

Date of Report: September 20, 2018

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: South Umpqua Complex B. Fire Number: OR-UPF-000264
C. State: OR D. County: Douglas and Jackson Counties
E. Region: 6 F. Forest: Umpqua and Rogue River Siskiyou
G. District: Tiller (UNF) and High Cascades (RRSNF) Ranger Districts H. Fire Incident Job Code: P6LOQ2
I. Date Fire Started: July 15, 2018 J. Date Fire Contained: 9/13/2018 (65% contained)
K. Suppression Cost: \$82,580,966

L. Fire Suppression Damages Repaired with Suppression Funds: 61.8 miles of dozer lines have been repaired within the South Umpqua Complex. Suppression repair activities are on-going within the fire area and will continue through fire containment.

M. Watershed Numbers:

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
171003020202	Middle Jackson Creek	18,781	2,309	12
171003020205	Lower Jackson Creek	28,419	4,014	14
171003020203	Squaw Creek	14,556	4,840	33
171003020401	Upper Elk Creek	17,571	2,921	17
171003020401	Sugarpine Creek	17,451	14,588	84
171003070501	Bitter Lick Creek-Elk Creek	19,921	8,155	41
171003020204	Beaver Creek	22,415	277	1
171003070110	Abbott Creek	16,379	392	2
171003070504	Flat Creek-Elk Creek	15,877	12,210	8

N. Total Acres Burned: 50,115 (as of September 11, 2018)

Fire Name	Umpqua NF Acres	Rogue River Siskiyou NF Acres	BLM and Corps of Engineers Acres	Private	Total Acres
Columbus	11,030	--	--	--	11,030
Miles	3,367	17,746	8,937	9,010	39,085
Total Acres by Ownership	14,397	17,746	8,937	9,010	50,115

O. Vegetation Types:

Conifer forest within the burn is comprised of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), white fir (*Abies concolor*), incense-cedar (*Calocedrus decurrens*), Shasta red fir (*Abies magnifica*), and western hemlock (*Tsuga heterophylla*). Associated species include huckleberry (*Vaccinium membranaceum*) creeping snowberry (*Symphoricarpos mollis*), sword fern (*Polystichum imbricans*), bracken fern (*Pteridium aquilinum*), and snowbush (*Ceanothus velutinus*).

P. Dominant Soils:

Soils within the western Cascades section have, for the most part, mixed mineralogy's. These soils generally have moderate depths, and contain a wide range of rock fragment percentages. In general, loam, loamy sand and gravelly loam textures are dominant across the fires. Soil maps are available in Appendix B of this assessment. A full breakdown of soils for the three fires as well as both forests are provided in the project record for this assessment.

Q. Geologic Types:

The Miles, Columbus, and Snowshoe Fires lie on the Western Cascades Province and to a lesser extent on the High Cascades Province. These mountains are comprised of volcanic sediments and flows associated with the initial buildup of the Cascades during the Tertiary Period. The Miles and Columbus Fires are predominantly made up of coarse and fine grained sediments, as well as tuffs, of the Little Butte Volcanics and the Late Western Cascades Volcanic groups. An inclusion of basaltic andesite from the Early Cascades Volcanics group lies on the eastern edge of these fires. The Snowshoe Fire is predominantly made up of coarse grained sediments (Colestin Formation) of the Early Western Cascades group.

R. Miles of Stream Channels by Order or Class:

Fire	Stream Class (miles)		
	Perennial, fish	Perennial, non-fish	Intermittent/Ephemeral
Columbus	12	13	33
Miles	11	35	192

S. Transportation System

Trails: 11.4 miles (11.3 miles Umpqua NF, 0.1 miles Rogue River- Siskiyou NF)

Roads: 132 miles

Operational Maintenance Level	Umpqua National Forest		Rogue River – Siskiyou National Forest
	Columbus Fire	Miles Fire	Miles Fire
DE - DECOMMISSIONED			10.9
EX - EXISTING	53.3	10.1	57.4
1 - BASIC CUSTODIAL CARE (CLOSED)	12.3	3.7	9.4
2 - HIGH CLEARANCE VEHICLES	31.5	4.4	30.4
3 - SUITABLE FOR PASSENGER CARS	9.4	2.0	15.1

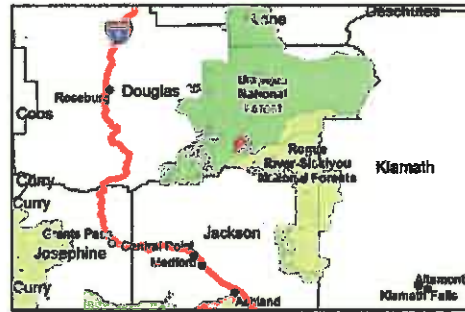
4 - MODERATE DEGREE OF USER COMFORT	0.1		0.0
OTHER ROADS			13.2
Grand Total	53.3	78.4	68.2

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Fire	Unburned	Low	Moderate	High	Unmapped within Fire Perimeter	Grand Total
Columbus	170 (2%)	9,362 (84%)	1,359 (12%)	110 (1%)	29	11,030
Miles	1,086 (3%)	26,948 (69%)	9,918 (25%)	1,133 (3%)	1	39,085
Total Acres	1,256 (2%)	36,310 (67%)	11,277 (21%)	1,243 (3%)	9	50,115

Soil Burn Severity



South Umpqua Complex - Miles Final Soil Burn Severity - September 14, 2018

Soil Burn Severity



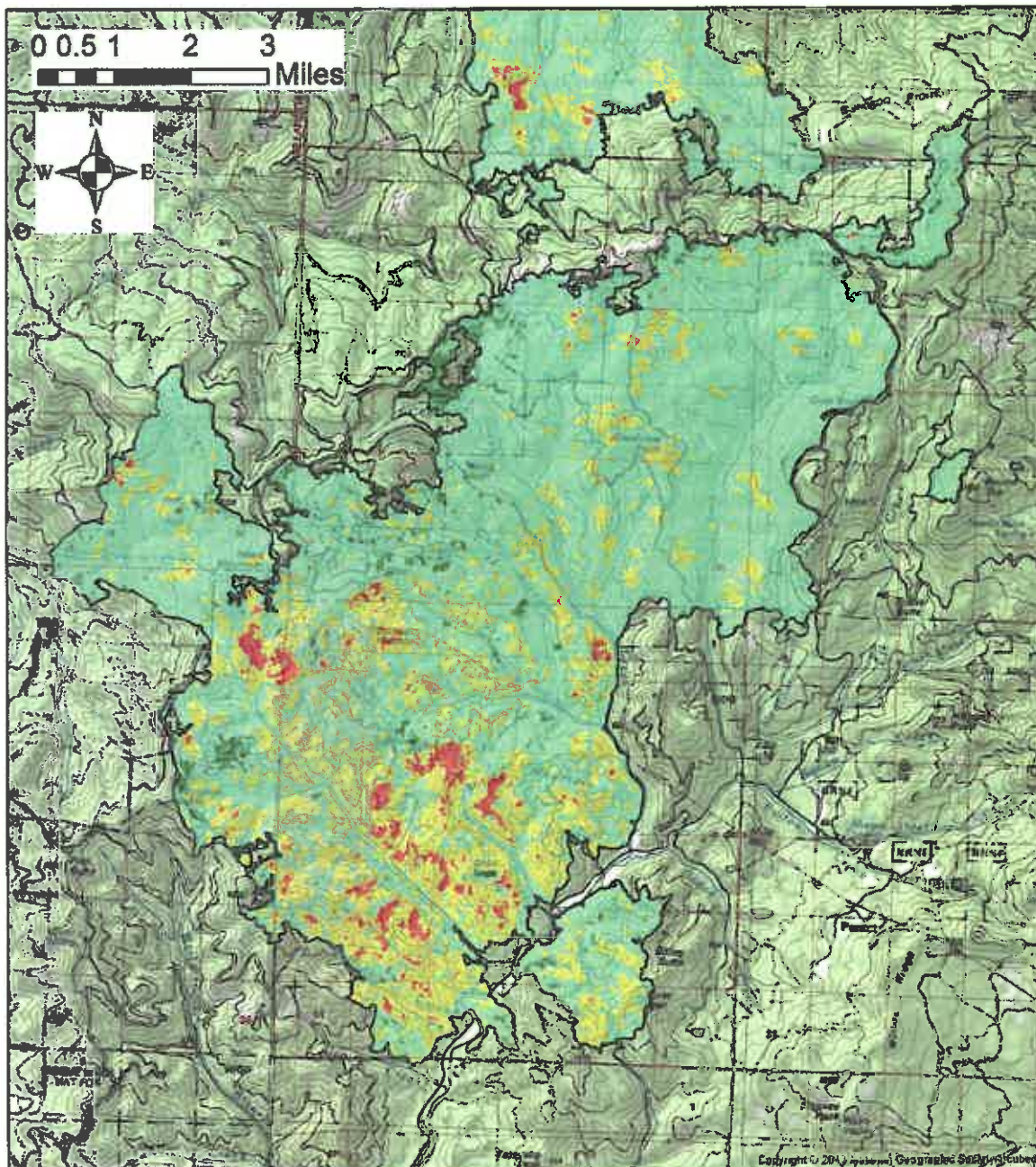
Severity	Acres
High	1,133
Moderate	9,918
Low	26,948
Unburned	1,086



