual, Part 620, Chapter 3 Wildland Fire Management. This report identifies response actions in accordance with the Forest Service Manual (FSM) 2500 Watershed and Air Management Chapter 2523 Emergency Stabilization-Burned Area Emergency Response and the FSM Interim Directive No.: 2500-2013-1.

The objective of emergency stabilization is to identify imminent post-wildfire threats to human life and safety, property and critical natural or cultural resources and take immediate actions to manage unacceptable risks. This assessment used methodology within Forest Service directives, Exhibit 01 and 02 to guide the development of values important to the local agencies and the risk to those values. The team determined risk by assessing the probability for post-fire damage and the magnitude of consequences if damage occurred.

A wide array of response actions were considered to attain the objective of emergency response, however, only 21 were considered feasible (1 action is located on BLM lands). Assessments and response actions identified in this report apply to Federal lands under the jurisdiction of the Mountain Home Ranger District on the Boise National Forest.

The Elk Complex Fire began as a combination of several wildfires that ignited from a dry lightning storm on August 8, 2013, and burned together north of the South Fork of the Boise River. These fires were complexed on August 9th, and Harvey's Great Basin Incident Management Team (IMT) #2 assumed command of the Elk Complex at 6 PM on August 10th. The IMT transitioned the fire back to the local unit on Thursday, August 22nd at 6 AM and the fire was called 100% contained on August 31, 2013 and burned 130,961 acres. The cost of suppression response is estimated at $10,720,000.

A Burned Area Emergency Response (BAER) Team was assembled utilizing local BLM and USFS personnel to assess the incident. The BAER Team consisted of individuals representing Safety, Engineering, Hydrology, Minerals, Geology, Soils, Cultural Resources, Wildlife, Range Management, Vegetation, Recreation, Environmental Compliance, Documentation and Geographic Information Systems. On August 21, 2013, an in-briefing was held with officials and staff from the BLM's Boise District, Four Rivers Field Office and USFS Boise National Forest, Mountain Home Ranger District to discuss the situation and strategize field assessments. Field assessments were conducted between August 21st and August 24th, 2013 by BAER Team members to evaluate risk to identified values.

Values that may be threatened due to post fire events were identified during the initial scoping meetings. During the course of field assessments, the BAER Team refined the values list to those that are at moderate to very high risk due to post fire events. Values of low to no risk are discussed in the resource assessments, but are not part of this plan.

A. Describe Critical Values/Resources and Threats (narrative):
(edited to incorporate "Critical Values" from ID 2520-2012-1, effective February 7, 2012)

CRITICAL BAER VALUES	RESOURCE/ VALUES	RISK (VERY HIGH TO INTERMEDIATE)	DESCRIPTION OF THREAT (Proposed Responses by #)
Human Life and Safety	Human Life and Safety of visitors, private residents, & agency personnel	Very High	Very High risk to humans throughout the burn area. Threats from flooding, hazard trees, and rockfall along/at roads, trails, developed and designated dispersed sites, and FS administrative sites that are downstream or downslope of burned slopes, especially those with a moderate-high burn severity. Threats to humans from flooding at the Lester Creek Guard Station; burned structures/material at Reclamation Village; burned comfort stations with open pits at Castle Creek CG. (T06-19)
Property	Forest roads and bridges	Very High	Very High risk to bridges due to burned or damaged bridges (4 bridges require repair, 2 require replacement), and to road infrastructure at intermittent and perennial drainages given expected flooding and debris flows. Undersized culverts are expected to plug or overtop and thereby severely damage road infrastructure and NFS investment. Forest roads #123 and #128 and Forest highway #161 are at Very High risk to damage from potential flooding and debris flows. (T06,07,12-14,18)
Natural Resources	Water Resources used for municipal and agricultural uses	Very High	Very High risk to water quality from increased soil erosion and sediment movement from areas that burned at moderate to high severity. This is expected to impact fisheries habitat through sedimentation and ash delivery into streams. It is also expected to impact the Anderson Ranch and the Arrowrock Reservoirs that are used for agricultural and municipal water supplies. Sediment delivery

			is expected to increase to between 5 and 20 times current levels. (T06-09,13,14,18)
Natural Resources	Hydrologic function (including riparian & stream channel stability	Very High	Very High risk to hydrologic function of hillslopes and channels due to the loss of soil cover and structure, decreased infiltration, hillslope erosion and sediment delivery to stream channels, and increased stream channel runoff. Flooding and debris flows are expected. Channel widening and excessive gully formation will occur. About 73% of the fire burned at moderate to high severity posing a widespread threat to hydrologic function across the fire. Very high risk to riparian areas from increased stream flows, channel erosion and loss of grass, forb, and shrub components in those areas that experienced moderate and high soil burn severity (T01-03,06,08,13,14)
Natural Resources	Critical Habitat – Bull Trout	Very High	Very High risk to bull trout and associated designated Critical Habitat due to the threat of post-fire runoff, erosion, and sediment delivery. These threats have the potential to negatively affect bull trout populations and lead to the degradation of designated critical habitat, deterring recovery objectives. Roughly 27.5 miles of designated Critical Habitat are within/adjacent to the fire. (T01-03,06,08,13,14,18)
Natural Resources	Redband trout	Very High	Very High risk to redband trout and associated habitat due to the threat of post-fire runoff, erosion, and sediment delivery. These threats have the potential to negatively affect redband trout populations and lead to the degradation of occupied habitat (125 miles of redband trout habitat in and immediately downstream of the fire perimeter). (T01-03,06,08,13,14,18)
Natural Resources	Soil Productivity	Very High	Very High risk to soil productivity with a high probability of immediate

			detrimental soil displacement. The loss of effective ground cover and above ground organic matter will leave the soil resource susceptible to erosive forces for 5 to 7 years. The increased potential for the spread of invasive & noxious weeds from known populations within & adjacent to fire could lead to high erodibility of the soil resource. (T01-03,06)
Natural Resources	Native or Naturalized Vegetative Communities – Non-forested	Very High	Very High risk to the grass and shrub native or naturalized vegetative communities due to the loss of vegetative cover from the fire. Known noxious and invasive weed populations exist within and immediately adjacent to the burned area, and they will compete aggressively with native species for space and nutrients. (T01-06)
Natural Resources	Native or Naturalized Vegetative Communities – Forested	Very High	Very High risk to the forested native or naturalized vegetative communities due to significant tree mortality, in which all conifers in moderate and high burn severity – 75% of the burn area, or 42,000 acres – were killed. Whitebark pine is a Candidate species under ESA. Some 48% of the habitat has been affected by the Elk and adjacent Trinity fires in 2012-2013. (T04-06)
Human Life and Safety	Emergency Ingress and Egress	High	High risk to travelers from flooding and subsequent damage to road prisms at stream crossings given damage could eliminate emergency ingress/egress along major roads of high concern, including Fall Creek, Meadow Creek, and the Pine-Featherville corridor. (T11,12,14,19)
Human Life and Safety	Risk to life and safety due to Loss of access	High	High risk to travelers that access along several roads within the Forest will be lost due to debris flows and flooding/washouts downstream/downslope of burned slopes, especially those with a moderate-high burn severity. Roads provide access to Forest lands, private property, and connection between communities.

