

# High Cascade Complex – East Spruce Lake & Blanket Creek Fires July/August/September/October 2017



Forest Service Road 6205 within the Blanket Creek Fire

Date of Report: September 11, 2017

Date of Interim Report: Oct. 29, 2017

Date of Interim2 Report: Nov. 1, 2017

**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 rehabilitation measures)

☐ 2. Interim Report: #1

This Interim Report updates information for the Blanket Creek Fire only. Spruce Lake Fire also grew considerably in Crater Lake National Park, but did not impact any more NFS lands, nor increased the threat of VARs downstream/downslope from NPS onto NFS lands.

- ☒ Updating the initial funding request based on more accurate site data or design analysis (increased growth affecting additional VARs)  
☐ Status of accomplishments to date

☒ 2. Interim Report: #2

This Interim Report identifies additional funding needs to cover the actual costs of road storm proofing work that is in the process of being implemented.

- ☒ 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:** High Cascade Complex

RSF portions of Blanket Creek and Spruce Lake Fires (Included in initial 2500-8)

**B. Fire Number:** OR-RSF-000636 (High Cascade Complex); OR-RSF-000371 (Blanket Creek); OR-CLP-000453 (Spruce Lake)**C. State:** Oregon**D. County:** Jackson and Klamath**E. Region:** R6 Pacific Northwest**F. Forest:** Rogue River-Siskiyou National Forest**G. District:** High Cascade Ranger District**H. Fire Incident Job Code:** P6K75A**I. Date Fire Started:** July 26, 2017**J. Date Fire Contained:** October 31, 2017 (Tentative)**K. Suppression Cost\*:** Blanket Creek Fire: \$17,700,000; \*Costs as of September 26, 2017 (ICS 209)

Spruce Lake:\$6,133,208; \*Costs as of September 2, 2017

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): Blanket Creek Fire: 0.85 mi. dozer, 3 mi. handline;  
Spruce Lake Fire: 1.25 mi. dozer, 2 mi. handline.
2. Fireline seeded (miles): Blanket Creek Fire: 0.85 mi. dozer;  
Spruce Lake Fire: 1.25 mi. dozer
3. Other (identify):

M. Watershed Number:

Blanket Creek Fire: 171003070204 Red Blanket Creek, 171003070108 Union Creek, 180102030105 Crooked Creek-Wood River, 180102030103 Dry Creek, 180102030104 Sevenmile Creek, 180102030102 Upper Annie Creek, and 171003070203 Upper Middle Fork Rogue River  
Spruce Lake Fire: 171003070104 Crater Creek, 171003070105 Foster Creek-Rogue River and 171003070106 Bybee Creek-Rogue River

N. Total Acres Burned: 38,408 acres

Blanket Creek Fire: 33,138 acres (As of October 3, 2017):

NFS Acres ( 28,699) Other Federal (Park Service: 4,439 acres) State (0) Private (0)

NFS acres include RRS and Fre-Win NF.

Spruce Lake Fire: 5,270 acres (As of August 24, 2017):

NFS Acres (311) Other Federal (Park Service: 5,459 acres) State (0) Private (0)

O. Vegetation Types:

Blanket Creek and Spruce Lake Fires: Moderate to high elevation Western Hemlock, Mountain Hemlock, Shasta Red Fir, and Lodgepole Pine plant communities, and scattered meadow plant communities.

P. Dominant Soils:

Blanket Creek Fire: Soils are dominated by sandy loams and loamy sands derived from glacial till, as well as pumice and ash deposits from Mt. Mazama.

Spruce Creek Fire: Soils are dominated by deep, excessively drained ashy sandy loams and loamy sands derived from pumice and ash deposits from the eruption of Mt. Mazama.

Q. Geologic Types:

The Blanket Creek fire is within the High Cascades Physiographic Province and is dominated by basaltic andesites of Mazama, Rocktop Butte, and Union Peak volcanos, which were then glacially carved into a steeply walled trough with glacial deposits down Red Blanket drainage during the last ice age. The subsequent eruption of Mt. Mazama approximately 7,000 years ago added areas of pumice and ash deposits (Badura and Jahn, 1977; Oregon DOGAMI, 2009).

The Spruce Lake fire is within the High Cascades Physiographic Province and is dominated by welded tuff and breccia deposits of the climactic eruption of Mt. Mazama, as well as andesites, basaltic andesites, and dacite from numerous volcanic peaks and lava flows associated with the Mazama stratovolcano. There are also large areas dominated by mixed grain glacial deposits (Badura and Jahn, 1977; Oregon DOGAMI, 2009).

R. Miles of Stream Channels by Order or Class:

Blanket Creek Fire: 97.3 miles of fourth order channels, 1.3 miles of third order channels, and 9.4 miles of first order channels;

Spruce Lake Fire: 96 miles of fourth order channels and 12 miles of first order channels



## S. Transportation System

Trails: Blanket Creek Fire: 34 miles; Spruce Lake Fire 0.0 miles

Roads: Blanket Creek Fire: 7.5 miles Maintenance Level 3 Roads, 10.5 Maintenance Level 2 Roads, and 0.7 miles Maintenance Level 1 Roads, 18.3 miles of Roads Total; Spruce Lake Fire: 0 miles of Roads

## **PART III - WATERSHED CONDITION**

### A. Burn Severity (acres): Total Acres Burned: 38,408 acres

Blanket Creek Fire: 8,847 acres (Very Low/Unburned), 9,447 acres (Low), 10,399 acres (Moderate), and 4,445 acres (High)

Spruce Lake Fire: 1,063 acres (Very Low/Unburned), 1,702 acres (Low), 1,862 acres (Moderate), and 643 acres (High)

### B. Water-Repellent Soil (acres):

Blanket Creek fire: 2072 acres of soils showing an increase in strong water repellency over unburned conditions.

Water repellency was not tested where the fire spread into the Sky Lakes Wilderness, but conditions are expected to be similar since similar soils and vegetation.

Spruce Lake fire: 2505 acres of soils showing an increase in strong water repellency over unburned conditions.

Unburned soils associated with both fires displayed moderate to strong natural hydrophobicity at the mineral soil surface. Low burn severity was similar to unburned condition. Moderate and high burn severity soils exhibited strong hydrophobicity with increased depth into the soil due to soil OM charring and loss of structure.

