



Forest
Service

Klamath
National
Forest

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File Code: 2520

Date: October 8, 2013

Route To:

Subject: Butler Fire - Burned Area Emergency Response Report

To: Regional Forester

Enclosed is the initial Burned Area Emergency Response (BAER) Report for the Butler Incident. The report describes the values at risk, threats to those values, proposed emergency treatments with their objectives, and funds requested for the emergency treatments.

The Butler Fire burned approximately 22,427 acres of Klamath National Forest land in Siskiyou County, CA from July 31 to September 29, 2013. The fire was the result of human-started ignitions along the Salmon River road (County road 1C01) that also resulted in the Salmon River Complex. The fire re-burned steep granitic watersheds which burned at high intensity during the Hog Fire of 1977. Experience from these past fires has shown that without treatment, large amounts of sediment are likely to be mobilized and delivered to the Salmon River, Forest Service roads and trails located in granitic soils are likely to incur damage, and noxious weeds are likely to spread into previously unaffected areas.

I support the BAER Team's recommendations to implement the enclosed land, channel, road, trail, and safety treatments to protect human life and property, significant natural resource values, and cultural resources in the burned area. I am requesting funds in the amount of \$90,594 to implement the proposed treatments.

I have reviewed the plan and determined that this is an emergency in nature and the actions will assist in reducing the risks to the values identified.

If you have any questions, please contact Dan Blessing, Natural Resource Officer, at (530)841-4521 or email at dblessing@fs.fed.us.

PATRICIA A. GRANTHAM
Forest Supervisor



It's Cool to Be Safe

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Date of Report: 10/7/2013

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

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

PART II - BURNED-AREA DESCRIPTION

- | | |
|---|--|
| A. Fire Name: Butler Fire | B. Fire Number: CA-KNF-005949 |
| C. State: CA | D. County: Siskiyou, Humboldt |
| E. Region: R5 | F. Forest: Klamath, Six Rivers |
| G. District: Salmon River RD
Ukonom RD, Orleans RD | H. Fire Incident Job Code: P5HS91 |
| I. Date Fire Started: July 31, 2013 | J. Date Fire Contained: 9/29/2013 |
| K. Suppression Cost: \$59 million (Forks Complex including Salmon River Complex and the Butler Fire) | |
| L. Fire Suppression Damages Repaired with Suppression Funds | |
| 1. Fireline waterbarred (miles): Approximately 43.9 miles of handline and 9.5 miles of dozer line waterbarred. | |
| 2. Fireline seeded (miles): No fireline seeded at this time. | |

3. **Other (identify):** Safety zones, staging areas, spike camps and drop points are in the process of being repaired if needed. Roads were graded and drainage repaired where suppression activities warranted doing so.

M. Watershed Numbers:

Soil Burn Severity Acres by Watershed

HUC 14	HUC 14 Name	Acres	very low severity	low severity	moderate severity	high severity	total burned	% burned
18010210040304	Butler Creek	4269	898	1257	373	55	1685	39%
18010210040104	Hammel Creek	3052	400	1525	716	260	2501	82%
18010210040103	Granite Creek	3558	237	992	838	484	2314	65%
18010210010803	McNeal Creek-SF Salmon River	3464	242	685	332	53	1070	31%
18010210040101	Upper Nordheimer Creek	6246	267	350	89	7	446	7%
18010210040102	China Creek	2488	149	438	229	263	930	37%
18010210040303	Portuguese Creek-Salmon	5166	373	628	162	28	819	16%
18010210040301	Lewis Creek-Salmon River	4221	357	1409	701	243	2353	56%
18010210040202	Horn Creek-Salmon River	4894	487	1671	607	134	2412	49%
18010210040105	Lower Nordheimer Creek	4488	592	2394	1060	365	3819	85%

N. Total Acres Burned:

22288 NFS Acres [0] Other Federal [0] State 139 Private

Soil Burn Severity Acres by Land Status					
Land Owner	Very Low Severity (Acres)	Low Severity (Acres)	Moderate Severity (Acres)	High Severity (Acres)	Total Burned (Acres)
Six Rivers	7	16	11	5	39
Klamath NF - Ukonom	1634	3259	1232	338	6463
Klamath NF -Salmon River	2376	8002	3859	1549	15786
Private	62	72	5	0	139
total	4079	11350	5107	1892	22427

O. Vegetation Types:

The vegetation can generally be described as, mixed evergreen forests dominated by Douglas-fir and ponderosa pine, with mixed components of sugar pine, white fir, incense cedar, and knobcone pine, depending on elevation and exposure. Hardwood understories composed of mixed evergreens including Pacific madrone, canyon live oak, and giant chinquapin are common. Areas of previous burns (within 10 years) are dominated by regenerating shrub fields with multiple species of manzanita, deerbrush and snowbrush.

Numerous conifer plantations of ponderosa pine and Douglas fir exist in this fire perimeter dating back to the early 1980's, post Hog Fire.

