USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report: September 22, 2018

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

[X] 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: Watson Creek

B. Fire Number: OR-FWF-360

C. State: Oregon

D. County: Lake

E. Region: R6

F. Forest: Fremont Winema NF

G. District: Paisley

H. Fire Incident Job Code: P6L3GJ18

I. Date Fire Started: August 15, 2018

J. Date Fire Contained: 95% as of 9/22/18

K. Suppression Cost: as of Sept 12, 2018: $19,186,249

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): dozer line – 46 miles, hand line – 3 miles
2. Fireline seeded (miles): zero
3. Other (identify): 2 safety zones, 19 drop points, 5 parking/staging areas, 7 helispots

M. Watershed Number:

HUC12	Name
180102020101	Paradise Creek
180102020103	Headwaters Sycan River
180102020501	Upper North Fork Sprague River
171200051405	Wooley Creek-Frontal Summer Lake
171200060201	Coffeepot Creek
171200060202	Bear Creek
171200060203	Mill Creek-Chewaucan River
171200060103	Elder Creek

N. Total Acres Burned: 62,155 acres
NFS Acres(48,413) Other Federal ( ) State ( ) Private (13,742)

O. Vegetation Types:

The Watson Creek Fire area primarily contains stands of dominated by lodgepole pine. However, mixed conifer stands are also well represented and generally contain higher proportions of other conifer species besides lodgepole as compared to lodgepole pine stands. Within the fire perimeter, mixed conifer stands are primarily comprised of lodgepole and white fir, lodgepole, ponderosa pine and sugar pine, or lodgepole and ponderosa pine. Dry ponderosa pine stands dominated by ponderosa pine and xeric pine stands comprised of ponderosa pine and juniper are also present, though less prevalent. Stands consisting of lodgepole and whitebark pine are scattered throughout the fire area. Juniper scablands and woodlands are also present in the driest areas of the burn area.

P. Dominant Soils:

Soils range from fine sandy loams to coarse textured sandy to ashy soils with varying amounts of rock content, generally increasing with depth. The soils are derived from residuum and colluvium from extrusive volcanics, such as basalt, rhyolite, various pyroclastic material, and air laid pumice. Surface soils are shallow to moderately deep (with deeper inclusions) and generally have a xeric (arid) soil moisture regime and a mesic (moist) to cryic (very cold) soil temperature regime. Most soils are well to excessively drained. Runoff potential based is primarily low to moderate with most soils falling into a low and high erosion potential.

Q. Geologic Types:

A major fault block created the steep and often unstable escarpment associated with Winter Rim that characterizes the northern boundary of the fire. Below the uplifted plateau, convex bowls remain where massive old landslides have moved pyroclastic bedrock material.

The eastern to south-eastern portion of the fire contains a highly variable and more dissected landscape dominated by dome shaped eruptive centers (i.e. McComb Butte), fractured rhyolites, and weathered pyroclastic and sedimentary rocks that include tuffs, breccias, and mudflows.

In contrast, the western half of the fire is largely covered by Mazama ash and pumice deposits of variable thickness over old buried residual soils derived from underlying basalt, tuff, or rhyolite. These gently rolling plateaus are extensive, not highly dissected, and give rise to a very unique vegetative zone.

R. Miles of Stream Channels by Order or Class:

Streams	Miles
Perennial	67.5
Intermittent	50.5
Ephemeral	46.2
Total	**164.2**

S. Transportation System

Trails: 89 miles Roads: 189 miles

Maintenance Level	Miles
1 - BASIC CUSTODIAL CARE (CLOSED)	79.03
2 - HIGH CLEARANCE VEHICLES	73.67
3 - SUITABLE FOR PASSENGER CARS	20.76
4 - MODERATE DEGREE OF USER COMFORT	15.51
Grand Total	188.97

PART III - WATERSHED CONDITION

A. Burn Severity (acres):
Total: 13,092 (unburned) 20,764 (low) 23,446 (moderate) 4,852 (high)
NFS Land: 10,256 (unburned) 16,119 (low) 18,629 (moderate) 3,408 (high)

B. Water-Repellent Soil (FS acres only): 13,261 total 10,153 NFS
Water repellent soils developed on approximately 21% of the fire area. Of that amount approximately 7% occur in areas of steeper slopes. Some of the ash derived soils present within the fire perimeter have a natural level of water repellency when dry.