### C. Soil Erosion Hazard Rating (acres):

Pre-fire erosion hazard for burned area soils was obtained from existing soil erosion hazard rating information in the Rogue River National Forest Soil Resource Inventory (1977) and the Crater Lake National Park Soil Survey (NRCS 2002). The EHR interpretation is based on soil properties such as soil texture, slope, aggregate stability, infiltration rate, subsoil permeability, depth to restrictive layers, and soil rock content. The rating is the maximum EHR for the soil map units. Actual pre and post fire erosion potential is better reflected by the ERMiT modeling runs for this project.

#### *Blanket Creek Fire*

Low Erosion Potential total acres (slight, very slight): 1098 acres

Moderate Erosion Potential total acres (moderate): 3448 acres

High Erosion Potential total acres: 7 acres

\*Note that the 13 acre difference between soil acres and fire perimeter acres was found to be due to GIS discrepancies between the pixelated BARC and ragged fire perimeter.

#### *Spruce Lake Fire*

Low Erosion Potential total acres (slight, very slight): 1323 acres

Moderate Erosion Potential total acres (moderate): 3658 acres

High Erosion Potential total acres (severe): 289 acres

### D. Erosion Potential:

Blanket Creek Fire: 4 tons/acre (range from 0.65 to 10.22) 2-yr to 10-yr runoff event respectively;  
Spruce Lake Fire: 5 tons/acres (range from 1.37 to 10.64) 2-yr to 10yr runoff event respectively

E. Sediment Potential:

Blanket Creek Fire: 2,253 cubic yards / square mile  
Spruce Lake Fire: 2,816 cubic yards / square mile

**PART IV - HYDROLOGIC DESIGN FACTORS**

- A. Estimated Vegetative Recovery Period, (years): 5-25\*
- B. Design Chance of Success, (percent): 80%
- C. Equivalent Design Recurrence Interval, (years): 2 year
- D. Design Storm Duration, (hours): 24 hour
- E. Design Storm Magnitude, (inches): 2.61-2.79
- F. Design Flow, (cubic feet / second/ square mile): 11.40 cfs/mi<sup>2</sup>
- G. Estimated Reduction in Infiltration, (percent): 25%
- H. Adjusted Design Flow, (cfs per square mile): 20.67 cfs/mi<sup>2</sup>  
\*25 years for lodgepole dominated sites in Spruce Lake Fire

**PART V - SUMMARY OF ANALYSIS**

**Introduction/Background:**

The Blanket Creek and Spruce Lake Fires started on July 26, 2017 from an outbreak of dry lightning and are approximately 9,810 acres in size (using fire perimeters from: Spruce Lake, August 24, 2017 and Blanket Creek, August 30, 2017). These fires are part of the High Cascade Complex which includes four other fires; Broken Lookout/Lookout 2/Windy Gap, Paradise, Pup, and Sherwood; as well as 14 smaller spot fires (20 fires total). These fires include burned areas within the Rogue River, Umpqua River, and Klamath River Basin drainages. The Rogue River Basin drainage drains all of the Blanket Creek and Spruce Lake Fires being analyzed by the BAER team. The fires burned on relatively steep slopes west and south of Crater Lake northeast of Medford, Oregon. The watersheds in the burn are characterized by steep U-shaped glacially carved canyons. The fire was in a rural area and there were only 18 values at risk identified for the Blanket Creek Fire and 8 values at risk identified for the Spruce Lake Fire (see tables 3 and 4 for the values at risk identified and the risk assessment).

In September Red Flag weather conditions caused both fires to make significant runs after the initial BAER assessment was well underway. The complex was also then divided into a West Zone and East Zone, with different incident command teams. The Blanket Creek and Spruce Lake Fires were managed as part of the East Zone, whereas the Pup and Broken Lookout (which combined with Lookout 2/Windy Gap, Paradise) became managed under the West Zone, and are covered under a different BAER assessment. This Interim #1 assesses the effects of the new growth on the Blanket Creek Fire. The Blanket Creek Fire grew by 28,598 acres, mostly in the Sky Lakes Wilderness, as well as in Crater Lake National Park and the Fremont-Winema NF. The fire burned across over 28 miles of wilderness trail system within the Sky Lakes Wilderness, including almost 9 miles of the Pacific Crest Trail in the Rogue River-Siskiyou (RRS) and Fremont-Winema National Forests and Crater Lake National Park. Most of this affected mileage is on the RRS (6.88 mi.).

The soil burn severity (SBS) map shows approximately 45% burned at high and moderate soil burn severity. The rest of the fire was either low soil burn severity or unburned. It is very important to understand the difference between fire intensity and burn severity, and soil burn severity as defined for watershed condition evaluation in Burned Area Emergency Response BAER analyses. Fire intensity or burn severity as defined by

fire, fuels, or vegetation specialists may consider such parameters as flame height, rate of spread, fuel loading, thermal potential, canopy consumption, tree mortality, etc. For BAER analyses, mapping is not simply vegetation mortality or above-ground effects of the fire – soil burn severity considers additional surface and below-ground factors that relate to soil hydrologic function, runoff and erosion potential, and vegetative recovery. Areas of high soil burn severity are scattered throughout the Blanket Creek and Spruce Lake Fires. Areas of high soil burn severity are at risk due to flooding and sedimentation affecting life and safety, invasive plants, and roads.

Most of the Spruce Lake Fire occurred within Crater Lake National Park. The SBS used for Spruce Lake is based off of draft SBS received from the National Park Service BAER team. As the fire is still actively burning on Park Service managed lands the Park Service BAER team has not been able to finalize this SBS. Some field work was completed within both Forest Service and Park Service managed lands, at this time both BAER teams felt like the soil burn severity mapping is correct. It was decided to move forward with analyzing the Spruce Lake fire. If the Park Service BAER team feels that the SBS needs to be modified for the Spruce Lake Fire when their analysis is completed, the Park Service will provide that new map to the Forest Service team. At that time the Forest Service BAER team will update this analysis and submit an interim 2500-8 updating the soil burn severity data.

Based on historic precipitation patterns, it can be expected that fall frontal storms have a high probability of occurring in the weeks following the High Cascade Complex Fires. The risk of flooding and erosional events will increase as a result of the fire, creating hazardous conditions within and downstream of the burned area. These hazardous conditions may be worsened in the case of a rain-on-snow event, where long-duration rainstorms falling on a shallow snowpack can produce very high peak flows.

