USDA-FOREST SERVICE FS-2500-8 (7/00)

Date of Report: October XX, 2017

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[X] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation 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: **Orleans Complex**

B. Fire Number: **CA-SRF-001159**

C. State: **California**

D. County: **Siskiyou**

E. Region: **05 – Pacific Southwest**

F. Forest: **Klamath N.F.**

G. District: **Ukonom**

H. Fire Incident Job Code: **P5K73417 (0510)**

I. Date Fire Started: **July 25, 2017**

J. Date Fire Contained: **October 12, 2017**

K. Suppression Cost: **$44,011,579**

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles):
Hand lines waterbarred – 21.1 miles
Dozer lines waterbarred – 28.5 miles

2. Fireline seeded (miles): 0
3. Other (identify): NA

M. Watershed Number:

HUC (6th level)	Watershed Name	Percent Watershed Burned
180102090605	Swillup Creek - Klamath River	15%
180102090603	Ukonom Creek	10%
180102090702	Ti Creek - Klamath River	3.0%
180102100304	Middle Wooley Creek	22%
180102100305	Lower Wooley Creek	37%
180102090703	Reynolds Creek - Klamath River	20%
180102100404	Somes Creek - Salmon River	3.2%
180102100301	North Fork Wooley Creek	12%
180102090301	Upper Elk Creek	0.2%

N. Total Acres Burned: 27,276 (sum of acreage of all 13 fires within the complex)
NFS Acres(27,254) Other Federal (0) State (0) Private (22)

O. Vegetation Types: For mixed evergreen and montane forest zones the timber species are California Red fir (Abies magnifica), Coastal Douglas-fir (Pseudotsuga menziesii var. menziesii), sugar pine (Pinus lambertiana), white fir (Abies concolor), incense cedar (Calocedrus decurrens), ponderosa pine (Pinus ponderosa), Jeffrey pine (Pinus jeffreyi), Pacific madrone (Arbutus menziesii), golden chinquapin (Chryosolepis chrysophylla), tanoak (Notholithocarpus densiflorus), California black oak (Quercus kelloggii), Oregon white oak (Quercus garryana), bigleaf maple (Acer macrophyllum), California big laurel (Umbellularia californica). The shrub component consists of green leaf manzanita (Arctostaphylos patula), buckbrush (Ceanothus cuneatus), oceanspray (Holodiscus discolor), poison oak (Toxicodendron diversilobum), Oregon Grape (Berberus nervosa), California blackberry (Rubus ursinus), salal (Gautheria Shallen), kinnikinnick (Arctostaphylos uva-ursi) and bear grass (Xerophyllum tenax).

P. Dominant Soils: Soils in the Orleans Complex formed from a variety of parent rock types including granitics, metavolcanics and ultramafics. About 44% of the fire area is mapped as granitic soils, the most extensive of which are Map Unit 129, Gilligan-Goldridge families association, 30 to 90 percent slopes (11097 acres), and Map Unit 128, Gilligan-Chawanakee families association, 30 to 90 percent slopes (4550 acres). These soils have sandy loam surface textures and rapid infiltration and drainage. Some of the less extensive ultramafic soils have slowly permeable subsoil, which increases their runoff potential.

Q. Geologic Types: Bedrock in the Haypress fire footprint is predominantly plutonic and metasedimentary rocks comprised of granodiorite, tonalite, and quartz diorite, and less dominantly of gabbro, diorite, slate, phyllite, metagraywacke, metavolcanic flows, tuffs, metavolcaniclastics, and breccia, and minor metasedimentary chert, argillite, conglomerate, and meta-andesite. The Ukonom fire area is predominantly plutonic and metavolcanic rocks consisting of granitics and metavolcaniclastic tuff and breccia, and meta-andesite, and less dominantly of metasedimentary and ultramafic slate, phyllite, metagraywacke, peridotite and serpentine. Granitics are mostly heavily grussified and granular. All rocks are strongly sheared and fractured. Shallow debris slides are confined to inner gorges of stream channels in the wilderness and landslides are common on Klamath inner gorge slopes.