C. Soil Erosion Hazard Rating (FS acres only):
9,565 (low) 13,252 (moderate) 27,620 (high)
Erosion Hazards listed in the Fremont SRI for the soil types within the fire perimeter are low for approximately 19% of the area, moderate for approximately 26% of the area and high for approximately 55% of the area.

D. Erosion Potential: 1.45 tons/acre (soils on gently sloping terrain slopes less than 30%) and up to 10.3 tons/acre (soils on steeper slopes greater than 40%).

E. Sediment Potential: 1,160 cubic yards per square mile of potential sediment contribution from gently sloping terrain and 8,240 cubic yards per square mile of potential sediment contribution on steeper slopes.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5-10 years

B. Design Chance of Success, (percent): 80%

C. Equivalent Design Recurrence Interval, (years): 2-10 years

D. Design Storm Duration, (hours): 2.3 to 3.5 hours

E. Design Storm Magnitude, (inches): 0.9 – 1.4 inches

F. Design Flow, (cubic feet / second/ square mile): 13 cfs/mi^2

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

H. Adjusted Design Flow, (cfs per square mile): 28 cfs/mi^2

Hydrologic Response: The primary watershed responses of the Watson Creek Fire are expected to include: 1) an initial flush of ash, 2) rill and gully erosion in drainages and on steep slopes within the burned area, 3) potential flash floods and spring snowmelt events with increased peak flows and sediment deposition. These responses are expected to be most evident during initial storm events immediately after the fire. Thereafter, responses are expected to become less evident as vegetation is reestablished, providing ground cover, increasing surface roughness, and stabilizing and improving the infiltration capacity of the soils.

Post-fire peak flow rates could be near double that of normal pre-fire peak flow rates. Post-fire flows could lead to plugged culverts, flow over road surfaces, rill and gully erosion of cut and fill slopes, erosion and deposition along road surfaces and relief ditches, loss of long-term soil productivity and threats to human life and safety. Sedimentation and erosion of ephemeral channels is likely to occur at an accelerated rate until vegetation establishes itself and provides ground cover.

Erosion Response: The soil burn severity shows the majority of the burned area falls within the low (38%) and moderate (33%) soil burn severity levels (34% each). High soil burn severity accounted for 8% of the fire area and the remainder of fire was very low to unburned (21%). The primary areas of high severity burning occurred in the subwatersheds around Elder Creek, Bear Creek, and tributaries of Coffepot Creek, resulting in a higher risk to flooding and possible sedimentation affecting water quality, roads, and trails.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Values at Risk:

The table below is Exhibit 02 from FSM 2523.1. This matrix was used to evaluate the risk level for each value identified during this BAER assessment. See FSM 2523.1 for additional information.

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

The table below is a summary of the values (some of which were not identified as 'critical' per Exhibit 01 from FSM 2523.1) within and along the Watson Creek fire area, as well as, the threats to those values, the probability of damage or loss, magnitude of consequences and the resulting level of risk. Red shaded cells are those values that rated out as "very high" or "high" risk. Yellow shaded cells rated out "intermediate" risk and green cells rated out "low" or "very low".