The fire was divided into sub-watersheds with “pourpoints” established at the bottom of burned watersheds, or where values at risk were located. Watershed runoff response is referenced to these points.

#### Erosion Response:

Erosion response is heavily influenced by soil burn severity and hill slope. The burn affected soil aggregate stability, canopy cover, ground cover, and infiltration rates. Before the fire, most of the forested areas had protective ground cover in the form of litter, duff, or ground vegetation. In high and moderate soil burn severity areas, it is highly likely that increased rates of soil erosion and sediment delivery to stream channels will occur, in the first and second year following the Blanket Creek Fire due to the glacially carved, steeply walled trough with glacial deposits and areas of pumice and ash. In contrast, the Spruce Lake Fire is less likely to have increased rates of soil erosion and sediment delivery due to lower gradients and coarse textured pumice soils within the area.

**Table 3. Estimated sediment yields off soil burn severity areas for *Blanket Creek Fire* modeled watersheds.**

Modeled Watershed Name	Soil Map Unit	Soil Burn Severity Rating	Unburned Est. Sediment Yield, 1 <sup>st</sup> Year (tons/ac)	Post-Fire Est. Sediment Yield, 1 <sup>st</sup> Year (tons/ac)
ERFO Site	35	Moderate	0.03	3.31
Unnamed Tributary 1	236	Moderate	0.02	2.15
Unnamed Tributary 2, site 1	16	Low	0.01	0.65
Unnamed Tributary 2, site 2	236	High	0.01	7.06
Varmint Creek, above road 6205	236H	High	0.03	10.22
Varmint Creek, above Varmint Camp Trail	22	Moderate	0.02	1.77
Ephemeral A Culvert	31	Moderate	0.03	2.95

**Table 4. Estimated sediment yields off soil burn severity areas for *Spruce Lake Fire* modeled watersheds.**

Modeled Watershed Name	Soil Map Unit	Soil Burn Severity Rating	Unburned Sediment Yield, 1 <sup>st</sup> Year (tons/ac)	Post-Fire Sediment Yield, 1 <sup>st</sup> Year (tons/ac)
Little Copeland, site 1	62	Moderate	0	1.37
Little Copeland, site 2	26H	Low	0	2.98
Little Copeland, site 3	62	High	0	10.64

Pre-fire slope stability and recovery of watershed hydrologic response is dependent on many factors and typically occurs within 5 to 25 years following the fire. Recovery of high burn severity areas is slower because little or no vegetative ground cover remains, the potential for needle cast is low and soils may be impacted by fire effects.

### Watershed Response:

#### Hydrologic Response:

Due to the steepness of these drainages and the amount of moderate burn severity and with large areas now devoid of vegetation and groundcover after the fire, the first large runoff producing storms will likely create increased surface flow. This scenario coupled with existing wet antecedent soil conditions from previous storms could trigger a potential flood event with high sediment volumes. The highest amounts of sediment yields from the burned watersheds are expected during the first year after the fire.

Post-fire watershed response for the Blanket Creek Fire was evaluated in several different areas: Two unnamed tributaries, an ERFO Site, and Varmint Creek. In order to calculate the pre and post fire discharge a gage analysis was used; Appendix A of the Hydrology Specialist Report describes the calculation process. Red Blanket Creek was the largest subwatershed completely burned within the burn perimeter. [Modeled results show flows increased from 620 cfs \(pre-fire\) to 796 cfs \(post fire\)](#). Increased flows as a result of the fire in Varmint Creek increased from 61 cfs (cubic feet per second) to 81 cfs, a 1.3 times increase. Unnamed tributary 1 also experienced increased flows from 17 cfs to 32 cfs, [also a 1.3 times times increase](#). Two other [pourpoints or smaller drainage areas](#) were [also modeled](#) which the team labeled Unnamed Tributary 2 and the ERFO Site due to the values at risk downstream. [Those results are shown in Table 5.](#)

Spruce Lake fire is expected to have a more moderated effect on discharge post-fire, this is due to the more gradual slopes and highly permeable pumice soil component. Field observation in similar terrain from the National Creek Fire in 2015, indicated little riling or overland land flow despite little vegetative recovery in pumice soils. Spruce Lake Fire pourpoints were modeled the same as Blanket Creek however flows are expected to be less impactful. See Table 5 for results of the modeling and expected hydrologic response.

**Table 5: Pre/ Post Fire Discharge and Percent Increase**

Watershed	Pre-Fire cfs	Post-Fire cfs	Times Increase
<b>Blanket Creek</b>			
Unnamed Tributary 1	17	32	1.3x
Unnamed Tributary 2	8	11	1.4x
Emergency Response for Federally Owned Roads (ERFO) Site	5	8	1.6x
Varmint Creek	61	81	1.3x
Red Blanket Creek (6 <sup>th</sup> field subwatershed)	620	796	1.3x
<b>Spruce Lake</b>			
Copeland Creek @ 100 Rd	147	183	1.2x
Little Copeland Creek @ 970 Rd	12	17	1.4x

#### Water Quality:

Surface waters in the fire area will be bulked by ash, debris and other floatable and transportable material during storm events. It is likely that stream flows from the first post-fire runoff producing rain events will see high concentrations of ash and fine sediment. This is expected to have short term detriment to water quality as vegetative recovery is restored.

A. Describe Critical Values/Resources and Threats:

A BAER team began assessing the area for post-fire emergencies on August 27, 2017. In that time the team has identified the following values at risk to post-fire threats. Interim reports may be submitted as additional assessments are completed.

The risk matrix below (Table 6), Exhibit 2 of Interim Directive No.: **2520-2010-1** was used to evaluate the Risk Level for each value identified during Assessment. Table 7 includes an analysis and notes on Values-At-Risk the team identified for the Blanket Creek and table 8 includes analysis and notes on Values-At-Risk the team identified for the Spruce Lake Fire.

