

Date of Report:10/20/2021**BURNED-AREA REPORT****PART I - TYPE OF REQUEST****A. Type of Report**

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

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☐ 2. Interim Request # _____
 - ☐ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION**A. Fire Name: Jack Fire****B. Fire Number: OR-UPF-000265****C. State: OR****D. County: Douglas****E. Region: 06****F. Forest: Umpqua National Forest****G. District: North Umpqua****H. Fire Incident Job Code: P6N40W - 0615****I. Date Fire Started: 7/05/2021****J. Date Fire Contained: 10/31/2021 (estimated)****K. Suppression Cost: \$44,334,150 (as of 10/5/2021)****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

- 1. Fireline repaired (miles):** Across all ownerships, as of 10/05/2021, 6.4 miles of fireline repair completed out of a total of 25.4 miles. 5.4 miles of dozer line repair completed of 17.6 total miles and 1 mile of hand line repair completed of 7.8 total miles. 0.5 miles of fireline are showing as 'no repair needed'.
- 2. Other (identify):** As of 10/05/2021, 0 repair points (dozer push, drop point) out of 53 are completed. 1 location is shown as 'no repair needed'. No culverts are currently listed as in need of repair.

M. Watershed Numbers:*Table 1: Acres Burned by Watershed*

Watershed	Subwatershed	HUC 12	Sub-watershed Acres	Acres Burned	% Burned
Little River	Headwaters Little River	171003011001	22,344	24	0.1%
Middle North Umpqua	Apple Creek-North Umpqua River	171003010806	11,727	6,379	54.4%
	Boulder Creek	171003010801	19,517	18	0.09%
	Calf Creek	171003010804	12,589	7,463	59.3%
	Copeland Creek	171003010802	22,996	22	0.1%
	Deception Creek-North Umpqua River	171003010803	15,101	2,443	16.2%
	Panther Creek	171003010805	12,172	7,820	64.3%
Steamboat Creek	Lower Steamboat Creek	171003010706	16,557	210	1.3%

N. Total Acres Burned:*Table 2: Total Acres Burned by Ownership*

OWNERSHIP	ACRES
NFS	24207.9
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	
PRIVATE	136.34
TOTAL	24344.24

- O. Vegetation Types:** The Jack fire has impacted multiple vegetation communities on Forest Service land. To the south of the Umpqua River, a primarily Western hemlock, Douglas fir, Sugar pine and Incense cedar forest dominates the slopes, with understories of Golden chinquapin, Pacific rhododendron, snowbrush and manzanita. Primary ground cover species include Vanilla leaf and Dwarf Oregon grape. Atop the ridge along the southern edge, where Jack Fire met the Rough Patch Fire, there are also White fir and Red fir mixed into the canopy. Within the scar of the 2002 Apple Creek Fire, regeneration of 4-8' tall thick stands of hardwood dominant postfire habitat included madrone, Big-leaf maple, bitter cherry, manzanitas, Oceanspray and Poison oak. To the north of the river abutting the Limpy Rock area, the forest type is dominated by Douglas fir, Madrone, Big-leaf maple, Oceanspray and Deerbrush with ground cover of Iris, Whipple vine and a variety of understory grasses. This forest type is interspersed by dry rocky meadows with populations of Oregon white oak and Poison oak. Down in the much moister creek draws at highway level, Douglas fir, Big-leaf Maple and Grand fir cover populations of Pacific dogwood, Salal, Vine maple and Sword fern. These ecosystems also host rare and sensitive plant, lichen, and fungus species.
- P. Dominant Soils:** Dominant soils originate from residuum and colluvium with components of Mazama volcanic materials and a minor components of volcanic ash deposits. Soils are largely gravelly and cobbly loams with varying amounts of rock content, generally increasing in depth. Soils tend to be shallow to moderately deep with depth to bedrock less than 3 feet up to 8 feet. Dominant soils generally originate from andesites to basalts as well as areas of weathered breccias and tuffs. The majority of soils have a low to moderate erosion hazard rating.
- Q. Geologic Types:** The fire is within the Western Cascade Range that consists of deep narrow valleys and rugged topography. The rock formations have been extensively modified by stream erosion and slope

instability. Geology consists largely consists of basaltic and andesite lava flows, breccia, tuff, and mudflow deposits.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	TOTAL MILES	HIGH	MODERATE	LOW	UNBURNED	OUTSIDE FIRE
PERENNIAL	81.73	0.39	30.45	50.49	39.06	2.75
INTERMITTENT	123.14	0.00	15.38	37.54	26.81	2.00
EPHEMERAL						
OTHER (ARTIFICIAL PATH)	11.53		0.04	3.18	1.15	7.17

S. Transportation System:

Trails: National Forest (miles): 3.78 Other (miles): N/A
Roads: National Forest (miles): 103.05 Other (miles): 3.38

