

Date of Report: 9/30/2015

EXECUTIVE SUMMARY

The Tepee Springs fire started during a lightning storm on August 12, 2015 and burned with varying intensities on approximately 96,000 acres. The Tepee Springs fire burned within several watersheds that feed the Salmon River in the northeast portion of the Payette National Forest (PNF). As the fire progressed, adjacent BLM and private lands, and eventually the Nez Perce-Clearwater National Forest (NCNF) were also affected. The fire burned within 3 miles of the City of Riggins and affected private landowners along the Main Salmon River corridor. The fire area is located approximately 10 miles north of New Meadows, Idaho.

Steeper slopes appeared to burn hotter resulting in stand replacing fire while gentler slopes burned in more of a mosaic pattern. During the BAER (Burned Area Emergency Response) field assessment it was noted that in many low and some moderate burn severities some green up was already occurring. In many locations partially scorched ponderosa pine was already shedding their needles resulting in a natural form of mulch that lessens soil erosion. Of the burned acres within the perimeter 6% were unburned, 46% were of low burn severity, 37% were moderate burn severity, and 11% were of high burn severity.

Burn Severity By Ownership

Owner	High	Moderate	Low	Unburned	Total
PNF	6281	20,562	22,175	3269	52,287
BLM	1591	4732	5444	295	12,062
NCNF	1720	4612	11,411	2349	20,092
State	462	981	697	15	2,155
PVT	788	4063	4038	225	9,114
Total	10,841	34,949	43,764	6153	95,708

An interagency BAER team was formed to assess post-fire affects on the PNF, NCNF and BLM lands, and provide data and modelling information that may be beneficial to the State and private land owners. The team considered and addressed post-fire impacts to critical values at risk including life and safety, property, natural resources, and cultural resources. The risk analysis took into consideration the magnitude of consequences and probability of damage to these critical values at risk. Treatments are recommended for those areas where the risk is considered to be high, and the treatments would have a high probability of reducing those risks in the most cost-effective manner.

The USFS is responsible for addressing risks on NFS lands. This report focuses on risks and proposed treatments to address threats to values at risk on NFS lands, but also provides relevant information for BLM, state, and private lands. Proposed treatments focus on storm proofing NFS system roads and trails, and minimizing the spread of noxious weeds into burned areas which could detrimentally affect native plant communities.

In total the BAER team identified approximately \$730,000 in potential emergency stabilization treatments to address post-fire impacts from the Tepee Springs fire. Approximately \$264,000 is proposed for treatments on the PNF, and \$466,000 is proposed for treatments on the NCNF.

BURNED-AREA REPORT

(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☐ 2. Interim Report #
 - ☐ Updating the initial funding request based on more accurate site data or design analysis
 - ☐ Status of accomplishments to date
- ☐ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Tepee Springs

B. Fire Number: ID-PAF-000192

C. State: ID

D. County: Idaho

E. Region: 1 and 4

F. Forest: PNF and NCNF

G. District: New Meadows and McCall RD,
Salmon River RD

H. Fire Incident Job Code: P4J1KS15

I. Date Fire Started: 08/12/2015

J. Date Fire Contained: 9/24/2015.

K. Suppression Cost: Approx. \$31,010,000 million at time of BAER Report (Friday, 9/25/2015).

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline (dozerline) rehabbed (miles): 17 (of 17 miles constructed)
2. Fireline seeded (miles): 0
3. Handline: 29 miles of handline constructed, 29 miles repaired (covered, scarified, and waterbarred)
3. Closed Road opened: 2 miles of 41 miles reclosed.
4. ATV Trail: rehabbed 6 miles of 6 miles constructed.

M. Watershed Numbers:

Table 1. 6th Field Subwatersheds and Burn Severity Acreages within 9/19/15 Fire Perimeter

Subwatershed Name (HUC6)	Total HUC6 Acres	Acres in Fire Perimeter	Acres Unburned in Fire Perimeter	Acres of Low Severity	Acres of Moderate Severity	Acres of High Severity
Allison Creek (170602090204)	12891	7122	317	2704	2762	1339
Berg Creek-Salmon River (170602090206)	18709	8723	816	3652	3084	1170
Carey Creek-Salmon River (170602071107)	11202	1187	23	593	570	1
Elk Creek-Little Salmon River (170602100502)	28416	2583	665	1640	265	12
Elkhorn Creek (170602090201)	13949	9483	114	3709	3989	1671
Fall Creek (170602071106)	13857	2423	217	1164	1033	9
Fiddle Creek-Salmon River (170602090402)	24676	76	11	52	14	0
Hard Creek (170602100301)	24066	4517	592	2308	1403	215
Kelly Creek-Salmon River (170602090203)	24420	12663	932	8782	2561	387
Lake Creek (170602090205)	14537	8215	191	2833	4080	1111
Lower French Creek (170602070103)	21731	5168	154	2475	2428	111
Partridge Creek (170602090202)	20239	16511	230	4366	7460	4455
Upper Little Slate Creek (170602090301)	25510	964	678	147	109	30
Vance Creek-Hazard Creek (170602100302)	27769	16073	1213	9339	5191	330
Total		95708	6153	43764	34949	10841

N. Total Acres Burned¹: (As of September 19, 2015)

NFS Acres 72,379² (76%) Other Federal (BLM) 12,061 (13%) State 2,155 (2%) Private 9,114 (9%)

Forested areas with lower canopy cover burned with less severity, but terrain driven fire behavior resulted in high intensity fire effects in the Partridge and Lake Fork drainages. In general, the fire tended to burn in a mosaic pattern that left pockets of more severely burned areas. The fire burned hottest towards the center of the fire perimeter and when making runs uphill. A majority of the high intensity fire occurred on the PNF side of the fire which included the north facing breaks into the Salmon River.