**Table 6: Risk Matrix**

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



**Table 7: Blanket Creek Fire**

Value (Life/Property/ Resources)	Value At Risk	Probability of Damage or Loss	Magnitude of Consequences	Risk	Treatment	Notes
Life & Safety	People being in fire area post fire	Likely	Major	Very High	<p>Emergency Road Closures &amp; post Emergency hazard warning signs:</p> <ul style="list-style-type: none"> <li>FSR 6205: repair existing gate</li> <li>FSR 6205-100: close existing gate</li> <li>FSR 6000-830: install new gate</li> </ul> <p>Emergency Trail Closures &amp; post Emergency hazard warning signs:</p> <ul style="list-style-type: none"> <li>#1070 Varmint Creek Trail</li> <li>#1073/OHV #32 Cold Springs/Red Blanket OHV Trails</li> </ul>	<p>Risk from hazard trees, stump holes, and flooding/debris flows.</p> <p>FSR 6205 is a ML3 road; FSR 6205-100 and FSR 6000-830 are ML2 roads.</p> <p>FSR 6205 has a gate that can be used to help enforce the emergency road closure, but needs a repair to be functional. FSR 6205-100 has an existing gate that would be utilized. FSR 6000-830 currently has no way to physically close road.</p> <p>Trailheads would be signed with emergency closure notices and hazard warning signs.</p>
Property	FSR 6205	Very Likely	Major	Very High	<p>Storm patrol, install 5x rolling dips, 3x locations of ditch cleaning, 20x culverts to clean, log jam removal at stream crossing</p>	<p>ML3 road. Road traverses the base of steep (50-100%) compacted glacial till through wall mountainside, and is downhill from and through the burned area. Debris flows are anticipated to reactivate in historic flow paths &amp; potentially come from new sources. Road includes culverts and ditches. Varmint Creek crossing has a log jam that has not been threatening road with normal annual flow; with potential for debris flows from burn, jam has potential to prevent function of the culvert and exacerbate road damage and potential crossing blow out.</p>
Property	FSR 6205-100	Very Likely	Moderate	Very High	<p>35x culverts to be cleaned, storm patrol</p>	<p>ML2 road. Road travels upslope and near the ridgeline. Treatments focus on the road miles that travel through areas dominated by moderate and high severity burn; road grade has potential to carry flows down road surface if ditchlines and cross-drains plug.</p>

Property	FSR 6205-200	Unlikely	Major	Intermediate	No Treatment	Road is downstream from fire area. Stream crossing with Red Blanket Creek is a large bridge.
Property	FSR 6000-830	Very Likely	Moderate	Very High	2x rolling dips, 5x Culverts to be cleaned, storm patrol	Varmint Creek Road. Road needs storm proofing and rolling dips. Road has steep grades.
Property	Trailheads for Trail 1070	Possible	Minor	Low	No Treatment	East of Varmint Creek along drainage bottom. Hazard trees. Located on containment line.
Property	Trailhead for Trail 1073	Unlikely	Minor	Very Low	No Treatment	Along the top of the fire, along containment line.
Property	Trail 1070 Varmint Creek Trail	Very Likely	Moderate	Very High	Trail Tread and Drainage Features treatments within moderate and high SBS, Trail Closure	Trail goes along Varmint Creek within moderate and high soil burn severity
Property	Trail 1073 Cold Springs Trail (Also known as OHV Trail 32/Red Blanket OHV Trail)	Unlikely	Moderate	Intermediate	No Treatment	Used as a containment line. Trail is along the top of fire. Burn would be downslope of the trail.
Property	Sky Lakes Wilderness Trail System: Trail 1088 Trail 1083 Trail 1089 Trail 1085 Trail 2000 (PCT) Trail 1090 Trail 1078 Trail 1084	Very Likely	Moderate	Very High	Trail Tread and Drainage Features treatments within moderate and high SBS	Extensive wilderness trail system in the Sky Lakes Wilderness, that includes a portion of the Pacific Crest Trail and connector trails. Sky Lakes trail system one of the most used trail systems on the forest. A high portion of the lengths of these trails experienced moderate and high SBS.
Resources	Native Vegetation	Very Likely	Moderate	Very High	Early Detection and Rapid Response; Surveys and Treatments	High probability of invasive plant invasion after wildfire. Collomia Mazama habitat (FS Sensitive), at risk from invasive plants.
Resources	Soil Productivity	Possible	Minor	Low	No Treatment	Mass wasting potential in debris slide-prone areas
Resources	Water Quality	Possible	Minor	Low	No Treatment	Some ash, fine sediment, and mass wasting potential
Resource	Northern Spotted Owl	Very Likely	Major	Very High	No Feasible Treatment	Some habitat loss due to stand replacing fire

Resource	Habitat and LSR	Unlikely	Minor	Very Low	No Treatment	Habitat would not be affected by the fire.
Resource	Cultural Resource Sites	Unlikely	Minor	Very Low	No Treatment	Sites are on ridge and would not be affected by watershed processes post-fire.
Property	Pacific Power Water Diversion	Possible	Moderate	Intermediate	No Treatment	Downstream water diversion, possibility of sediment and ash
Property	Private Water diversion	Possible	Moderate	Intermediate	No Treatment	Downstream irrigation water diversion, some probability of mass wasting

**Table 8: Spruce Lake Fire**

Value (Life/Property/Resources)	Value At Risk	Probability of Damage or Loss	Magnitude of Consequences	Risk	Treatment	Notes
Life & Safety	People being in fire area post fire	Likely	Major	Very High	Post "Entering Burned Area" Warning Signs near the ends of FSR900 & FSR970 where roads access the burn area.	Risk from hazard trees, stump holes, and flooding
Property	FSR 6500-100	Unlikely	Moderate	Low	No Treatment	Road is downstream from the fire area. Stream crossing is three culverts.
Property	FSR 6530-970	Unlikely	Moderate	Low	No Treatment	Two culverts below fire area.
Resources	Native Vegetation	Very Likely	Moderate	Very High	Early Detection and Rapid Response; Surveys and Treatments	High probability of invasive plant invasion after wildfire.
Resources	Soil Productivity	Possible	Minor	Low	No Treatment	Some mass wasting potential
Resources	Water Quality	Possible	Minor	Low	No Treatment	Some ash, fine sediment, and mass wasting potential
Resources	Northern Spotted Owl Habitat – LSR	Likely	Major	High	No Feasible Treatment	Some habitat loss due to stand replacing fire
Resources	Wolf Habitat	Unlikely	Minor	Very Low	No Treatment	Habitat should not be affected by fire.