Forest Service Roads by Operational Maintenance Level

1 - BASIC CUSTODIAL CARE (CLOSED): 18.19
 2 - HIGH CLEARANCE VEHICLES: 84.25
 3 - SUITABLE FOR PASSENGER CARS: 0.34
 4 - MODERATE DEGREE OF USER COMFORT: 0.03
 OTHER ROAD 0.25

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

B. Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	7608.17			38.28	7646.44	31.41%
Low	10701.60			96.08	10797.68	44.35%
Moderate	5802.28			1.99	5804.27	23.84%
High	95.85				95.85	0.39%
Total	24207.90			136.34	24344.24	31.41%

C. Water-Repellent Soil (acres):

Water Repellency	Acres	Percent of fire
None	14,124	58%
Weak	4,808	20%
Moderate	3,605	15%
Strong	1,804	7%

C. Soil Erosion Hazard Rating:

Soil Erosion Rating	Acres	Percent of Fire
Low	11,156	46%
Moderate	5,893	24%
High	89	<1%

D. Erosion Potential:

Soil Erosion Estimates (tons/acre/year)		
Soil Burn Severity	Averages	
	2-year	5-year
	50% probability	20% probability
Low	2.7	5.9
Moderate	4.0	9.2
High	6.3	12.6

E. Sediment Potential: 750-1500 cubic yards/mile

F. Estimated Vegetative Recovery Period (years): 1-2 years

G. Estimated Hydrologic Response (brief description): Anticipated watershed response based on field observations, modeling, and professional experience include: 1) an initial flush of ash, 2) rill and gully erosion in drainages and on steep slopes within the burned area, 3) floods with increased peak flows and sediment deposition. These responses are expected to be greatest in initial storm events, and will become less evident as vegetation is reestablished, providing ground cover, increasing surface roughness, and stabilizing and improving the infiltration capacity of the soils. The estimated vegetative recovery for watersheds affected by the Jack Fire is expected to be approximately 2 to 5 years in most places. Some locations that were burned in the 2002 Apple Fire, spots of high soil burn severity, and sites with poorer antecedent conditions will take longer.

PART V - SUMMARY OF ANALYSIS

Introduction/Background: The Jack Fire located on the Umpqua National Forest started on July 5, 2021 as a human-caused fire. Warm dry weather, fuel types and steep terrain contributed to rapid fire growth. Initial attack efforts included the U.S. Forest Service, Oregon Department of Forestry (ODF) and Douglas Forest Protection Association (DFPA). The fire started on the north side of Highway 138 and eventually jumped the highway as winds shifted to the south. The Jack Fire continued to burn towards the south and reburned the in the 2002 Apple Fire scar.

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

Critical Values identified during the BAER assessment that have potential to be at risk as defined in FSM 2523.1 include human life and safety of employees and public, FS property (roads, trails, administrative, recreation infrastructure), cultural resources, natural resources including Threatened and Endangered species habitat, native plant communities, soil and water resources. The BAER team evaluated the risk to these critical values in accordance with the Interim Directive No. 2520-2019 by using the BAER risk assessment. The Jack Fire Critical Value tables for intermediate, high, and very high risk values is displayed below. The complete Jack Fire Critical Values tables is available upon request.

Table 5: Critical Value Matrix

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High	Very High	Low
Likely	Very High	High	Low
Possible	High	Intermediate	Low
Unlikely	Intermediate	Low	Very Low

Value	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Rationale for Probability	Magnitude of Consequence	Rationale for Magnitude	Risk	Treatment Options Considered	Recommended Treatment
BAER critical value	Life and Safety	Trail #1414 - Calf Segment	Rock fall and debris flow. Safety risk at creek crossings from burned bridges	Very Likely	Moderate burn severity on and above trail leads to increased flow and sediment movement	Major	Potential for injury or death is possible	Very High	Closure of trail. Reroute trail. Replace bridges	S1b. Sign hazards. T3. Close trail through winter. Reopen when bridges have been replaced
BAER critical value	Life and Safety	Horseshoe Bend Raft Launch	Increased debris flow from upriver	Possible	Moderate burn severity exists in river corridor.	Moderate	Debris flow in river creates potential for injury or death.	Intermediate	Install BAER advisory signs. Plan for future debris removal from site.	S1b. BAER advisory sign at raft launch.
BAER critical value	Life and Safety	Segment of North Umpqua River	Increased debris flow and falling trees	Likely	Moderate and high burn severity will increase hazards blocking navigation	Major	Potential for injury or death is possible to river users.	Very High	Install BAER advisory signs. Closure of river segments. Remove or adjust hazards in the river	S12. Plan for adjustment of any debris that obstruct raft navigation. Install BAER advisory signs at raft launches as needed.
BAER critical value	Life and Safety	Fairy Shelter	No threats observed.	Unlikely	Light burn in understory spots but no threats to structure observed.	Major	While it is unlikely, the consequence of a tree falling would be major.	Intermediate	Install BAER advisory signs, but might not be necessary.	S1b. Install BAER advisory signs.
BAER critical value	Life and Safety	Youtlkut Pillars	Hazard trees	Unlikely	Green trees have low failure potential.	Major	Possibility of hazard tree falling on vehicles parked along road.	Intermediate	Install BAER advisory sign along road where people park, but the visitation to this unofficial site might not warrant it.	S1b. Install BAER advisory signs.
BAER critical value	Life and Safety	Roads 4720, 4720-005, 4720-120, 4720-125, 4720-135, 4720-145, 4720-480, 4720-491	Washouts and/or stream diversions due to road/stream crossings plugging or over capacity.	Likely	Pipes likely undersized, and often in some state of disrepair	Major	Moderate property damage to road could result in accidents, injury, and death.	High	Storm inspection and response. Road Closure. Road stabilization. Signage.	S1a. Installation of signs and S12. Temporary public closure
BAER critical value	Natural Resources - T&E habitat	T&E Species; Northern spotted owl activity centers, nest sites and critical habitat.	Impacts from the fire could result in additional mortality to remaining live trees and further reduce NSO suitable habitat and usable Critical Habitat and threaten the viability of owl sites.	Very Likely	Additional loss of habitat and additional mortality is expected during the first year. Probability is high for additional loss of habitat.	Moderate	Long Term Risk of Loss of Additional Habitat: value there is a moderate probability that some suitable habitat will become unsuitable or dispersal-only habitat during the next decade	Very High	No BAER treatments. Natural Recovery	No BAER Treatments. Natural recovery