			Loss of access is especially dangerous during storm events and the colder months due to the potential to strand travelers that are unprepared for long-term exposure to the elements.(T12,14,18,19)
Property	Dog Creek campground	High	High risk to Dog Creek campground facilities and water supply system, due to increased flooding, sedimentation, and debris flows. Sixty-two percent of the Dog Creek watershed burned at high and moderate soil burn severity. (T16)
Property	Lester Creek Guard station	High	High risk to Lester Crk. Guard Station facilities with damage expected due to flooding and sedimentation. Lester Crk. burned at mostly moderate soil burn severity (70%). (T15)
Property	Forest trails	High	High risk to forest trail infrastructure, including culverts and puncheon that were burned and hazard trees created; and from unstable tread (burned roots and logs beneath tread) and threat of increased runoff/erosion to tread. (T09)
Cultural and Heritage Resources	Cultural sites	Intermediate	Intermediate risk to cultural sites given that increased soil erosion and loss of vegetation cover may affect/expose cultural resource sites within the burn perimeter. Sites are extremely important to the Shoshone-Paiute Tribes and Shoshone-Bannock Tribes. (T20)
NON-BAER Values			
Natural Resources	Sage-grouse habitat	Very High	Very High risk to sage grouse habitat due to the loss of vegetative cover from the fire. Nearest lek less than 2 miles from fire perimeter. Sagebrush mortality over large areas appears unlikely to recover naturally which will make this landscape unsuitable for sage-grouse occupancy. There is a very high risk to the normal fire return interval should invasive grasses become dominant, which in turn will

			threaten soil stabilization and the biotic integrity of the site. Specifically, burn severity had a large-scale impact to healthy, perennial grasses and shrubs within the burned area. The large-scale mortality to the shrub components was important to the candidate species, Greater sage grouse. Sagebrush mortality has resulted in a loss of over 100,000 acres (Pony and Elk Fires alone) of the most important component of native and naturalized vegetative communities that is unlikely to recover naturally. This will result in creating a landscape unsuitable for sage-grouse occupancy resulting in a listing of a new species. Recent fire history has eliminated thousands of acres of adjacent habitats. In those areas of moderate burn severity the native grass, forb, shrub response may be further threatened because of strong invasive species responses within the burned area. (T01-04)
Natural Resources	Mule Deer Winter Range	Very High	There is a very high risk to native and naturalized vegetative communities due to the lack of vegetative cover within the Elk Complex Fire. There is a very high risk to the normal fire return interval should invasive grasses become dominant, which in turn will threaten soil stabilization and the biotic integrity of the site. Specifically, this fire and the Pony complex caused Bitterbrush and sagebrush mortality over large areas of winter habitat. This loss of thermal cover and forage will stress returning mule deer and increase pressure on adjacent habitat and private land. However, recent fire history over the last 5 – 10 years has greatly reduced mule deer winter range on the north side of Interstate 84. The next two years will likely push deer into the

			corridor between recent fire scars and the interstate putting pressure on habitat and increasing risk to travelers.Very High risk to mule deer winter range given bitterbrush and sagebrush mortality over large areas in winter habitat has occurred. This loss of habitat (30,000 acres on Elk; 150,000 acres between Elk and adjacent Pony fires) will cause high stress to mule deer from loss of thermal cover and forage, causing increased pressure on adjacent habitat and private land. (T01-04)
Natural Resources	Canada Lynx, Lynx Analysis Unit	Very High	Very High risk to suitable Lynx habitat within the fire area due to the moderate and high severity burn; this will reduce functionality of lynx habitat in this unit for the next 30 years.

B. Emergency Treatment Objectives:

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

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

Land 60 % Channel -- % Roads/Trails 60 % Protection/Safety 90 %

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	90	70	--
Channel	80	70	--
Roads/Trails	70	80	90
Road treatments are designed for increased runoff which will decrease as vegetation recovers.			
Protection/Safety	80	60	60
Assume Visitors will pay attention to the new signs.			

E. Cost of No-Action (Including Loss): $7,610,250; See VAR;

F. Cost of Selected Alternative (Including Loss): $5,479,380; See VAR and summary statement in section E, above. Although the cost benefit ratio is just over 1.0, several factors are not considered in the cost analysis. First, the hillslope treatments will help reduce sediment from high and moderate severity burn areas by 20 - 30% in those drainages that it is applied. This will give road and trail treatments downslope a better chance of succeeding. Second, bull trout and their critical habitat occur downstream of the proposed treatment areas. Reducing sediment and improvement of undersized culverts to pass debris will help protect these already at-risk populations. Third, the cost of protecting soil productivity is difficult to estimate. Mulching will protect over 2,000 acres of high and moderate severity burn areas and promote vegetative recovery quicker than if left untreated. Finally, noxious weed treatments, mulch and seeding treatments will protect native and naturalized vegetative communities and soil productivity. These last benefits were not fully considered by the VAR tool. When all accumulated values (critical and non-critical) are considered as part of the success of the BAER response, the BAER team feels the overall package of treatments is essential.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: T.J. Clifford

Email: tclifford@blm.gov Phone: 208-384-3459 FAX:

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.)

> *These treatments were developed by each of the respective resource groups as part of a specification sheet that helped guide narrative and cost considerations. Each treatment proposal was then captured within this document. Since the development of those specification sheets, the team leader has communicated with BAER Coordinators at forest, regional, or national levels to ensure consistency with BAER authority. Therefore, this document, with the included treatment description and design, supersedes all prior versions.*

Land Treatments:

Seeding (Combined original T01 - Aerial Seeding, T02 - Drill Seeding, T03 – Hand Seeding)
General Description of Treatment: Perennial native grass species with annual sterile grass species will be applied via helicopter/fixed wing, hand application and drill to provide for the most effective application for each site. This seeding will assist in the deterring establishment of new noxious and/or invasive weed infestations in existing native communities. Seeding would also assist in protecting against further degradation of soil productivity, hydrologic function above cultural resource sites, designated bull trout critical habitat and forest service property and infrastructure.

Suitable Sites:
Treat high soil burn severity areas within the fire perimeter where stabilizing grasses and shrub habitat are unlikely to return naturally. These areas overlap with critical values associated with existing native plant communities, soil productivity, hydrologic function, specific cultural resources, and T&E habitat.

- 6,650 acres of aerial seeding
- 354 acres of drill seeding
- 129 acres of hand seeding

Design/Construction Specifications:
Seeding rates will be 14-20 lbs./acre (PLS) and will a focus on aggressive native species with annual sterile grasses. Grass species selection will be proportions that will assist in cost savings and maintain native species emphasis. The target costs for this treatment are:

Species/Action	Cost Target (Estimate 7,133 acres)
Native Perennials	10 to 14 lbs. lbs./acre @ $4 to $5 per pound
Annual Sterile Grasses	5 to 7 lbs./acre @ $2.00 per pound
Aerial Application Costs	Approximately $60 per acre
Contract Administration	$1 per acre
Total Cost	Cost per acre - $133

Additional native shrub and forb species may be added by The following seed mix is proposed, however, adjustments may be made depending on supply, contribution from cooperators, and application efforts by other agencies.