B. Emergency Treatment Objectives:

1. **Roads** – To stabilize the transportation roads system and prevent further damage resulting from:
  - a. Erosion and other effects of storm water runoff as a result of fire damage on adjacent lands.
  - b. Public Safety Hazards as a result of facilities or structures damaged or destroyed.
2. **Trails** – Storm proof trails and close portions of them to the public, as warranted, until properly stabilized.
3. **Ecological integrity** – Reduce the potential for impaired vegetative recovery and introduction/spread of invasive weeds by conducting detection surveys and rapid response eradication efforts where feasible.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land **80** %   Channel **N/A** %   Roads/Trails **75** %   Protection/Safety **80** %

D. Probability of Treatment Success (Table 9)

Table 9: Years after Treatment			
	1	3	5
Land	80	90	100
Channel	--	--	--
Roads / Trails	80	90	100
Protection / Safety	80	90	100

E. Cost of No-Action (Including Loss): \$10,784,000 (Includes an estimated monetary value of 10M for loss of life).

F. Cost of Selected Alternative (Including Loss): \$2,902,006 (Includes an estimated monetary value of 10M for loss of life).

G. Skills Represented on Burned-Area Survey Team:

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

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## H. Treatment Narrative:

### ***Blanket Creek Fire***

#### Life and Safety Treatment:

Road Hazard Signs: Hazard trees are present throughout the burned interior of the fire. This is a hazard to FS employees or the public in the area, with a likely probability and major potential of consequence if someone were to be struck by a falling tree. Because of the likely probability, administrative closure is considered warranted; signage would be a low-cost alternative to mitigate risk and liability. Two warning signs with the narrative "Warning Entering Burned Area – Risk From Flash Flooding, Rock Fall, and Debris Flows" are proposed on FS lands at the east entry points to the burned area along Forest Service Roads 6205 and 6205-100. Both of these routes have existing gates, however the gate on FSR 6205 would need to be repaired to be locked for the closure. The third sign would be located along the entry point to the fire area along FSR 6000-830. This road would need a new gate installed to initiate a closure post fire.

Table 10: Life and Safety Treatments – Road Hazard Signs and Gates				
Item	Unit	Unit Cost	# of Units	Cost
Warning Sign (3' x 6')	Each	\$200	3	\$600
New Gate	Each	<del>\$5,500</del> \$6,529	1	<del>\$5,500</del> \$6,529
Repair Gate on FSR 6205	Each	\$1,000	1	\$1,000
Total Request				\$7,100 (\$8,129)

Trail Hazard Signs: Hazard trees are present throughout the burned interior of the fire. This is a hazard to FS employees or the public in the area, with a likely probability and major potential of consequence if someone were to be struck by a falling tree. Because of the likely probability, administrative closure is considered warranted; signage would be a low-cost alternative to mitigate risk and liability. Six warning signs with the narrative "Warning Entering Burned Area – Risk From Flash Flooding, Rock Fall, and Debris Flows" or similar wording are proposed on FS lands at each of the trail entry points to the burned area along the Varmint Camp Trail #1070, the Cold Springs Trail #1073 and Red Blanket OHV Trail #32.

Table 11: Life and Safety Treatments – Trail Hazard Signs				
Item	Unit	Unit Cost	# of Units	Cost
Trail Warning Sign/Install	Each	\$275	6	\$1,650
Total Request				\$1,650

#### Land Treatments:

Invasive plant detection surveys – The objective is to protect native plant populations by performing early detection rapid response surveys (EDRR) of invasive plants spreading into fire-exposed moderate to high severity burned soils. Target species are Oregon Department of Agriculture designated invasive plants and other non-native plants judged to be a risk to native vegetation including the sensitive Mt. Mazama collomia.

Treatment of known invasive plant sites and new sites detected through surveys – Objective is to strategically treat known populations of high priority invasive species. Strategic treatments include sites

adjacent to moderate and high severity burned areas that are also adjacent to Crater Lake NP lands and populations of the globally rare endemic Sensitive plant species *Collomia mazama*. Treatments are to be enacted following Rogue River-Siskiyou integrated invasive plant treatment methodology which includes native plant revegetation in the highest priority sites. All revegetation work would be completed within one year of containment.

Native plant materials will be used to protect sensitive species populations of *Collomia mazama* (Mt. Mazama *collomia*) and control an isolated population of *Linaria vulgaris* (butter and eggs).

<b>Table 12: Weed Surveys and Rapid Response Costs</b>				
<b>Item</b>	<b>Unit</b>	<b>Unit Cost</b>	<b># of Units</b>	<b>Cost</b>
1 GS-11 botanist	Hours	\$44	40	\$ 1,750
2 GS-5 Invasive Plant Techs (EDRR Surveys)	Days	\$256	40	\$10,240
1 GS-7 and 1 GS-5 Invasive Plant Techs (Herbicide Treatments)	Days	\$320	12.5	\$4,000
4 GS-5 Invasive Plant Techs (Manual Treatments)	Days	\$512	20	\$10,240
Supplies	Each	\$120	2	\$ 240
Native plant materials	Each	\$2500	1	\$2500
Vehicle gas mileage	Miles	\$0.40/mile	800	\$ 320
Vehicle FOR	Month	\$300	2	\$ 600
<b>Total Cost</b>				<b>\$27,390</b> <b>(\$29,890)</b>

Channel Treatments:

None

Roads and Trail Treatments:

Road Treatments:

Culverts, bridges, roadside ditches, and other road drainage features are at risk from these watersheds. Increased runoff and sediment from the burned areas can negatively affect the road prism, damaging the road, eroding land downslope of the road and routing flow and sediment directly to stream channels. Culverts associated with these roads are at risk of plugging from debris carried down channels from burned watersheds. Some culverts are undersized for the expected increases in peak flows and are at risk of failure from overtopping. Culvert failures may increase the magnitude of flood, sediment and erosion hazards in downstream communities and private lands and increase scouring of stream channels on NFS lands.