O. Vegetation Types: The Fire burned a variety of vegetation types ranging from 1,900 to 8,800 feet elevation. The steep, rocky, canyon lands in the Salmon River corridor contain a mixture of bunch grass, shrub, and ponderosa pine communities along with some Douglas-fir and grand fir communities on the moister aspects. The vegetation transitions into mixed conifer forests containing lodgepole pine, ponderosa pine, Douglas-fir, grand fir, subalpine fir, and Engelmann spruce with small pockets of aspen, meadows, and shrub communities as elevation increases. Above 7,000 feet, whitebark pine are present along ridge

¹ Acres burned based on data available as of Sept 19, 2015. There may have been small a small increase in the total burned acres after 9/19/15 on the east end as the fire was still burning. However aerial reconnaissance and landsat data indicate that burn severity on any additional acres was generally low.

² Acres for the Salmon River coded as 'HistoricWTR' were added to Nez Perce NF acres since this is the lead agency on river corridor management

lines and high peaks. Graminoids, willows, alders, and Rocky Mountain maple, dominate the major drainages with riparian areas.

P. Dominant Soils: Sandy loam and, to a lesser extent, loam soils are dominant in the fire area. These soils are typically weakly developed, meaning they have increased organic matter and stronger soil structure at the surface, but subsoil horizons appear to be minimally altered from the weathered parent material. The soils support mixed conifer forests of Ponderosa pine, lodgepole pine, grand fir, Douglas fir, and whitebark pine in the higher elevations and grass and shrublands at the lower elevations. Riparian areas support willows and other wetland grasses, forbs, and shrubs. Soils are generally shallow (less than 20" to bedrock) to moderately deep (20-40" to bedrock) on steep mountain slopes and ridges and deep (> 40") on toe-slopes and valley bottoms.

Q. Geologic Types: The burned area is located in Northern Rocky Mountain physiographic province. The soils are derived from the intrusive granitics of the Idaho Batholith, the Columbia River Basalts, and the Suture Zone to the west. Elevations range from about 1,700 to 8,200 feet within the fire vicinity. Mountain slopes range from 20 to over 75 percent; valley bottom gradients average 2-4 percent in the wider lower river reaches and up to 10 percent or greater in the narrow, steep headwater creeks.

R. Miles of Stream Channels by Order or Class: 144 Perennial, 157 Intermittent/Ephemeral

S. Transportation System: Trails: 75 miles (PNF) and 12 miles (NCNF) Roads: 70 miles (PNF) and 93 miles (NCNF) system and non-system roads were assessed

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 6153 (6%) (unburned) 43,764 (46%) (low) 34,479 (37%) (moderate) 10,841 (11%) (high)

Approximately 1,052 acres burned after the BARC satellite data was collected on September 7 and September 19. The fire was generally burning east into Fall Creek and Carey Creek during this time. Subsequent BARC data from September 23, indicates that the soil severity in these subwatersheds ranged from low to moderate.

Map of soil burn severity by ownership is provided in Appendix A of this report (below).

Table 2. Burn Severity By Ownership:

Owner	High	Moderate	Low	Unburned	Total
PNF	6281	20,562	22,175	3269	52,287
BLM	1591	4732	5444	295	12,062
NCNF	1720	4612	11,411	2349	20,092
State	462	981	697	15	2155
PVT	788	4063	4038	225	9114
Total	10,841	34,949	43,764	6153	95,708

An initial BARC image was obtained on 09/7/2015 which covered approximately 94,655 acres. The image was obtained by Landsat 7, which due to broken sensors, produced an image with streaks of no data. A complete image was obtained by running a GIS script which filled in the no data pixels based on proximity information. The team reviewed the results of this GIS script and felt that it reflected burn severity conditions on the ground for those streaked areas. Soil burn severity, hydrophobicity, and ground cover observations were used by soil scientists to validate the BARC data and produce a final soil burn severity map. This process was based on criteria outlined in the Field Guide for Mapping Post Fire Soil Burn Severity. A total of 95,708 acres were analyzed in this assessment, consistent with the 9/19/15 fire perimeter.

- B. Water-Repellent Soil (acres): 45,790. Water repellency was observed in the field under moderate and high soil burn severity in shrub and forest vegetation types. It was estimated that 100% of the high and moderate severity burn contained some degree of water repellency.
- C. Soil Erosion Hazard Rating (acres): 4,872 (low) 61,401 (moderate) 25,749 (high) 3518 (Other)
Other includes of water, rock outcrop.
- D. Erosion Potential: Information collected during the field assessment, as well as GIS calculations using a 10M DEM, existing vegetation classifications, SSURGO soil data and Payette LSI data, and local knowledge of pre-fire non-forested composition were used as erosion and sediment model inputs. The Forest Service WEPP ERMiT model (Robichaud et al, 2007) was used to estimate post-fire sediment delivery in two watersheds: Allison Creek and Lake Creek. Two scenarios were modeled for the year following the fire; the first was a likely outcome with a 50% probability of exceedance and the second was a possible outcome with a 10% probability of exceedance. See **Error! Reference source not found.** for maps of the ERMiT model results for the Allison Creek and Lake Creek watersheds. Erosion/sediment delivery rates are expected to decrease in the next 2-5 years as native vegetation re-establishes.

Sediment Delivery: In the first year post-fire, modeled sediment delivery rates are estimated below. In both watersheds, under pre-fire conditions, there was a 90% chance that average sediment delivery was negligible (about 0-0.1 ton/acre).

Allison Creek HUC 6 (portion with the fire perimeter)

There is a **10%** chance that average sediment delivery will exceed 5.8 tons/acre in the first year following the fire in Allison Creek. This is a total sediment delivery of 64,100 tons.

There is a **50%** chance that average sediment delivery will exceed 0.5 ton/acre in the first year following the fire in Allison Creek. This is a total sediment delivery of 6,250 tons.