P. Dominant Soils:

The major soils within the Butler Fire are Clallam, Deadwood, Holland, and Gilligan. Most are deep with the exception of Deadwood which is shallow. Clallam, Deadwood, Holland are formed from metamorphic rock and are gravelly to extremely gravelly loams. Gilligan is formed from granite and are sandy loams. Clallam, Holland, and Deadwood have moderate to high erosion hazard ratings depending on burn severity and slope steepness. With sandy soil textures, the majority of Gilligan soils have a high soil erosion hazard rating.

Q. Geologic Types:

The underlying bedrock in the Butler Fire perimeter is mainly metasedimentary/metavolcanic. There is a granitic pluton in the upper northwest of the fire perimeter in the Butler Creek and Hammel Creek watersheds. There is 223 acres of active landslides and over 4600 acres of inner gorge within the project area. All the watersheds in the fire perimeter have experienced debris flows recent history including during the 1997 flood event. McNeal and Butler Creek both have several recent active landslides. These landslides were burned with low to very low burn severity and are not likely to be impacted directly by fire effects.

R. Miles of Stream Channels by Order or Class:

Flow Regime by Severity (Miles)					
Flow Regime by Land Status	Very Low Severity (Miles)	Low Severity (Miles)	Moderate Severity (Miles)	High Severity (Miles)	Total (Miles)
Klamath NF					
Intermittent	15.9	40.9	12.9	2.2	71.9
Perennial	10.4	19.3	1.7	0.1	31.6
Grand Total	26.3	60.2	14.6	2.3	103.5

S. Transportation System

Trails: 20.8 miles

FS Roads: 18.9 miles

County Road: 3.8 Miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):	3962 (very low)	11435 (low)
	5132 (moderate)	1898 (high)

Approximately 8% of the Butler Fire had a high soil burn severity and 23% had a moderate soil burn severity (see soil burn severity map below). These areas are well distributed throughout the fire and except for two locations in China and Granite Creeks, patches of high and moderate soil burn severity are relatively small. The rest of the fire was either low or very low soil burn severity. It is very important to understand the difference between fire intensity or burn severity as discussed by fire behavior, fuels, or vegetation specialists, and soil burn severity as defined for watershed condition evaluation in 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 analysis, we are not mapping 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.