Watson Creek Fire BAER - Forest Service Values At Risk Tracking Table

High / Very High Risk	
Intermediate Risk	
Low / Very Low Risk	

Category	Life/ Property/ Resources	Critical Value	Threat to Value	Probability of Damage or Loss	Magnitude of Consequence	Risk	Treatment	Notes
Recreation	Property	Hanan Coffeepot Trailhead	Damaged or Destroyed Buck and Pole Fencing surrounding critical infrastructure	Very Likely	Minor	Low	*Long Term Recovery -Replace fencing in kind with Buck and Pole Fencing*	The fence has burned resulting in damage to surrounding area and further threatens to undermine the historic character of the site
Recreation	Life and Safety	Hanan Coffeepot Trailhead	trailheads are heavily used and in timber stands partly burned in the fire	Likely	Major: Falling trees could result in loss of life or injury	Very High	Hazard Tree Mitigation (PS5)	Two hazard trees have been identified within the areas surrounding the trailhead
Recreation	Property	Hanan Sycan Trailhead	Damaged or Destroyed Buck and Pole Fencing surrounding infrastructure	Very Likely	Minor	Low	*Long Term Recovery -Replace fencing in kind with Buck and Pole Fencing*	The fence has burned resulting in damage to surrounding area and further threatens to undermine the historic character of the site
Recreation	Property	Hanan Trail #142	Trails in high and moderate burn severity have a high threat of runoff and water damage post-fire	Possible	Major	High	Trail Drainage Improvements (T2)	A total of 3.9 miles of trail treatment is needed. Treatment includes hazard tree removal as need for worker safety.
Recreation	Life and Safety	Hanan Trail #142	Inadequate signage due to hazards in burned areas education and information about potential hazards found in recently burned areas	Possible	Moderate	Intermediate	Install Hazard Signs at Trailheads exhibiting risks and hazards (PS2)	Signs shall be installed at each end of the burned areas, exhibiting hazards within Burned Area.
Recreation	Property	Hanan Trail #142	Trail infrastructure is lost or damaged and poses a threat to health and safety	Possible	Moderate: Treadloss poses a risk of washout, gullying and loss of resource.	Intermediate	~~Long Term Recovery -Repair, stabilize or replace timber water crossings~~	A total of 4 timber cut bridges have burned resulting in possible injury to hikers. Integrity of the bridge structures is undermined.
Recreation	Property	Nat. Rec. Trl #160	Trails in high and moderate burn severity have a high threat of runoff and water damage post-fire	Likely	Moderate: Treadloss poses a risk of washout, gullying and loss of resource.	High	Trail Drainage Improvements (T1)	Approximately 5.5 miles of trail treatment is needed. Treatment includes hazard tree removal as need for worker safety.
Recreation	Life and Safety	Nat. Rec. Trl #160	Inadequate Signage along trail due to conflagration	Possible	Moderate	Intermediate	~~Long Term Recovery -Replace and add additional reassurance markers along trails~~	Timber carved reassurance markers have been lost, and need replacement as well as additional added in areas where trail is obscured.

Recreation	Life and Safety	Human life associated with Bear Creek Trailhead	Hazard trees pose threat to human life and safety adjacent to trailhead and parking area (6 trees)	Possible	Major: Falling trees could result in loss of life or injury	High	Trailhead Hazard Tree Mitigation (PS4)	Suppression repair activities have mitigated most of the hazard trees around the area. However, six hazard trees remain around the trailhead. This trailhead accesses National Recreation Trail #160.
Recreation	Life and Safety or Property	Human Life and Property associated with Slide Lake Trailhead	Rolling Rocks, Logs & Hazard Trees	Possible	Major: rolling rocks downslope to the trail could result in injury or loss of life	High	Natural material catchment and hazard signage (T4 & PS6)	Areas directly adjacent to Slide Lake parking area and 1/10 mile shall have natural barriers installed to mitigate rolling material and reduce risk of damage to property and health and safety
Recreation	Life and Safety	Human Life and Safety associated with Withers Lake Rec. Area	Hazard trees pose threat to human life and safety surrounding lakeshore (25 trees)	Likely	Major: falling trees could result in injury or loss of life	High	Hazard Tree Mitigation in Recreation Area (PS3)	The developed recreation area around Withers Lake is a heavily trafficked. The 1 mile trail contains 25 hazard trees that are likely to fall where users congregate posing a risk to life and safety.
Recreation	Life and Safety or Property	Human Life and Safety associated with Withers Lake Rec. Area	Inadequate post-fire drainage resulting in loss of trail	Likely	Major: loss of trail could result in hikers getting lost thus a longer duration of transit in potentially hazardous areas	High	Hillside Stabilization, Trail Drainage Improvements (T4)	Approximately .25 miles of trail along the east side of Wither's Lake has experience blowouts, gullying and winter runoff puts resource at risk.
Botany	vulnerable native plant communities	introduction and spread of invasive plant species	adjacent to known populations of invasive plant species and within the burn area and exposed mineral soil	Very likely	Moderate: considerable long-term effects to native plant community	Very High	EDRR (L1)	Ventenata (annual invasive grass) infestation in lower elevation scabland juniper/pine habitat is a concern. Current invasive plant infestations are within and adjacent to high and moderate burn severity areas.
Botany	Forestry (Candidate Threatened and Endangered species) Whitebark Pine	Loss of Candidate Threatened and Endangered (T&E) species from post fire conditions	this species experienced low, moderate, and high burn severity. Mortality is unknown across the landscape.	**Possible**	**Moderate:** loss of all age classes throughout occupied habitat, including cone-bearing trees, reduction in genetic diversity	**Intermediate**	no treatment recommended--no cost-effective treatment available	Whitebark Pine is a Candidate T&E species. Approximately 15,400 acres of habitat for this species burned. 20 cone collection trees were within the fire perimeter, mortality unknown. Approximately 880 acres of habitat experienced a high severity burn severity, 6,668 acres of moderate burn severity, 4,561 acres of low burn severity, and 3,292 acres were unburned.
Cultural	Resource	6020300084	Damage to site integrety and displacement of artifacts due to increased erosion	**Possible** due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER