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B. Water-Repellent Soil (acres): 13,764 acres (Miles and Columbus Fires)

C. Soil Erosion Hazard Rating (acres): 3,683 (low) 9,959 (moderate) 15,483 (high)

D. Erosion Potential: 7.4 tons/acre

E. Sediment Potential: 1,984 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period	2 to 5 years
B. Design Chance of Success	90 %
C. Equivalent Design Recurrence Interval	5 years
D. Design Storm Duration	24 hours
E. Design Storm Magnitude	3.7 inches
F. Design Flow	73 cfs / mi ²
G. Estimated Reduction in Infiltration	49%
H. Adjusted Design Flow	97 cfs / mi ²

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
Umpqua National Forest								
Natural Resources	Native Plant Communit ies	Along dozer and hand lines where soil disturbance has occurred in the fire area.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>survey and treatment of noxious weeds to mitigate risks of introduction and spread of noxious weeds into native plant communities from firelines</i>
Natural Resources	Native Plant Communit ies	Native plant communities in moderate to high severity burned areas immediately adjacent to roads. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>survey and treatment of noxious weeds to mitigate risks of introduction and spread of noxious weeds into native plant communities from roads.</i>

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
			extensive resources to manage.					
Natural Resources	Unique habitats	Unique habitats with Region 6 listed sensitive plant populations in SIA and RNA designations. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage. If left unmanaged the results could permanently alter plant communities and habitat, and adjacent private land values.	Very Likely	Major	Very High	Early Detection/Rapid Response	SIA along 700 and 800 roads as well as the Squaw creek RNA contains several R6 listed plant species where some high and mod severity burned areas occur. It is highly likely free range cattle will introduce non-native weeds as well as natural dispersal from nearby infestations.
Natural Resources	Coho Salmon	Aquatic Habitats	Soil loss from post-fire erosion can cause flashier hydrologic response and subsequent degradation to aquatic habitats, including critical habitat for ESA listed species, Coho salmon.	Likely	Major	Very High	Recommended road treatments will protect aquatic habitat.	Within the burned area, Squaw Creek, Jackson Creek, Donagan Creek, Sugarpine Creek, Bitter Lick Creek, and Coalmine Creek are critical habitat for listed ESA species Coho salmon. Extensive investments have been made in restoring habitat in these watersheds.
Natural Resources	Soils	Soil Productivity	Soils within high and moderate soil burn severity are at risk of hillslope erosion, mass wasting, and surface runoff which would reduce short term soil productivity and increase overland flow.	Likely	Moderate	High	No treatment recommendations	There is vegetation already coming in post-fire (bracken fern, big leaf maple, and other shrubs and forbs) and in some areas there is needle/leaf litter accumulation that will add a natural mulch layer.
Property	Roads/Property and Life	FSR-6800-100 System	2.64 miles of road were identified for treatment within the FSR 6800 and FSR 6800-100 road systems that are at a likely to be damaged and have a moderate magnitude of consequences.	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Proposed treatments include cleaning catch basins, ditch cleaning, and minor catch basin modifications (enlarging them) to effectively capture anticipated increases in flows.
Property	Roads/Property	FSR-6800-100 Culvert on Nameless Tributary	The crossing of a nameless tributary on FSR-6800-100 is undersized and hydrologic modeling shows that the culvert is at risk for failure and has high diversion potential.	Very Likely	Moderate	Very High	Armored Dip	The area surrounding this nameless drainage shows signs of soil instability and evidence of previous debris flows.

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommendations	
Property	Roads/Property and Life	FSR-6800-200 System	On the FS-6800-200 road system, 0.99 miles of road were identified as having a high risk (likely, moderate); these segments have been identified for treatment.	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Proposed treatments include cleaning catch basins, ditch cleaning, and minor catch basin modifications (enlarging them) to effectively capture anticipated increases in flows.
Property	Roads/Property and Life	FSR-6800-250	This road includes a series of springs that are resulting in a wet road prism with poor water drainage. The existing condition of the road prism will result in an elevated risk when runoff conditions increase.	Likely	Moderate	High	Storm Proofing, Rolling Dip Install, and Storm Inspection and Response	Install Rolling Dip at interface with un-named tributary to Crooked Creek.
Property	Roads/Property and Life	FSR 2925	The 2925 road is a major arterial road through the Umpqua National Forest and provides access to the Rogue River Siskiyou National Forest. On this road system, 0.31 miles of road were identified as having a high risk for damage or loss, and treatment is only recommended on specific road segments (see treatment map).	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Treatment Locations are identified on the BAER treatment map.
Property	Roads/Property and Life	FSR 2925-300 System	The 2925-300 system includes several road drainage features and crossings down-slope of moderate soil burn severity areas. On this road system, 0.31 miles of road were identified as having a high risk for damage or loss, and treatment is only recommended on specific road segments (see treatment map).	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Treatment locations are identified on the treatment map. Approximately 10% of the road system needs storm proofing treatment.
Property	Roads/Property and Life	FSR 2950 - Black Canyon tributary side draw	The 2950 road includes stream crossing on a side tributary of Black Canyon Creek, which have moderate and high soil burn severity in the watershed headwaters. The crossings on this road prism are at elevated risk for damage following a large runoff event.	Likely	Moderate	High	Culvert Upsize, Storm Proofing, and Storm Inspection and Response	For full discussion, see treatment narrative, R-4, page 23. This culvert is located near the confluence of the nameless tributary and Black Canyon creek. Upsizing the culvert would protect the road prism, and also protect downstream Coho critical spawning habitat in Jackson Creek, a very high risk to Coho where Coho populations are dwindling. The current culvert is a 24

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
								inch culvert, and modeling shows that there is a 22% expected increase in flow. The crossing would divert down the road.
Property	Roads/Pro perty	FSR 2950 - Slumping and Ditch cleaning	Road is slumped and blocking road drainage features, the upstream watershed has moderate and high soil burn severity.	Likely	Moderate	High	Storm Proofing	Slump location is an unburned area, but is downslope of moderate severity and there is a likely chance that the road would run water during a large storm event. Ditch cleaning is the proposed treatment in this location.
Human Life and Safety	Human Life and Safety	Interior Roads to Fire Area - Hazard Trees	Hazard trees are prevalent within the South Umpqua Complex fires and pose a major threat to human life and safety. There is still an inherent risk for more hazard trees to fall within the burned area throughout the winter of 2018-2019.	Possible	Major	High	Temporary Road Closures and Hazard Warning Signs	Roads will be determined after danger tree suppression mitigations are complete.
Property	Roads/Pro perty and Life	All FS Roads in Moderate and High Severity	Roads that cross through or are located downslope of moderate and high soil burn severity areas are subject to increases in runoff, rolling debris, and falling hazard trees. These threats pose a risk to road systems where drainage failure is possible.	Very Likely	Moderate	Very High	Storm Inspection and Response	In the 2500-8 implementation plan, we will plan priority roads for storm inspection and response, with emphasis on arterial roads, then lower operational maintenance levels.
Human Life and Safety	Life	Cover Camp Campground	On the south side of Jackson Creek the Columbus Fire burned to the edge of the creek where visitors staying at Cover Camp frequently swim during the summer. There are multiple high failure-potential hazard trees near swimming areas	Possible	Major	High	Identify and treat Hazard Trees	Approximately 22 Hazard Trees were initially identified in burn scar. Since swimming season is over, a large number of trees may come down this winter, but not all before visitors would be exposed. Many will only become more hazardous as rot sets in.
Life and Property	Human Life and personal vehicles	Dispersed campsite near 68/29 road intersection	This dispersed campsite is used year-round by campers and hunters. There are about 20 Likely Failure Potential trees near the moderate intensity burn that need to be treated if visitors are allowed to camp in this location.	Very Likely	Major	Very High	Recreation Warning Signs	Approximately 20 Hazard Trees were initially identified in burn scar. Due to proximity to the 68 road, it may be difficult to close the site.