Value	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Rationale for Probability	Magnitude of Consequence	Rationale for Magnitude	Risk	Treatment Options Considered	Recommended Treatment
BAER critical value	Natural Resources - T&E habitat	T&E Species; Franklin's bumble bee habitat in areas of 50- 100% burn severity.	Loss of suitable habitat by invasive plant invasion in areas with 50-100% basal area loss.	Possible	Suitable habitat is adjacent to known locations of noxious weeds or areas likely to become infested. There are no known current locations of the species.	Moderate	There are no records of Franklin's bumble bee within the fire area or adjacent to it and little is known about the current occupancy of the species on the Forest. However, the magnitude of consequence is high given the impacts of noxious weeds on native plant communities & available suitable habitat for Franklin's bumble bee.	Intermediate	Invasive EDRR (see botany critical values)	None. Franklin's bumble bee with benefit from P1a. Invasive EDRR (see botany critical values)
BAER critical value	Natural Resources - T&E habitat	Critical Habitat for Oregon Coast Coho Salmon	Sediment, peak flow, temperature	Likely	8 miles of coho critical habitat within fire perimeter. Increased sediment and flows as predicted by hydrology and soils analysis. Limpy Creek at highest risk	Moderate	Moderate and high soil burn drainage will result in short term increase in sediment delivery to spawning areas, increased peak flows, and increase stream temperature due to loss of riparian shade.	High	See road and trail treatments. Treatments in the Limpy Creek drainage highest priority	See road and trail treatments
BAER critical value	Natural Resources - Native Plants	Intact native plant communities	Invasive plant colonization of areas with 50-100% basal area loss	Very Likely	Infestations of listed noxious weeds are present throughout the Jack Complex. These species rapidly colonize in bare soil and high-light conditions. Intact native plant communities are now threatened with alteration and type conversion from introduced noxious weeds.	Moderate	Noxious weeds severely reduce plant diversity and habitat for other species, especially in unique habitats with rare or endemic plants. Native plant communities and ecosystem functions are very difficult to restore once noxious weeds are established	Very High	P1a. Invasives EDRR	P1a. Invasives EDRR
Other FS value	Natural Resources - Native Plants	Suppression Repair- Prevention of noxious weeds in intact plant communities	Invasive plant colonization of areas disturbed by suppression	Very Likely	Clearing fire lines and staging, camp, and safety areas removed canopy and exposed mineral soil adjacent to known populations of noxious weeds, creating ideal conditions for new populations to establish.	Moderate	Native plant communities and ecosystem functions are very difficult to restore once noxious weeds are established.	Very High	P1b. Invasives EDRR - Suppression	P1b. Invasives EDRR - Suppression
BAER critical value	Property – Roads	Road 4720 Panther Creek Crossing	Increased flow causing road prism and drainage structure failures	Likely	Bottomless Arch Culvert has high capacity to pass flow and debris however some failure of structure is present	Major	Structure could fail	Very High	Storm Inspection and Response	R3. Storm Inspection and Response
BAER critical value	Property - Roads	Road 005 Bachelor Creek Crossing	Increased flow causing road prism and drainage structure failures	Unlikely	Culvert has high capacity to pass flow, however debris could collect	Moderate	If culvert plugs, it could fail	high	Storm Inspection and Response	R3. Storm Inspection and Response
BAER critical value	Property - Roads	Roads 4720, 4720-005, 4720-120, 4720-125, 4720-135, 4720-145, 4720-480, 4720-491	Washouts and/or stream diversions due to road/stream crossings and road drainage plugging or over capacity. Debris flows initiated by road drainage issues.	Likely	Pipes likely undersized, and often in some state of disrepair	Major	Moderate property damage to roads. Stream diversions have potential to cause larger landslides and potential to deliver sediment to CHU streams	High	Storm inspection and response. Road stabilization. Signage.	R1. Stormproofing, ie. clean inlets, install additional waterbars or drainage dips in roadway