R. Miles of Stream Channels by Order or Class: Perennial: 104 Intermittent: 356

S. Transportation System

Trails: 29 miles Roads: 34 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Soil Burn Severity (SBS) - Acres					
Fire	**High**	**Moderate**	**Low**	**Very Low/Unburned**	**Total**
Ukonom	0.4	596.0	3164.2	476.2	4236.8
Haypress	118.7	3031.3	15096.6	2839.7	21,086
Burney	0.0	0.0	10.2	1658.6	1,669
Total	**119.2**	**3,627**	**18,271**	**4,974**	**26,992**

The remaining fires were all smaller than 27 acres. They account for the remainer of the acreage not shown in table above.

B. Water-Repellent Soil (acres):

	Water repellency			
	Strong	Mod to weak, patchy	Weak	Total
Haypress	19654	1433	0	21087
Ukonom	728	3462	51	4240
	20382	4895	51	25327

C. Soil Erosion Hazard Rating (acres):

	Erosion Hazard Rating (acres)				
	Low	Mod	High	V.High	Total
Ukonom	443	640	3079	78	4240
Haypress	2624	2216	13869	2423	21132
Total	3067	2856	16948	2501	25372
%	12.1	11.3	66.8	9.9	100.0

D. Erosion Potential: 5 tons/acre

E. Sediment Potential: 3,000 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 8 – 10

B. Design Chance of Success, (percent): 75

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 12

E. Design Storm Magnitude, (inches): 3.97

F. Design Flow, (cubic feet / second/ square mile): 480

G. Estimated Reduction in Infiltration, (percent): 0

H. Adjusted Design Flow, (cfs per square mile): 480

PART V - SUMMARY OF ANALYSIS

Background: The Orleans Complex consists of 13 lightening caused fires. The Haypress Fire is the largest (21,354 acres), followed by the Ukonom Fire (4,237 acres), the Burney Fire (1,642 acres), and the Forks Fire (242 acres). The remaining fires were each smaller than 27 acres. A large portion of the Haypress Fire and all of the Burney Fire burned in the Siskiyou Wilderness. Less than 1% of the Burney Fire was low severity, none was moderate or high, hence, no watershed emergency is associated with the Burney fire. Likewise no watershed emergency is associated with the Ukonom Fire which had less than one acre of high severity, less than 14% moderate severity and the area where the fire occurred is largely unroaded. 28.5 miles of completed dozer line was built for the Haypress Fire.

Describe Watershed Emergency:

The following is a brief summary of the BAER critical values within the fire areas or otherwise directly affected outside (downslope/downstream) of the fire areas. Threats to those values and associated risk assessment is also described. Possible response actions are described later in Part V-H below.

The risk matrix below, Exhibit 2 of Interim Directive No.: 2520-2017-1, 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**

Note: probability of damage or loss described below is assessed assuming a 5-year recurrence interval storm occurs in the first winter – by definition a 20% probability of occurrence; IF that were to occur, then the probability of VAR damage or loss may be higher or lower than 20% (at *least* possible, perhaps more likely).

Values at Risk

1. **Human Life and Safety:** Thirty miles of popular foot trail access the Siskiyou Wilderness and 35 miles of Forest Service standard roads are within the fire perimeter, mainly within the Haypress Fire, creating a public safety concern and the need to post warning signs.

   High Risk (possible, major) to the public and agency personnel traveling on the 5816, 5818, and 5834 foot trails (PS-02, PS-03).

   High Risk (possible, major) to human life and safety when traveling the 5819, 5821,5823, 5824, 5828, 5838, 5843, and 5854 foot trails from hazard trees. (PS-02, PS-03).

   High Risk (possible, major) to human life and safety due to the potential loss of trail tread from non-functioning damaged wooden retaining walls.

High Risk (possible, major) to human life and safety due to the increased potential for culverts to plug with sediment and debris which could washout sections of the roads.

2. **Property:**

High Risk (possible, major) to roads within the Orleans Complex burned area located below areas of high to moderate burn severity. With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate erosion on the slopes and it is likely that this runoff will cover the roads or cause washouts at drainage facilities (culverts) or stream crossings.