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
Life and Property	Human Life and personal vehicles	Abbott Butte Trailhead	The trailhead and parking area have upwards of 30 trees with a High Failure Potential. Many of these are from the High Cascades Complex but several are new from the Miles Fire.	Very Likely	Major	Very High	Recreation Warning Signs and Hazard Tree Treatment	Approximately 32 Hazard Trees were initially identified in burn scar. Due to proximity to 68 road, it may be difficult to close the site.
Cultural Resources	Property	Archeological and historic sites	Historic and Pre- Contact artifacts are at a very high risk to looting and vandalism and loss of information that make sites eligible for the National Register.	Very Likely	Major	Very High	Camouflage exposed artifacts and features and monitor treatments	Areas of concern include Snowshoe Spring, Black Canyon, Squaw Flat, Butler Butte, and the Huckleberry Patch
Rogue River-Siskiyou National Forest								
Natural Resources	Native Plant Communit ies	Along dozer and hand lines where soil disturbance has occurred in the fire area.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage. If left unmanaged the results could permanently alter plant communities and habitat, and adjacent private land values.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>survey and treatment of noxious weeds are proposed separately for suppression related impacts to mitigate risks of introduction and spread of noxious weeds into native plant communities from firelines</i>
Natural Resources	Native Plant Communit ies	Native plant communities in moderate to high severity burned areas immediately adjacent to roads. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage. If left unmanaged the results could permanently alter plant communities and habitat, and adjacent private land values.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>survey and treatment of noxious weeds are proposed separately for non-suppression related impacts to mitigate risks of introduction and spread of noxious weeds into native plant communities</i>

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
Natural Resources	Unique habitats	Unique habitats with Region 6 listed sensitive plant populations in SIA and RNA designations. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>SIA along 700 and 800 RDs contains several R6 listed plant species where some high and mod severity burned areas occur. It is highly likely free range cattle will introduce non- native weeds as well as natural dispersal from nearby infestations.</i>
Natural Resources	Native Plant Communit ies	Along roads, trails, dozer and hand lands, open areas (Where understory was consumed by fire), trailheads, Admin sites. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>The Rogue River Siskiyou NF side of the South Umpqua Complex needs EDRR trt by logging operation</i>
Natural Resources	Unique habitats	Unique habitats with Region 6 listed sensitive plant populations. These areas are currently weed free and at risk for weed invasions.	Fire-caused disturbances create perfect conditions for noxious weed invasion and expansion. If emergency mitigation activities are not implemented this problem will expand exponentially and will require future extensive resources to manage.	Very Likely	Major	Very High	Early Detection/Ra pid Response	<i>SIA along 800 contains several R6 listed plant species where some mod severity burned areas occur. It is hiky likely fire suppression activities will introduce non-native weeds</i>
Natural Resources	Soils	Soil Productivity	Soils within high and moderate soil burn severity are at risk of hillslope erosion, mass wasting, and surface runoff which would reduce short term soil productivity and increase overland flow.	Possible	Moderate	Interme diate	No treatment recommend ations	There is vegetation already coming back post-fire (bracken fern, big leaf maple, and other shrubs and forbs) and in some areas there is needle/leaf litter accumulation that will add a natural mulch layer.
Natural Resources	Coho Salmon	Aquatic Habitats	Soil loss from post-fire erosion can cause flashier hydrologic response and subsequent degradation to aquatic habitats, including critical habitat for ESA listed species, Coho salmon.	Likely	Major	Very High	Recommend ed road treatments will protect aquatic habitat.	Within the burned area, Squaw Creek, Jackson Creek, Donagan Creek, Sugarpine Creek, Bitter Lick Creek, and Coalmine Creek are critical habitat for listed ESA species Coho salmon. Extensive investments have been made in restoring habitat in these watersheds

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
Natural Resources	Watershed	Hydrologic Function	Increased runoff and sediment deposition is at risk from roads and related drainage features impacted by post-fire flows.	Likely	Minor	Low	Recommend ed road treatments will protect watershed resources.	
Property	Life and Property	FSR 6610-800 System	The 1610-800 road system is within inclusions of lower, moderate, and high severity fire areas. The road system is likely to see increased run-off during large storm events. A total of 1.93 miles of road were identified as a high risk, and only these road segments are recommended for treatment within this road system.	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Maintenance level 2 but clearly have investment in these roads to keep them intact. This road system would need treatment in approximately 25% of the system to accommodate concerns associated with being downslope of moderate and high burn severity.
Human Life and Safety and Property	Life and Property	FSR 6610	The 6610 road is a main arterial road within the burned area. 3.15 miles of the 6610 road were identified as a very high risk for damage to BAER critical values, including property and natural resources (Coho critical habitat and hydrologic function).	Very Likely	Major	Very High	Storm Proofing and Storm Inspection and Response	Highest Priority in the Fire Area
Property and Natural Resources	Hydrologic Function, Human Life and Safety, and Property	FSR 6610 - Channel Crossing near bottom	A tributary channel to Sugar Pine Creek is located within a steep, moderate and high severity drainage. The existing culvert is 24 inch pipe, and the inlet is currently plugged by an old debris flow. Hydrologic modeling shows that this crossing will likely see a 38% increase in flows. The alluvial fan below the crossing shows signs of soil mass movement and scour of the road fill slope.	Likely	Major	Very High	Culvert Modification and Overhead Flow Structure Construction	Recon trip with BAER engineers, forest hydro, forest fisheries, and team leads on Monday. This culvert is located just upstream of the confluence of an unnamed tributary and Sugarpine Creek, which is coho critical habitat. The road is paved and the existing pipe is already plugged and misplaced for water diversion, resulting in water running down the road during storm events.

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment Recommend ations	
Property	Roads	FSR 6620 System	The 6620 road is a main arterial road within the burned area. 2.64 miles of road prism were identified for storm proofing treatments based on their high risk to BAER critical values.	Likely	Moderate	High	Storm Proofing and Storm Inspection and Response	Storm proofing would need to occur on approximately 10 crossings and ditch relief culverts within this roads system, based on likelihood of debris coming into ditch lines and drainage from steep moderate and high severity terrain.
Human Life and Safety	Life and Property	Bigfoot Camp Dispersed site	This dispersed campsite is used year-round by campers and hunters. There is also strong cultural interest in the site by the Cow Creek Band of the Umpqua Tribe of Indians.	Very Likely	Major	Very High	Recreation Warning Signs	There are about 15 Likely Failure Potential, fire weakened trees near the low intensity burn that need to be treated if visitors are allowed to camp in this location.
Human Life and Safety	Human Life and Safety	Interior Roads to Fire Area - Hazard Trees	Hazard trees are prevalent within the South Umpqua Complex fires and pose a major threat to human life and safety. There is still an inherent risk for more hazard trees to fall within the burned area throughout the winter of 2018-2019.	Possible	Major	High	Temporary Road Closures and Road Warning Signs	Roads will be determined after danger tree suppression mitigations are complete. Treatment P-5 recommends temporary road closures.
Property	Roads/Property and Life	All FS Roads in Moderate and High Severity	Roads that cross through or are located downslope of moderate and high soil burn severity areas are subject to increases in runoff, rolling debris, and falling hazard trees. These threats pose a risk to road systems where drainage failure is possible.	Very Likely	Moderate	Very High	Storm Inspection and Response	In the 2500-8 implementation plan, we will plan priority roads for storm inspection and response, with emphasis on arterial roads, then lower operational maintenance levels. .
Cultural Resources	Property	Archeological and historic sites	Chipped stone tool artifacts, cans, and bottles now exposed by fire are visible and could potentially be surface collected. Surface collecting can also lead to looting and vandalism and loss of information that make sites eligible for the National Register.	Very Likely	Major	Very High	Camouflage exposed artifacts and features and monitor treatments	Areas of concern include the Huckleberry Patch, Bigfoot Camp, Huckleberry Gap,

Human Life and Safety

The South Umpqua Complex fires are surrounded by communities that utilize National Forest lands for a variety of public interests including recreating, hunting, huckleberry picking, cultural resources within the Huckleberry Special Interest Area (SIA), and firewood gathering. The post-fire environments in the South Umpqua Complex include elevated threats to forest visitors, residents of adjacent private lands, and Forest

Service employees who work, travel through, and recreate in National Forest lands. Threats to human life and safety include loss of ingress and egress within the burned area, hazard trees, rock fall, and debris flows. These threats exist along road and trail corridors and in dispersed recreation areas. The fire suppression and repair process includes the mitigation of danger trees along roads used during fire suppression; these efforts alleviate safety concerns in the burned area, but the threat of falling hazard trees will continue through the winter of 2018 – 2019. Where road systems have not been treated for hazard trees under fire suppression, roads still pose a *very likely* and *major* threat to human life and safety.

On the Umpqua National Forest, three recreation sites were determined to be at risk for post-fire threats, predominantly from hazard trees that are likely to fall near areas where large groups of people tend to congregate, including the Cover Camp campground and swimming hole, a disbursed campsite at the junction of FSR 2900 and 6800, and the Abbott Butte Trailhead. On the Rogue River – Siskiyou National Forest, a trailhead at the Bigfoot Camp dispersed site was also identified as a threat to human life and safety.