Common Name	Scientific Name	PLS Pounds Per Acre	PLS # Seed / Sq. ft.	Price Per pound
Annual				
Sterile Triticale Hybrid	(*Triticum aestivum* x *Secale cereale*)	5	1.3	$2.25
Perennial				
Bluebunch wheatgrass (PSSPS)	*Pseudoroegneria spicata ssp spicata*	3	9.6	$10-11
Mountain brome (BRMA4)	*Bromus marginatus*	5	16	$6-7
Idaho fescue (FEIDI2)	*Festuca idahoensis*	2	20.9	$9
Canbyi bluegrass	*Poa secunda var canbyi*	1	21.5	$7
Mountain big sagebrush (Funded by Partner)	*Artemisia tridentata vaseyana*	0.08	4.1	$18

Purpose of Treatment: The BAER Team considered this treatment necessary to reduce the Very High risk to the accumulated critical values of **Soil Productivity, Native and Naturalized Vegetative Communities**, and **Hydrologic Function**. The primary objective of seeding is to provide root systems and vegetative ground cover to stabilize slopes that burned at moderate and high severity. This seeding will also minimize the spread of existing populations and deter establishment of new noxious weed infestations and invasive plants, further reducing the threats to native plant communities and degraded soil productivity. By providing the stability necessary to hold soils on site during the first two years, hydrologic function is also protected.

In addition to mitigating the threats to critical BAER values, this seeding treatment will indirectly benefit other non-BAER values, specifically **Sage-grouse Preliminary Priority Habitat**, **Sage-grouse Preliminary General Habitat**, and **mule deer winter range**.
Describe Treatment Effectiveness Monitoring: The site will be monitored annually.

T04 - Early Detection & Rapid Response (EDRR)
General Description of Treatment: Monitor and treat noxious weed infestations on FS lands associated with suppression activities and BAER treatments. This treatment may be coordinated with private land treatments under the local County Weed Management Agreement.

Suitable Sites:
1. Sites near known preexisting weed species in the area. Include trails and roads within the burned area, especially those routes designated for motorized use and trails designated for motorized or equestrian use.
2. Areas where fire suppression activities may have introduced noxious or invasive weeds.
    a. Roads within Elk Complex Fire used for travel outside of existing weed populations and including fire suppression routes, handline, dozerline, helibases, helispots, drop points, heliwater spots, spike camps, dip sites, medevac sites, camps, staging areas, ICP, and Pine Airstrip.
    b. Aerial seed & mulch BAER treatment sites.

Design/Construction Specifications:
1. Provide EDRR in suppression disturbed areas during growing seasons for spread.
    a. If spread of noxious weeds is identified, then plan and design treatment.
2. Select herbicide, application rate, and application timing based on specific weed being treated, and access to the location of the infestation.
3. Consideration for TES (listed species) habitat and sensitivity when selecting appropriate herbicide.

Purpose of Treatment: Noxious or invasive weeds are treated to stabilize and prevent unacceptable degradation to native plant community, natural, and cultural resources. Treating noxious and invasive weeds prevents the serious threat these plants have on ecosystems. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the identified critical values of:

1. Native and naturalized vegetative communities – non-forested

Describe Treatment Effectiveness Monitoring: Follow-up monitoring with program funds will occur in 2nd & 3rd years as needed if new or expanded weed populations are discovered during the 1st year BAER treatments.

T05 Fence Construction (Temporary)
General Description of Treatment: The Elk Complex Fire will require the construction of approximately 8 miles of new, temporary fence. Electric fence will be used. These fences will be required to exclude livestock from areas rested from grazing for natural recovery of vegetation.

Suitable Sites: These fences will be located on the Williams Creek C&H Allotment and Smith Prairie C&H Allotment.

Design/Construction Specifications:
The Elk Complex Fire will require the construction of approximately 8 miles of new, temporary fence. Fences will be located on the Williams Creek C&H and Smith Prairie C&H Allotment. Temporary fence will be electric fence.
- One strand will be used, with a t-post every 30 to 50 feet depending on terrain.
- Solar fencers will be used to charge the wire.

- The fence will be installed cooperatively between the Forest Service and the permittee. Maintenance will be conducted by the permittee, which will include take down in the fall and re-installation in the spring. The permittee will also be required to routinely check the fence to ensure compliance and effectiveness.

Purpose of Treatment: This treatment provides benefits to multiple critical values to stabilize and prevent unacceptable degradation to the native plant community. This treatment is the considered to be the minimum necessary to achieve a reduction in risk to the existing native plant communities and also the cumulative critical values of:

1. **Soil productivity**
2. **Hydrologic function (including riparian and stream channel stability)**
3. **Critical Habitat - Bull Trout**
4. **Cultural Sites**

Describe Treatment Effectiveness Monitoring: Implementation is monitored through administration.

T06 - Aerial Seed and Straw Mulch

General Description: Apply sterile Triticale Hybrid (Triticum aestium x Secale cereal) seed to ground surface by helicopter prior to applying straw mulch. These treatment sites were chosen because they provide the most effective reductions to peak runoff and peak sediment delivery to streams. Seeding is included with the mulch to ensure maximum soil stability and prevent runoff from these sites. Both the site selection and the heavy treatment (seed and mulch) were evaluated against a much broader, but lighter treatment area and determined to be the minimum necessary to reduce the risk to human life and safety, forest investments, soil productivity, and hydrologic function. The non-persistent annual grass will still provide cover in year 2, therefore, will also aid in reducing establishment of new noxious weed infestations for a longer time period than mulch alone.

Agricultural straw mulch will be applied to the ground surface by helicopter (and spread with hand crews as necessary) to achieve a continuous cover of uniform thickness, as specified below, to replace ground cover consumed by the fire. Ground cover is needed to maintain soil moisture, accelerate recovery of native vegetation, and to protect any seed remaining onsite. In addition, the organic mulch will protect soil from solar heating and drying, thereby improving the ability of seeds to germinate and native vegetation to re-establish.

The mulching/seeding treatments are predicted to lower the estimated soil erosion and subsequent sediment delivery to the streams by about 20 to 40%. Mulching will also reduce downstream peak flows by absorbing and slowly releasing overland runoff which is likely to be increased due to reduced soil cover and hydrophobic soil conditions. Mulching treatments in the headwaters of the streams can protect a much larger downstream area from cumulative runoff and sedimentation.

Location (Suitable Sites): Eighteen treatment units totaling 2,162 acres. The proposed treatment units have direct sediment delivery potential to Dog, Green, Mill, Knox, Myrtle, Meadow, Stavely and Fall Creeks and the South Fork of the Boise River. Refer to BAER Treatment Map for exact locations. Treatment units have been identified using the following criteria in areas identified to be the highest contributors to water and sediment delivery:

- Within high burn severity
- Treatable Slopes (25 to 55%) where rill initiation is expected.

- Typically on upper third to upper two-thirds of hillslopes.

Design/Construction Specifications:

1. Treat areas in designated units with “High” soil burn intensity that are less than 55% slope.
2. Seed application rate will be 20 pounds PLS per acre (5 – 9 seeds per square foot).
3. Straw application rate: Apply mulch to achieve a continuous cover of uniform thickness over 70% of treatment area at a depth of less than 2.0 inches. Application rate will be approximately 1.0 ton/acre (2,000 pounds). This is about 0.25 inches or 3 straw shafts deep. Aerial application may not achieve desired ground cover, therefore ground crews will likely be needed to spread straw clumps by hand in select locations in each treatment unit.
4. Straw must conform to Idaho or State Department of Agriculture (ISDA), Certified Noxious Weed Free Standards for Noxious Weed Free Forage and Straw (NWFFS). All straw provided will grown in Idaho, have been planted, and harvested during the 2013 growing season. Straw shaft length will not exceed 12 inches. Only wheat straw is suitable. Additional certification for Bromus Tectorum will also be required.
5. The straw must be applied dry (less than 12 percent internal moisture content) to ensure proper dispersal during aerial applications. The Forest Service will randomly test bales using a moisture probe.