<b>Table 13: Road Treatments, FSR6205, 6205-100, 6000-830 through mod &amp; high severity</b>				
<b>Item</b>	<b>Unit</b>	<b>Unit Cost</b>	<b># of Units</b>	<b>Cost</b>
Installation of rolling dips w/Aggregate Material	Each	\$2,250 \$4,954	7	\$15,750 \$34,678
Clean Drainage Structures (Culverts)	Each	\$200	55	\$11,000
Cleanout roadside ditch FSR 6205, 6205-100	Feet	\$5/Foot	800	\$4,000
Danger Tree Mitigation for Work Areas	Each	\$1,500 \$2,100	1	\$1,500 \$2,100
Cleanout Log Jam on FSR6205 at Varmint Creek	Each	\$5,100	1	\$5,100
Contractor Mobilization	Each	\$5,000 \$14,400	1	\$5,000 \$14,400
Storm Inspection and response				
GS-11	Hours	\$50/Hour	60	\$3,000
GS-9	Hours	\$40/Hour	60	\$2,400

Vehicle 4812 (20 Days of Use and 3,000 miles of travel)	Each	\$1,440	1	\$1,440
GS-11 Contract Admin, COR	Hours	\$50/Hour	120	\$6,000
<b>Total Cost</b>				<b>\$55,190</b> <b>\$84,118</b>

#### Trail Treatments:

Trail Storm Proofing: Prior to the first damaging rain events and within the first year following the fire, storm proofing is recommended to minimize erosion of the trail tread. Storm proofing treatments, implemented with hand-tools, would include out-sloping, de-berming, water-bars, and other suitable treatments outlined in the BAER Treatments Catalog to protect the trails from accelerated post fire flows and soil erosion. Includes snagging hazard trees as necessary for worker safety during trail work. The Varmint Creek Trail (Trail 1070) within Moderate and High SBS would be treated. Repairs are recommended for approximately 1 mile of trail. Total estimated cost for a 4 person crew with supervisor, materials and supplies, vehicle cost for 2 weeks = \$4,756.00.

After the Initial BAER assessment, the Blanket Fire made large runs into the Sky Lakes Wilderness, burning over an extensive wilderness trail system, including a section of the Pacific Crest Trail. The following trail sections on the Rogue River-Siskiyou NF within Moderate and High SBS would be treated:

<b>Table 14: Trail Storm Proofing Treatments in Sky Lakes Wilderness through mod &amp; high soil burn severity</b>				
<b>Trail Name &amp; Trail No.</b>	<b>Units</b>	<b># of Units</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Halifax Trail #1088	Miles	0.12	\$4,000	\$480
Lucky Camp Loop Trail #1083	Miles	1.31	\$4,000	\$5,240
McKie Camp Trail #1089	Miles	2.45	\$4,000	\$9,800
Mudjekeewis Trail #1085	Miles	1.98	\$4,000	\$7,920
Pacific Crest Trail – Wilderness #2000	Miles	2.0	\$4,000	\$8,000
Red Blanket Trail #1090	Miles	1.38	\$4,000	\$5,520
Stuart Falls Trail #1078	Miles	2.17	\$4,000	\$8,680
Tom and Jerry Trail #1084	Miles	1.45	\$4,000	\$5,800
<b>Total Miles and Cost</b>		<b>12.86</b>		<b>\$51,440</b>

#### Structures:

None

#### ***Spruce Lake Fire***

##### Life and Safety Treatment:

Hazard Signs: Hazard trees are present throughout the burned interior of the fire. This is a hazard to FS employees or the public in the area, with a likely probability and major potential of consequence if someone were to be struck by a falling tree. Because of the likely probability, administrative closure is considered warranted; signage would be a low-cost alternative to mitigate risk and liability. Two warning signs with the narrative "Warning Entering Burned Area – Risk From Flash Flooding, Rock Fall, and Debris Flows" are proposed on FS lands at the east entry points to the burned area at the end of Forest Service Roads 6530-900 and 6530-970.

<b>Table 15: Life and Safety Treatments - Hazard Signs and Gates</b>				
<b>Item</b>	<b>Unit</b>	<b>Unit Cost</b>	<b># of Units</b>	<b>Cost</b>
Warning Sign (3' x 6')	Each	\$200	2	\$400
<b>Total Request</b>				<b>\$400</b>

Land Treatments:

Invasive Plant treatments for the Spruce Lake Fire are included in the costs for the Blanket Creek Fire.

Channel Treatments:

None

Roads and Trail Treatments:

None

Structures:

None

**I. Monitoring Narrative:**

No treatment monitoring other than for Invasive Plants (covered under land treatments) are proposed.



## Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			NFS Lands		
		Unit	# of		Other
Line Items	Units	Cost	Units	BAER \$	\$
<b>A. Land Treatments</b>					
Noxious Weeds	acre	273.9	100	\$27,390	\$0
Noxious weeds - seed	each	2500	1	\$2,500	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Land Treatments				\$29,890	\$0
<b>B. Channel Treatments</b>					
None				\$0	\$0
				\$0	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Channel Treat.				\$0	\$0
<b>C. Road and Trails</b>					
Storm Proof FSR 6205	mile	3560.65	15.5	\$55,190	\$0
Storm Proof Roads Additional	each	\$28,928	1	\$28,928	
Storm Proof Trail 1070	mile	4756	1	\$4,756	\$0
Storm Proof Trails - W	mile	4000	12.86	\$51,440	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Road & Trails				\$140,314	\$0
<b>D. Protection/Safety</b>					
Rd Warning Signs/Gate	each	7100	1	\$7,100	\$0
New Gate Additional Cost	each	1029	1	\$1,029	
Trail Warning Signs	each	275	6	\$1,650	\$0
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Structures				\$9,779	\$0
<b>E. BAER Evaluation</b>					
Assessment Team	report			\$0	\$40,623
Interim Assessment	report			\$0	\$6,071
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Evaluation				\$0	\$46,694
<b>F. Monitoring</b>					
				\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0
Subtotal Monitoring				\$0	\$0
<b>G. Totals</b>				\$179,983	\$46,694
Previously Approved				\$96,086	
Previously Approved Interim 1				\$53,940	
Total for This Request				\$29,957	