Value	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Rationale for Probability	Magnitude of Consequence	Rationale for Magnitude	Risk	Treatment Options Considered	Recommended Treatment
BAER critical value	Property - Roads	Roads 4714, 4720, & 4720005	Erosion from existing culverts, lack of needed drainage	Very Likely	Erosion already occurring and expected to worsen after fire.	Moderate	Likely to result in damage to road embankment.	Very High	Storm inspection and response. Culvert Modification.	R6. Place riprap splash aprons at problem culverts
BAER critical value	Property - Roads	Roads 4720 & 4720-005	Melted plastic culverts	Very Likely	Road integrity is compromised due to observed voids. Increase post-fire flows will results in road failure	Moderate	The road structure is compromised due to the melted culverts and will collapse and damage the road. Damage will create drainage issues and deliver sediment to CHU streams due to close proximity.	Very High	Installation of new metal culverts. Road closure. Signage.	R2b. Replace these culverts with corrugated metal pipes of the same diameter of the melted pipes.
BAER critical value	Property - Roads	Roads 4720- 005, 4713, stream crossings	Increased runoff and debris flows	Possible	Culverts at these crossings are functioning properly, so a very severe water event would need to occur to cause damage.	Major	If overflow of these stream crossings did occur, damage could be severe and costly to repair. Delivery of sediment to CHU streams	High	Storm inspection and response. Installation or maintenance of existing dips. Culvert upsizing or Modification.	R5. Improve/install critical dips at these stream crossings.
Property - Roads	Property - Roads	Limp Creek Bridge (4720-000 MP 1.97)	Rock and trees falling	Likely	Increased post fire runoff and debris flows and fire damaged trees have increased mortality and likelihood to fall and damage bridges	Major	Substantial property damage	Very High	Fell trees that have the possibility of striking the bridges	S3. Fell hazard trees that have the possibility of striking and damaging bridges.
Property - Roads	Property - Roads	Roads 4720, 4720-005, 4713, 4713- 100	Increased runoff and debris flows	Likely	Increased post fire runoff and debris flows have increased likelihood to damage roads	Moderate	Substantial property damage	High	Storm inspection and response	R3. Storm inspection and response
BAER critical value	Property - Trails	Trail #1414 - Calf Segment	Erosion, Unstable slopes, Rock slides, Tread degradation. Increased flow/drainage from weather events.	Very Likely	Moderate burn severity on and above trail leads to increased flow and sediment movement	Moderate	Reroute is not financially viable if trail is lost. National Rec Trail	Very High	Close trail section through with winter. Stormproof.	T1. Trail drainage stabilization
BAER critical value	Cultural Resources	Precontact site	Use of camera for monitoring critical site values - Looting	Very Likely	Rock shelters are known for looting. Proximity to Highway 138. Artifacts are more visible because of the fire burning vegetation and duff.	Major	non-renewable resource. Eligible or potentially eligible to the NRHP with intact integrity	Very High	Game camera deployment and monthly visitation	H1. Game camera deployment and monthly visitation to check the camera for effectiveness
BAER critical value	Cultural Resources	Precontact site	Looting or collecting	Possible	The lithic scatter site is located near an area that would make an ideal dispersed camp. Artifacts are more visible because of the fire burning vegetation and duff.	Major	non-renewable resource. Eligible or potentially eligible to the NRHP with intact integrity	High	Bi-monthly visitation Game camera deployment and monthly visitation	H1. Game camera deployment and monthly visitation to check the camera for effectiveness
BAER critical value	Cultural Resources	Precontact site	Looting or collecting	Possible	Fire burned around this rock shelter making the area more visible to hikers using the trail.	Major	Popular hiking trail and increased visibility	High	High elevation. Visit when possible. Fell fire killed trees parallel to the rock shelter	H1. Fell hazard trees away from the rock shelter, monthly check for effectiveness.

B. Emergency Treatment Objectives:

The primary objective of this Burned Area Emergency Response Report is to recommend treatments to manage identified unacceptable risks from “imminent post-wildfire threats to human life and safety, property, and critical natural resources on National Forest System lands” (FSM 2523.02). These treatments are expected to substantially reduce the probability of damage to identified BAER critical values. Below, the objectives are the proposed treatments are included.