Cultural	Resource	6020300060	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300085	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300386	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**, impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300545	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**, impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300547	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300549	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300557	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Cultural	Resource	6020300558	Damage to site integrity and displacement of artifacts due to increased erosion	**Possible**: due to loss of ground cover	**Minor**: impact will not detract from National Register of Historic Places eligibility	**Low**	No Treatment Recommended	Resource assessed in the field for BAER
Soils	Resource	Soil productivity and hydrologic function	Loss of ash cap and surface soil through erosion and debris flows, decreased infiltration, damming and sedimentation of waterways	Very likely: steep slopes, highly erodible soils, loss of canopy and ground cover	Moderate: loss of ash cap is not recoverable, short-term recoverable effects to hydrologic function	Very High	No treatment recommended - no cost-effective treatment available	
Range	Property	12 miles of fence	Range allotment fencing impacted by fire and suppression activities resulting in livestock use and impacts to important natural resources, structures, and other values.	**Likely**	**Moderate**	**Intermediate**	*Long Term Recovery -Replace fencing in kind*	Treatment does not qualify for BAER funds as an emergency. The fence has burned resulting in damage to surrounding area and further threatens to undermine the historic character of the site.

Roads	Property	NFS Road 3360000 (MP 3.44 to MP 5.87)	Ditches and culvert inlets partially filled reducing capacity and efficiency of drainage structures	**Possible**: increased runoff, stream flow and associated debris is possible	**Major**: damage or loss of road prism on primary administrative and public access road	High	Ditch and catchment basin cleanout, storm proofing (R2)	
Roads	Property	NFS Road 3360000 (MP 4.93)	Potential for debris to plug culvert. Overflow culvert will provide access for water to pass through the road fill without blowing out the entire road fill	**Possible**: increased runoff, stream flow and associated debris is possible	**Major**: damage or loss of road prism on primary administrative and public access road	High	Install 24" x 80' overflow culvert (R1)	
Roads	Property	NFS Roads 2800000 (MP 35.19 to MP 48.21), 3300014 (MP 0.00 to MP 6.24), 3300015 (MP 0.00 to MP 1.82), 3315000 (MP 6.97 to MP 20.41) and 3360000 (MP 3.41 to MP 7.34)	Elevated runoff and large woody debris in drainages could overwhelm existing drainage features and plug culverts, diverting flow onto roads causing damage	**Likely**: increased runoff, stream flow and associated debris is likely	**Moderate**: damage or loss of road prism	High	Storm inspection and response (R3)	Primary roads accessing FS and private property with mostly moderate or high burned severity
Roads	Human Life and Safety	Open system roads entering fire boundary	Roadside Hazard Trees along NFS road system within burned areas pose threat to Human Life and Safety	**Possible**: potential of falling snags, rocks, flooding, or other unforeseen hazards	**Major**: falling snags, rocks, flooding, or other unforeseen hazards could result in loss of life or injury	High	Burned area warning sign installation (PS1)	**Signs shall be placed at road and fire boundary intersections** on roads accessing Watson Creek Fire. Roads include 2800000 at fire boundary, 2900000 at 2901 jct., 3360000 at fire boundary, 3315000 at fire boundary, 3300000 at 3300012 jct., 2800000 at 3300000 jct., 2800000 at 34000000 jct., 3411000 at 3372000 jct., 3372000 at 3372022 jct., 3372022 at fire boundary, 3360000 at fire boundary.
Roads	Human Life and Safety	Open system roads entering fire boundary	Roadside Hazard Trees along NFS road system within burned areas pose threat to Human Life and Safety	**Possible**: potential of falling snags, rocks, flooding, or other unforeseen hazards	**Major**: falling snags, rocks, flooding, or other unforeseen hazards could result in loss of life or injury	High	Burned area warning sign installation (PS1)	Signs shall be placed at road and fire boundary intersections on roads accessing Watson Creek Fire. Roads include 2800000 at fire boundary, 2900000 at 2901 jct., 3360000 at fire boundary, 3315000 at fire boundary, 3300000 at 3300012 jct., 2800000 at 3300000 jct., 2800000 at 34000000 jct., 3411000 at 3372000 jct., 3372000 at 3372022 jct., 3372022 at fire boundary, 3360000 at fire boundary.