Butler BAER Assessment Soil Burn Severity

Klamath National Forest & Six Rivers National Forest
24 September 2013

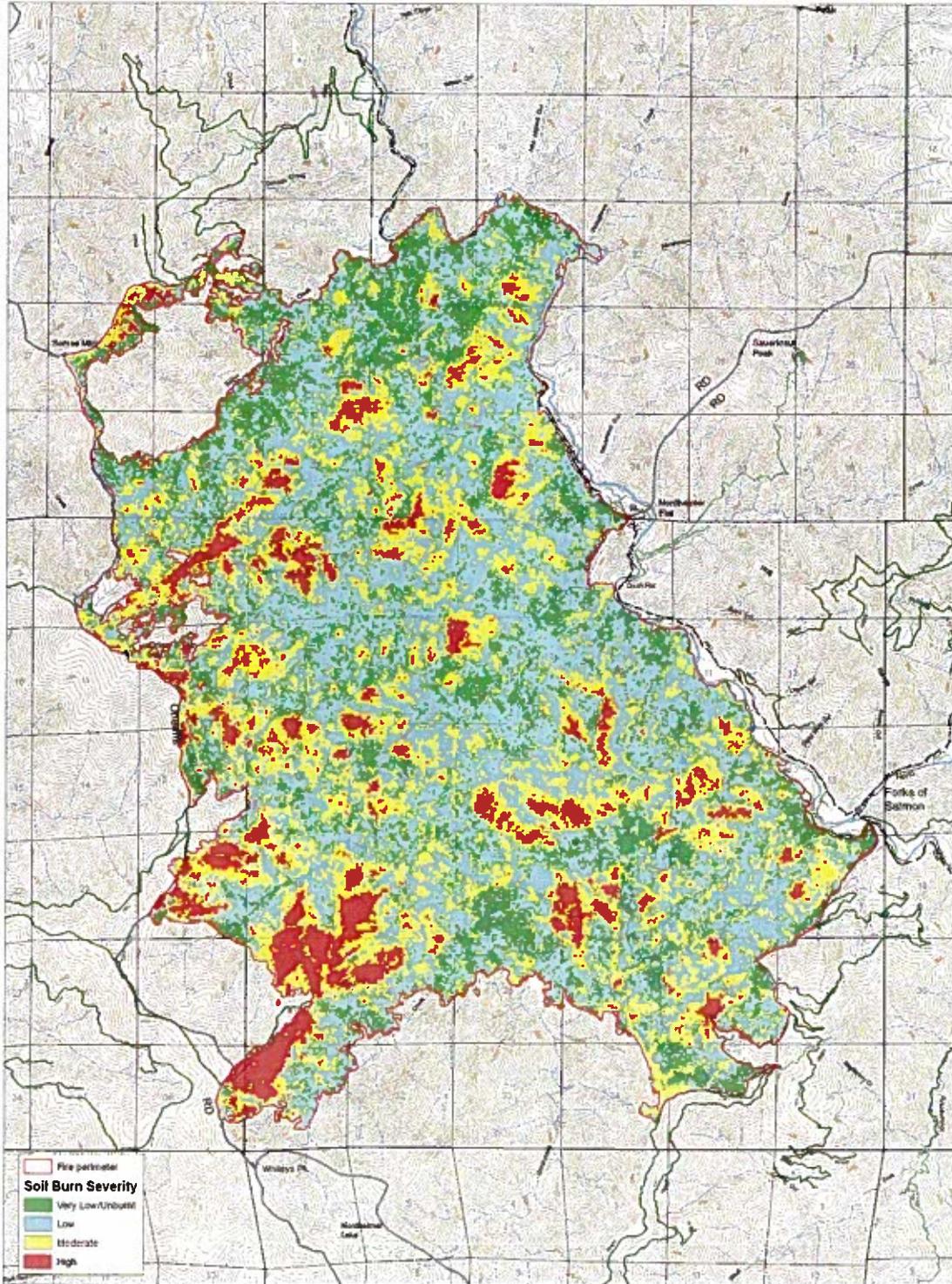
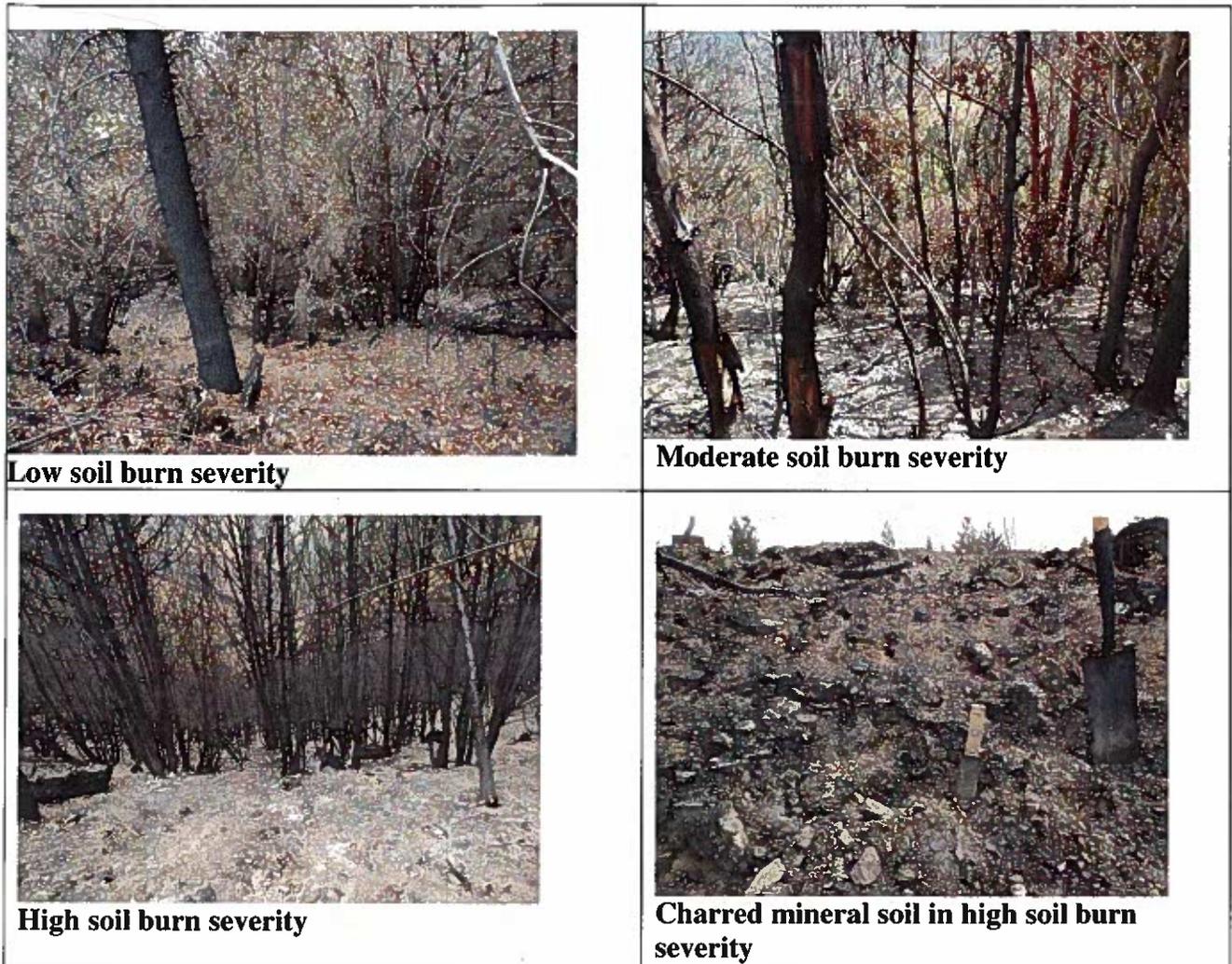


Figure 1 – Pictures of soil burn severity in upper Boulder Creek



Soil burn severity is assessed by looking at above ground cover and surface cover, soil char (depth of soil burning), soil structure, destruction of soil organic matter, destruction of fine roots, and water repellency strength and depth. Areas of high soil burn severity typically had nearly all surface organics removed and char depths of up to 1 in affecting soil structure and fine roots. Water repellency in high soil burn severity is running from 2 to 4 inches deep depending on soil texture and vegetation that was burned. In moderate soil burn severity most of the surface organics are consumed but fine roots and soil structure are unaffected. Water repellency is low or non-existent and scorched needles and leaves provide for potential soil cover. In low soil burn severity the surface litter is only partially consumed and the shrub or canopy is still partially green.