Lake Creek HUC 6 (portion with the fire perimeter)

There is a **10%** chance that post-fire average sediment delivery will exceed 7.2 tons/acre in the first year following the fire in the Lake Creek watershed. This is a total sediment delivery of 104,750 tons.

There is a **50%** chance that average sediment delivery will exceed 0.5 ton/acre in the first year following the fire in Lake Creek. This is a total sediment delivery of 8,800 tons.

PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period, (years): 3-5 years
B. Design Chance of Success, (percent): 80%
C. Equivalent Design Recurrence Interval, (years): 10 years
D. Design Storm Duration, (hours): 1 hour
E. Design Storm Magnitude, (inches): 0.75"
F. Design Flow, (cubic feet / second/ square mile): 0.13 cfs/mi²
G. Estimated Reduction in Infiltration, (percent): 47.8%
H. Adjusted Design Flow, (cfs per square mile): 154.4 cfs/mi²

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

THREATS to HUMAN LIFE/SAFETY and PROPERTY

Threats to life and safety and property exist in valley bottom areas and in steep burned areas throughout and downstream from the burned area. Residents and road users will be exposed to increased risk of flooding, debris flow, and falling rock. Houses and other structures, driveways, other private property, Forest Service recreation facilities, and roads and trails located in valley bottoms adjacent to or in the floodprone areas or near stream channels, are at increased risk for flooding and debris flow. In several locations, structures and roads are located on alluvial terrain at the outlets of watersheds with high percentages of severe burn; these areas have increased risk for debris flows and flood flows. Water diversion infrastructure is at risk due to sediment and debris accumulation.

Debris Flow Hazard:

The debris flow hazard is expected to increase significantly in the years following the fire. An emergency for debris flows **was** determined for the following reasons:

- There are a high number residents and recreationists in the area resulting in high numbers of people exposed.
- The infrastructure in the area is not adequate to handle the increases in flow and sediment predicted.
- Debris across the roads in the area could result in large numbers of people being cut off from emergency services, possibly for long periods of time.
- There is substantial risk to life and property resulting from the increased debris flow risk.

The probability of loss is Possible and the magnitude of consequence is Minor for debris torrents on Forest Service lands. The threat to life and safety, roads, and trails is high.

Emergency Determination: An emergency exists to both Forest users and downstream users of debris flows that warrants early warning notification and signage to reduce the threat of this risk causing injury or death.

Roads and Bridges

There are State, private, County and Forest Service roads within the burned area. There are 51 total miles of PNF Roads within the burn perimeter and 78 miles of NCNF Roads within the burn perimeter. Approximately 39.0 miles of road on the PNF and 44.1 miles of road on the NCNF, travel through Low and Unburned severity and require no treatment. Listed below are the 4 roads on the PNF, and 19 roads on the NCNF that travel through Moderate and High burn severity where impacts are likely.

PNF Roads;

50104, 50246, 50426, and 50287

NCNF

9921, 9921B, 9921A, 9934, 9934A, 9935, 9935A, 76110, 76112, 263L, 263A, 9936, 9936A, 263M, 76314, 76314A, 76314B, 263, 221, and 9905

Roads within the burned area are at risk from impacts from increased water, sediment, and/or debris. Impacts include damage to the road and/or loss of access due to severe erosion of the road surface, or deposition of sediment or debris. Increased risk for temporary loss of access/egress exists on major thoroughfares and on un-paved roads within the burned area. Any damage to, or blocking of the county road network, Forest Service Roads and/or private roads, could eliminate access to residents or emergency service providers. Roads within the burned area are also likely to exacerbate the risk of flooding and erosion

by collecting surface water, concentrating it and delivering it to hillslopes or stream channels. Most of the roads within the burned area have inadequate cross-drainage for anticipated post wildfire flows.

1. Resource condition resulting from the fire

- a. Severely burned slopes and drainages exist above several roads in many locations. These burned drainages present increased hazards to road infrastructure and life and safety from debris and sediment flows.
- b. Many culverts are undersized for the flows anticipated. Culverts will be removed and replaced with larger crossings on open roads. We found a total of 6 culverts on the Payette and 11 on the Nez Perce that will need to be replaced. The team determined that all culverts will need to be replaced immediately on open roads. On roads that are currently in management level 1 status, all culverts were removed and will not be replaced until needed.
- c. Road treatments will be needed for a total of 17 miles on a total of 4 roads on the PNF and 43 miles on a total of 19 roads on the Nez Perce to protect the road surface and road drainage structures from damage caused by increased post wildfire runoff and erosion.
- d. To help protect several watersheds, it was determined to remove the culverts on three closed roads on the NCNF (remove culverts to protect human life and safety and water quality).
- e. Severely burned and/or structurally compromised trees pose threats to life and safety of Forest Service workers implementing road stabilization treatments.
- f. Severely damaged bridge wingwalls resulting in unprotected bridge fills.

Emergency Determination: An emergency for roads was determined for Human Life and Safety and Property. The probability of loss is Very Likely and the magnitude of consequence is High. Therefore, the BAER risk is High.

Recreation Resources

NFS Trails:

Within the fire perimeter there are 94 miles of trail and three major bridges. Of the 94 miles of trail 22 miles were identified as being burned over by fire of Moderate to High Severity. Three bridges were in the fire perimeter, but were not impacted.

Values at risk include the trail infrastructure, water quality and fish habitat. It is anticipated that increase in flows associated with the fire effects will cause trail rilling and erosion, as well as cut slope and fill slope failures. In addition to the resource degradation, the trails are likely to become difficult or dangerous for travel, or in some cases totally impassable due to washouts and excessive trees devastated by the fire.

Within the fire perimeter, there are several dispersed and developed sites. On the NCNF, there are 3 facilities located on the main Salmon Road and approximately 9 dispersed camping areas that experienced low to high fire intensity. On the PNF, there were two dispersed sites and one administrative site that experienced low to moderate fire intensity.