High Risk (possible, major) to the Haypress Trail bridge resulting from fire damage to two adjacent wooden retaining walls.

3. **Natural Resources:**

High Risk (likely and moderate) to native plant diversity, native plant communities or naturalized communities due to the threat of introduction and spread of noxious and non-native invasive plant species from known populations that exist within and adjacent areas of high and moderate burn severity and in association with fire suppression activities. This can occur due to alteration of habitat and loss of competitive pressure from native plant species due to the fire, and introduction of weed seeds from transport by fire suppression equipment. Displacement of native species by non-native invasive plant species can result in a loss of viability for Region 5 Sensitive plant species that occur within the burned area, degradation of range and recreational values, reduction of water availability to native plants, negatively impacts to community ecology.

High Risk (possible, major) to ESA Listed Threatened Coho Salmon (Oncorhynchus kisutch), Forest Service Sensitive Anadromous species; Chinook salmon (Oncorhynchus tshawytscha), Steelhead (Oncorhynchus mykiss), Pacific lamprey (Entosphenus tridentatus) due to changes in water quality, chemistry and quantity which can impact all life stages. Stream flows in some streams with large areas of high and moderate burn severity may increase which has to potential to flush individuals out of stream stretches and into downstream areas. Sediment delivery for the first year after the fire will be greater than the normal sediment delivery. Increase in sediment supply is a critical stressor for younger life stages of all salmonid species. The greatest risk to aquatic values in the Haypress fire will most likely be from any culvert failures and debris flows. The burning and damage to two of the Haypress Bridge trail retaining walls will increase sediment to Haypress Creek and in turn to Wooley Creek if it is not repaired. The streams located within and below the Haypress and Ukonom fire perimeters do not have significant spawning for Coho salmon and Chinook salmon, but do provide significant habitat for over summering juveniles. Steelhead/rainbow trout are more abundant and occupy a larger portion of the creeks, but these tributaries are not significant producers of summer steelhead. (No treatment recommended).

4. **Cultural and Heritage Resources:**

Intermediate Risk (possible, moderate) to two historic trails likely having local and state significance at risk from post fire erosion in moderate to high severity burn areas.

A. Emergency Treatment Objectives:

- Mitigate and protect, to the extent possible, threats to personal injury or human life of forest visitores and Forest Service employees by raising awareness through posting hazard warning signs on reads, trails and recreation facilities to communicate hazards of burned trees, flooking, debris flows, and rock fall, and repair and maintenance of roads that would pose a threat to safety if damaged.

- Protect or mitigate potential post-fire impacts to roads, trails, and critical natural and cultural resources within the burn area.
- Treat invasive plants, which are a threat to native or naturalized ecosystems, by minimizing the expansion of existing weed populations in the burned area where soil and/or vegetation was disturbed as a result of fire suppression activities.

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

Land 50 _% Channel NA % Roads 80% Protection and Safety 80%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	85	95
Channel	NA	NA	NA
Roads/Trails	80	90	90
Protection/Safety	80	70	60

E. Cost of No-Action (Including Loss): $392,083

F. Cost of Selected Alternative (Including Loss): $96,379

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: John McRae

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Orleans Complex BAER Assessment Team

Mark Bodily, Heritage and Cultural Resources, Helena-Lewis & Clark N.F.
Natalie Cabrera, Geologist, Six Rivers N.F.
Bryson Code, Recreation, Six Rivers N.F.
Adam Dresser, Hydrologist, Six Rivers N.F.
Victor Dumlao, Engineering, Six Rivers N.F.
Jennifer Dyer, Heritage and Cultural Resources, Six Rivers N.F.
Andrea McBroom, Fisheries Biologist, Six Rivers N.F.
John McRae, Botanist, Six Rivers N.F.

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:

L-01 EDRR EDRR (Early Detection Rapid Response): Treatments to mitigate the noxious weed emergency include detection surveys in high priority areas and concurrent treatment of any new noxious weed populations located during those surveys. Detection surveys will be conducted in areas along fire lines, trails, and existing roads where invasion by noxious weeds is most probable. Surveys will be conducted during appropriate seasonal times for detection of target noxious weeds in 2018.