B. Water-Repellent Soil (acres): 949 (50% repellency of high soil burn severity acres)

C. Soil Erosion Hazard Rating (acres):

113 (low) 13,753 (moderate) 8,364 (high) 197 (very high)

Erosion Hazard Rating		
Rating	Acres	Percent
low	113	.5%
moderate	13,753	61.3%
high	8,364	37.3%
very high	197	0.9%
Total	22,427	

D. Erosion Potential: # tons/acre: average erosion potential is 18 tons/acre (Calculated from WEPP-ERMIT for a 2-year storm event and untreated hillslope. Model accuracy is +-50%)

E. Sediment Potential: # cubic yards / square mile: 780 cu yards/sq mi (Calculated by converting erosion potential in D. to cu yards/square mile (assuming 1 cu yards equals 1.5 tons) and using a 10 percent delivery factor)

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 60

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

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 2.9

F. Design Flow, (cubic feet / second/ square mile): 162

(Average design flow of 10 sub-drainages delineated for soil erosion, hydrology and geo debris flow analysis)

G. Estimated Reduction in Infiltration, (percent): 41

(calculated based on increase in average adjusted design flow)

H. Adjusted Design Flow, (cfs per square mile): 229

(Average adjusted design flow of 10 sub-drainages delineated for soil erosion, hydrology and geo debris flow analysis)

PART V - SUMMARY OF ANALYSIS

Background- the Butler Fire, which is part of the Forks Complex, burned approximately 22,427 acres of forest in Siskiyou County, CA from July 31 to September 18, 2013. The Butler Fire started near Butler Mountain and spread to the south and south-west into several watersheds that drain into the Salmon River mostly below the confluence of the North and South Fork. Fire

effects within the Butler Fire perimeter resulted in 69 percent unburned/very low to low, 23 percent moderate and 8 percent high soil burn severity. Values at-risk include public safety on affected roads, trails, and private property, Forest Service roads infrastructure, natural resource including fisheries, streams, and native plant communities, and cultural resources.

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

The following is a brief summary of the values within and along the fire area as well as the threats to those values.

Values at Risk:

The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value identified during Assessment:

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

Values At Risk Matrix Table

Risk Type	Value At Risk	Potential Threats	Probability of Damage	Magnitude of Consequences	Risk	Treatment
Life/PVT property	Private land at Butler Flat	Debris flows and flooding	Possible	Moderate	Intermediate	Communicate risk with county and public
life/safety	Ingress/egress on Salmon River Road	Debris flows and flooding	Possible	Moderate	Intermediate	Communicate risk with county and public
life/safety	Public safety from rock fall on FS roads and Salmon River Road	Rock fall	Very Likely	Moderate	Very High	Communicate risk with county and public. Temporarily close FS roads in fire area.
life/safety	Orleans Mtn. Trail	Rock fall, falling snags, erosion, trail collapse	Possible	Moderate	Intermediate	Install hazard warning signs, repair collapsed tread

life/safety	Nordheimer Trail	Rock fall, falling snags, erosion, trail collapse	Possible	Moderate	Intermediate	Install hazard warning signs, erosion control, repair collapsed tread
FS property	10N10	Flooding, debris flows	Likely	Major	Very High	Stormproof MP 5.23, 5.26, 5.50, 5.88
FS property	10N04	Flooding, debris flows	Possible	Moderate	Intermediate	Rolling dips MP 0.44, 0.56, 7.88, 8.11, 8.26
FS property	10N05	Flooding, debris flows	Possible	Moderate	Intermediate	Rolling dips MP 0.21, 1.84, 2.67,
FS property	10N05A	Flooding, debris flows	Possible	Moderate	Intermediate	Rolling dips MP 0.25, 0.55, 0.60
Natural Resources	Native habitat prone to invasion from noxious weeds	invasive noxious weeds	Likely	Moderate	High	Detection survey and hand treatment to remove noxious weeds
FS property	Nordheimer Fish Ladder	debris flows, log jams	Likely	Moderate	High	Remove any material in fish ladder by hand
Natural Resources	Coho Critical Habitat - Nordheimer Creek	Sedimentation, debris flows	Possible	Major	High	Stormproof FS road 10N10 at MP 5.23, 5.26, 5.50, and 5.88. Trail repair work on Nordheimer trail
Natural Resources	Coho Critical Habitat - Hammel Creek	Sedimentation, debris flows	Possible	Moderate	High	Road treatments 10N10
Natural Resources	Coho Critical Habitat - McNeal Creek	Sedimentation, debris flows	Possible	Major	High	Road treatments 10N04 & 10N05
Natural Resources	303d listings - McNeal	Sedimentation, debris flows, stream shade loss	Possible	Major	High	Road treatments 10N04 & 10N05
Natural Resources	303d listings - China Creek	Sedimentation, debris flows, stream shade loss	Possible	Major	High	None. Treatments not feasible
Natural Resources	303d listings - Granite	Sedimentation, debris flows, stream shade loss	Likely	Major	Very High	Road treatments 10N10