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

Land: 90

Channel: N/A

Roads/Trails: 75

Protection/Safety: 75

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	80	80	90
Channel	N/A	N/A	N/A
Roads/Trails	80	80	90
Protection/Safety	80	80	90

E. Cost of No-Action (Including Loss): \$442,715

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 **\$313,433**.

IMPLIED MINIMUM VALUE
Estim. cost of treatments: \$ 188,060
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 $\$188,060/(0.8-0.2) = \$313,433$

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 **\$102,222**.

IMPLIED MINIMUM VALUE
Estim. cost of treatments: \$61,333
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 $\$61,333/(0.8-0.2) = \$102,222$

F. Cost of Selected Alternative (Including Loss): \$272,493

G. Skills Represented on Burned-Area Survey Team:

- ☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☒ Archaeology
☒ Weeds ☒ Recreation ☐ Fisheries ☐ Wildlife
☐ Other:

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Team Members: Table 7: BAER Team Members by Skill

Skill	Team Member Name
<i>Team Lead(s)</i>	Joe Blanchard
<i>Soils</i>	Sarah Brame, Ut Huynh (t)
<i>Hydrology</i>	Dan Dammann
<i>Engineering</i>	Steve Hanussak, Dylan Hokanson (t), Richard Childs (t)
<i>GIS</i>	Kim Viera-Rainville, Mat Vandermolen
<i>Archaeology</i>	Chris Kelly, America Freeman (t)
<i>Weeds</i>	Crystal Shepard, Devin McMahan (t)
<i>Recreation</i>	Skyler Ogden, Jennifer Taylor (t), Lauren Hack (t), Lindsey Mann (t)
<i>Wildlife</i>	Sheila Colyer

H. Treatment Narrative:

Land Treatments:

- P1a. Burned area Early Detection Rapid Response (EDRR):** It is critical to perform EDRR actions for invasive plants in the spring and fall of 2022 to prevent invasive plant establishment. Treatment is most effective when infestations are small and before new invaders produce seed. BAER EDRR treatment is prescribed for approximately 479 acres on the Jack Fire. BAER EDRR would be used to survey, treat, and monitor invasive plants (noxious weeds) in moderate and high severity burn areas adjacent to roads and trails, within at-risk unique habitats, and in buffered areas outside the perimeters of pre-

existing invasive populations. This work should be at the discretion of the local botanists or invasive coordinator using their local knowledge of these invasive plant populations.

2. **P1b. Suppression Impacts to BAER:** Approximately 50 acres of dozer line, push-outs, and staging areas were cleared to bare mineral soil during suppression activities on the Jack Fire. EDRR is recommended in fall of 2021 and spring of 2022, if possible, to treat invasive plant populations vectored by suppression activities and dispersing onto disturbed ground.

<i>BAER EDRR—restricted to areas with > 50% basal area mortality</i>			
Area of risk	Buffer (ft)	Acres	Notes
Unique habitats ^a	0	175	Excludes rock outcrops and talus
Invasive plant population perimeter ^b	400	301	Buffer represents seed dispersal distance; this may be longer for seeds dispersed by wind or vehicles
Road as line or improved road ^c	20	2.5	Burned areas most vulnerable to seed carried by suppression traffic
Subtotal		479	
<i>Suppression EDRR</i>			
Disturbance Form	Buffer (ft)	Acres	Notes
Push-outs, staging areas, camps, and helispots ^c	0	12.3	Areas with soil disturbed and weeds vectored by equipment
Dozer lines ^c	0	37.9	Average dozer line width 20 ft, based on field observations
Subtotal		50.2	
Total		529	

Rehabilitation Item	Unit*	Cost	Description of costs
<i>BAER EDRR 479 ac x 2 treatments</i>	\$47.97/acre	\$45,960	Spring 2022 and Fall 2022: EDRR surveys and treatment in vulnerable areas (unique habitats and areas adjacent to highest probability weed populations) where fire caused >50% basal area mortality
<i>Suppression EDRR 50.2 ac x 2 treatments</i>	\$62.45/acre	\$6,270	Fall 2021 and Spring 2022: EDRR surveys and treatment on ground disturbed by suppression
Total Cost of Treatment:		\$52,230	Complete all recommended BAER and Suppression EDRR activities associated with the Jack Fire

3. H1. Heritage Treatments

Treatment actions are being recommended to three of the six sites. These treatment actions include directional felling of trees for erosion and limiting visibility, camera surveillance, and monitoring of the cameras until vegetation is reestablished. Four additional sites were not visited during the initial BAER assessments and are recommended for interim BAER assessments to determine if any treatments are needed.