Property

The South Umpqua Complex fires include 144 miles of National Forest System Roads (FSR) and 12 miles of National Forest System trails within the burned area. Post-burn conditions and the predicted watershed response indicate the potential for an increase in runoff, and associated sediment and debris, into transportation drainage features, such as roadside ditches, culvert inlets, and roadway dips. These drainage features become vulnerable to failure when impacted by significant runoff events, allowing uncontrolled water to divert and damage forest service road and trail prisms. The transportation systems in the burned area include roads with significant road improvement investments which can be compromised, along with threats to loss of access along road and trail segments.

Stream/road interaction points (large culvert crossings) with significantly impacted drainages above are likewise susceptible to these increased flows and debris plugging. Overtopping in these locations would be more extreme, with sudden failures of the road prism and mass wasting whether the crossing is on a slope or in a floodplain. Even in scenarios where the prism fill does not collapse, excessive erosion and damage to the prism will occur around the inlet of the culvert and on the fill slope across the road. Structure loss may or may not occur in both these situations.

The South Umpqua Complex fires are adjacent to the High Cascades Complex fires from 2017. In some cases, previously requested BAER treatments are adequate to protect property forest service property where the burn scars of the two fires overlap. In other areas, further treatment is requested (storm proofing – including minor ditch, catch basin, and culvert cleaning) in order to protect the investments made through the High Cascades BAER request.

Natural Resources

The Snowshoe, Columbus, and Miles fires burned area includes diverse ecological systems including native plant communities, habitat for rare or endangered aquatic and terrestrial species, and unique soil and hydrologic systems. Natural resources within the burned area are at risk for elevated watershed responses and the introduction of non-native species.

Native Plant Communities

Although there are no documented occurrences of federally listed plant species there are several plant species on the R6 Regional Forester's Sensitive Species list within the South Umpqua complex fire perimeter, including *Iliamna latibracteata* and *Frasera umpquaensis* both which occur within the Huckleberry Special Interest Area (SIA) as well as *Cypripedium montanum*, *Romanzofa thompsonii*, and several non-vascular species of mosses and lichens. The natural plant communities and unique habitats affected by the South Umpqua Complex fire provide important habitat and ecological values for wildlife and human uses. The primary threat to these communities is the invasion by non-native invasive plants that readily colonize burned areas. Non-native invasive plants reduce diversity and abundance of native plant species with a corresponding decrease in diversity and quality of wildlife habitat. Rapid colonization and expansion of non-native invasive weeds also increases erosion, decreases water quality, forage, and with some invasive species may significantly slow post fire recovery. Permitted cattle grazing also occurs within the South Umpqua Complex fire perimeter and were

observed grazing in the Huckleberry SIA as well as wet meadows and other sensitive plant habitats, and are known to be vectors for spreading invasive weeds.

Dozer lines, handlines, and areas with bare soil disturbance from fire suppression can have a significant effect on native plant communities because the higher light conditions and disturbed ground from fire suppression activates can be readily colonized by non-native invasive weeds. The primary threat to these existing native plant populations and other suitable sensitive plant habitat is the introduction of weed seeds and propagules from equipment, vehicles, hoses, and firefighter gear resulting in the establishment of non-native plant species including state listed noxious weeds that could displace sensitive plant populations, which will lower plant community diversity and negatively affect ecosystem services. The risk of invasion of non-native and noxious weeds has increased due to suppression activity and wildfire (Asher et al. 2001). Other threats include the dispersal of noxious weeds by vehicles, off-road vehicles, cattle and hikers. Non-native species can aggressively overtake burned open spaces and crowd out native species (USFWS 2010).

Oregon Coast Coho Salmon

The Upper South Umpqua and Jackson Creek on Tiller Ranger District are natal habitat for populations of winter steelhead, spring chinook, coho salmon and coastal cutthroat trout. OC Coho salmon are listed as Threatened under the Endangered Species Act. In 2017, coho surveys conducted by the Oregon Department of Fish and Wildlife in tributaries to the South Umpqua revealed a drop in adult spawning numbers. An average of 1.3 coho were seen per mile down from 2.3 in 2016. Spring chinook had a significant drop in numbers as well. A total of 28 fish were seen in 2018 which is a significant decrease from the 50 year average of 170 fish. The historic low numbers of fish are attributable freshwater habitat condition, specifically high summer water temperatures, lack of gravel substrate, large width to depth ratios. Winter habitat conditions, specifically velocity refuges are inadequate and adversely affect salmon and steelhead production largely as a result of large wood removal. Redd scour occurs annually as a result of an altered hydrograph and unstable in channel gravel deposits. More recent declines in the salmon and steelhead populations are likely a result of bass predation on smolts during migration and poor ocean conditions. Over the last 20 years, millions of dollars has been spent conducting instream restoration in Jackson Creek and the Upper South. These efforts have been successful at creating refuges for anadromous fish. One refuge is lower Black Canyon Creek. This refuge is immediately downstream from the Columbus fire.

On the Umpqua National forest, Squaw Creek, Jackson Creek, and Donagan Creek are critical habitat with documented occurrences. In these drainages, soil burn severity was low and moderate, with some inclusions of high severity fire in the headwaters of Squaw Creek. It is likely to see a spike in turbidity and bedload associated with sediment runoff within these burned watersheds. The effect of this sediment input will likely have a negative effect on the spawning gravels in Squaw Creek for a period of years. Upper Jackson Creek will be similarly affected but to a lesser degree because the fire there was a flanking, lower intensity ground fire.

Anticipated fire effects on the Rogue River-Siskiyou National Forest fish species and habitat are moderate. Coho salmon critical habitat is located in Sugarpine Creek, Bitter Lick Creek, and Coalmine Creek within the burned area. The Sugarpine creek drainage has a mosaic of low and moderate burn severity, with potential for increased sediment bedload that could result in damage to spawning grounds in Sugarpine creek. Bitter Lick and Coalmine Creeks have low severity fire throughout their watersheds, which may cause a short term spike in turbidity, but is not anticipated to result in any long term threat to coho salmon. There are no anadromous fish in the Upper Rogue above the William L. Jess Dam, making the fish habitat in these drainages important for coho. A spike in turbidity and bedload could occur as a result of the fires within streams that were partial burnt.

Cultural and Heritage Resources (Pre-Contact and Historic)

Three cultural resources (one pre-contact and two historic site) were identified as a value at risk within the South Umpqua Fire Complex. Treatment implementation is priority as cultural features and subsurface

resources are at a higher risk of being damaged or exposed by fire activities and post-fire effects such as erosion and soil movement. Other concerns include the location of equipment during road treatments, the disposal of any waste material created during road treatments, and potential future looting/vandalism. The probability of damage or loss is likely at both of the sites given the severity of the burn, potential for erosion, and heightened potential for looting given easy access and visibility from highly used roads. The magnitude of consequences (loss of scientific data present in archaeological deposits) is major given the significance of the site, making the risk very high. The treatment recommendation proposed consists of wood-straw dispersal for camouflaging exposed artifacts and preventing erosion during major weather events. Post-implementation monitoring will be planned to be completed by a qualified Heritage professional during the winter and spring months to monitor the effectiveness of the treatment.

Huckleberry Special Interest Area

The Huckleberry SIA consists of 9,497 ac. total on the Umpqua and Rogue River-Siskiyou National Forests Tiller and Prospect Ranger Districts. Approximately 2,791 ac. (29%) burned within the South Umpqua Complex perimeter, with 0.2%, 2.4%, and 20.9% of the SIA burning in high, moderate, and low soil burn severity respectively (the rest of the SIA was unburned at the time of this report). The purpose of the SIA is "...to encourage management activities that would benefit the recognition of cultural, historic, and traditional values, as well as encourage production of huckleberries; require appropriate tribal consultation for projects on the Forest; address activities that may occur within the SIA; and clarify direction for overlapping management strategies and allocations (USDA 2005)."

The Huckleberry SIA patch is still utilized by the Cow Creek Band of Umpqua Tribe of Indians (Cow Creek) for huckleberry picking, hunting, social events, and personal ceremonial activities. In 1992 the SIA was determined eligible for listing in the National Register of Historic Places (NRHP) as a traditional cultural property (refer to BAER Cultural Specialist Report). 1,998 ac. of the Huckleberry Patch SIA that burned were at low SBS and are expected to resprout within 3 to 7 years however, 248 ac. burned at Mod-High SBS and these areas are expected to have higher mortality or greatly reduced sprouting postfire with expected recovery generally occurring within 15-20 years.

Other non-BAER values

No non-BAER critical values were identified during this BAER assessment.

B. Emergency Treatment Objectives:

The primary objective of this Burned Area Emergency Response Report is to recommend prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to human life and property and mitigate unacceptable risk of degradation to natural and cultural resources. The South Umpqua Complex BAER team has recommended treatments that address the emergencies presented in the post-fire environment with the most effective, minimum treatment. The application of these BAER treatments are expected to minimize the risk of on-site and downstream damages to the identified critical values. Below, the objectives are the proposed treatments are included.