Fisheries	Resource	Bull trout Critical Habitat	Critical habitat for bull trout experienced significant areas with moderate and high soil burn severity. These areas are expected to see increased streamflows, increased sediment yields from hillslope erosion, and potentially increased water temperatures from loss of riparian and overstory vegetation	**Likely:** increased flows and hillslope erosion, high percentages of moderate & high soil burn severity	**Minor:** Post-fire effects are not anticipated to affect the resiliency of the bull trout population as the habitat is unoccupied or have long-term impacts to habitat.	Low	No treatment recommended	

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 prevent unacceptable degradation to natural and cultural resources. The application of these BAER treatments are expected to minimize on-site and downstream damages to the identified values at risk previously mentioned. The emergency treatments being recommended by the Watson Creek BAER Team are specifically designed to achieve the following results.

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 (**L1**).

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. (**R1, R2, R3, T1, T2,T4**)
2. Reduce the risk of blowouts, gullying, treadloss and loss of trail resources (**T1, T2, T4**)

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. (**PS1, PS2**)
2. Reduce the risk to public health and safety by removing hazards around high public use areas. (**PS3, PS4, PS5, PS6**)

Proposed Channel Treatments:

There are no proposed channel treatments.

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

Land **NA** (only weeds) % Channel **NA** % Roads/Trails **75** % Protection/Safety **85** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70	75	80
Channel	NA	NA	NA
Roads/Trails	90	90	90
Protection/Safety	85	85	95

E. Cost of No-Action (Including Loss): **$188,794**

F. Cost of Selected Alternative (Including Loss): **$72,511**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Scott Hagerty -Six Rivers National Forest, Forest Soil Scientist (retired; AD)

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H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

L1 – Invasive Plant Detection and Treatment: Invasive plant detection and treatment along Forest Service Roads (primarily Maintenance Level (ML) 3 and 4), where high to moderate soil burn severity occurred will be necessary to prevent spread and dispersal of invasive plant species into newly burned and disturbed areas. Although moderate soil burn severity areas may have some intact vegetation or may experience needle fall, it is not sufficient to prohibit the spread and establishment of invasive plants. All known invasive plant infestations within high and moderate soil burn severity will be targeted for treatment. Detection will focus on locations adjacent to known invasive plant sites, along primary access roads, and in areas where suppression activities created bare ground. Treatment and detection will reduce the potential for invasive plant species to seed and spread. Treatment is most effective when infestations are small and it is critical to treat the infestations before seed is produced. EDRR is covered under the Fremont-Winema National Forest Invasive Plant Treatment Record of Decision (2011) with a range of treatment options including use of herbicides.

EDRR will occur on approximately 36.3 miles of primarily access roads (ML 3 and 4) and invasive plant treatments will occur on approximately 83 acres that experienced a high or moderate soil burn severity. **Total request is for $14,750.**

Locations: Primary Access Roads - 28 (ML 4) & 33, 3411, 3372, 3380, 3315, 29, & 3360 (ML 3); suppression actions locations (dozer line where is crosses primary access roads, 2 safety zones, 19 drop points, 5 parking/staging areas, and 7 helispots); and invasive plant treatments in high and moderate soil burn severity areas.

Treatment	Units	Unit Cost	# of Units	Total Cost
Invasive Plant Surveys/Detection	Acre	$9.00	440	$3,960
Invasive Plant Treatments	Acre	$130.00	83	$10,790
			Total Amount Requested:	**$14,750**

Roads and Trail Treatments:

R1 – Overflow Culvert Installation: A pour point watershed was delineated to analyze anticipated changes to peak flow rates that may affect the stream road crossing at Little Withers Creek and the 3316 Road (Hydrology Specialist Report Table 4). This analysis shows a 2 fold increase to peak flow rates, however professional judgement and local knowledge lead to the belief that the risk of this culvert failing is greater than that and a relief culvert is warranted. An overflow culvert is proposed for installation to provide relief drainage in the instance the culvert at this location becomes obstructed by debris.