Purpose of Treatment: Straw mulch and seed will provide immediate ground cover and stability to protect against from erosion and loss of nutrients. Mulch can reduce downstream peak flows by absorbing rainfall and allows pre-wetting of water repellant soil. Straw helps secure seeds that are stored in the soil, or applied as an emergency treatment. Straw mulch on burned areas helps maintain a favorable moisture and temperature regime for seed germination and growth. The seed will provide added stability by establishing root systems and cover necessary to prevent or minimize runoff from these sites. The BAER team considered this treatment the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human life and safety of visitors, private residents, and agency personnel** at recreational sites of the South Fork Boise River and Fall Creek.
2. **Human life and safety of visitors, private residents, and agency personnel** along travel routes.
3. **Forest roads and bridges**
4. **Forest trails**
5. **Soil productivity**
6. **Hydrologic function (including riparian and stream channel stability)**
7. **Critical Habitat - Bull trout**
8. **Native or naturalized vegetative communities – forested and non-forested**
9. **Cultural Sites**

Describe Treatment Effectiveness Monitoring: Visually inspect randomly selected mulch treatment units for proper application rate and uniform thickness during/immediately after treatment. In each unit, measure percent ground cover using a 100ft pace transect method once after treatment, and again in the spring of 2014. Visually inspect aerial seeding to ensure approximately 5 – 9 seeds per square foot are applied. Monitor units for seed germination in the spring of 2014.

Channel Treatments:

T07 Channel Debris Clearing

General Description of Treatment: The goal is to minimize the potential for plugging and debris jams and resulting flood damage to roads, facilities, and natural resources. To accomplish this goal, channel debris clearing is proposed at two locations identified as 'high' risk:

1) Approximately 0.5 miles of the Meadow Creek Road where the road prism has significantly reduced the natural channel and floodplain dimensions of Meadow Creek. In this reach of channel, likely formation of debris jams and subsequent flooding and erosion threaten Meadow Creek Road.
2) Approximately 0.25 miles of Lester Creek where removal of accumulated sediment and woody debris is essential for the protection of the Lester Creek Guard Station. This will allow for improved transport of stream flows and sediment through the Lester Creek adjacent to the Guard Station.

Suitable Sites: The proposed treatment is located in Meadow Creek along the Meadow Creek Road, and in Lester Creek adjacent to the Lester Creek Guard Station.

Design/Construction Specifications:

An excavator w/ thumb will remove burned and existing trees that have fallen into the 0.5 mile reach of Meadow Creek adjacent to the Meadow Creek Road. This same equipment will be used to remove and transport debris from a 0.25 mile reach of Lester Creek. Removed debris will be hauled away with a 10-yard dump truck because there is no suitable location to place the debris in the vicinity of the stream channel segments. The upstream half of the Meadow Creek treatment is accessible to heavy equipment a short distance (about 50-200 feet) off the road; this area is most likely to contribute debris to the more constricted reaches just downstream along the road. The downstream part of the treatment area can be treated with the excavator from the roadbed. A watershed specialist will supervise the projects.

At Lester Creek, the channel clearing would require equipment to go up to 200 feet off the Lester Creek roadbed below the road crossing where the majority of the initial clearing treatment would occur. Above the crossing, the road is adjacent to the channel and clearing should be possible from the roadbed.

Purpose of Treatment: The purpose of this treatment is to minimize the potential for plugging and debris jams to minimize flood damage to roads, facilities, and natural resources. The treatments would reduce / mitigate risks to the following values.

1. **Forest roads and bridges**
2. **Lester Creek Guard Station**
3. **Redband trout**)
4. **Water quality**

Meadow Creek Road is a major transportation route through this part of the Boise NF and connects the communities of Prairie and Pine therefore a loss of this segment of road would be a significant impact to these communities. The watershed area above the Meadow Creek road segment is approximately 1 square-mile and is dominantly 'high' soil burn severity and significant increase in flow is expected. As such, there is a high risk for debris jams in this channel reach resulting from burned logs/debris in combination with the expected increase in post-fire runoff. The loss of the 0.5 mile section of road would be a major sediment input into fish habitat and a major detriment to water quality.

Decreased channel capacity and the potential for plugging and debris jams in Lester Creek near the Guard Station increases the risk of damage to the facilities that is directly attributed to increased post-fire stream flows.

Describe Treatment Effectiveness Monitoring: The effectiveness of the treatment would be monitored as part of the 'Storm Patrol' specification.

Road and Trail Treatments:

T08 - Road Drainage Reconstruction
General Description: This treatment will maintain the road drainage in preparation for increased runoff. Road work will be consistent with pre-fire design in most cases and will include outsloping, drain dips, waterbars, overflow structures, culvert installation, debris racks, culvert cleaning, ditch cleaning, roadside stream stabilization and road template reshaping.

Suitable Sites: The roads are listed in the detailed specifications for engineering and on the treatment map. The roads are listed individually and represent approximately 149 miles of the 329 miles within the fire perimeter The engineers determined that suitable road segments must meet the following criteria:

1. Located below or within areas with slopes burned at moderate to high severity,
2. Have a continuous grade and infrequent drainage structures,
3. Contain culverts that have diversion potential, and
4. Located on roads where frequencies between inspection and maintenance may be limited after the fire.

Design/Construction Specifications: This treatment will include a "system" of design/construction methods depending on the prisms current condition. The details of this treatment are provided in the engineering report and associated specifications and will be completed per Forest Service standards.

1. Outsloping
2. Drain Dips (with or without armor)
3. Waterbars
4. Overflow Structures
5. Culvert Installation
6. Debris Racks
7. Culvert Cleaning
8. Ditch Cleaning
9. Roadside Stabilization
10. Corrugated Inlet Guard
11. Road Reshaping

Generally, reshape the road surface to provide positive drainage to ditches and culverts. Remove berm where water will flow off roadbed, repair large ruts in the middle of the roadbed that channel water downgrade.

Describe Purpose of Treatment: The purpose of this treatment is to mitigate additional risk to Human Life and Safety, property, emergency ingress/egress, loss of access to visitors and local residents, and impacts to water quality, riparian, and bull trout (listed species).. Approx. 329 miles of Forest Roads and fourteen (14) major bridge crossings are located within the fire perimeter, representing a significant financial property investment. Adjacent communities, Pine and Prairie, and numerous in-holdings, Fall Creek area, are located within or adjacent to the fire

perimeter, the roads and bridges provide critical access needs and emergency ingress/egress to the public and administrative personnel. Protect road infrastructure and minimize sediment delivery into the watersheds that run into the South Fork of Boise River which contain listed fish species (bull trout). The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Safety of visitors, private residents, and agency personnel**
2. **Forest roads and bridges**
3. **Emergency ingress and egress**
4. **Loss of access**
5. **Soil productivity**
6. **Hydrologic function(including riparian and stream channel stability)**
7. **Critical Habitat - Bull Trout**
8. **Water quality of two major reservoirs and designated, occupied critical habitat**

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.