All newly discovered noxious weed populations on Forest Service land 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. Noxious weed treatment will consist of hand pulling to root depth and if seed is present, plants will be bagged and disposed of properly. A geotextile fabric (materials) will be used to treat the dormant seedbed.

Treatment	Detection Survey Area (acres - dozer line, drop points, etc)	Labor	Materials	Travel	Total
L-01 EDRR	Roads (56) Dozer Lines (35)	$11,000	$560	$1,162	$12,722

Channel Treatments: None

Roads and Trail Treatments:

RT-01 Road Storm Patrols: Patrol road drainage structures and debris flow treatment structures after significant storm events to ensure the maximum drainage capacity is maintained until the natural re-vegetation of the burned area has occurred. Maintain and/or repair any damage to road surfaces. Remove sediment and debris from drainage and treatment structures and repair headcutting in streams and drainages to prevent further degradation of channels. Monitor the movement of large woody debris and make a determination of whether or not the material should be removed before it contacts bridge piers, abutments, or culverts. Mitigate hazard trees at treatment locations to provide for worker safety. See Burned Area Emergency Response Treatments Catalog Chapter 4, Storm Inspection and Response pages 149 -152 and BAER Specification for Storm Patrols for more information.

RT-02 Drop Inlet Lids: Drop Inlet drainage structures were burned over and damaged and destroyed drop inlet lids. Without the lids, the drop inlet structures could cease to function properly, plug the culvert, and cause water and/or debris to top over the road and cause a closure due to safety, blockage of the road, and potential loss of the road. There were approximately 20 drop inlets damaged or destroyed beyond use. They will be replaced before winter storms block access.

RT-03 Rock Lined Diversion Dips: Nine sites were identified as potential for increased debris runoff and rock fall. Rock lined diversion dips would be installed to direct water and debris in a controlled manner should existing drainage structures fail or diminished in capacity due to blockages and would begin overtopping the roadbed. They will be replaced before winter storms block access.

RT-04 Culvert Replacement: One location has been identified and had encountered a mass flow debris field across the road where the culvert proved inadequate for a recent rain event. Forest Road 15N17 encountered a slide that overtopped the road after debris inundated the culvert inlet. The road prism is put at risk to closure and/or washout if the culvert becomes incapacitated again for a longer duration storm.

RT-05 Repair Retaining Wall Haypress Creek: A retaining wall located in Haypress Creek adjacent to the Haypress Creek trail bridge was consumed by the fire. The trail, trail bridge and anadromous fishery are at risk from hillslope failure in the absence of the retaining wall.

Engineering Treatments Specifications		Cost
RT-01 Storm Patrols	Storm patrols will be used to identify problem areas such as clogged culverts, washed out roads and damaged drainage and treatment structures. Storm patrols will complete limited maintenance by removing debris from treatment structures to ensure they continue to function during future flood events.	$7,000
RT-02 Drop Inlet Lids	20 Drop inlet cover lids, designed for access to clean out drop inlets and culvert structures and to prevent build-up of debris in the drop inlet, will be replaced after burning over.	$ 1,400
RT-03 Rock Lined Diversion Dips	8 Rock Lined Diversion Dips would be installed in areas below moderate burn severity areas that have been identified as potential locations that could generate increased debris flows and runoff beyond the capabilities of existing structures. The dips would be directed to control flows over the road if needed.	$18,000
RT-04 Culvert Replacement	Replace undersized 24 inch culvert with appropriate sized 48 inch culvert and a metal end section on Forest Road 15N17.	$32,225
RT-05 Repair retaining wall at Haypress Ck. Trail Bridge	Pack in 8 – pressure treated 4" X 6's to replace those consumed by fire which formed a retaining wall in Haypress Ck. adjacent to trail bridge.	$13,320
Total Cost		$71,945

Protection/Safety Treatments:

Potential threats to the public and agency personnel include flooding and debris flows, hazard trees, and rock-fall along roads, trails, and at recreation facilities that are downstream or downslope of areas with moderate to high burn severity.