Natural Resources	303d listings - Hammel Creek	Sedimentation, debris flows, stream shade loss	Likely	Major	Very high	Road treatments 10N10
Natural Resources	303d listings - Nordheimer Creek	Sedimentation, debris flows, stream shade loss	Likely	Major	Very High	Road treatments 10N05A & 10N10
Natural Resources	303d listings - Horn Creek	Sedimentation, debris flows, stream shade loss	Possible	Major	High	Road Treatments 10N05
Natural Resources	303d listings - Lewis Creek	Sedimentation, debris flows, stream shade loss	Likely	Major	Very High	None. Treatments not feasible
Natural Resources	303d listings - Butler Creek	Sedimentation, debris flows, stream shade loss	Possible	Major	High	None. Treatments not feasible
Natural resources	Soil productivity	Soil Erosion affecting site productivity	Unlikely	Moderate	Low	None
Cultural Resources	Known Archaeological Sites	Looting, vandalism, erosion, falling snags	Likely	Moderate	High	Camouflage, on-site monitoring

- **Human Life and Safety-**

- Potential loss of or injury to human life exists along private land at Butler Flat and along Salmon River Road from flooding and debris flows due to high and moderate soil burn severities, steep slopes, and hydrophobic soils. The *Probability of Damage or Loss* is *possible* and the *Magnitude of Consequences* from human life and safety is *Moderate*. Therefore *risk* to human life and safety *Intermediate*. **Treatments Recommended – Coordination with Siskiyou County and public to communicate risk of debris flow and flooding on at Butler Flat and Salmon River Road.**
- Potential loss of or injury to human life exists along Salmon River Road and Forest Service roads from rock fall due to high and moderate soil burn severities and steep slopes. The *Probability of Damage or Loss* is *Very Likely* and the *Magnitude of Consequences* from human life and safety is *Moderate*. Therefore *risk* to human life and safety *very high*. **Treatments Recommended – Coordination with Siskiyou County and public to communicate risk of rock fall on Salmon River road. Temporarily close to Forest Service roads in the burn area.**
- Potential loss of or injury to human life exists along the Nordheimer and Orleans Mountain Trails. The presence of fire damaged trees along all trails within the burned

area, presents a hazard to recreationists with falling trees and fallen trees blocking the trail. Along sections of the Nordheimer and Orleans Trails, the trail shoulder and tread has been supported by shrub and tree roots which were burned, resulting in sloughing of the trail tread prism and collapsing of the trail tread. This presents a hazard to the recreating public utilizing the trails, especially those on horses that are traveling at higher rates of speed. The Probability of Damage or Loss to human life and safety would be Possible to Likely depending on the intensity of the burn and the topography of the area. The Magnitude of Consequences would be Moderate with potential injury to humans. With these two elements combined the risk is identified as Intermediate to High. **Treatments Recommended –Install hazard warning signs and trail work addressing areas with potential for trail collapse due to burned out roots and logs beneath the tread.**

- Property–

- FS Roads 10N10, 10N04, 10N05, 10N05A. Based on the runoff and debris flow modeling results the Probability of Damage or Loss of the fire affected road segment is Possible to Likely and the Magnitude of Consequences is Moderate to Major resulting in an intermediate to Very High risk. **Treatments Recommended –Install rolling dips on 10N04, 10N05, 10N05A, and 10N10. Potential culvert upgrade on 10N10.**
- Norheimer fish ladder. Based on debris flow modeling and past experience, logs and debris are likely to impact the fish ladder which would restrict anadromous fish access to most of Norheimer Creek Probability of Damage or Loss of the fire affected the fish ladder is Likely and the Magnitude of Consequences is Moderate to resulting in a High risk. **Treatments Recommended- Remove any material in fish ladder by hand**

- Natural Resources –

- Soil productivity on burned NFS lands. After a fire there is the potential threat of increased soil erosion affecting site productivity. The Probability of Damage or Loss is Unlikely and the Magnitude of Consequences would be Moderate resulting in Low risk. **No Treatments Recommended**
- Hydrologic Function on burned NFS lands. The critical values at risk are related to waters with special state or federal designations on or in close proximity to the burned NFS lands. The Salmon River is 303(d) impaired for elevated water temperature. Beneficial uses that are adversely effected by temperature impairment in the Salmon River include: Commercial or Sport Fishing; Cold Freshwater Habitat; Rare, Threatened, or Endangered Species ; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Native American Culture. The Salmon River Total Maximum Daily Load (TMDL) for Temperature and Implementation Plan links impairment to cumulative natural and human-caused sedimentation and stream shade loss. Therefore, potential threats to water quality in the Salmon River from the Butler Fire include: sedimentation, debris flows, and stream shade loss. Stream shade loss is related to wildfire effects and debris flows removing stream side vegetation. After a fire there is potential threat of stream channel alteration from increase peakflows, excess sedimentation and debris flows. Failure of road fill from debris flows and elevated peakflows would further impair stream channel function. The Probability of Damage or Loss is Possible to Likely and