T09 - Trail Drainage Improvement

General Description: Treatment would provide immediate protection to the trail system. Trails may capture 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. The trail system would be improved to withstand increased runoff, protecting property, workers and users, and critical habitat for bull trout.

Suitable Sites: Trails located within the Elk Complex Fire perimeter, 23 section of National Forest System Trail (NFST) were impacted for a total of 59.74 miles. Of the miles impacted 42.39 are within the moderate to high burn severity. The managed use for these systems is motorcycle and ATV. Priority trails to be worked on include those that are within or below moderate to high soil burn severity slopes and those with sustained steep grades that have inadequate drainage.

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.

1. Install water-bars depending on steepness of trail (18 per mile) in areas of moderate or high severity.
    a. Install waterbars in sections of trail that have continuous gradient for a length of greater than 50 feet and are either insloped (cupped) or show evidence of routing water (rills, gullies).
2. Construct tread retention structures where necessary and downslope, stabilizing vegetation has been consumed.
3. Hazards within the trail route that restrict access to work sites will be removed (rocks, trees)
4. Clean existing water bars.
5. Removal of identified hazards surrounding work site locations.
6. If the area has to large a safety risk then the work will be delayed until safety risk is stabilized

Purpose of Treatment: Trails within the Elk Complex 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 that will render the trails unusable or dangerous to use. Motorcyclists and ATV users are the primary users. Additional hazards caused by the fire such as hazard trees 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. 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**

Describe Treatment Effectiveness Monitoring: • The drainage improvements will be inspected throughout the year after implementation to monitor the effectiveness of water run-off and the trail drainage condition.

T10 – Temporary Trail Closure
General Description: A maximum of a two-year closure for motorized vehicles will occur to keep vehicles out of the burn area and from moving across the treatment area until vegetation has re-established. If vegetation recovery objectives are met prior to two years, then the closure could be rescinded.

Location/(Suitable) Sites: The proposed vehicle closure would include all trails within the Wilson Flat trail system.

Design/Construction Specifications: Site will be gated by the District. Placement of a permanent post is required and placement of large rock to strengthen vegetative screening at the trail head would successfully close the area.

Purpose of Treatment Specifications: The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1 **Native or Naturalized Vegetative Communities – Non-forested**
2 **Native or Naturalized Vegetative Communities – Forested**

Treatment Effectiveness Monitoring Proposed: Effectiveness will be measured by site visits and the lack of evidence of recreational vehicle traffic on federal lands within the trail system. Vegetation will be monitored as part of the monitoring plan established for the fire area.

T11 - Dog Creek Crossing Mitigation (To be submitted within BLM ESR Authority)
General Description: Forest Highway 61, the Pine-Featherville Highway crosses Dog Creek with three culverts and a concrete headwall at the inlets. The existing structure is comprised of three culverts: 36-inch diameter, 48-inch diameter, and 54-inch diameter with a concrete headwall securing the culvert inlets and blocking debris. It is anticipated that the existing structure will not be adequate to accommodate the increased post fire flows and debris torrents that are expected to pass through the drainage as a result of high intensity rainstorms and/or spring time snowmelt. Two (2) alternatives are presented here to alleviate the anticipated increase post fire flows and mitigate the damage to the existing property and the threat to Human Life and Safety. Alternative #1 is to replace the existing structure with a 60 foot span bridge allowing water and debris to pass under the highway in a simulated natural stream channel configuration. Alternative #2 is to armor the upstream and downstream slopes along

the highway to protect the roadfill and prism through the area and allow water and debris to flow over the highway in case of plugging or overtaxing the existing drainage structures in the event of a large storm water event.

Suitable Sites: The Dog Creek site is located on Forest Highway 61 approximately 3.5 miles north of Pine, Idaho. The site is located on Bureau of Land Management (BLM) lands. BLM granted an easement to Mountain Home Highway District (MHHD) for the operation and maintenance of the highway at this location.

Design/Construction Specifications:

1. Forest Service and/or Bureau of Land Management personnel will monitor the work. The design and specifications written will be site specific for either of the alternatives chosen. Contract specifications shall conform to *FP03-Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* and Forest Service Supplements.
2. If Alternative #1 is selected, the replacement stream crossing design will comply with the Forest Service San Dimas criteria for Aquatic Organism Passage at Road –Stream Crossings. The removal of culverts and installation of a bridge will include setting up traffic control, excavating and removing the existing culverts off of Forest Service lands, hauling away any excess excavated material to an approved waste site, reconstructing the stream channel with stream simulation material, and reconstructing the road prism.
3. Alternative #2 will mitigate the risk of damage to the roadfill and prism by armoring the upstream and downstream fill slopes, allowing the anticipated flows to overtop the existing structure.

Describe Purpose of Treatment: The purpose of Alternative #1 is to eliminate the risk of pipe failure and associated sediment delivery to critical resources. The purpose of Alternative Number #2 is to minimize the consequences of pipe failure and associated sediment delivery to critical resources. This crossing within the Elk Complex Fire now has the potential for increased runoff and debris flows. This increase in flow to the existing crossing will likely result in plugging of culverts and exceeding their maximum flow capacity. In this instance, the inadequately sized culverts pose an unacceptable risk to the road infrastructure (property) and other critical values (impacts to water quality and riparian areas from the additional erosion, primarily from the road fill). The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human Life and Safety of visitors, private residents, and agency personnel**
2. **Forest roads and bridges**
3. **Loss of access**
4. **Emergency ingress and egress**
5. **Hydrologic function (including riparian and stream channel stability)**
6. **Water quality**

There is an intermediate to high risk to Forest travelers along this stretch of Forest Highway 61 due to the increased potential for flash floods and mudflows. Forest Highway 61 is the primary access to Featherville from Pine and State Highway 20. Loss of this segment of highway would leave residents of Featherville stranded and eliminate access of all motorized travel to Featherville, including Emergency Services. These conditions put the safety of Forest visitors, local residents, and administrative personnel at risk, especially during emergency situations.

Describe Treatment Effectiveness Monitoring: Monitoring will be conducted by district personnel and/or members of the Forest Engineering staff. Monitoring will consist of visiting the

site after high intensity thunderstorms and/or after spring run off to ensure the enhancements are functioning as designed. In addition, photos will be taken during the site visits and a photo log will be established.

T12 – Road Bridge Repair

General Description: This treatment is for the repair of four existing road bridges on Forest Roads within the fire perimeter. These bridges had critical components such as wingwalls, timber beams, and abutments that were destroyed or incurred section loss from the fire. This treatment is not for permanent repairs of these bridges but for minor or short term repairs that stabilize the crossing, provide for equipment access to the treatment areas, and maintain emergency ingress/egress.

Suitable Sites: The bridges listed below were found to have localized damage and will require short term repairs to stabilize the crossing and maintain access during the implementation of treatments.