Values at risk include facilities and infrastructure from erosion, rolling debris and hazard trees. Of main concern are Spring Bar Campground (including the well facility), Spring Bar Boat Ramp, Allison Creek Campground and Picnic Area, and Van Creek Campground.

Emergency Determination: An emergency for recreation (trails, recreation sites, and recreation residences) was determined for Human Life and Safety and Property. The probability of loss is Very Likely and the magnitude of consequence is Major. Therefore, the BAER risk is Very High.

THREATS to NATURAL RESOURCES

Water Quality Degradation:

The cumulative effect of increased peak flows and sediment laden flows from the burned areas increases the risk for various downstream values at risk, particularly effects on drinking and irrigation water providers. Soil erosion and subsequent large sediment increases are predicted throughout and downstream of the burn area. An effort to inform water users about water quality degradation was determined for the following reasons:

- Large sediment increases are expected. These increases will be of short term duration, recovering to pre-fire conditions over time with the worst impacts occurring over the next three years. During this time there is likely potential for degradation of source water quality for water developments downstream of moderate to high severity burn areas. This is expected to be a short-term effect.

Emergency Determination: The probability of loss is Likely and the magnitude of consequence is Minor. Surface water developments are all located off NFS lands, therefore no BAER assessment was made.

Flood Hazard:

The flood hazard is predicted to increase within the tributaries of the Main Salmon River that had high percentages of moderate to high soil severity burn. An emergency for flood hazard **was** determined for the following reasons:

- Runoff is predicted to increase significantly following the fire.
- There are a high number of residents and recreationists in the area resulting in high numbers of people exposed.
- There is substantial risk to life and property resulting from the increased flood risk.

Emergency Determination: The probability of loss is Very Likely and the magnitude of consequence is Major. Therefore, the BAER risk is High. An emergency exists for forest users and for NFS road and trail networks that are in close proximity to stream channels.

Native or Naturalized Plant Communities

There are no known occurrences of Threatened or Endangered plant species within the fire perimeter. Populations of the candidate species *Pinus albicaulis* (Whitebark Pine) are known to occur within the fire perimeter. Some individuals were destroyed or damaged by the fire, but no large scale impacts are likely to result. Several populations of sensitive species are known to occur within the fire perimeter. Some experienced mortality and stress, but the risk of extirpation from fire consumption is low. There is a high risk of population loss from unstable slopes and noxious weed infestation for many of those sensitive plant populations.

Approximately 10,810 acres of land burned with a high intensity. The nature of the mosaic burning pattern allows for native seed sources to naturally spread back into the burned areas. The low to moderately burned areas will naturally revegetate within 1-3 years, with the high intensity areas revegetating within 3-5 years.

Values at Risk From Fire Effects

1. *Halimolobos perplexa* populations located along the Hazard/Hard Cr. roads (PNF), Alison Cr. road (NPNF), West Fork of Alison Cr. area (Plant, Ranch, Gus Creeks) roads (NPNF), and the Fall/French Cr. road (PNF) are at **High** risk of loss from erosion and slumping.
2. *Halimolobos perplexa* populations located along the Hazard/Hard Cr. roads (PNF), Alison Cr. road (NPNF), West Fork of Alison Cr. area (Plant, Ranch, Gus Creeks) roads (NPNF), and the Fall/French Cr. road (PNF) are at **High** risk of loss from noxious weed spread and competition.

3. *Halimolobos perplexa* populations located along the Hazard/Hard Cr. roads (PNF), Alison Cr. road (NPNF), West Fork of Alison Cr. area (Plant, Ranch, Gus Creeks) roads (NPNF), and the Fall/French Cr. road (PNF) are at **Low** risk of extirpation from direct fire consumption and heat stress.
4. The Patrick Butte RNA is at **Low** risk of loss from fire impacts and potential weed infestation.
5. *Pinus albicaulis* populations experienced some mortality and stress, but are at **Low** risk of detrimental impacts.
6. The population of *Buxbaumia aphylla* near Berg Mountain is at a **Low** risk of loss.
7. The loss of vegetation in high intensity burn areas is at a **Low** risk of loss, as the native vegetation will recover in 1-5 years.

Emergency Determination: No Emergency was determined for TES plant species

Values at Risk from BAER Implementation

Implementation of BAER treatments has the potential to affect sensitive plant species as outlined below. Awareness of these concerns and mitigation measures during implementation should sufficiently address these concerns.

1. *Halimolobos perplexa* populations located along the Hazard/Hard Cr. roads (PNF), Alison Cr. road (NPNF), West Fork of Alison Cr. area (Plant, Ranch, Gus Creeks) roads (NPNF), and the Fall/French Cr. road (PNF) are at **Low** risk of loss from road treatments.
2. *Halimolobos perplexa* populations located along the Hazard/Hard Cr. roads (PNF), Alison Cr. road (NPNF), West Fork of Alison Cr. area (Plant, Ranch, Gus Creeks) roads (NPNF), and the Fall/French Cr. road (PNF) are at a **High** risk of loss from noxious weed spraying.

Emergency Determination: No Emergency was determined from implementation actions.

Range and Weeds

The fire area was under management for noxious weed infestations prior to the fire. Known weed infestations were concentrated around roads, trails, dispersed camp sites, and parking areas. The NCNF recorded a significantly higher number of noxious weed species (27) than the PNF (15).

Findings of ground assessments

NCNF Forest Risk Assessment

- The fire area north of the Salmon River on the NCNF (Divisions H, K, and L) has documented **27 Class A noxious weed species**. The Risk Assessment indicates each of these species is a **high risk** to increase population size as a result of the Tepee Springs wildfire.