*the Magnitude of Consequences would be Moderate to Major resulting in High or Very High risk. **Treatments Recommended - Reduce sediment loads and probability of fill failures via implementation of road and trail treatments.***

- *Water used for municipal, domestic, hydropower, or agricultural supply or waters with special state or federal designations on or in close proximity to the burned NFS lands. Domestic water sources for the Butler Flat were affected by the fire. However, more than 90% of the watershed was either unburned or had low soil burn severity. Therefore the risk of increased sedimentation and flooding are low in Butler Creek. The Probability of Damage or Loss is Unlikely and the Magnitude of Consequences is Moderate resulting in an Low risk. **No Treatments Recommended***
- *Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal or plant species on or in close proximity to the burned NFS lands. Probability of Damage or Loss of habitat for Federally Threatened coho and Northern Spotted Owl (and Critical Habitat) and FS Sensitive Chinook, steelhead, and lamprey species would be Possible to Likely. The Magnitude of Consequences would be Moderate to Major. With these two elements combined the risk is identified as Intermediate to High. **Treatments Recommended - Reduce erosion and debris flow threat via implementation of road and trail treatments.***
- *Native or naturalized communities on NFS lands where invasive species or noxious weeds are absent or present in only minor amounts. The Butler Fire on Klamath National Forest lands occurred in areas where noxious weeds are absent (wilderness and upper 2/3 of the watersheds) or present in only minor amounts (scattered along roads in the lower third of the watersheds). Dense infestations of dyer's woad and yellow starthistle occur adjacent to the fire footprint and are a likely seed source into the burn area. The Probability of Damage or Loss from non-native species introduction or spread is Likely to occur, with the Magnitude of Consequences being Moderate, this results in a risk assessment of High. **Treatments Recommended - Noxious weed detection surveys and hand treatment.***
- Cultural Resources –
 Values at risk relating to Cultural Resources include diminishing the National Register of Historic Places (NRHP) values of sites eligible for, or potentially eligible for, listing on the NRHP. The Butler Fire occurred on NFS lands where previously recorded sites that have not been evaluated for NRHP eligibility were located. Sites which have not been formally evaluated must be considered as potentially eligible until a formal determination has been made. Areas within sites which have been denuded of vegetation due to the fire have exposed artifact concentrations and features previously obscured from view, which are now subjected to an increased risk of looting or vandalism. Due to this site being located in close proximity to an easily accessible NFS road, as well as being visible from the same road, the Probability of Damage or Loss is considered Possible to Likely. The Magnitude of Consequences is Moderate, given that the loss of these resources would diminish the site's NRHP values. The combination of these elements results in an assessment of Intermediate to High utilizing the risk matrix. **Treatments Recommended – Installation of vegetative (or other appropriate) camouflage to obscuring artifact**

visibility from highly traveled road, limited monitoring to ensure that treatments are effective.

- B. Emergency Treatment Objectives (narrative):** 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 of natural resources. The application of these BAER treatments would minimize on-site and downstream damages to the identified values at risk. The emergency treatments being recommended by the Butler Fire BAER Team are specifically designed to achieve the following results.

Proposed Treatments

The objectives of the treatments are to:

1. Protect human life and safety by raising awareness through posting hazard warning signs on trails, reinforcing trail tread, improving trail drainage, improving road drainage, and communicate hazard of flooding, debris flow and rock fall to cooperating agencies and community groups.
2. Protect Forest Service investment in road and trail infrastructure by installing drainage features capable of withstanding potential increased stream flows and/or debris flows.
3. Protect hydrologic function, domestic water sources and 303(d) listed streams through Trail Maintenance and NFTS Road Stormproofing.
4. Protect ecological values of critical habitat of federally listed habitat for Federally Threatened coho (and Critical Habitat) and FS Sensitive Chinook, steelhead, and lamprey species Creeks through road and trail work.
5. Protect ecological value of biological diversity by monitoring and treating as necessary, sites where introduction of noxious weeds may have occurred in previously uninvaded sites.

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

A programmatic biological assessment (BA) for facility maintenance (including road maintenance, trail maintenance), on KNF lands for threatened and sensitive salmon and steelhead is in place, which will streamline ESA compliance and allow immediate implementation of BAER treatments.

If implementation occurs after October 15, extensions can be granted by a line officer assuming the project still meets BMPs and wet weather operations standards (WWOS). Examples of conditions that may warrant an extension are (a) an extended dry weather forecast or (b) a greater risk of environmental harm by leaving a site to over winter in its current condition versus finishing the work.