***Sites with Treatments =** 3 precontact sites- Camera surveillance, effectiveness monitoring, directional felling to limit visibility *Cameras and directional felling costs covered by other programs

Personnel costs for monitoring site camera BAER treatments:

Heritage item	Unit	Cost	Description of costs
Overtime for GS-12 Heritage Program Manager-5 days	\$336.64/day	\$ 1683	Project oversight, consultation with SHPO and tribes
GS-5 Heritage Techs-50 days	\$135.20/day	\$6,760	Deploy cameras, analyze data, effectiveness monitoring
Total Cost of Treatment:		\$8,443	

Channel Treatments: None

Roads and Trail Treatments:

1. T1. Trail Storm Proofing- Calf section of the North Umpqua Trail

Storm proofing of trails is needed along specific sections of trails in preparation of increased winter run-off and debris flow. Drainage features will be cleaned and additional drainage features will be installed in order to protect the trail infrastructure from further damage. This work will be focused on segments of trail impacted by moderate and high soil burn severity and where the trail prism is still intact.

Storm Proofing of Trails to Protect the Trail Infrastructure – Seasonal 4 person FS crew for 10 days					
Facility/Trail Name	Trail Number	Approx. Burned Length in Miles	Work Needed	Cost/mile	Cost
North Umpqua Trail (Calf Segment)	1448	3.46	Storm Proofing	\$8,381.5	\$ 29,000
TOTAL COST –					\$29,000

2. R1. Road Stormproofing:

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.

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

1. **R1 – Storm Proofing:** Clean culverts, drain ditches, and catchment basins of sediment.

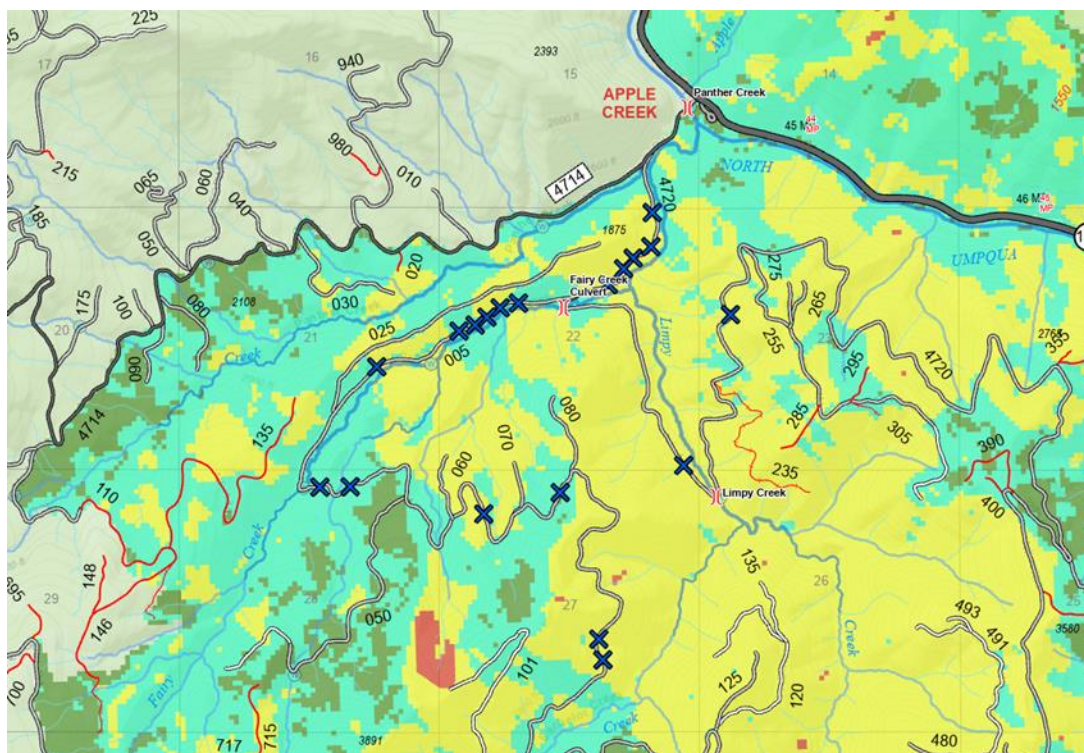
Road #	Surface_Type	BMP	EMP	Total Miles
4720120	NAT - NATIVE MATERIAL	0	0.53	0.53
4720120	IMP - IMPROVED NATIVE MATERIAL	0.53	0.82	0.29
4720125	AGG - CRUSHED AGGREGATE OR GRAVEL	0	0.34	0.34
4720480	AGG - CRUSHED AGGREGATE OR GRAVEL	0	0.59	0.59
4720491	NAT - NATIVE MATERIAL	0	0.83	0.83
4720000	AGG - CRUSHED AGGREGATE OR GRAVEL	0	9.11	9.11
4720135	IMP - IMPROVED NATIVE MATERIAL	0	0.48	0.48
4720005	AGG - CRUSHED AGGREGATE OR GRAVEL	0	8.38	8.38
4720145	AGG - CRUSHED AGGREGATE OR GRAVEL	0	1.23	1.23
4713100	AGG - CRUSHED AGGREGATE OR GRAVEL	1.77	2.77	1
		Total Miles		22.78