PNF Risk Assessment

- The fire area south of the Salmon River on the PNF have documented 15 noxious weed species – all of which are high risk to increase population size as a result of the fire. The west side of the fire area (Divisions A, C and D) has the highest noxious weed occurrence.
- The northeast side of the fire area (Division N) has relatively few (6) noxious weed species.
- The east and south sides of the fire area (Divisions T, Y, and Z) have areas where there were either no noxious weed species prior to the fire, or there were only 2 species in small, scattered populations. The native plant communities in this area of the fire are important to protect from noxious weed invasions.

Even where noxious weed species do not currently occur on the landscape, the threat will persist until native plants have had a chance to recolonize burned and disturbed areas. This could take several years.

All twenty-seven noxious weed species located in the fire area will likely spread at a faster rate from existing infestations as a result of the fire. We do not know where all existing weed populations are located – much of the fire area is previously unsurveyed. In addition, there is a very high probability that

invasive species shall be transferred from one Division to another via suppression and BAER Team efforts (vehicles, helicopters, crews, etc.).

The spread of noxious weeds would adversely affect multiple resources including native plant communities which in turn affects threatened and endangered species habitat for wildlife, fisheries and plants. In addition noxious weeds can alter natural plant communities in eligible wild and scenic river corridors.

The twenty-six Class A noxious weeds listed in Table A (Pages 3-8) which occur within and on the Tepee Springs Fire perimeter are **very likely to stimulate a major magnitude of negative consequences** to several values at risk, including: anadromous fisheries, TES and candidate plant species, native plant communities, transportation route integrity, recreation, hydrologic function, soil stability, etc.

Emergency Determination: There is an emergency situation for the recovery of native vegetation due to significant threats from noxious weed establishment and/or spread affecting natural plant community integrity, wildlife habitats, and watershed values.

Wildlife: Critical TES Habitat or Suitable Occupied Habitat

Habitat exists for one federally listed species (Canada lynx) and also a proposed species, wolverine.

Canada Lynx

Vegetative communities capable of providing source habitat conditions for the lynx include PVGs 3, 7, 8, 9, 10, and 11 (USDA Forest Service 2011b). These vegetative communities are found primarily at higher elevations in the watersheds affected by the fire and are subject to mixed and lethal fire regimes. Estimated suitable habitat pre-fire is 9,764 acres. Where fire intensities are high, potential and suitable habitat will likely be negatively affected in the near term, with improvements expected over the next several decades. Approximately 1,402 acres of modeled lynx habitat was subjected to high intensity fire. It is unknown if high densities of snowshoe hares are present to support lynx. No lynx observations are noted in the perimeter of the fire (ArcMap query 2015).

Wolverine

Wolverines predominately use coniferous forest, but their significant use of non-forest alpine habitats distinguishes them from the fisher and marten (Banci et al 1994). Wolverines appear to select areas that are free from significant human disturbance, especially during the denning period from late winter through early spring. Wolverines that occur in forested areas use dense forest cover for travel and resting, especially in the winter.

In the burned areas of low to moderate fire severity, habitat for wolverines is still available, particularly in areas that still retain large logs and downed woody debris. In the areas of high severity, in particular the center of the fire, cover that may be used during foraging was negatively affected. Denning habitat should largely be unaffected or enhanced due to an increase in downed woody debris. Wolverines are documented in the fire perimeter, but are considered a rare occurrence due to the large home range size of this species.

Multiple Forest Service sensitive species occupy the burn area. While the fire affected some habitat for the majority of the species, the mosaic nature of the burn is not expected to significantly affect these populations.

Emergency Determination –No emergency exists pertaining to the federally listed or Forest Service Sensitive species or their habitats,

Fisheries: Critical TES Habitat or Suitable Occupied Habitat

The Salmon River and its tributaries within the Tepee Springs Fire perimeter support important critical habitat for threatened (Chinook salmon, steelhead, and bull trout), sensitive (westslope cutthroat trout) and resident fish species. Sockeye salmon migratory and overwintering critical habitat is designated in the main Salmon River. On the Payette National Forest, the fire burned adjacent to portions of spawning and rearing habitat for bull trout and critical habitat for Chinook salmon and steelhead in Lake Creek, Partridge Creek, Elkhorn Creek, French Creek, Fall Creek, Hard Creek, and Hazard Creek. On the Nez Perce National Forest, steelhead spawning and rearing critical habitat occurs in Allison Creek and lower West Fork Allison Creek.

The Fire burned through the Riparian Conservation Areas (RCAs) on critical habitat streams within the fire perimeter with varying severity. About 66% of the RCAs on critical habitat streams burned with moderate severity. High severity burn was identified in only 100 acres within RCAs on critical habitat. About 95 acres of high burn severity within bull trout critical habitat RCAs occurred in Partridge Creek on the Payette National Forest and 10 acres in steelhead critical habitat in West Fork Allison Creek on the Nez Perce National Forest. Moderate to high severity burns within RCAs have reduced stream shade for Lake Creek, Partridge Creek, Elkhorn Creek, French Creek, West Fork Allison Creek, Hazard Creek and Hard Creek. Increased exposure to solar radiation is expected to result in elevated stream temperatures. To the extent they are able, ESA-listed fish species, westslope cutthroat trout and resident trout within the burned area may disperse to avoid increasing water temperature.

Moderate to high severity burns are expected to result in increased soil erosion and sediment delivery to surface waters within and downstream from the Tepee Springs Fire perimeter. Elevated fine sediments reduce both salmonid egg survival and their macroinvertebrate prey base. To the extent they are able, fish in streams that are affected by post-fire erosion may disperse to avoid increased fine sediments.

The streams that will see potential adverse impacts from post fire run-off events associated with thunderstorm and overland flow events identified during the BAER process that contain designated critical habitat were West Fork Allison Creek, Allison Creek, Lake Creek, Partridge Creek, Hazard Creek and Hard Creek. Recovery of aquatic ecosystems will occur as erosion rates diminish and flushing flows route fire contrived fine sediment from main channels.