Proposed Land Treatments

The objective of the land treatments are to:

1. Promote and protect native and naturalized vegetative recovery by reducing the spread of noxious weeds (L-01).

Proposed Road and Trail Treatments

The objective of the road and trail treatments are to:

1. Protect road and trail investments from becoming impassible and damaged due to increased post-fire runoff.
2. Reduce sedimentation into streams degrading water quality and endangered species habitat (Coho salmon).

3. Improve road drainage by increasing ditch and catchment basin capacity to reduce the potential for road failure due to increased flows

Proposed Protection/Safety Treatments:

The objective of the protection/safety treatments are to:

1. Protect human life and safety by raising awareness through posting hazard warning signs at recreation sites, trailheads, and when entering the burn area.
2. Coordinate with other Federal, state, and county agencies on posting of hazard warning signs
3. Protect worker and public safety by removing hazard trees at trailheads and within the vicinity of road and trail work.

Proposed Channel Treatments:

There are no proposed channel treatments.

Cultural and Heritage Resources:

To ensure cultural resources are not damaged by road and trail BAER treatment activities, site inspections by a qualified Heritage specialist will be performed prior to any ground disturbing activity. These Heritage specialists will assess locations where heavy equipment will be parked and where work will occur.

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

Land **NA (weeds only)** % Channel **NA** % Roads/Trails **80 - 100** % Protection/Safety **90 - 100** %

As an appendix to this 2500-8 funding request, an implementation plan was developed for the Umpqua and Rogue-River Siskiyou National Forests which will facilitate expedited treatment implementation in the burned area. The implementation plan includes an a listed project coordinator for each requested treatment, implementation time, and anticipated implementation mechanism (force account, forest agreements, and contracting mechanism).

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	50-90%	50-90%	50-90%
Channel	N/A	N/A	N/A
Roads/Trails	80-100%	80-100%	80-100%
Protection/Safety	90-100%	90-100%	90-100%
Cultural Resource Protection	90-100%	90-100%	90-100%

E. Cost of No-Action (Including Loss): 49,550

Human Life and Safety – Without signs describing hazards present in the burned area, a forest user could be unaware of risks and proceed without further consideration for their safety. Exposure to falling rocks, hazard trees, route loss and flooding are among the threats identified. The significance of protecting human life and safety is assumed self-evident and not included in the calculations used below to justify treatments.

Property – Certain road segments have been identified as being susceptible to damage by post-fire peak flows and increased runoff. A method called the Implied Minimum Value (IMV) is recommended by BAER leadership to determine the cost-benefit ratio for values at risk where market value is not available Calkin et. al., (USDA 2007). An IMV is assigned to the Property Values at Risk which equals **\$261,738**.

IMPLIED MINIMUM VALUE
Estim. cost of treatments: \$ 157,043
Estim. Probability of Damage or Loss w/o Treatment: 80%
Estim. Probability of Loss if Treated: 20%
IMV = Treatment Cost/(Probability Loss Untreated - Loss Treated)
Implied Minimum Value (IMV) for Property $\$157,043/(0.8-0.2) = \$261,738$

Natural Resources – Without treatments to minimize post-fire effects from the spread of known populations of invasive plant species, there is a risk of diminishing native vegetation and ecosystem diversity in wilderness and the areas. Using the IMV method, the value of the native plant communities in threatened areas is \$90,775.

IMPLIED MINIMUM VALUE
Estim. cost of treatments: \$ 54,465
Estim. Probability of Damage or Loss w/o Treatment: 80%
Estim. Probability of Loss if Treated: 20%
IMV = Treatment Cost/(Probability Loss Untreated - Loss Treated)
Implied Minimum Value (IMV) for Property $\$54,465/(0.8-0.2) = \$90,775$

F. Cost of Selected Alternative (Including Loss):_ **\$232,040**

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"/> Trails and Recreation
<input type="checkbox"/> Forestry	<input 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 type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

Team Leaders: Joe Blanchard

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Team Members:

Lizeth Ochoa – Soil Scientist

Luis Palacious – Engineer
 Justin Nettleton – Engineer
 Bryan Kurtz – Engineer
 Mark Sommer – Hydrologist
 Amy Rusk – Hydrologist
 Lance Sargent – Trails and Recreation
 Krista Farris – Botany and Weeds
 Chris Kelly – Archaeology
 Amber Nelson – Archaeology
 Troy Ferone – Archaeology
 Bob Grate – Archaeology
 Chris Strobl – GIS

H. Treatment Narrative:

Land Treatments

L-1 – Early Detection/Rapid Response of Invasive Weed Treatment – Supression Activities

Non-native Invasive Plant Monitoring and Treatment

Prevention, combined with early detection and rapid response, is the most effective means of controlling noxious weeds and protecting native plant communities. Post-fire non-native invasive plant detection monitoring is recommended the first year “to determine the post-fire presence of invasive species” on fire lines, etc. This is consistent with Forest Service Manual direction of BAER treatment of invasive plants. (FSM2523.3) (USDA, 2004). Current NEPA covering herbicide treatment on the Umpqua and Rogue River Siskiyou National Forests is limited, follow-up manual weed control would occur in order to reduce the potential for spread of weeds within the fire perimeter. This is possible under the “Early Detection Rapid Response” guidelines in the Noxious Policy and Classification System (ODA 2014). Treatment effectiveness monitoring is also required under the FSM direction of BAER treatment of invasive plants (USDA, 2004). Fire lines, and roads improved for fire breaks are the focus of EDRR treatment to mitigate the risk of introduction and spread of invasive weeds into native plant communities adjacent to the dozerlines, handlines, drop points, staging areas where soil was disturbed and bare soil is present for firebreaks.

L-1 South Umpqua Complex Fire 2018 funding request-Treatments for Suppression related impacts only

Line Items	Forest	Fire name	units	Unit cost	# of units	Total \$
South Umpqua Complex	Dozerlines, handlines, drop points, and staging areas within the fire perimeter					
Weed surveys	RRS	Miles	miles	\$100	11.2	\$1,120
Treatments (est. based on existing infestations)	RRS	Miles	acres	\$300	6	\$1,800
GS-09 admin of survey, treatment, data entry	RRS	Miles	days	\$310	4	\$1,240
Monitoring treatment effectiveness	RRS	Miles	days	\$310	3	\$930
Total	RRS	Miles				\$5,090
Weed surveys	UMP	Miles	miles	\$100	6.25	\$625
Treatments (est. based on existing infestations)	UMP	Miles	acres	\$300	3.5	\$1,050
GS-09 admin of survey, treatment, data entry	UMP	Miles	days	\$310	3	\$ 930
Monitoring treatment effectiveness	Ump	Miles	days	\$310	2	\$620
Total	UMP	Miles				\$3,225

Weed surveys	UMP	Columbus	miles	\$100	9.05	\$905
Treatments (est. based on existing infestations)	UMP	Columbus	acres	\$300	5	\$1,500
GS-09 admin of survey, treatment, data entry	UMP	Columbus	days	\$310	3	\$930
Monitoring treatment effectiveness	UMP	Columbus	days	\$310	2	\$620
total	UMP	Columbus				\$3,955
Total						\$12,270

L-2 Early Detection/Rapid Response of Invasive Weed Treatment – Sensitive Areas

Non-suppression repair related treatments are proposed in areas that burned with moderate to high severity within the Huckleberry SIA and Squaw Flat RNA as well as portions of road systems where moderate to high intensity burns occurred adjacent to the road matrix excluding road sections already covered under treatments for suppression related activities. (see treatment map below).

L-2 South Umpqua Complex Fire 2018 funding request-Treatments for Non-Suppression

Line items	Forest	Fire name	units	Unit cost	# of units	Total \$
South Umpqua Complex	Treatments in SIA, and RNA and where the fire burned up to the road prism with moderate to high severity (excluding portions covered by suppression repair)					
Weed surveys in SIA	RRS	Miles	acres	\$50	196	\$9,800
Treatments (est. based on existing infestations)	RRS	Miles	acres	\$300	20	\$6,000
Weed Surveys along roads with black adjacent	RRS	Miles	miles	\$100	6.7	\$2,010
Treatments (est. based on existing infestations)	RRA	Miles	acres	\$300	4	\$1,200
GS-09 admin of survey, treatment, data entry	RRS	Miles	days	\$310	4	\$1,240
Monitoring treatment effectiveness	RRS	Miles	days	\$310	3	\$930
Total	RRS	Miles				\$21,180
Weed surveys	UMP	Miles	miles	\$100	8	\$800
Treatments (est. based on existing infestations)	UMP	Miles	acres	\$300	4	\$1,200
GS-09 admin of survey, treatment, data entry	UMP	Miles	days	\$310	1	\$ 310
Monitoring treatment effectiveness	Ump	Miles	days	\$310	1	\$310
Total	UMP	Miles				\$2,600
Weed Surveys in SIA (51.3ac) & RNA (10.2ac)	UMP	Columbus	acres	\$50	61.5	\$3,075
Treatments (SIA & RNA)	UMP	Columbus	acres	\$300	10	\$3,000
Weed Surveys along roads with black adjacent	UMP	Columbus	miles	\$100	9.6	\$9,600
Treatments (est. based on existing infestations)	UMP	Columbus	acres	\$300	5	\$1,500
GS-09 admin of survey, treatment, data entry	UMP	Columbus	days	\$310	2	\$620