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

Ditch and Culvert Cleanout			
Total Length of Road	22.78 mi		
BPA	\$1,641.79 /mi		
Overtime for Admin 4 days*\$300/day	\$1,200		
		Total	\$37,400.00

3. R2b. Culvert Replacement:

The road structure is compromised due to the melted culverts and will collapse and damage the road. High and moderate soil burn severity will result in increased flows and without functioning drainage, these roads are likely to fail. Due to the close proximity of the melted culverts to coho critical habitat and the high likelihood that road failure will occur if emergency stabilization actions aren't taken, it is recommended that immediate actions are taken to reduce risk at these sites. Additionally, roads need to stay open for storm inspection and response through this part of the fire to prevent road failures through the Limpy Creek drainage area. See the map below of treatment locations and a photo of



Melted culvert locations

Replace culvert on roads in table below.

Road #	MP	Diameter	Culvert Length
4720000	0.25	18"	50
4720000	0.39	18"	60
4720000	0.48	24"	40
4720000	0.63	18"	40
4720000	0.53	18"	50
4720000	1.79	24"	35
4720000	2.97	24"	40
4720-005	0.24	18"	36
4720-005	0.32	18"	40
4720-005	0.39	18"	46
4720-005	0.45	18"	50
4720-005	0.52	18"	50
4720-005	3.38	18"	40
4720-005	2.84	18"	50
4720-005	4.61	18"	35
4720-005	0.89	18"	30
4720-005	1.57	18"	44
4720-005	1.73	18"	48
4720-005	4.52	18"	46

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Replacement of 16 culverts 18" CMP: Road 4720 and 4720-005	\$51,200
Replacement of 3 culverts 24" CMP: Road 4720	\$15,600
TOTAL PERSONNEL SERVICE COST	\$ 66,200
Overtime for GS9 (\$350 per day used for monitoring 6-days)	\$ 2,100

Overhead and Contract Costs	COST/ITEM
Overtime for Contract preparation (4 days)	\$ 1,400
TOTAL OVERHEAD AND CONTRACT PREP COST	\$ 4,400

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
USFS, UMPQUA NATIONAL FOREST	1	\$70,300
TOTALS	1	\$70,300

4. S3. Hazard tree falling for bridge protection:

Fell hazard trees that could cause damage to property or injury road crews in road treatment areas. Hazard tree felling is only proposed in areas of other road treatments.

Road #	BMP	EMP	Total Miles	Location
472000 0	1.91	2.01	0.11	Limpy Bridge

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Item 1 – Tree faller team with equipment, all transportation and supplies @6,000/mile X 1 days	\$660.00
TOTAL PERSONNEL SERVICE COST	\$660.00

Overhead and Contract Costs	COST/ITEM
Overtime for Contract preparation	\$650.00

	\$650.00
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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
USFS, UMPQUA NATIONAL FOREST	1	\$1310.00
TOTALS	1	\$1310.00

5. R5. Armored Dips:

The roads listed below were found to have issues with their drainage system due to the expected increase in flows. The minimal treatments required to remedy these issues are:
 Armored Dip – Roadway dips modify the road drainage by altering the template and allowing surface flows to run off the road to prevent any excessive erosion of the surface. The armor consisting of rip rap is placed where runoff could possibly cause erosion to the road surface and fill-slope.

Describe Specific Treatment Location or General Description of Suitable Sites for Treatment		
Install Armored Dip: Culverts within the burned area were found to have current pipes undersized for post-fire short-term increased storm runoff, and are now at risk for flash flooding, mud/debris flows, and loss of water control. Drain dips should be installed on the road listed in the table below.		
Road #	MP	
4713-000	1.53	
4713-000	1.61	
4713-000	1.73	
4713-000	1.92	
4713-000	2.43	
4720-005	2.38	
4720-005	6.21	
4720-005	6.80	

LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	
Install Dip: material and install \$5,000 x 8	\$40,000
TOTAL PERSONNEL SERVICE COST	\$40,000

Overhead and Contract Costs and Travel Cost	COST/ITEM

JURISDICTION	UNITS TREATED	COST
USFS, UMPQUA NATIONAL FOREST	8	\$40,000

TOTALS	8	\$40,000
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6. R3. Storm Patrol and Response:

Roads within the Jack Fire contain drainage structures that cross streams located in watersheds that have a high to moderate burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows pose a threat to the existing crossings which may result in plugging drainage structures or exceeding their maximum flow capacity. If these flows plug drainage structures the result could be massive erosion and debris torrents further down the drainage due to the failure. Storm inspection/response keeps culvert and drainage structures functional by cleaning sediment and debris from the inlet between or during storms. This work will be accomplished through Forest Service Road Crew, equipment rental, and general labor.