Bridge 101-0.1 (Fall Creek)

1) Burned northeast wing wall – Construct rock wall (riprap) to stabilize fill slope and mitigate scour/erosion in abutment and fill slopes

Bridge 175-5-7 (Smith Creek)

1) Burned northwest wing wall – Construct rockery wall (riprap) to stabilize fill slope and mitigate scour/erosion of abutment and fill slopes

Bridge 129-3.7 (Fall Creek)

1) Remove burned debris from crossing, lay the slopes back at the crossing to match the surrounding banks, close the road until a permanent bridge is constructed or install a short term portable bridge for short term access

Bridge 128-13.72 (Fall Creek)

1) Add signs and barriers to restrict traffic to the south side of the bridge
2) Burned northwest wing wall – Construct rockery wall (riprap) to stabilize fill slope and mitigate scour/erosion of abutment and fill slopes
3) Rehab abutment by constructing new timber sill on stabilized rock wall

Design/Construction Specifications:

1) FS Engineering and Mountain Home Highway District (MHHD) will direct the work
2) Rockery walls will be designed according to Forest Service standards and guidelines
3) Rehab of Bridge 128-13.72 abutment will be coordinated with MHHD's engineering consultant and the Intermountain Region Bridge Engineer

Describe Purpose of Treatment: The purpose of this treatment is to mitigate additional risk from post-fire effects to the critical values of:

1. **Human Life and Safety of visitors, private residents, and agency personnel**
2. **Forest roads and bridges**
3. **Emergency ingress and egress,**
4. **Hydrologic function (including riparian and stream channel stability)**
5. **Water quality**

These road bridge crossings are located within the fire perimeter and represent a significant financial property investment. These bridges not only provide critical access needs during the

implementation of BAER treatments but also serve adjacent communities, Pine and Prairie, and numerous in-holdings, including the Fall Creek area. The exposed fill slopes of the bridges need to be stabilized to mitigate accelerated sediment delivery into the watersheds.

Describe Treatment Effectiveness Monitoring: Monitoring will be conducted by district personnel and/or members of the Forest Engineering staff. Monitoring will consist of visiting the site after high intensity thunderstorms and/or after spring run off to ensure the enhancements are functioning as designed. In addition, photos will be taken during the site visits and a photo log will be established.

T13 - Culvert Removals

General Description: This treatment is for the removal of existing culverts at stream crossings on Forest Roads. The culvert crossings were identified as being undersized due to the anticipated increase in flows from the burned watersheds above the crossings. These culverts will be removed and have the road fill pulled back to match the surrounding stream banks in order to pass the increased flows that are anticipated from future storm events. The stream channel will be reconstructed with stream simulation material, thereby reducing the potential for head cutting and scour through the new channel. The treatment is primarily for undersized pipe crossings primarily located on maintenance level 1 roads, which are closed to all motorized traffic, and maintenance level 2 roads that are maintained for high clearance vehicles and where the cost of replacing the culverts exceed the benefit from the road system.

Suitable Sites: The following sites locations are where the pipes will be removed:

- NFSR 154B1 – West Fork Fall Creek (36” diameter pipe)
- NFSR 101E – Myrtle Creek (36” diameter pipe)
- NFSR 128F – Lester Creek (48” diameter pipe)

All culvert removal locations were based on the determination that the existing culvert was within a watershed with substantial moderate and high burn severity and that it was undersized for the expected runoff increase.

Design/Construction Specifications: Removal of culverts shall include:

1. FS personnel that will direct the work.
2. Removal of culverts shall include setting up traffic control, excavating and removing the existing culvert from Forest Service lands, hauling away excavated material to an approved waste site, reconstructing the stream channel with stream simulation material, and laying the excavation slopes back so they match the surrounding stream bank slopes.
3. If the crossing is located on a road open to public travel, install barricades or other road entry treatments.
4. Update FS databases to reflect the road management changes.

Purpose of Treatment: The purpose of this treatment is to reduce the risk of pipe failure and associated sediment delivery to critical resources. Roads within the Elk Complex Fire contain drainage structures that cross primarily intermittent streams located in watersheds that have a moderate to high burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows 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 additional erosion and debris further down the drainage due to the failures of the road fill slopes, thereby impacting water quality and the riparian areas.The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human life and safety of visitors, private residents, and agency personnel**
2. **Forest roads and bridges**
3. **Soil productivity**
4. **Hydrologic function (including riparian and stream channel stability)**
5. **Critical Habitat – Bull trout**
6. **Water quality**

Describe Treatment Effectiveness Monitoring: Monitoring will be conducted by district personnel and/or Forest engineering staff. Monitoring will consist of visiting the site after high intensity thunderstorms and/or after spring runoff. Photos will be taken during the site visits and a photo log will be established.

T14 - Culvert Replacements

General Description: The treatment is for the replacement of existing culverts at stream crossings on Forest Roads. Following post-fire streamflow analysis, the pipe crossings were identified as being undersized due to the anticipated increase in flows from the burned watersheds above the crossings and pose an unacceptable risk to the road infrastructure and other critical values. These culverts will be removed and upsized in order to pass the increased flows that are anticipated from future storm events. Where appropriate, the replacement culverts will be designed for aquatic species passage with stream simulation material.

Suitable Sites: Approximately forty three culverts that are undersized and/or are non-functioning and are to be removed and replaced. The roads identified to require a culvert replacement have been designated as Maintenance Level 2 or above. All culvert replacement locations were based on the determination that the existing culvert was within a watershed with substantial moderate and high burn severity and that it was undersized for the expected runoff increase.

Design/Construction Specifications:

1. Forest Service personnel will monitor and direct the work. The design and specifications written will be site specific for each culvert installation. Contract specifications shall conform to *FP03-Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* and Forest Service Supplements. Where appropriate, the replacement stream crossing design complies with the Forest Service San Dimas criteria for Aquatic Organism Passage at Road –Stream Crossings.
2. Replacement of culverts shall include setting up traffic control, excavating and removing the existing culvert off of Forest Service lands, hauling away any excess excavated material to an approved waste site, reconstructing the stream channel with stream simulation material, and reconstructing the road prism.

Purpose of Treatment: The purpose of this treatment is to reduce the risk of pipe failure and associated sediment delivery to critical resources. Roads within the Elk Complex Fire contain numerous drainage structures that cross intermittent and perennial streams located in watersheds that have a moderate to high burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows to the existing crossings may result in plugging culverts or exceeding their maximum flow capacity. In certain cases, the inadequately sized culverts pose an unacceptable risk to the road infrastructure (property) and other critical values (impacts to water quality and riparian areas from the additional erosion, primarily from the road fill slopes).The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human life and safety of visitors, private residents, and agency personnel**

2. **Forest roads and bridges (property)**
3. **Soil productivity**
4. **Hydrologic function(including riparian and stream channel stability)**
5. **Critical Habitat – Bull trout**
6. **Water quality**

Describe Treatment Effectiveness Monitoring: Monitoring will be conducted by district personnel and/or members of the Forest Engineering staff. Monitoring will consist of visiting the site after high intensity thunderstorms and/or after spring run off to ensure the replacements culverts are functioning as designed. In addition, photos will be taken during the site visits and a photo log will be established.

Protection/Safety Treatments:

T15 - Guard Station Facilities Protection

General Description: This proposed treatment is to protect the Lester Creek Guard Station facilities from post-fire flooding, sedimentation, and debris. Protection will consist of a 700-foot continuous barrier made out of 10-foot concrete highway barriers (K-rails) and sandbags. The Guard Station facility is on the Lester Creek floodplain and includes a bunkhouse, supervisor's quarters, office building, barn, shop/garage, well/pump house, and several smaller utility buildings.

Description of Suitable Sites: The proposed treatment is located at the Lester Creek Guard Station.