Dispersal of fish is dependent on habitat connectivity. Road-stream crossings on Forest Service lands are passable to fish and other aquatic organisms. Access to other suitable stream habitats in the vicinity may be impaired by culvert barriers at road-stream crossings on non-Forest Service lands in Partridge and Elkhorn Creeks.

Recreational fishing, particularly for anadromous species, is important to the local economy of Riggins. In 2003, the salmon fishery brought in about 13% of the annual sales in Riggins.

Emergency Determination: Because there is a limited road and trails system in areas where ESA-listed fish species and critical habitat occur, there is not an emergency determination for fisheries.

CULTURAL AND HERITAGE RESOURCES

The Tepee Springs Fire has over four dozen recorded cultural resources. Some of these cultural resources are eligible for listing on the National Register of Historic Places (NRHP). These sites are eligible because they have good context, capable of contributing to research and knowledge of Native American Indian lifeways, including resource procurement, settlement patterns, travel routes, and land-use strategies. Impacts by fire-induced erosion or looting may damage or destroy the archaeological record and the depositional contexts important to the site's significance and information potential (Criteria D).

Activities associated with BAER treatments such as ground-disturbing activities outside a road prism or previously disturbed contexts may threaten known and potentially unknown heritage resources exposed by the fire. The National Historic Preservation Act requires a cultural resource inventory and consultation with the State Historic Preservation Office (SHPO) prior to implementation of these activities. The probability that fire-induced runoff from typical high intensity/short duration summer thunderstorms may impact the archaeological record is possible and, if impacted, the consequences would be major damage or loss. **The BAER risk for impacts to these resources is considered to be high.**

Values at Risk from fire effects include prehistoric sites eligible for the NRHP within the fire perimeter near steep slopes, headwaters, and in areas of severe burn. Recorded sites are at risk to context loss and changes in site significance. Damage would be irreversible. Ten eligible archaeological sites are identified with high risk for impact due to location within the severe burn area and proximity to slopes with erosion potential. These ten sites require treatment to mitigate visibility and erosion.

Emergency Determination: Fire-induced impacts to ten eligible prehistoric sites is considered to be high and an emergency exists for these resources.

Summary of BAER Risk Assessment

Threat Identification	Critical Value	Probability of Loss	Magnitude of Consequences	BAER Risk
Roads	Life and Safety/Property	Possible to Very Likely	Moderate to Major	Intermediate to Very High
Trails and Recreation	Life and Safety/Property	Unlikely to Likely	Moderate to Major	Low to Very High
TES fish habitat	Natural Resources	Unlikely to Possible	Minor to Moderate	Very Low to Intermediate
Invasive Species	Natural Resources	Very likely	Major	Very high
Cultural Resources	Cultural Resources	Possible	Moderate	Intermediate
Forest Users, private land-owners	Life and Safety	Possible to likely	Major	High

B. Emergency Treatment Objectives:

Land Treatments

The objective of noxious weed detection surveys and treatments is to provide for recovery of native vegetation by preventing the establishment and spread of noxious weeds in the recently burned area.

Road and Trail Treatments

The objective of road and trail stabilization treatments is to lower the risk of damage to property (system roads and trails) by lowering erosion of the road and trail surface in severely burned and steep areas within the burned area and to provide for public safety. The objective of temporary closure of roads and trails is to reduce risk to human life and safety.

Recreation Treatment: Recreation treatments are needed to protect health and safety of public users of developed and dispersed sites, as well as the General Forest Areas. Treatments are also necessary to protect infrastructure.

Protection/Safety Treatments

The objective of installing warning signs is to reduce threats to life/safety of Forest users by warning that they are entering a burned area and warning against access into hazardous areas. These signs also serve to accelerate natural recovery by preventing travel off trails. Additional signs to provide warning of increased potential for falling rock and debris are also recommended to lower threats to human life/safety, particularly in the Salmon River corridor.

The objective of temporary closure of the Lake Creek road is to reduce risk to the risk to human life and safety.

Facilitating and coordinating with the National Weather Service, the Idaho County Office of Emergency Services, and the NRCS for installation of an early warning system will reduce the threat to life and safety. Interagency coordination with the NRCS and county will inform these entities of anticipated post wildfire watershed response and associated threats to public safety. This information could be utilized in the development of early warning systems or emergency response plans.

Cultural Resources

The objective of cultural resource treatments is to prevent irretrievable loss of archeological information, to prevent looting by informing recreational users of the importance of archaeology and federal laws that prohibit theft of artifacts and damage to historic or prehistoric sites, and to prevent erosion on disturbance of archaeological materials.

Treatments considered, but not carried forward

Opportunities exist to reduce sediment delivery through mulching. The team considered this treatment to protect the road system in West Allison and Plant creeks (Allison Creek drainage) from the risk of increased sediment delivery overwhelming road drainage features resulting in failure of the road and loss of the investment in the road system. Mulching would not only help to protect the road system, but also reduce sediment delivery to TES fish habitat in Allison Creek, as well as to the private property and home at the mouth of Allison Creek. The team determined the acres available for mulching in the high burn severity in these two subwatersheds. ErMIT modelling was used to estimate the reduction in sediment delivery with mulching versus no treatment. The VAR tool was used to determine a minimum implied value. The value of the road system and a qualitative assessment of TES fish habitat was compared to this implied minimum value. This comparison found that the mulching treatment was not warranted.

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

Land 80 % Channel N/A % Roads/Trails 80 % Protection/Safety 90 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70	80	80
Channel	N/A	N/A	N/A
Roads/Trails	80	90	100
Protection/Safety	80	90	100

The VARTool Calculation Spreadsheet is available in project file. As described in this report, increased risk for impacts to life/safety and non-market cultural and ecological values exists throughout the burned area. These values were described in the VAR Assessment but not considered in the benefit/cost ratio.