## PART VII - APPROVALS

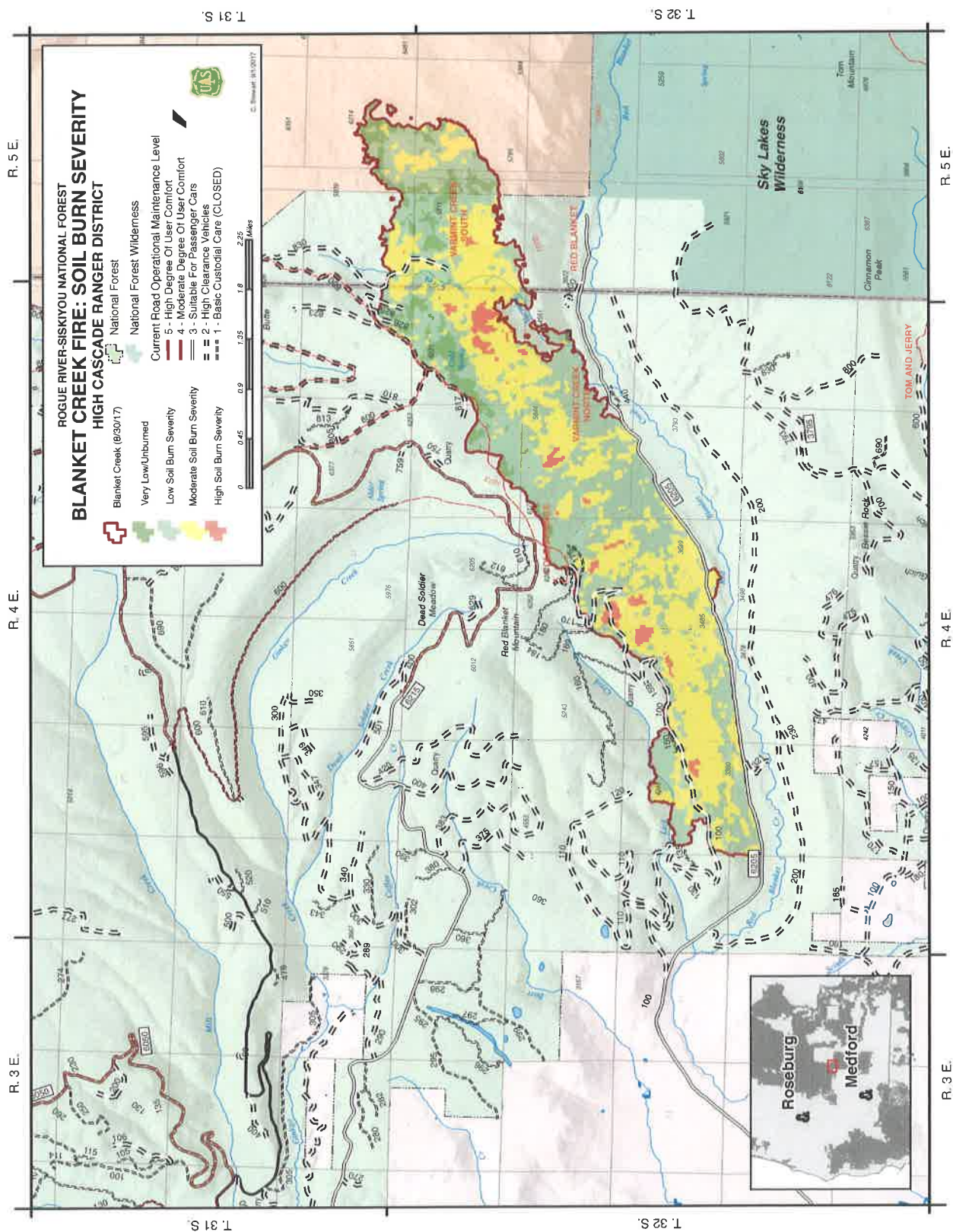
1.  (For)  
Forest Supervisor (signature)

11/9/17  
Date

2. \_\_\_\_\_  
Regional Forester (signature)

\_\_\_\_\_  
Date

Appendix A: Maps and Figures  
 Figure 1: Blanket Creek Soil Burn Severity Map





**ROGUE RIVER-SISKIYOU NATIONAL FOREST  
HIGH CASCADE RANGER DISTRICT**

**SPRUCE LAKE FIRE: SOIL BURN SEVERITY**

**Legend:**

- Spruce Lake Fire (8/24/17)
- National Forest
- National Forest Wilderness
- Current Road Operational Maintenance Level
- 5 - High Degree Of User Comfort
- 4 - Moderate Degree Of User Comfort
- 3 - Suitable For Passenger Cars
- 2 - High Clearance Vehicles
- 1 - Basic Custodial Care (CLOSED)
- Very Low/Unburned
- Low Soil Burn Severity
- Moderate Soil Burn Severity
- High Soil Burn Severity

**Scale:** 0 0.45 0.9 1.35 1.8 2.25 Miles

**Map Labels:** Spruce Lake, Wizard Island, Discovery Point, The Watchman, Williams Crater, Hillman Peak, Gravel Pit, Campsite, Loop, Trail, Over Trail, Crater Sprout, Spruce Lake, Campsite, Loop, Trail, Over Trail, Crater Sprout, Spruce Lake, Campsite, Loop, Trail, Over Trail, Crater Sprout.