Design/Construction Specifications:

K-rail installation and sandbag guidelines:

1. Install approximately 70 10-ft. K- rails to prevent Lester Creek overbank flows from flooding the station facilities.
2. Level site for K-rails with backhoe or suitable equipment
3. K-rails should be placed end to end on level ground.
4. Sandbags need to be placed in a single row and against the seams on uphill side of K-rail and a single row on downhill side.
5. To maximize flood protection, K-rails should be inter-pinned with 30 inch length, 8 gauge rebar.
6. K-rails delivered to site must not be staged in drainages.
7. Store any extra sandbags in locations to easily deploy if needed.
8. Delivered or stored sandbags will not be placed in stream channels.
9. Inspect sites after large storm events, clean out sediment; replace damaged bags.

Purpose of Treatment: The purpose of this treatment is to reduce / mitigate the risk to the following values:

1. **Lester Creek Guard Station**

The Lester Creek drainage above the guard station was dominated by moderate soil burn severity and the watershed modeling results show a significant increase in post-fire peak flows and sediment yield . The station is in the floodplain, and the treatment would protect structures from flooding, sedimentation, and debris flows in the event the stream channel overflows its banks which have occurred under pre-fire watershed conditions.

Describe Treatment Effectiveness Monitoring: Inspect sandbags and K-rail placement and performance after major storm events and make necessary adjustments to improve protection of structures.

T16 - Water Facility Protection
General Description: This proposed treatment is to protect the Forest Service drinking water facility at Dog Creek Campground from post-fire sedimentation and debris. The water facility consists of a well/pump house, storage tank, and power supply riser at the upper end of the campground. Protection will consist of protection fences made out of 10-foot concrete highway barrier (K-rails).

Description of Suitable Sites: The proposed treatment is located in the Dog Creek Campground.

Design/Construction Specifications:
Construct separate K-rail barriers around each of the three water facility features (closed on the upstream end and sides, and open on the downstream end).

1. Install K-rails at prescribed locations utilizing low-boy transport and front end loader.
2. Level site for k rails with backhoe or suitable equipment
3. K-rails should be placed end to end on level ground.
4. To maximize flood protection, K rails should be inter-pinned with 30 inch length, 8 gauge rebar.
5. K-rails delivered to site must not be staged in drainages.

Purpose of Treatment: The purpose of this treatment is to reduce / mitigate the risk to the following values:

- **Dog Creek Campground** (Well/pump house, storage tank, and power supply riser)

Due to the threat to visitors, the campground will be closed. The Dog Creek Campground is located where Dog Creek leaves its canyon and enters the riparian corridor of the South Fork Boise River. As such the campground is built on an alluvial fan. Relict channels occur throughout the campground which provides evidence that under undisturbed watershed conditions Dog Creek has flooded the campground in the past. A significant portion of the Dog Creek watershed experienced high and moderate soil burn severity and it is anticipated that significantly higher post-fire stream flows will occur thus increasing the probability that flooding and debris will enter the campground. The largest investment needing protection is the water system.

Describe Treatment Effectiveness Monitoring: Inspect K-rail placement and performance after major storm events and make necessary adjustments to improve protection of structures.

T17 - Developed Site Hazard Mitigation
General Description: The fire impacted 14 developed recreation areas, along with multiple designated camping areas along the South Fork Boise River (SFBR). The treatment would provide immediate hazard mitigation for public safety. The incident also destroyed 3 structures (Castle Creek restroom and 2 out buildings at FR121H, located at old BOR site). The treatment will provide for disposal of all debris and back fill around destroyed structures, and removal of slumped areas, and holes from burnt materials.

Description of Suitable Sites: Developed Recreation sites; designated camping areas within the Elk Fire perimeter along the SFBR; Castle Creek restroom and 2 outbuildings at FR121H

located at old BOR site. The fire destroyed three recreation site structures, including exposing a vault toilet and degenerating burnt debris, all of which creates a significant safety hazard to humans. The fire also created hazard trees which put the public and workers and infrastructure at significant risk in locations where humans and infrastructure are stationary at recreation sites. Slump areas and burnt holes were also created and are safety hazards. This treatment would provide immediate hazard mitigation by removing hazard trees, cleaning up burnt debris, and filling holes and removing slumps. Human life/public safety and the infrastructure investment will be protected.

Design/Construction Specifications: Fall and/or remove all hazard trees which have the potential of striking any recreation improvement, trailhead sign, or cause injury to public at stationary locations. Dispose of all debris and back fill around destroyed structures (Castle Creek restroom and 2 structures at FR121H, located at old BOR site). Remove all slumped areas, and holes from burnt materials. Due to the limited timeframe it was not possible to assess each recreation area located within the fire perimeter for hazards. However, the identified items above represent a reasonable list based on discovery at areas reviewed.

Purpose of Treatment: To prevent further damage to recreation infrastructure; and to allow the use to continue with reduced risk of injury or property damage. The Elk Complex Fire burned in several developed recreation sites, creating hazardous conditions for visitors and workers and damaging or destroying infrastructure in these locations. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the following values:

1. **Human life and safety of visitors, private residents, and agency personnel**

Describe Treatment Effectiveness Monitoring: Inspect prior to opening the recreation areas and monthly during the use season for the first year after implementation to ensure risk to infrastructure and public safety has been resolved.

T18 – Storm Patrols

General Description: The patrols are used to identify road drainage restrictions and road damage such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that have received damage. The storm patrollers shall have access to at least a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged, and to repair roads which are exhibiting severe surface erosion. Due to the presence of several bridges in the Fall Creek and Smith Creek drainages and the potential for floating debris to cause damage to those structures, the patrols will also monitor the movement of large woody debris and make a determination of whether or not the material should be removed before it contacts bridge piers or abutments.

Suitable Sites:

Approximately 27 roads and bridges are identified that receive the most traffic, are of more value to the transportation system, and/or have high-risk structures that are prone to storm damage.

Storm patrols are intended for use at the following locations:

1. Road crossings where loss of control of water or exceedance is identified.
2. Road access is necessary throughout the storm season.
3. Road crossings where high sediment and debris is anticipated.
4. Roads susceptible to landslides.
5. Roads with all-season surfacing (aggregate or asphalt).

The patrols will first focus on those roads that receive the most traffic and are of more value to the transportation system.

Design/Construction Specifications:

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

Purpose of Treatment: To reduce the risk to Human Life and Safety (Public Safety of Forest Visitors and administrative personnel), Property (Forest Roads and Bridges), and Emergency ingress/egress. The treatment will also provide protection of infrastructure and associated sediment/debris that in turn causes an impact to Water Quality and Riparian areas. Roads within the Elk Complex Fire contain drainage structures that cross primarily intermittent streams located in watersheds that have a moderate burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows 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 will likely be additional erosion and debris further down the drainage due to the failures of the fill slopes of the roads.

There is an immediate and future threat to travelers along these roads within the burned area due to the increased potential for rolling and falling rock from burned slopes and increased potential for falling trees, flash floods and mudflows. The post-fire flooding mayinterrupt access to visitors, local residents, and Forest Service personnel who are implementing treatments. 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 Forest visitors and administrative personnel at risk.