E. Cost of No-Action (including Loss)

The value of the Lake Creek Bridge structure is \$110,000 and the repair of the burned wingwall is \$10,000. The cost of no action is the potential loss of the bridge which has been identified as a risk to life and property and additionally provides the only public access to the northwest corner of the PNF and the trail head located there at the end of the road.

The road system in the WF Allison Creek on the NCNF has a replacement value of approximately \$1,500,000 and the cost of the culvert work and storm patrols is \$419,835. The cost of no action is the potential failure of portions of this road, which have been identified as a risk to life and property. The road work also reduces sediment delivery potential to TES fish habitat in Allison Creek, losses to hydrologic function and long term soil productivity, as well potential for issues associated with road and stream crossing failure to the private property and home at the mouth of Allison Creek.

Total costs to rebuild the Forest System Trails burned over with moderate and high burn severity would be \$287,400 or \$19,418.92 per mile. There would also need to be a NEPA analysis and document prepared in order to complete new construction, estimated at a cost of \$21,000. These trails have outfitter and guide use, so their loss would negatively affect the livelihood of the outfitter currently using them. Trails burned over with moderate and high burn severity are a public risk to health and safety, due to downfall and tread loss. Sediment and erosion are also a loss to hydrologic function and long term soil productivity. The cost of \$39,952 in trail treatments proposed is cost effective for the benefits achieved.

Trail	Miles
Elkhorn Creek #115	2.1
French Creek #116	1.2
Partridge Creek #152	2.2
Patrick Butte#153	5.7
Lake Point #156	1.9
Hazard Creek	1.7
Total Trail Miles	14.8

The cost of no action at the Spring Bar water development could potentially result in the loss or degradation of the water source for the campground. This is a public safety issue and also would require the construction of a new source or repair of the existing structure. The existing well includes a solar power system, external plumbing, a well house, and cement features. The amount needed to replace the well and associated facilities would far exceed the \$1762 proposed for protection of the system from fire effects.

Several non market values were considered in the assessment as described in the VAR Assessment workbook. The market and non-market values are used collectively to determine the recommendations for treatments.

F. Cost of Selected Alternative (including Loss)

In total the BAER team identified \$730,000 in potential emergency stabilization treatments to address post-fire impacts from the Teepee Springs fire. Approximately \$264,000 is proposed for treatments on the PNF, and \$466,000 is proposed for treatments on the NCNF.

G. Skills Represented on Burned-Area Survey Team:

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

USFS Team Leader: Liz Schnackenberg. Email: lschnackenberg@fs.fed.us. Phone: 970.819.2900

USFS Team Leader Trainee: Leigh Bailey. Email: lbailey@fs.fed.us. Phone: 208.347.0335

Because the fire burned both NFS and BLM lands, a multi-agency team was assembled to conduct the burned area assessment. Personnel from both agencies were represented on the team. In addition, selected team members met with the NRCS (Richard Spencer) and Idaho County Emergency Manager (Jerry Zumwalt) to provide information on the BAER assessment and initiate inter-agency coordination which is expected to continue post-assessment with Leigh Bailey being the key contact.

Forest Service BAER Team Members

Forest Service Team Lead	Liz Schnackenberg
Team Leader Trainee	Leigh Bailey
Soils Lead	Kara Green/Jim Hurja
Hydrology	Brendan Waterman
Noxious Weeds	Donna Reed/Brian McMorris
Botany	Grahm Johnson/Alma Hanson
Engineering	Ben Dreier
Recreation	Susan Jenkins/Kent May
Wildlife	Russ Richards
Fisheries	Trisha Giambra
Cultural Resources	Maggie Schirack/Erik Whiteman
GIS	Sue Dixon
Public Information	Gina Bonaminio

BLM BAER Team Member

Fisheries/GIS	Bonnie Claridge
---------------	-----------------

Technical/Field Support

Payette NF BAER Coordinator	Dave Kennell
Cara Farr/Megan Oswald	Nez Perce-Clearwater NF BAER Coordinators
Hydrologic Technician	Andrew Stonebreaker
Hydrologic Technician	Cindy Buxton
Engineer	Dave Woras
Engineer	Jason Wright
Engineer	Ben Hipple
Engineer	Will Perry
Range Technician	Alex Danczyk
Range Technician	Mike Eytchison
Lands/Special Uses	Denise Cobb

External Partners and Contacts

Richard Spencer	NRCS
Craig Johnson	BLM Resource Specialist
Jerry Zumwalt	Idaho County Emergency Services
Robbin Boyce	BLM Agency Administrator

H. Treatment Narrative:

The proposed treatments on National Forest System lands can help to reduce the impacts of the fire from storm events, but treatments cannot fully mitigate the effects of the fire on the watershed. Detailed information of the treatments summarized below can be found in the specialist reports prepared in support of this funding request. Hill slope treatments (such as hydromulching, aerial seeding, and straw application) were not proposed because they are infeasible and/or would not significantly reduce the probability of damage to assets. The treatments listed below are those that are considered to be the most effective on National Forest System lands to protect identified values at risk.

Land Treatments:

Noxious weeds: Early Detection Rapid Response surveys

This treatment includes survey, treatment and monitoring of acres considered to be at high risk of noxious weed spread due to proximity to moderate and high burn severity adjacent to known weed populations, and where vectors exist such as roads and trails. In addition this treatment will monitor and treat areas disturbed by suppression actions such as dozer lines, spike camps etc. where there is a high probability of the introduction of noxious weeds.

Channel Treatments:

No channel treatments are proposed on USFS lands.