Land 90% Channel 90% Roads/Trails 90% Protection/Safety 90%

D. Probability of Treatment Success

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

E. Cost of No-Action (Including Loss): \$ \$2,124,800 (calculated from the Values at Risk (VAR) tool)

F. Cost of Selected Alternative (Including Loss): \$ 90,954 (calculated from the Values at Risk (VAR) tool)

G. Skills Represented on Burned-Area Survey Team:

- Hydrology Soils Geology Range
- Forestry Wildlife Fire Mgmt. Engineering
- Contracting Ecology Botany Archaeology
- Fisheries Research Landscape Arch GIS

Team Leaders: Joe Blanchard - Region 5 – Forest Soil Scientist, Klamath NF
Email: jhblanchard@fs.fed.us **Phone:** 530-4841-4591 **FAX:** 530-841-4571

Team:

- GREGG BOUSFIELD -HYDROLOGY
- MARLA KNIGHT - BOTANIST/INVASIVE SPECIES
- ANGIE BELL - GEOLOGY/GIS
- TOGAN CAPOZZA AND SAM COMMARTO - RECREATION
- DAVE SEILER - ENGINEERING
- MAIJA MENEKS- FISHERIES
- JOE BLANCHARD- SOILS
- ZACH RODRIGUEZ- ARCHAEOLOGY

H. Treatment Narrative:

Land Treatments:

Cultural Resource Treatments.

Treatment objectives to mitigate the Cultural Resources emergency include reducing the likelihood that sites will be subjected to looting and vandalism due to an increased visibility of artifacts, and ensuring that the implementation of treatments designed to mitigate other resource concerns do not negatively impact the NRHP values of eligible or potentially eligible sites.

Specific protection measures designed to reduce the probability of looting for selected artifact deposits include installation of locally available vegetative camouflage or other material (e.g. straw or wood shavings.) to obscure the visibility of artifacts on the surface. Following this treatment, monitoring will be necessary to evaluate the effectiveness of this treatment, which would consist of periodic site visits (approximately 2) throughout the year to monitor site condition and assess whether or not evidence of unauthorized artifact collection is present.

Cultural Resource protection measures applicable to the implementation of proposed treatments associated with other resources (e.g. soils and fishery) which occur within archaeological site boundaries include on-site monitoring by a qualified USFS Archaeologist during implementation.

Cultural Resource Treatment Costs

Item	Unit	Unit Cost	# of Units	Cost
GS-9 Archaeologist	Days	\$275	5	\$1375
Mileage	Miles	\$0.5	560	\$280
Camouflage Materials/Straw Bales	Bale	\$10	40	400
			Total Cost:	\$2,055

Noxious Weed/Invasive Plant Detection Surveys.

Treatments to mitigate the noxious weed emergency include an initial detection survey, combined with treatment at time of discovery, if possible. Surveys will begin in 2014 at times when the species are the most visible. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of

surveys in roads, dozer lines, drop points, helispots , wilderness trails, staging areas,water drafting sites, and safety zones, will be the first priority. The second priority for survey will be along hand lines.

All locations of noxious weeds discovered will be mapped and entered into the National Resource Inventory System (NRIS) according to National protocol. Treatment will be recorded as directed by the same National protocols. Treatment will consist of hand pulling to root depth and if seed is present, plants will be bagged and properly disposed of.

Weed Survey Cost Estimate

Weed Assessment Area	Survey Miles	Survey Acres	Labor Cost	Mileage Cost	Supplies	Project Admin	Total
Klamath	80	81	\$10080	\$1202	\$200	\$2095	\$13,577
Six Rivers	45	30	\$3520	\$1200	\$200	\$3450	\$8,370

Total Cost Estimate:	\$21,947
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Channel Treatments:

Based on debris flow modeling and past experience, logs and debris are likely to impact the fish ladder which would restrict anadromous fish access to most of Norheimer Creek. In the spring a small crew with chair saws can remove the logs and debris from the fish ladder.

Fish Ladder Treatment Costs

Item	Unit	Unit Cost	# of Units	Cost
GS-7 Crew (3 people)	Days	\$744	3	\$2232
Mileage	Miles	\$0.5	560	\$280
			Total Cost:	\$2512

Roads Treatments:

Results from hydrology, soil erosion, and debris flow models indicate that some roads within the Butler Fire area are at risk due to increased peak flows, sedimentation, and debris flows. In many areas of the fire ground cover was completely consumed The lack of vegetation and

ground cover is expected to result in increased flashy runoff, down slope movement of fine ash and sediment, rock fall, and debris flow until vegetation is reestablished.

Fire area maps and on the ground reconnaissance was conducted. The roads are anticipated to be at risk to post-burn runoff with increased sediment / debris delivery. Treatments are related to restoring and improving the drainage function to preserve property, public safety, and water quality.

Threats to life and property, effects on water quality, and the Forest Service Infrastructure (roads and trails) are considered the values at risk. The Forest Service developed roads and trails are considered a government investment or asset which are documented in Infra, and are needed for emergency, administrative and recreational access. Proposed road treatments are estimated as high as \$50,049. The value of the existing road system varies depending on individual road designs, maintenance and service levels. With an estimated value of \$150,000 per mile, the road system within the fire perimeter is valued at approx. \$4-million. The proposed road treatments if implemented as prescribed will reduce risks to life, property, and water quality.