Locations: 1) FSR 3360000, MP 4.93

Treatment	Units	Unit Cost	# of Units	Total Cost
Overflow Culvert Installation	Each	$6,000	1.0	$6,000

R2 – Storm Proofing: Storm proofing drainage features where identified in areas with high and moderate burn severity. Activity will include cleaning culverts and increasing ditch and catchment basin capacity where they exist and installing additional water bars as necessary to handle short-term post-fire flows, sediment and debris.

Locations: 1) FSR 3360000 (MP 3.44 to MP 5.87)

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Proofing	Miles	$1,852	2.43	$4,500

R3- Storm Patrol: Storm inspection/response will keep culvert and drainage features functional by cleaning sediment and debris from in and around features between or during storms. This work will be accomplished through Forest Service Road Crew, equipment rental, and general labor.

Locations: 1) FSR 2800000 (MP 39.19 to MP 48.21); 2) 3300014 (MP 0.00 to MP 6.24); 3300015 (MP 0.00 to MP 1.82); 3315000 (MP 8.97 to MP 20.41)

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Patrol	Days	$500	6	$3,000

T1- Improve Trail Drainage and Tread along NRT #160 Hanan #142.

Objective- Reduce the potential for runoff concentration and surface erosion on trails.

Description- Install drain dips, water bars, and water crossings, check dams and improve trail tread for 5.5 miles of trail. Treatment includes bucking and hazard tree removal for worker access. Trail work will follow established National Forest trail standards.

Treatment	Units	Unit Cost	# of Units	Total Cost
Improve Trail Drainage (NRT160)	Mile	$3856	5.5	$21,203

T2- Improve Trail Drainage and Tread Hanan #142

Objective- Treatment Objective- Reduce the potential for runoff concentration and surface erosion on trails.

Description- Install drain dips, water bars, and water crossings, check dams and improve trail tread for 3.9 miles of trail. Treatment includes bucking and hazard tree removal for worker access. Trail work will follow established National Forest trail standards.

Treatment	Units	Unit Cost	# of Units	Total Cost
Improve Trail Drainage (Hanan #140)	Mile	$3856	3.9	15,041

T4- Improve Trail Drainage and Tread Withers Lake Loop Trail.

Objective- Reduce the potential for runoff concentration and surface erosion on western side of ring trail at Withers Lake.

Description- Reinforce Trail surface on hillside, install check dams, and retaining support to reduce the risk of runoff and tread loss.

Treatment	Units	Unit Cost	# of Units	Total Cost
Improve Trail Drainage (Withers)	Mile	$3856	0.3	$1,156

Protection/Safety Treatments:

PS1 – Road Hazard Signs: Signs will inform users of the dangers associated with entering and recreating within the burned area.

Locations: 1) FSR 2800000 at fire boundary; 2) FSR 2900000/2901000 junction; 3) FSR 3360000 at fire boundary; 4) FSR 3315000 at fire boundary; 5) FSR 3300000/3300012 junction; 6) FSR 2800000/3300000 junction; and 7) FSR 2800000/3400000 junction; 8) FSR 3411000/3372000 junction; 9) FSR 3372000/3372022 junction; 10) FSR 3372022 at fire boundary; 11) FSR 3380000 at fire boundary.

Treatment	Units	Unit Cost	# of Units	Total Cost
Installation of warning signs	Each	$255	11	$2,800

PS2- Recreation Hazard Signage

Objective- To inform public of hazards of the burned area.

Treatment Description- Installation of hazard signs at trailheads and recreation areas detailing the risks and hazards of the burned area.

Treatment	Units	Unit Cost	# of Units	Total Cost
Install Hazard Signs	Each	$125	8	$1000

PS3- Hazard Tree Mitigation (Withers Lake)

Objective-Felling of identified hazard trees around Withers Lake Recreation Area in order to reduce the risk to life and safety of patrons that congregate around the lakeshore.