Roads Treatments:

A determination was made that there was a very high risk to numerous system roads of post-fire effects. The following treatments were identified to reduce the risk and threats from increased sediment delivery and flood flows from the Tepee Springs Fire burned area:

1. Temporary road closure of the Lake Creek road for 1-3 years during the high risk period from mid-February to October 1 is recommended to protect public safety. The Lake Creek watershed has an inherent high risk of debris flows. The fire will not only exacerbate this risk, but erosion and flood flows from summer thunderstorms are expected to greatly increase. Since this road is located in the drainage bottom, there is a high probability of injury or loss of life from these natural events until soils in the burned area stabilize, and the potential for increased flood flows is reduced.
2. Road stabilization with Rolling Dips, Waterbars, Road shaping, Ditch Cleaning, Culvert Replacement, Culvert Removal, Culvert Inlet Protection, and Fill Slope Stabilization
3. Treatment of Hazard Trees and Unstable Rocks to protect workers implementing BAER treatments
4. Removal of specifically identified culverts on Maintenance Level 1 roads.
5. Replacement of undersized culverts with appropriately sized culverts on open roads
6. Storm Inspection and Response on roads to remain open
7. Stabilization of burned bridge wingwalls
8. Installation of warning signs burned by the fire
9. Installation of fire hazard signs at all major entrances to the burned area

Trails and Recreation Facilities:

Trails

Administrative closures: There is a need to remove rocks, debris slides, and burnt snags that have fallen onto or across trails to allow for safe passage by BAER treatment crews. Crews will re-establish proper drainage and water management structures to prevent further loss to the trail infrastructure. The crews will maintain, repair, rebuild and add new water management structures where needed.

Trail Tread Treatments:

- Cleaning of existing and undamaged drainage structures to ensure capacity to respond to increased runoff pattern
- Repair or replace damaged water drainage structures
- Install additional drainage structures as necessary to increase the ability to handle increased runoff
- Remove/repair areas of slumping, sliding and sloughing occurrences. Stabilize the cut and fill slopes as needed and feasible to avoid reoccurrence
- Stabilize, repair or reconstruct outcropping of tread as necessary to limit erosion potential and to ensure safe use and travel on the trail for BAER treatment crews
- Post "Burned Area.." signage and post other informational fliers

One time trail maintenance effort on these trails during spring/summer of 2016 should meet the need for reducing hazards, user risks, and reestablishing drainage features. Forest Service trail crews along with conservation corps members will remove rock and debris hazards on the cut slopes and trail grade, clean out existing culverts, and reestablish drainage features. Drainage structures need to be cleaned and numerous slumps and sloughs need to be removed on all mid-slope trail miles within the moderate to high severity fire perimeter to prevent further loss of trail infrastructure.

Recreation: Install erosion control devices around the well water system at Spring Bar Campground. Monitor the well site, as well as the campground for increased sediment movement and water flow through the campground. If needed, employ more robust measures to keep sediment out of the facility. For other developed and dispersed sites, monitor for increased sediment and water flow that may cause a health and safety hazard to public users of these sites. Continue to monitor tree mortality and remove hazard trees that may also threaten infrastructure and public safety.

Recreation Treatments: Continued assessment and clearing of hazard trees in and around developed and dispersed recreation sites.

- Install erosion control features around Spring Bar well system, specifically silt fencing. Reassess in the spring to determine if additional features are necessary and if seeding should be implemented to reestablish vegetation in areas surrounding facilities.
- Post Information/Hazard signs at campgrounds and kiosks, as well as to the entrances to major portals that provide a gateway to dispersed camping areas
- Perform storm site monitoring and assessment during times of high public use in the Lower Salmon River Geographic Area, specifically for Van Creek and Allison Creek sites along County Road 1614. As needed, implement seasonal closures of developed and dispersed sites. Alternatively, implement measures to close sites during evening hours when emergency response may be hampered by night time darkness.

Efforts will need to take place throughout the fall of 2015, as well as during the spring when precipitation is higher. Forest service recreation personnel will install erosion control devices, post hazard signs at kiosks at developed sites, recreation portals, and other locations as deemed appropriate.

Cultural Resources:

The objective of cultural resource treatments is to prevent irretrievable loss of archeological information, to prevent looting by informing recreational users of the importance of archaeology and federal laws that prohibit theft of artifacts and damage to historic or prehistoric sites, and to prevent erosion on disturbance of archaeological materials,.

Treatment Types:

- 1) Perform rapid BAER type assessment surveys on known heritage sites that were inaccessible during initial assessment where post-fire threats may exist.

2) Perform Section 106 consultation as needed for implementation of recommended treatments

Treatment Descriptions:

Site stabilization: Immediately after the BAER Team assembled, remote sites eligible for the National Historic Register were inaccessible due to adverse weather conditions and safety concerns. It is assumed that the risk of adverse post-fire effects is high for looting and erosion or sediment deposition for sites within high and moderate burn severity. Efforts to disguise exposed sites and reducing soil erosion through slash and other debris would be implemented. The sites identified for treatment are those with a high probability of irreversible damage, are located in a variety of terrain and vegetation types, including floodplains and areas prone to erosion, and in areas of moderate to high burn severity.

Section 106 consultation: This treatment is needed on ground disturbing treatments to ensure compliance with section 106 regulations for the heritage resource. Consultation may include field survey for ground disturbing treatments, report writing, and consultation with SHPO as needed.

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.)

No additional monitoring needs have been identified at this time. Storm patrol will identify additional concerns with the road treatments, and noxious weed detection surveys will serve to monitor the effectiveness of the weed treatments.

Part VI – Emergency Stabilization Treatments and Source of Funds: Nez Perce NF Initial

[illegible]

BAER assessment costs BLM lands: Since this was an interagency assessment, approximately \$6,000 was spent assessing BLM lands by USFS personnel using job code HTBAER.

PART VII - APPROVALS

1. /s/
Nez Perce-Clearwater NF Forest Supervisor (signature) _____ Date _____

2. /s/
R4 Regional Forester (signature) _____ Date _____