**Inset Map:** Roseburg, Medford



Figure 3: Blanket Creek Proposed Treatments

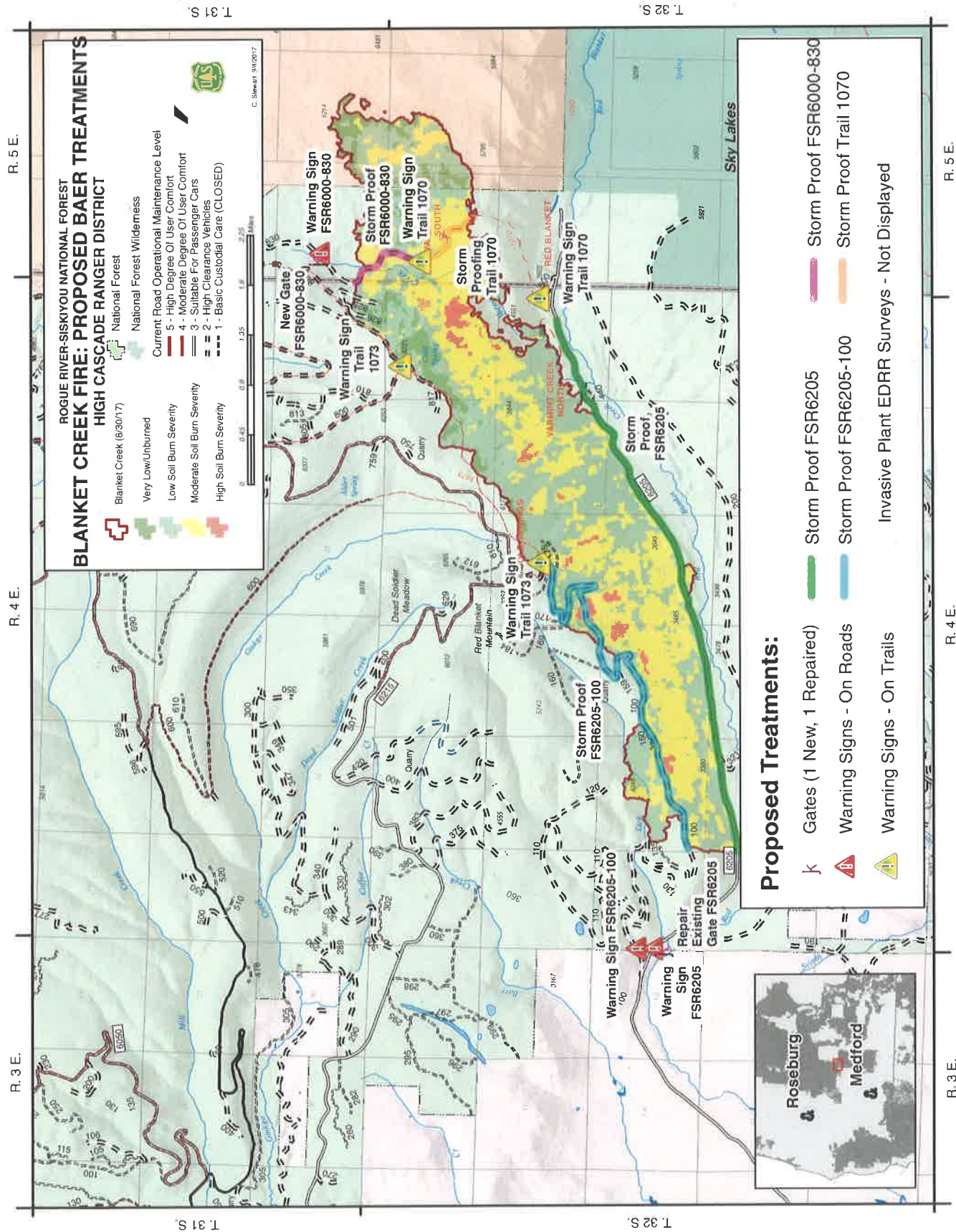




Figure 4: Spruce Lake Proposed Treatments

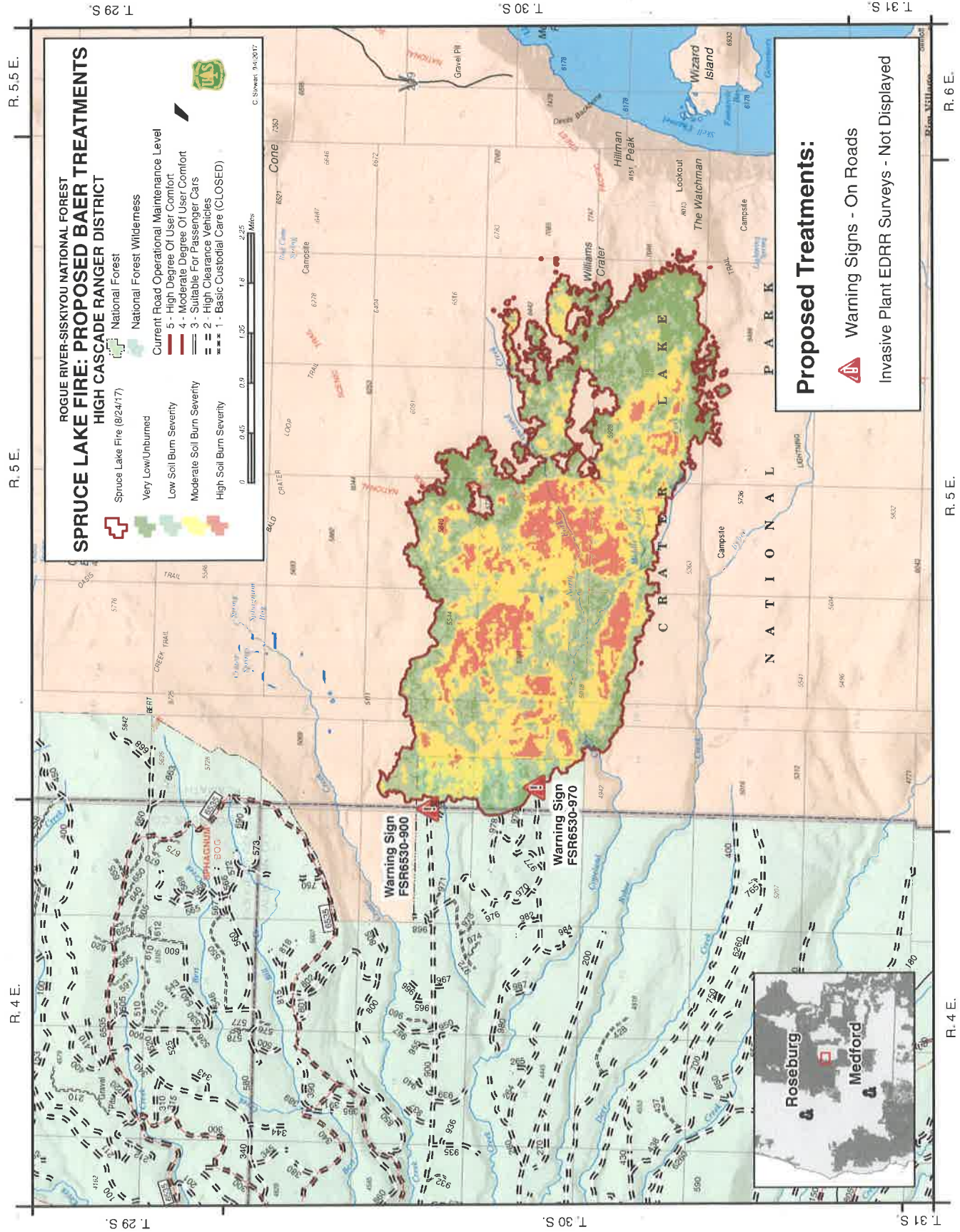




Figure 5. Blanket Creek – Final Burn Severity, and Proposed Trail Treatments in Sky Lakes Wilderness, Rogue River-Siskiyou NF