Monitoring treatment effectiveness	UMP	Columbus	days	\$310	2	\$620
total	UMP	Columbus				\$18,415
Total						\$42,195

Roads Treatments

R-01 – Storm Proofing

Road storm proofing treatments are designed to prepare road systems within the burned area for elevated runoff that is anticipated to impact road drainage features and pose an elevated risk to the Forest Service property infrastructure. In the Miles and Columbus fire burned areas, 11.48 miles of road were identified as needing treatment based on proximity (traveling through or down-slope of) moderate and high burned areas. Forest engineers critically identified road segments that are at a high risk for damage to road drainage features within moderate and high severity areas. Storm proofing treatments consist of a variety of drainage maintenance including:

1. **Culvert Cleaning** – Culvert cleaning includes the cleanout of catchment basins, inlets and outlets. The cleanout of catchment-basins below the inlet of the culvert is done to capture the sediment transported from the channel or ditch. Capturing the sediment will help in preventing the culvert inlet from being partially plugged or completely buried. Culvert outlet cleanout is done to remove any material that would impede the flow of water through the outlet of the culvert.
2. **Ditch Cleaning** – The cleanout of drainage ditches is required to remove any debris that may deflect the flow out of the ditch and also to ensure the flow reaches the outflow structure.
3. **Culvert Catch Basin cleaning and enhancement**-The cleaning and enhancement of catch basins is to allow for efficient culvert flow and extra capacity for sediment due to expected enhanced flows.

Implementation Plan Summary

Storm proofing treatments on the South Umpqua Complex have been prioritized by treatment area, with major arterial road prisms also being treated for anticipated increases in peak flows. The planned implementation mechanism is an IDIQ road contract. The highest priority storm proofing area has on the Umpqua National forest side of the fire includes the main arterial routes (FSR 6800-100 and 6800-200 road systems) and on the Rogue River- Siskiyou, FSRs 6610 and 6620 are the highest priority. Further details are available in Appendix C, the South Umpqua Complex Implementation Plan.

Umpqua National Forest – Storm Proofing

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Proofing	Miles	\$5,802	3.76	\$21,831

Rogue River – Siskiyou National Forest – Storm Proofing

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Proofing	Miles	\$6,393	7.72	\$49,351

Storm proofing unit costs on the Rogue River – Siskiyou NF are higher than those proposed on the Umpqua NF. This difference in cost is tied to a higher concentrations of treatments within the mileage on FSR 6610, which is a rocky and very steep road prism that will require extensive ditch clearing and culvert basin clearing, to a higher degree than other locations within the fire area.

R-02 – Storm Inspection and Response

The South Umpqua Complex burned area includes several watersheds that have been subjected to moderate and high severity burned areas which are at an increased risk for elevated flows, which may damage road

systems, by exceeding the capacity of road drainage structures. If drainage structures become plugged by debris, they are likely to fail and can cause moderate to major impacts to the National Forest transportation system. Storm inspection and response would keep culvert and drainage structures functional by cleaning sediment and debris from drainage structures between and during large storm events.

Based on predicted storm events and historic trends, it is anticipated that 3 to 6 days are needed for storm inspection and response in the 2018-2019 post-fire seasons. Work will include Forest Service personnel inspection of transportation systems and identification of problems, and then response treatment to correct the damages to road drainage features, including days for forestry technicians to log out roads where access may be obstructed by downed trees.

For the Umpqua National Forest ownership of the fire area, less roads were identified as potentially having concerns, and 3 days were assigned for storm inspection and response, with treatment recommendations to treat approximately 3.76 miles of road. On the Rogue River – Siskiyou National Forest, 6 days were assigned for storm inspection and response, related to more road miles that are at an elevated risk to drainage feature failure (7.72 miles of road).

Implementation Plan Summary

The BAER engineering specialists prioritized roads for treatment based on anticipated impacts in the burn area and operational maintenance level. On the Umpqua National Forest, FS roads 2950 and 2925 were identified as the highest priority areas for storm inspection and response based on their access within the burned area. On the Rogue River – Siskiyou National Forest, FS 6610 is the highest priority for storm inspection and response treatments.

Umpqua National Forest – Storm Inspection and Response

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Inspection GS-09 Road Manager	Days	\$285	3	\$855
Log Out for Road Access, 2 GS-07 Forestry Technicians	Days	\$550	3	\$1,650
Road Crew Response Cost	Days	\$2,000	3	\$6,000
Administrative and Contract Costs (10%)	Lump sum	--	--	\$851
Total Costs				\$9,356

Rogue River – Siskiyou National Forest – Storm Inspection and Response

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Inspection GS-09 Road Manager	Days	\$285	6	\$1,710
Log Out for Road Access, 2 GS-07 Forestry Technicians	Days	\$550	6	\$3,300
Road Crew Response Cost	Days	\$2000	6	\$12,000
Administrative and Contract Costs (10%)	Lump sum	--	--	\$1701
Total Costs				\$18,711

R-03 – Armored Critical Dips

Armored critical dips are proposed in two locations in the burned area. These crossing locations are at risk for failure of the road prism based on their proximity to moderate and high soil burn severity and the existing,

degraded condition of these crossing locations. Both armored critical dip proposed locations are within watershed that drain to Coho salmon critical habitat and failure of these crossings could result in a spike in turbidity that could result in a very high risk to Coho salmon spawning habitat.

68-100 MP 0.405 Armored Overflow Structure

This crossing has a 36" round cmp, but sizing using a post-fire Q100 of 65 cfs shows a 60" pipe is needed to pass the 27% increased peak flow. Using the BAER value at risk tool (Lite), it was determined that the culvert upgrade was not the least-cost minimum treatment for this location, and an armored dip is proposed to protect the crossing. The existing culvert inlet is slightly smashed, so capacity is reduced; jacking this out to repair the pipe would likely be ineffective since the culvert bottom is rusted out at the inlet. Lidar indicates that much of this drainage is landslide prone, so heavy debris movement through this stream is possible. If plugged, this pipe would divert flow down the road ditch. This stream drains directly into Critical Coho Habitat in Jackson Creek which is 0.6 miles downstream. An overflow structure is proposed for this treatment.

6800-250 Armored Dip

This crossing is located adjacent to a spring in the Crooked Creek drainage, which is downslope of moderate and high soil burn severity. The existing condition of the crossing is a slumped in drainage dip, where there is evidence of long-term soil instability. No culvert is present and no drainage structure is present at the crossing; the road is perennially wet in this location and signs of erosion of the fill slope and run off are present. An armored dip in this location would reduce the risk of failure significantly.

Implementation Plan Summary

Installation of these critical dips are among the highest priority work on proposed for the Umpqua National Forest. These treatments are anticipated to be implemented this fall, prior to the first major storm events.

Treatment	Units	Unit Cost	# of Units	Total Cost
Armored Critical Dip	Each	\$3,091	2	\$ 6,182

R-04 – Culvert Upsizing

Culvert upsizing is proposed at one crossing within the South Umpqua Complex Fire, located on a tributary just above its confluence with Black Canyon Creek on FSR 2950, MP 1.181. The existing 24" round cmp is rusting completely through the bottom and water is eating into the fill beneath the culvert. A 48" culvert would be needed to pass a post-fire Q100 of 55 cfs. This crossing is moderately skewed and has approximately 9' fill over pipe. A large deposit of material has accumulated above the pipe indicates this pipe has plugged in the past. If plugged during a large storm flow, it would divert down the road approximately 300' to large pipe at Black Canyon Creek, an anadromous stream. Coho critical habitat is located 1.2 miles downstream in Jackson Creek, this population of Coho are at very high risk and have had documented declines in population in 2016 and 2017. Millions of dollars have been invested in Coho habitat in Jackson creek, which would be at risk in the event of culvert failure. Projected increase in peak flow from modeling post fire conditions is 22%.

Culvert upsizing at this location was evaluated using the BAER VAR Tool (Lite) to assess the probability of success that upsizing this culvert would have. Given that the existing structure is in very poor condition and has high diversion potential to damage a main arterial road, the treatment was justified as economically feasible. Ecological factors, including close proximity to Coho critical habitat and hydrologic function, also weigh into the proposal to upsize this culvert crossing.

Implementation Plan Summary

Along with armored critical dips, this is the highest priority work for the Umpqua National Forest BAER implementation plan. The culvert would be removed and replaced this fall, prior to the first damaging storms.