R-3 Per the BAER Treatments Catalog, storm patrols are intended for use at the following locations:

Road #	BM P	EMP	SEG_Length	OPER_MAINT	SURFACE_TY
4713	0	5.43	5.43	2 - HIGH CLEARANCE VEHICLES	AGG - CRUSHED AGGREGATE
4713100	0	2.8	2.8	2 - HIGH CLEARANCE VEHICLES	AGG - CRUSHED AGGREGATE
4720-005	0	8.38	8.38	2 - HIGH CLEARANCE VEHICLES	AGG - CRUSHED AGGREGATE
4720	0	9.11	9.11	2 - HIGH CLEARANCE VEHICLES	AGG - CRUSHED AGGREGATE

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Storm Patrol, 3 days x \$3,000/day	\$9,000
TOTAL PERSONNEL SERVICE COST	\$9,000

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item	COST/ITEM
Overtime for Contract preparation, inspection 3days @ \$350	\$1,050
TOTAL PROJECT COST	\$10,050

Protection/Safety Treatments:

1. S1b. Warning Signs for Trails and T3. Temporary closure

- Temporary closure and hazard tree mitigation will be needed on the North Umpqua Trail to protect human life and safety and trail integrity.
- Signs warning the public of hazards should be applied at all entry points to the trail (2 trailheads).

2. S12. River Hazard Tree Relocation:

Monitoring and removal of fallen trees that block safe passage for boating on the North Umpqua River. Repositioning of those trees deemed to be unsafe will allow for safe passage while minimizing disturbance of associated aquatic habitat. All trees selected for

repositioning shall be moved such that, in their relocated position, they are less likely to move downstream than prior to repositioning.

Signs to notify and warn the public of the hazards				
Facility/Trail Name	Trail Number	Number of signs	Cost per sign including post, sign, hardware	Total
North Umpqua Trail (Calf Segment)	1414	2- at trailheads	\$180	\$360
Total				\$360

Relocation of hazard trees within North Umpqua River			
Facility/Trail Name	Work Needed	Specifics	Cost
North Umpqua River Hazard Tree Relocation	Relocate hazard trees from river navigation routes for safety of on river users. Trees will be moved to the side of the channel, bank, or a stable location in the riparian area.	Relocation of approximately 8-12 trees is expected	\$16,000
Recreation seasonal River survey	Scout river for hazards	5 days x 2 rec specialists	\$2,000
TOTAL COST			\$18,000

3. S1a. Road Warning Signs and S12. Temporary Public Closure:

Inform users of the dangers associated with entering/recreating within a burned area as well as inform them of objects and closures to help ensure that users are able to access the correct routes in a safe manner.

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	
Laborer	
4X4X 12' Posts and Hardware for BURNED AREA Warning Signs, 11 @ \$50/Each	\$550
Warning signs stating "Entering Burn Area Fallen Rock and Debris" x 11 @ \$400 Each	\$4400.00
TOTAL PERSONNEL SERVICE COST	\$4950.00

Overhead and Contract Costs and Travel Cost	COST/ITEM
Overtime for Contract preparation, inspection	\$450
TOTAL PROJECT COST	\$5400.00

I. Monitoring Narrative: None requested

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	NFS Lands		Other	Other Lands				All
			# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	Total \$
A. Land Treatments										
P1a. Invasives EDRR	Acres	48	958	\$45,960	\$0		\$0		\$0	\$45,960
P1b. Invasives EDRR- Supr	Acres	62	100.4	\$6,270	\$0		\$0		\$0	\$6,270
H1. Heritage Treatments	Each	8,443	1	\$8,443	\$0					\$8,443
<i>Subtotal Land Treatments</i>				\$60,673	\$0		\$0		\$0	\$60,673
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
T1. Trail Drainage Stabilizat	Miles	8,382	3	\$29,000	\$0		\$0		\$0	\$29,000
R1. Road Stormproofing	Miles	1,642	23	\$37,400	\$0		\$0		\$0	\$37,400
R2b. Culvert Replacement	Each	3,700	19	\$70,300						\$70,300
R14. Bridge Protection	Each	1,310	1	\$1,310						\$1,310
R5. Armored Dips	Each	5,000	8	\$40,000						\$40,000
R3. Storm Patrol and Respo	Miles	391	26	\$10,050						\$10,050
<i>Subtotal Road and Trails</i>				\$188,060	\$0		\$0		\$0	\$188,060
D. Protection/Safety										
S1b. Trail Hazard Signs	Each	180	2	\$360	\$0		\$0		\$0	\$360
S12. River Hazard Tree Rel	Each	18,000	1	\$18,000	\$0		\$0		\$0	\$18,000
S1a. Road Hazard Signs	Each	491	11	\$5,400						\$5,400
<i>Subtotal Protection/Safety</i>				\$23,760	\$0		\$0		\$0	\$23,760
E. BAER Evaluation										
Initial Assessment	Report			\$75,000	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$75,000	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
G. Totals				\$272,493	\$0		\$0		\$0	\$272,493
Previously approved										
Total for this request				\$272,493						

PART VII - APPROVALS

1. _____
 Forest Supervisor Date