Description -Fell approximately two dozen identified hazard trees, and any other that may arise during implementation

Treatment	Units	Unit Cost	# of Units	Total Cost
Hazard Tree Mitigation	Each	$92	25	$2263

PS4- Hazard Tree Mitigation (Bear Creek Trailhead)

Objective-Felling of approximately a half dozen identified hazard trees around Bear Lake Trailhead in order to reduce the risk to life, safety and property.

Description- Fell approximately a half dozen identified hazard trees, and any other that may arise during implementation.

Treatment	Units	Unit Cost	# of Units	Total Cost
Hazard Tree Mitigation	Each	$92	6	$365

PS5- Hazard Tree Mitigation (Hanan/Coffeepot Trailhead)

Objective-Felling of a several identified hazard trees around Hanan/Coffeepot Trailhead in order to reduce the risk to life, safety and property.

Description Fell approximately a two identified hazard trees, and any other that may arise during implementation.

Treatment	Units	Unit Cost	# of Units	Total Cost
Hazard Tree Mitigation	Each	$92	2	$184

PS6- Rockfall Hazard Mitigation (Slide Lake Trailhead)

Objective- mitigate rolling material from damaging property at the trailhead.

Description- Moving and relocation of several dropped trees to the base of the slope surrounding trailhead to serve as a catchment barrier for rolling material.

Treatment	Units	Unit Cost	# of Units	Total Cost
Rockfall Hazard Mitigation	Each	$100	2	$200

I. Coordination, Communication:

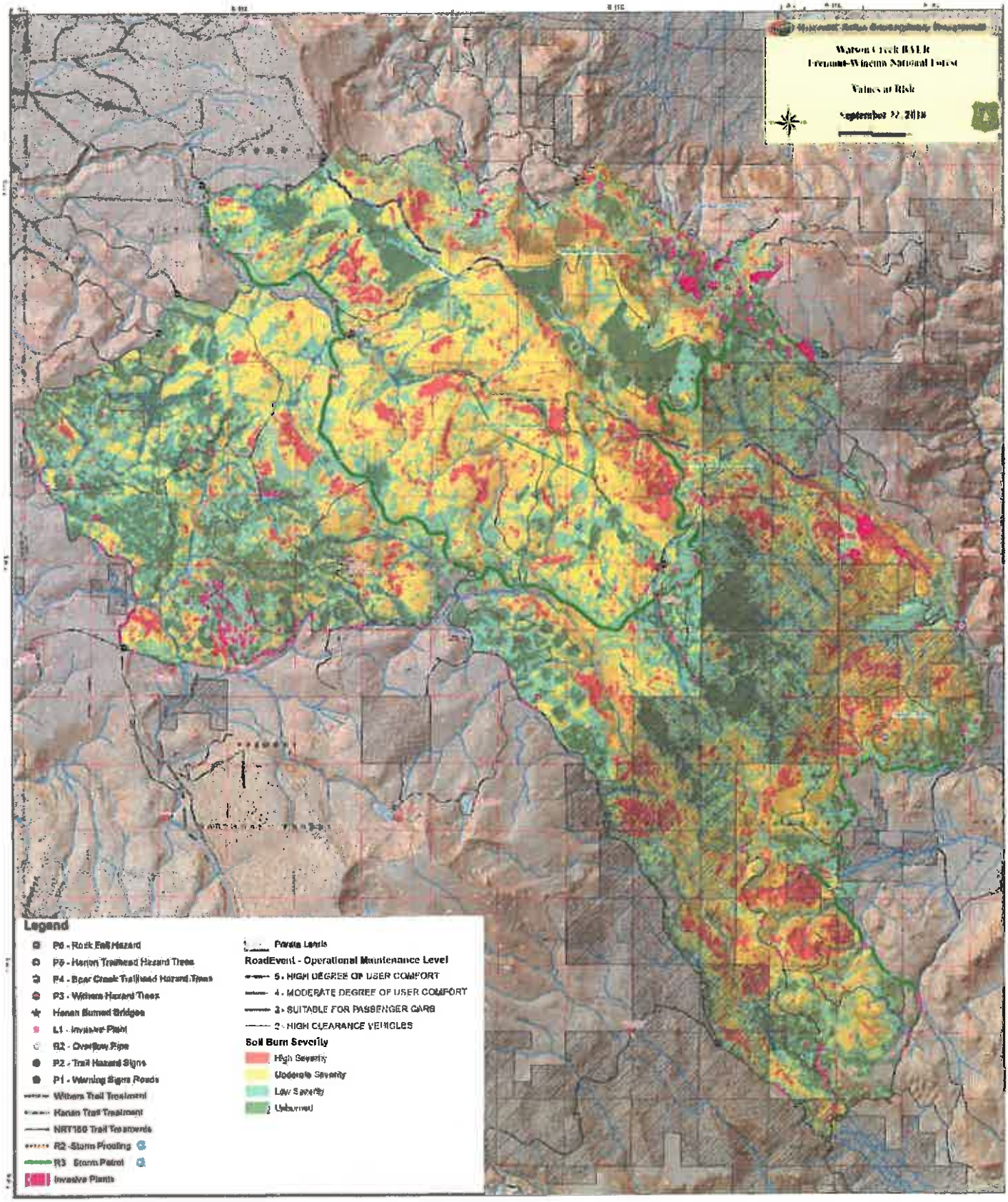
Part VI – Emergency Stabilization Treatments and Source of Funds **Interim #**