Treatment	Units	Unit Cost	# of Units	Total Cost
Culvert Upsizing	Each	\$12,562	1	\$12,562

R-05 – Culvert Modification and Overflow Structure

The crossing on FSR 6610, MP 1.164 is a crossing that is at very high risk of failure based on hydrologic modeling. This crossing has a 24" round pipe; the drainage was too small to be modeled for peak flow increase but an adjacent, slightly less severely burned watershed was modeled and showed a 38% increase in flow. The catchment area above the inlet has a very large fine sediment wedge from a past debris flow and large wood is blocking the inlet. This crossing has been observed in the past to be overwhelmed by large storm flows, which causes diversion of flow for a short distance, approximately 150 feet. This intermittent stream joins Sugarpine Creek 200' below, which is Coho habitat, with Coho observed during field reconnaissance for this BAER assessment. The watershed above this crossing is private land, and appeared to be logged about 15 years ago; multiple logging roads cross the drainage as shown on Lidar images. Treatment at this crossing needed to protect the road and coho habitat includes the removal of the sediment wedge and wood debris, the addition of a culvert riser to prevent total plugging when more fine material comes down, and the construction of a broad based overflow structure above the pipe to prevent diversion of flow. The road in this location is a very high value at risk, it is a primary access route into the burned area and the road prism is paved – the Rogue River Siskiyou has made significant investments into this road prism.

The BAER Value at Risk Tool (Lite) was used to assess the economic feasibility of this treatment. Currently, ERMiT runs show that soils in this location are at 50% risk for failure which would result in more sediment deposition in the large sediment wedge located in the inlet catch basin. Treatment of removing this debris would reduce the likelihood of failure to 20% (engineering and hydrology opinion based on site visits and modeling). The economic cost of the road (market resource value) is approximately \$160,000, including the 100 foot section of diversion potential anticipated with a failure event.

This treatment proposal is three-fold:

1. Clean Debris Flow from Catch Basin: Approximately 250 cubic yards of material is currently located in the culvert inlet from a previous debris flow event, plugging and burying the culvert to a depth of 6' above the culvert inlet.
2. Overflow Structure Construction: The 6610 road at the site of this crossing has a 13% grade, which has diversion potential of approximately 100 feet. A broad based dip would be used to divert water off of the road and down slope onto the alluvial fan. This construction would include armoring of the fill slope to ensure that fill slope failure would not occur. Construction also includes re-surfacing the road.
3. Installation of Culvert Riser: A culvert riser would be added to the existing culvert pipe in order to allow for flow, even if the existing culvert becomes compromised.

Implementation Plan

This culvert modification and overflow structure is the highest priority treatment on the Rogue River- Siskiyou National Forest. Treatment design will begin immediately upon approval of this request and construction is likely to occur prior to damaging storms during the winter of 2018 – 2019.

Treatment	Units	Unit Cost	# of Units	Total Cost
FSR 6610 Culvert Modification and Overflow Structure	Lump sum	\$39,050	1	\$39,050

Protection/Safety Treatments:

P-01 – Road Hazard Signs: Signs will inform users of the dangers associated with entering and recreating within the burned area.

Road Warning Signs will be located at critical portals when entering the fire area. Road warning sign locations are located on the BAER treatment map (Appendix A).

Umpqua National Forest – Road Hazard Signs

Treatment	Units	Unit Cost	# of Units	Total Cost
Installation of warning sign 30x48	Sign/Post	\$327	8	\$2,556

Rogue River - Siskiyou National Forest – Road Hazard Signs

Treatment	Units	Unit Cost	# of Units	Total Cost
Installation of warning sign 30x48	Sign/Post	\$327	14	\$4,578

P-02 –Trail Hazard Signs:

The overall purpose of this treatment is to reduce risks to human life and safety by warning Forest visitors of existing threats while traveling within or adjacent to burned areas on National Forest System trails.

“Entering Burned Area” signs are needed to alert the public of possible threats to their life and safety that exist within the burned areas. The signs contain language specifying items to be aware of when entering burned areas such as falling trees, and rolling rocks. Signs would be posted at motorized trail entrances where there is high probability of visitor use. Many motorized trails are not necessary to sign because visitors will already be warned by road signs that are planned to be put in place, or are overgrown enough to be inaccessible to visitors.

Recreation Warning Signs Locations (see attached treatment map):

- Trail entrance to T1610547 (1)
- Trail entrance to T6800235 (1)
- Trail entrance to T6800600 (1)
- Trail entrance to T6800400 (1)
- Trail entrance to T2925680 (1)
- Additionally, order 3 additional trail signs to replace if vandalized (3)
- Road 6800 dispersed campsite near its intersection with road 2900 just south of Abbott Butte Bridge (1)
- Road 2900 dispersed campsite just east of Abbott Butte Bridge (1)
- End of road 2950 where there is a dispersed campsite (1)
- Additionally, order 2 additional signs to replace if vandalized (2)

Treatment	Units	Unit Cost	# of Units	Total Cost
Recreation Warning Signs	Sign/Post	\$78	13	\$1,014

P-03 – Hazard Tree Mitigations

Hazard trees were assessed in the Cover Camp Campground and Abbott Butte Trailhead on the Umpqua National Forest where recreators congregate within the burned area. The purpose of this treatment is to reduce the risks to human life and safety by felling weakened hazard trees within proximity of the Cover Camp Campground and swimming area.

Work will be completed by local Forest Service district personnel, including a crew of 5 people (road guards (2), recreation specialist (1), and tree falling module (2)), for approximately 20 hours of work.

Treatment	Units	Unit Cost	# of Units	Total Cost
Road Guards, 2 GS-5	Hours	\$32	20	\$640
Recreation Specialist, GS-9	Hours	\$25	20	\$485
Falling Module, 2 GS-8	Hours	\$50	20	\$1,000
Materials, Supplies, and Travel	Lump sum	\$184	1	\$52.00

Total Hazard Tree Falling Costs				\$2,309
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P-04 – Cultural Resource Protection

Umpqua National Forest – Cultural Resource Treatments

One resource (historic site) was identified as a value at risk within the South Umpqua Fire Complex. Treatment implementation is priority as cultural features and subsurface resources are at a higher risk of being damaged or exposed by fire activities and post-fire effects such as erosion and soil movement. Other concerns include the location of equipment during road treatments, the disposal of any waste material created during road treatments, and potential future looting/vandalism. The probability of damage or loss is likely at both of the sites given the severity of the burn, potential for erosion, and heightened potential for looting given easy access and visibility from highly used roads. The magnitude of consequences (loss of scientific data present in archaeological deposits) is major given the significance of the site, making the risk very high. The treatment recommendation proposed consists of wood-straw dispersal for camouflaging exposed artifacts and preventing erosion during major weather events. Post-implementation monitoring will be planned to be completed by a qualified Heritage professional during the winter and spring months to monitor the effectiveness of the treatment.

Cultural Resources Treatments: Wood-straw will be dispersed over the exposed artifacts surrounding Butler Butte. Camouflaging exposed artifacts will deter recreationalists from taking or altering portions of the site that have been exposed from the fire. It was also mitigate those areas with increased slope to help hold the artifacts in-situ.

Pre-implementation Clearance – Archaeological surveys will be necessary to protect heritage values at risk from impacts of implementing other BAER treatments. It is important that there is coordination between heritage resource specialists and other specialists in the implementation phase so cultural resources are not lost or damaged during treatment implementation. To avoid damage to cultural resources by equipment and actions during implementation and comply with Secion 106 of the National Historic Preservation Act qualified archeologists will perform an assessment of the work sites and the proposed activities. Five days of work to check the road and trail prisms for Archeological resources will be conducted prior to any work in the area if proposed.

Umpqua NF Cultural Resources Treatments	Units	# of Units	Unit Cost	Total Cost
CR1 – Pre-implementation Clearance (Archaeologist GS-9/4)	Days	5	\$315	\$1,575
CR2 – Camouflage Treatment (Firefighter GS-4/1 and Archaeologist GS-9/4)	Days	1	\$437	\$437
CR3 – Consultation with SHPO/Tribes (Forest Archaeologist GS-12/4)	Days	5	\$416	\$2,080
Cultural Resource Protection				\$4,092

Rogue River Siskiyou National Forest – Cultural Resource Treatments

Two resources (one pre-contact and one historic site) were identified as values at risk within the South Umpqua Fire Complex. Treatment implementation is priority as cultural features and subsurface resources are at a higher risk of being damaged or exposed by fire activities and post-fire effects such as erosion and soil movement. Other concerns include the location of equipment during road treatments, the disposal of any waste material created during road treatments, and potential future looting/vandalism. The probability of damage or loss is likely at both of the sites given the severity of the burn, potential for erosion, and heightened potential for looting given easy access and visibility from highly used roads. The magnitude of consequences (loss of scientific data present in archaeological deposits) is major given the significance of the site, making the risk very high. The treatment recommendation proposed consists of local material dispersal for camouflaging

exposed artifacts. Post-implementation monitoring will be planned to be completed by a qualified Heritage professional during the winter and spring months to monitor the effectiveness of the treatment.