Roadway drainage structures are at risk of losing their function and diverting water onto the roadway when becoming clogged with debris during post-burn storm events. To prevent this risk it is necessary to restore and improve drainage function by constructing road dips and armoring fill slopes to protect the road prism from anticipated increased post burn runoff and sediment / debris delivery. The risk can be effectively mitigated on roads 10N04, 10N05, 10N05A and 10N10 with rolling dips. One crossing on 10N10 is at a very high risk for failing so culvert replacement, additional aggregate, and riprap is needed to armour the crossing.

Trail Treatments:

On the Nordheimer and Orleans Mountain Trails in areas where there are burned out cavities beneath the tread, rock will be used to fill and reinforce the area.

On sections of the Nordheimer Trail water bars will be installed or existing water bars cleaned to divert surface water, curb trail erosion, and protect water quality. Installation should be designed to last no more than 3 years -- permanent structures are not part of this treatment.

Trail work addressing areas with potential for trail collapse due to burned out roots and logs beneath the tread and erosion control measures will be implemented by a small force account trail crew. The implementation of the work will take place as soon as practical, weather permitting. The cost of this trail tread work is \$11,165.

Trail Treatments Costs

Item	Unit	Unit Cost	# of Units	Cost
Trail Crew	Hours	\$46	160	\$7,360
GS-7 Crew Oversight	Hours	\$31	40	\$1,240
Field Per Diem	Days	\$33.75	60	\$2,025
Mileage	Miles	\$0.72	750	\$540
Total Cost:				\$11,165

Protection/Safety Treatments:

Relative to the increased risk posed by wind thrown trees and deteriorated trail tread conditions within the burned area, safety-hazard notification signs should be developed, purchased and posted at all trailheads leading into the burned area.

Purchasing and installing hazard warning signs at trailheads that enter the burned area could be implemented almost immediately. This would help warn users of the possible dangers they may encounter along the trails. This treatment is practical and technically feasible and the cost \$1,231.

Trail Safety Costs

Item	Unit	Unit Cost	# of Units	Cost
GS-7	Hours	\$31	24	\$744
Posts	Each	\$12	6	\$72
Hazard Signs	Each	\$10	6	\$60
Mileage	Miles	\$0.79	450	\$355
Total Cost:				\$1231

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Implementation Monitoring:

Road work will be monitored during implementation by a hydrologist or earth scientist to ensure Best Management Practices are being followed. R5 BMP evaluations forms E08 for road and surface protection, E09 for stream crossings, and E11 for control of sidecast material will be filled out to document BMP compliance.

Implementation Monitoring Costs

Item	Unit	Unit Cost	# of Units	Cost
GS-9	Days	\$275	5	\$1375
Mileage	Miles	\$0.5	560	\$280
			Total Cost:	\$1655

Part VI -Emergency Stabilization Treatments and Source of Funds

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands			All Total \$	
			# of Units	BAER \$		# of units	Fed \$	# of Units		Non Fed \$
A. Land Treatments										
Nox.Weed Detection KNF	Miles	\$169	80	\$13,557	\$0		\$0		\$0	\$13,557
Nox.Weed Detection SPNF	Miles	\$186	45	\$8,370						\$8,370
Cultural Res. Tit.	Each	\$2,055.00	1	\$2,055			\$0		\$0	\$2,055
				\$0						\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$23,982	\$0		\$0		\$0	\$23,982
B. Channel Treatments										
Fish Ladder Treatment	Each	2512	1	\$2,512	\$0		\$0		\$0	\$2,512
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$2,512	\$0		\$0		\$0	\$2,512
C. Road and Trails										
10N04 Rolling Dips	Each	\$ 2,080.00	5	\$10,400	\$0		\$0		\$0	\$10,400
10N05 Rolling Dips	Each	\$ 2,033.33	3	\$6,100	\$0		\$0		\$0	\$6,100
10N05A Rolling Dips	Each	\$ 2,033.33	3	\$6,100	\$0		\$0		\$0	\$6,100
10N10 Rolling Dips+StormPr	Each	\$ 6,862.25	4	\$27,449	\$0		\$0		\$0	\$27,449
Trail work	mile	715.70	15.6	\$11,165	\$0		\$0		\$0	\$11,165
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$61,214	\$0		\$0		\$0	\$61,214
D. Protection/Safety										
Install hazard signs	each	205.16	6	\$1,231	\$0		\$0		\$0	\$1,231
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$1,231	\$0		\$0		\$0	\$1,231
E. BAER Evaluation										
BAER Assessment	report				\$15,000		\$0		\$0	\$15,000
				—	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				—	\$15,000		\$0		\$0	\$15,000
F. Monitoring										
Implementation Mon.	Each	1655	1	\$1,655	\$0		\$0		\$0	\$1,655
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$1,655	\$0		\$0		\$0	\$1,655
G. Totals										
				\$90,594	\$15,000		\$0		\$0	\$105,594
Previously approved										

PART VII - APPROVALS

1. *Pat A Gant*
Forest Supervisor (Klamath NF) (signature)

10.7.13
Date

2. *NA BTJ*
Forest Supervisor (Six Rivers NF) (signature)

Date

for 3. *Barrie T. Dyant*
R5 Regional Forester (signature)

10/11/2013
Date