A. Land Treatments					
L1-Invasive Survey/Detection	acres	9	440	$3,960	$0
L1-Invasive Plant Treatment	acres	130	83	$10,790	$0
Insert new items above this line!				$0	$0
Subtotal Land Treatments				$14,750	$0
B. Channel Treatments					
Insert new items above this line!				$0	$0
Subtotal Channel Treat.				$0	$0
C. Road and Trails					
R1-Oveflow culvert	Each	6000	1	$6,000	$0
R2-Storm Proofing	Miles	1852	2.43	$4,500	$0
R3_Storm Patrol	Days	6	500	$3,000	$0
T1-Trail Treatment NRT#160	Miles	3856	5.5	$21,208	$0
T2-Trail Treatment Hanan #142	Miles	3856	3.9	$15,038	$0
T4-Trail Treatment	Miles	3856	0.3	$1,157	$0
Insert new items above this line!				$0	$0
Subtotal Road & Trails				$50,904	$0
D. Protection/Safety					
PS-1-Road Hazard Signs (purchase/Install)	Sign/post	255	11	$2,805	$0
PS-2-Trail Hazard Signs	Each	125	8	$1,000	$0
PS-3-Hazard tree mitigation Withers Lake	Each	92	25	$2,300	$0
PS-4 Bear Crk TH Hazard Tree Mitigation	Each	92	4	$368	$0
PS-5 Hzd Tree Mitigation Coffepot/Hanan TH	Each	92	2	$184	
PS-6 Rockfall Hzd mitigation Slide Lake TH	Each	2	100	$200	
Insert new items above this line!				$0	$0
Subtotal Structures				$6,857	$0
E. BAER Evaluation					
Watson Crk BAER				$62,150	
Insert new items above this line!				---	$0
Subtotal Evaluation				---	$0
F. Monitoring					
Coordination				$0	$0
Insert new items above this line!				$0	$0
Subtotal Monitoring				$0	$0
G. Totals				$72,511	$0
Previously approved					
Total for this request				**$72,511**	

PART VII - APPROVALS

1. _____ 9/25/18
Forest Supervisor (signature) Date

2. _____ 10/4/2018
Regional Forester (signature) fw Date


Warm Creek BAER
Fremont-Winema National Forest
Values at Risk
September 27, 2018
Legend
P6 - Rock Fall Hazard
P5 - Herlan Trailhead Hazard Trees
P4 - Bear Creek Trailhead Hazard Trees
P3 - Withers Hazard Trees
Herlan Burned Bridges
L1 - Invasive Plant
R2 - Overflow Pipe
P2 - Trail Hazard Signs
P1 - Warning Signs Roads
Withers Trail Treatment
Herlan Trail Treatment
NRT150 Trail Treatments
R2 -Storm Proofing
R3 Storm Patrol
Invasive Plants
Private Lands
RoadEvent - Operational Maintenance Level
5 - HIGH DEGREE OF USER COMFORT
4 - MODERATE DEGREE OF USER COMFORT
3 - SUITABLE FOR PASSENGER CARS
2 - HIGH CLEARANCE VEHICLES
Soil Burn Severity
High Severity
Moderate Severity
Low Severity
Unburned