Engineering and District personnel will survey the roads within the fire perimeter after high-intensity summer thunderstorms and spring snow-melt. Survey will inspect road surface condition, ditch erosion, and culverts/inlet basins for capacity to accommodate runoff flows. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human life and safety of visitors, private residents, and agency personnel**
2. **Emergency ingress and egress**
3. **Forest roads and bridges**
4. **Hydrologic function (including riparian and stream channel stability)**
5. **Critical Habitat – Bull trout**

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.

T19 –Safety Signs
General Description: This treatment is for the installation of highway warning signs, burned area warning signs, road and bridge delineators. The traffic warning signs are those signs that warn the public of dangers on the road such as curves, falling rocks, etc. . Burned area signs warn the public identifying of the possible dangers associated with a burned area on major entry points into the burned area and developed recreation sites. It shall contain language specifying items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods. Road and bridge delineators are reflective devices mounted in a series along the edge of roadway or at the corners of bridges to help indicate the roadway alignment and ensure driver safety.

Suitable Sites:
- 9 Burned area warning signs on major entry points.
- 23 Burned area warning signs or safety placards at developed recreation sites and/or trails areas.
- 9 locations for Road and Bridge Delineators

Detailed Design/Construction Specifications:
1. Traffic Warning and Road Closure Signs shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) and shall be installed per Federal Highway Safety Standards.
2. Burned Area warning signs along the roads shall measure, at a minimum, 4 feet by 4 feet and consist of 0.08" aluminum, sheeted in high intensity yellow with black letters. The **BURNED AREA** lettering shall be a minimum of 5 inches in height and all remaining lettering shall be a minimum of 3.5 inches in height.
3. Bridge delineators shall conform to Type 3 object marker standards established by the MUTCD. Road delineators shall conform to MUTCD and the "Sign and Poster Guidelines for the Forest Service" (EM-7100-15).

Purpose of Treatment: The purpose of the Highway Warning, Road Closure, Burned Area, Road and Bridge Delineators, is to provide safety to the motorists of upcoming road dangers and/or objects. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Human Life and safety of visitors, private residents, and agency personnel**

Describe Treatment Effectiveness Monitoring: District personnel will monitor or check signs after events to ensure that they will be effective for the future.

T20 –Resource Protection Patrols
General Description: There are forty-nine cultural resources sites in the Elk Complex. The general area encompasses the lands north of the South Fork Boise River.

Suitable Sites: Cultural resources of particular concern are Native American sites on NFS lands in the South Fork Boise River drainage and Smith Prairie area. Treatment units have been identified using the following criteria: the Forest Service Manual (2523.02, 2523.1 Exhibit 01) identifies cultural resources as a critical value for the purposes of BAER.

Design/Construction Specifications: N/A

Purpose of Treatment: The purpose of resource protection patrols is to reduce or mitigate the risk of archeological looting, erosion, runoff, and flash flooding on significant cultural resources in the Elk Complex Fire that can damage or destroy site integrity. Archeological sites determined eligible for listing on the National Register of Historic Places and that are of

importance to the Shoshone-Paiute Tribes and Shoshone-Bannock Tribes. These sites are of special concern to the Shoshone-Paiute Tribes and the Shoshone-Bannock Tribes because of their cultural importance to the Tribes. They are also some of the most important archeological sites on the Boise NF. During monitoring of sites just outside the Elk Complex Fire perimeter in May 2013, FS archeologists discovered "pocket drops" (concentrations of lithic material) on top of new vegetation, indicating that sites in the vicinity had been recently looted.
Exposure of previously hidden artifacts and features due to vegetation loss and increased ground surface visibility increase the potential for looting and/or erosion that affect site integrity. Weekly to bi-weekly patrols will prevent possible looting to sites by establishing a regular presence in the area and monitoring for hydrologic threats that may need immediate management action. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. **Cultural sites**

Describe Treatment Effectiveness Monitoring: The patrols will document changes to the site in terms of artifact and feature composition that indicate archeological looting, runoff, and flash flooding is occurring and could affect site integrity. The results of the patrols will be used to determine if additional management action is required to protect these sites.

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.)

T21 – Monitoring of Vegetation Recovery
Provide a Brief General Description of Treatment: Monitoring for natural vegetation recovery/re-establishment within the burned area especially those areas treated with mulch or seed will be developed and included in an interim BAER Report.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #_1_

			NFS Lands				Other Lands		
		Unit	# of		Other	# of	Fed	# of	Non Fed
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$
A. Land Treatments									
T01 - 03 All Seeding	acre	145	7133	$1,033,851	$0		$0		$0
T04-Early Detection & Rapi	acre	10	10305	$99,340	$0		$0		$0
T05-Fence Construction (T	miles	918	8	$7,344	$0		$0		$0
T06-Aerial Seed & Straw M	acre	1,643	2162	$3,552,923	$0		$0		$0
Insert new items above this line!				$0	$0		$0		$0
Subtotal Land Treatments				$4,693,458	$0		$0		$0
B. Channel Treatments									
T07-Channel Debris Clearii	miles	4,200	2	$8,400	$0		$0		$0
Insert new items above this line!				$0	$0		$0		$0
Subtotal Channel Treatments				$8,400	$0		$0		$0
C. Road and Trails									
T08-Road Drainage Recon	miles	1,867	100	$186,700					
T08-Road Drainage Recon	miles	1,867	49	$91,483	$0		$0		$0
T09-Trail Drainage Improve	miles	1,875	42	$78,732	$0		$0		$0
T10-Temporary Trail Closu	acre	0	5,760	$1,958	$0		$0		$0
T11-Dog Creek Crossing M	culvert	147,979	0	$0	$0	1	$147,979		$0
T12-Road Bridge Repair	bridges	3,341	4	$13,364	$0	0	$0		$0
T13-Culvert Removals RF a	culvert	1,774	3	$5,322	$0	0	$0		$0
T14-Culvert Replacements	culvert	6,617	38	$251,446	$0	0	$0		$0
T14-Culvert Replacements	culvert	6,617	5	$33,085					
Insert new items above this line!				$0	$0		$0		$0
Subtotal Road and Trails				$662,090	$0		$147,979		$0
D. Protection/Safety									
T15-Guard Station Facilities	each	27,230	1	$27,230	$0		$0		$0
T16-Water Facility Protecti	each	7,955	1	$7,955	$0		$0		$0
T17-Developed Site Hazar	facilities	629	20	$12,579	$0		$0		$0
T18-Storm Patrols	days	1,600	20	$32,000	$0		$0		$0
T19-Safety Signs RF Appr	each	189	41	$7,745	$0		$0		$0
T20-Resource Protection F	days	436	30	$13,083	$0	0	$0		$0
Insert new items above this line!				$0	$0		$0		$0
Subtotal Protection/Safety				$100,592	$0		$0		$0
E. BAER Evaluation									
Initial Assessment	Report	$0	1	---	$0		$0		$0
Insert new items above this line!				---	$0		$0		$0
Subtotal Evaluation				---	$0		$0		$0
F. Monitoring									
T21-Monitoring of Vegetati	acre	$3	0	$0	$0		$0		$0
Insert new items above this line!				$0	$0		$0		$0
Subtotal Monitoring				$0	$0		$0		$0
G. Totals				$5,464,540	$0		**$147,979**		**$0**
Previously approved				$494,798					
Total for this request				**$4,969,742**					

PART VII - APPROVALS

1. /s/ Cecilia R. Seesholtz — 9-13-2013
   Forest Supervisor (signature) — Date

2. _____ _____

Regional Forester (signature) Date