Cultural Resources Treatments: Local material will be cut and dispersed near the exposed artifacts at both sites. Camouflaging exposed artifacts will deter recreationalists from taking or altering portions of the site that have been exposed from the fire.

Pre-implementation Clearance – Archaeological surveys will be necessary to protect heritage values at risk from impacts of implementing other BAER treatments. It is important that there is coordination between heritage resource specialists and other specialists in the implementation phase so cultural resources are not lost or damaged during treatment implementation. To avoid damage to cultural resources by equipment and actions during implementation and comply with Section 106 of the National Historic Preservation Act qualified archeologists will perform an assessment of the work sites and the proposed activities. Five days of work to check the road and trail prisms for Archeological resources will be conducted prior to any work in the area if proposed.

Rogue River-Siskiyou NF Cultural Resources Treatments	Units	# of Units	Unit Cost	Total Cost
CR1 – Pre-implementation Clearance (Archaeologist GS-9/4)	Days	5	\$315	\$1,575
CR2 – Camouflage Treatment (Firefighter GS-4/1 and Archaeologist GS-9/4)	Days	1	\$437	\$437
CR3 – Consultation with SHPO/Tribes (Forest Archaeologist GS-12/4)	Days	5	\$416	\$2,080
Cultural Resource Protection				\$4,092

P-05 – Temporary Road Closures

Emergency road closures mitigate hazards to protect human life, safety, and property. Burned areas include hazard trees that now become susceptible to falling as the trees are dead or soon will be dying. These trees will be a hazard to motorists who may encounter falling trees while traveling in the Snowshoe fire area.

There is an immediate risk to travelers along the roads within the burned area due to the increased potential for rolling and falling rock from burned slopes, this risk is anticipated to last through the winter of 2018-2019 and beyond. With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate erosion on the slopes and it is likely that this runoff will cover the roads or cause washouts at drainage facilities (culverts) or stream crossings. These events make for hazardous access to forest roads and put the safety of users at risk.

Suppression repair activities associated with the South Umpqua Complex Fires include on-going danger tree mitigations through main arterial roads in the burned area. It is recommended that collector roads that are interior to the burned area that may not be treated during danger tree mitigations be closed to public access to mitigate the threat to life and safety.

Emergency road closures will be signed to protect human life, safety, and property; these costs are represented in the road warning signs treatments. Road closures should be temporary and roads should be re-evaluated and re-opened when hazards are no longer a threat. Roads recommended to be closed are listed in Tables below.

South Umpqua Complex: Umpqua National Forest			
Road	Beginning Location	Ending Location	Length (miles)
1610-546	1610-540	Terminus	0.98

1610-547	1610-500	Terminus	2.70
1610-549	1610-547	Terminus	0.25
Total Miles of Temporary Closure			3.93

South Umpqua Complex: Rogue River-Siskiyou National Forest			
Road	Beginning Location	Ending Location	Length (miles)
1610-900	1610-000	Terminus	2.20
1610-955	1610-900	Terminus	0.09
1610-980	1610-900	Terminus	1.95
1610-920	1610-900	Terminus	1.59
1610-958	1610-900	Terminus	0.21
6610-800	6610-000	Terminus	2.22
6610-870	6610-800	Terminus	0.62
6620-410	6620-400	Terminus	0.61
6620-400	6620-400	Terminus	3.40
6620-420	6620-400	Terminus	0.25
6620-435	6620-400	Terminus	0.19
6620-470	6620-000	Terminus	1.12
6620-472	6620-470	Terminus	0.46
6620-515	6620-500	Terminus	0.64
6620-517	6620-515	Terminus	0.17
6620-590	6620-000	Terminus	1.10
6640-800	6640-000	2529-800	0.74
6620-500	6620-000	Terminus	2.32
6620-516	6620-515	Terminus	0.20
6620-518	6620-517	Terminus	0.12
Total Miles of Temporary Closure			22.7

I. Monitoring Narrative:

Post-Implementation Monitoring of Cultural Resource Protection – Resource monitoring will need to occur in the spring to ensure that the appropriate treatments have mitigated post-fire effects from exposure to looting. This must be completed by a qualified Heritage professional. Three days of work to monitor the cultural and heritage resources on each National Forest will be conducted during the winter and spring months.

M1 – Umpqua National Forest, Cultural Resource Implementation Monitoring

Monitoring	Units	# of Units	Unit Cost	Total Cost
M1 – Post-Implementation Monitoring (Archaeologist GS-9/4)	Days	3	\$315	\$945

M1 – Rogue River - Siskiyou National Forest, Cultural Resource Implementation Monitoring

Monitoring	Units	# of Units	Unit Cost	Total Cost
M1 – Post-Implementation Monitoring (Archaeologist GS-9/4)	Days	3	\$315	\$945

Part VI –

**Umpqua National Forest
Emergency Stabilization Treatments and Source of Funds**

Initial Request #1

Line Items	Units	Unit Cost	NFS Lands		Other \$
			# of Units	BAER \$	
A. Land Treatments					
L-1 EDRR Suppression	lump su	\$7,180	1	\$7,180	\$0
L-2 EDRR Non-Suppression	lump su	\$21,015	1	\$21,015	\$0
<i>insert new items above this line!</i>				\$0	\$0
<i>Subtotal Land Treatments</i>				\$28,195	\$0
B. Channel Treatments					
None Proposed				\$0	\$0
<i>insert new items above this line!</i>				\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0
C. Road and Trails					
R-1 Storm Proofing	miles	\$5,802	3.76	\$21,831	\$0
R-2 Storm Inspection and Re	lump su	\$9,356	1	\$9,356	\$0
R-3 Armored Dips	each	\$3,091	2	\$6,182	\$0
R-4 Culvert Upsizing	each	\$12,562	1	\$12,562	\$0
<i>insert new items above this line!</i>					
<i>Subtotal Road & Trails</i>				\$49,931	\$0
					\$0
D. Protection/Safety				\$0	\$0
P-1 Road Warning Signs	each	\$327	8	\$2,556	\$0
P-2 Recreation Warning Sign	each	\$78	13	\$1,014	\$0
P-3 Hazard Tree Mitigation	lump su	\$2,309	1	\$2,309	\$0
P-4 Cultural Resource Protec	lump su	\$4,092	1	\$4,092	\$0
P-5 Temporary Closures	lump su	\$0	1	\$0	
<i>insert new items above this line!</i>					
<i>Subtotal Protection and Safety</i>				\$9,971	\$0
E. BAER Evaluation		\$22,500	1	—	\$22,500
					\$22,500
<i>insert new items above this line!</i>					
<i>Subtotal Evaluation</i>				\$0	\$0
F. Monitoring				\$0	\$0
M-1 Cultural Resource Pro	days	\$315	3	\$945	\$0
<i>insert new items above this line!</i>					
<i>Subtotal Monitoring</i>				\$89,042	
G. Totals				\$89,042	\$22,500
Previously approved				\$0	
Total for this request				\$89,042	

PART VII - APPROVALS

1.

amBans
Forest Supervisor (signature)

7/20/18
Date

2.

Regional Forester (signature)

Date

Rogue River – Siskiyou National Forest
Emergency Stabilization Treatments and Source of Funds

Initial Request # 1

Line Items	Units	Unit Cost	NFS Lands		Other \$
			# of Units	BAER \$	
A. Land Treatments					
L-1 EDRR Suppression	lump sum	\$5,090	1	\$5,090	\$0
L-2 EDRR Non-Suppression	lump sum	\$21,180	1	\$21,180	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Land Treatments</i>				\$26,270	\$0
B. Channel Treatments					
None proposed				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Channel Treat</i>				\$0	\$0
C. Road and Trails					
R-1 Storm Proofing	miles	\$6,393	7.72	\$49,354	\$0
R-2 Storm Inspection and Resp	lump sum	\$18,711	1	\$18,711	\$0
R-5 Culvert Modification and Ov	lump sum	\$39,050	1	\$39,050	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Road & Trails</i>				\$107,115	\$0
D. Protection/Safety					
P-1 Road Warning Signs	each	\$327	14	\$4,578	\$0
P-4 Cultural Resource Protectio	lump sum	\$4,092	1	\$4,092	\$0
P-5 Temporary Road Closures	lump sum	\$0	1	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Structures</i>				\$8,670	\$0
E. BAER Evaluation		22,500	1		\$22,500
<i>Insert new items above this line!</i>				---	\$0
<i>Subtotal Evaluation</i>				---	\$0
F. Monitoring					
M-1 Cultural Resource Monito	days	\$315	3	\$945	\$0
<i>Insert new items above this line!</i>				\$0	\$0
<i>Subtotal Monitoring</i>				\$945	\$0
G. Totals				\$143,000	\$0
Previously approved					
Total for this request				\$143,000	

PART VII - APPROVALS

1. _____
Forest Supervisor (signature)

Date

2. 
Regional Forester (signature)

10/1/2018

Date