PS-01 Hazard Warning Signs - Recreation: Purchase and install burned area hazard warning signs at the trailheads and junctions of the 5816, 5818, and 5834 trails 5819, 5821,5823, 5824, 5828, 5838, 5843, and 5854 trails. Install before winter storms block access.

PS-02 Temporary Trail Closure: Obtain Forest Order for temporary closure of the 5816, 5818, and 5834 trails until hazard trees, and jack-strawed trees, and slash (across trail on steep loose grade) are mitigated, close the trails, and enforce the closure. Put order inplace before winter storms.

Public Safety Treatments	Materials	Labor	QTY	UOM	Cost
PS-01 Hazard Warning Signs – Recreation	$140	$200	10	each	$3,400
PS-02 Temporary Trail Closure	$100	$1,500	3	each	$4,800
RT-03 Resource Protection Patrol					
Total Cost					$8,200

PS-03 Resource Protection Patrols - Heritage: Patrol historic Stanshaw and Haypress trails within the burned area following winter storms to detect fire related damage to the historic trail prism.

PS-04 Resource Protection Patrol	Materials	Labor	QTY	UOM	Cost
Patrol Personnel (GS-7)		$237	2	days	$474
Patrol Personnel (GS-12)		$434	2	days	$838
Vehicles (FOR and mileage)					$300
Total Cost					$1,612

PS-04 Consultation – Heritage: Consult with the State Historic Preservation Office concerning the effect of the fire on the historic Stanshaw and Haypress trails.

Forest Archeologist (GS-11)	$380	5	$1,900
Total Cost			$1,900

Management Recommendations

Replace road mileage, road directional signs, and 'road closed' signs (on level 1 roads) either burned in the fire or damaged/removed as part of fire suppression operations. The road and direction signs are important for navigation by the general public. The 'road closed' signs provide resource protection (decrease prism damage, reduce sediment delivery and noxious weed spread) by discouraging unauthorized motor vehicle travel.

Maintain and construct drainage features on trails within the fire perimeter to prevent property damage caused by increased overland flow from burned areas concentrating on and eroding the trail tread.

Coordination, Communication, and Consultation

Areas or features of concern: Continue to communicate to the public that trails throughout the burn area may become compromised. This may result in loss of access or hazardous conditions that need to be brought to their attention. Cooperation and agreement on road maintenance objectives is needed to ensure the BAER treatments remain functional to protect the invested funding and preserve the integrity of the road prism.

Coordination and Consultation

I. **Monitoring Narrative:** None Recommended

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

			NFS Lands				Other Lands				All
Line Items	Units	Unit Cost	# of Units	WFSU SULT $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
L-01 EDRR	LS	12722	1	$12,722	$0		$0		$0	$12,722
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$12,722	$0		$0		$0	$12,722
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.										
C. Road and Trails										
RT-01 Storm Patrol	LS	7000	1	$7,000	$0		$0		$0	$7,000
RT-02 Drop Inlet Lids	EA	70	20	$1,400	$0		$0		$0	$1,400
RT-03 Diversion Dips	EA	2000	9	$18,000	$0		$0		$0	$18,000
RT-04 Culvert Replc.	LS	1	32225	$32,225	$0		$0		$0	$32,225
RT-05 Rpr Retain Wall	LS	1	13320	$13,320						$13,320
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$71,945	$0		$0		$0	$71,945
D. Protection/Safety										
PS-01RecWarnSigns	EA	340	10	$3,400	$0		$0		$0	$3,400
PS-02TrailCloseSign	EA	1600	3	$4,800	$0		$0		$0	$4,800
PS-03Resource Patrol	LS		1	$1,612						$1,612
PS-04Consultation	LS		1	$1,900						$1,900
Subtotal Structures				$11,712	$0		$0		$0	$11,712
E. BAER Evaluation										
Initial Assessment	LS		1	$28,000	$0		$0		$0	$28,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$28,000	$0		$0		$0	$28,000
F. Monitoring										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring										
G. Totals				$96,379	$0		$0		$0	$96,379

PART VII - APPROVALS

1. _____ 10-13-17
Forest Supervisor (signature) Date
MERV GEORGE, JR.

2. _____ 10/19/2017
Regional Forester (signature) Date