

Date of Report: 12/12/2018
Interim #1 in Red

BURNED-AREA REPORT

PART I - TYPE OF REQUEST

A. Type of Report

- 1. Funding request for estimated WFSU-SULT 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
 - 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: Cranston Fire | B. Fire Number: CA-BDF-011390 |
| C. State: California | D. County: Riverside |
| E. Region: 5 | F. Forest: San Bernardino |
| G. District: San Jacinto | H. Fire Incident Job Code: P5L1KN18 (0512) |
| I. Date Fire Started: 7/25/2018 | J. Date Fire Contained: Estimated 8/9/2018 |

Completed Dozer Line	21
Completed Hand Line	14
Completed Line	57
Road as Completed Line	0.4

Fenceline: There is a plan in place for repair of fenceline damaged as a result of fire suppression damage repair.

M. Watershed Number:

		Total Watershed	High	Moderate	Low	Unburned/ Very Low	Total
Lower South Fork San Jacinto River	180702020104	14,446 (>1%)	0	15	44	9	68
Middle Palm Canyon Wash	181002010203	18,287 (>1%)	0	1	31	16	48
Strawberry Creek-San Jacinto River	180702020102	16,286 (38%)	91	3,871	1,585	650	6,197
Tahquitz Creek	181002010204	22,549 (>1%)	3	11	12	5	31
Upper South Fork San Jacinto River	180702020101	40,807 (18%)	284	4,745	1,969	317	7,315
Grand Total				378	8,643	3,641	997
							13,659

N. Total Acres Burned:

NFS Acres (12,369) Other Federal () State () Private (1,289)

O. Vegetation Types:

Mixed vegetation cover includes mixed chaparral, conifer, and hardwood community types. The dominant vegetation types in the fire area are redshank chaparral, lower montane mixed chaparral and chamise. There are over 5,000 acres of mixed pine and hardwood vegetation types which will require long term recovery in moderate to severe burn areas.

		Soil Burn Severity								
Grand Total		High		Moderate		Low		Unburned / Very Low		
COVER TYPE	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
BARREN	61	0.4	0	0.0	16	0.1	34	0.3	11	0.1
CONIFER	1,849	13.5	39	0.3	1,025	7.5	614	4.5	171	1.3
HARDWOOD	291	2.1	17	0.1	212	1.5	52	0.4	10	0.1
HERBACEOUS	463	3.4	0	0.0	124	0.9	244	1.8	95	0.7
MIXED	2,467	18.1	199	1.5	1,775	13.0	395	2.9	98	0.7
SHRUB	8,448	61.9	122	0.9	5,473	40.1	2,254	16.5	600	4.4
URBAN	72	0.5	0	0.0	19	0.1	44	0.3	9	0.1
WATER	6	0.0		0.0	0	0.0	4	0.0	3	0.0
Grand Total	13,658	100.0	378	2.8	8,643	63.3	3,641	26.7	997	7.3

P. Dominant Soils:

The soils that comprise the fire area are all derived from granitic residuum. The steeper slopes are dominated by very rocky soils with the major components being very large rock outcrops. The lower and more gentle slopes are also dominated by rocks but with little rock outcrop. Stable terraces with more soil development and more competent soils are also found on the gentler slopes.

20% of the area KoD - Wind River-Oak Glen families association, 2 to 15 percent slopes
 14% of the area LrG - Lithic Xerorthents-Rock outcrop complex, 50 to 100 percent slopes
 11% of the area DxF - Wapi-Pacifico families, dry-Rock outcrop complex, 30 to 50 percent slopes
 10% of the area MoFG - Typic Xerorthents-Morical family, dry association, 30 to 75 percent slopes
 35% of the area various soil types in minor amounts

Q. Geologic Types:

The burned area is within the San Jacinto Mountains. The San Jacinto Mountains are the northernmost part of the Peninsular Ranges, a NW-SE trending range composed mostly of Mesozoic age granitic rocks (tonalite). The San Jacinto Mountains are an uplifted fault block bounded by the San Jacinto fault on the west and the San Andreas Fault system on the east (Matti and Morton, 2000).

R. Miles of Stream Channels by Order or Class:

Ephemeral	0.39 miles
Intermittent	41.58 miles
Perennial	7.59 miles

S. Transportation System

Trails: 26 miles

Roads: 11.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

3,641 (low) 8,643 (moderate) 378 (high)

B. Water-Repellent Soil (acres):

C. Soil Erosion Hazard Rating (acres): Ermit modeling is used as a surrogate for Erosion Hazard Rating
 (low) (moderate) (high)

D. Erosion Potential: 5.13 tons/acre for a 2 year event for the fire perimeter

Erosion potential by watershed pourpoint:

Pourpoint Name	Erosion Rates, Tons/acre			
	2 year unburned	2 year burned	5 year unburned	5 year burned
Coldwater Creek @ McCall Park Rd	0.09	3.52	0.20	5.72
Coldwater Creek @ Mountain Center	0.09	3.60	0.21	5.74
Dry Creek @ Hwy 74	0.09	3.53	0.23	6.19
Herkey Creek @ Campground	0.09	4.88	0.24	6.28
Herkey Creek above Fleming Ranch	0.10	7.01	0.25	9.07
Herkey Creek below Fleming Ranch	0.09	6.47	0.24	8.10
Strawberry @ Hwy 74	0.10	0.64	0.39	1.48
UNST @ Campground	0.21	6.04	0.44	5.70
UNST @ Hwy 74 above Lake Hemet	0.10	0.44	0.37	1.19
UNST @ Hwy 74 below Dry Creek	0.11	5.79	0.26	11.71

E. Sediment Potential: cubic yards / square mile Erosion rates are used as a surrogate for Sediment Potential

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5

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

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

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches): 0.72

F. Design Flow, (cubic feet / second/ square mile): 14.65

G. Estimated Reduction in Infiltration, (percent): 11%

H. Adjusted Design Flow, (cfs per square mile): 65.81

Summary of Watershed Response

Hydrologic Response:

Area affected by the 2018 Cranston Fire primarily drains into the San Jacinto River which drains to Lake Elsinore (Santa Ana Region Basin Plan). Surface water bodies directly impacted by the fires include HUC 12 watersheds Tahquitz Creek and Middle Palm Canyon Wash at the ridges of the watershed. Surface waters are not expected to be impacted in these watersheds. Larger portions of Lower South Fork San Jacinto River, Upper South Fork Jacinto River, and Strawberry Creek-San Jacinto River will be impacted by surface runoff from the fire area.

Wildfires affect water quality through increased sedimentation. As a result, the primary water quality constituents or characteristics affected by this fire include color, sediment, settleable material, suspended material, and turbidity. Floods and debris flows can entrain large material, which can physically damage infrastructure associated with the beneficial utilization of water (e.g., water conveyance structures; hydropower structures; transportation networks). The loss of riparian shading and the sedimentation of channels by floods and debris flows may increase stream temperature. Fire-induced increases in mass wasting along with extensive tree mortality can result in increases in floating material – primarily in the form of large woody debris. Post-fire delivery of organic debris to stream channels can potentially decrease dissolved oxygen concentrations in streams. Fire-derived ash inputs can increase pH, alkalinity, conductivity, and nutrient flux (e.g. ammonium, nitrate, phosphate, and potassium), although these changes are generally short lived, phosphorus rates on the San Jacinto area are already high. Post-fire increases in runoff and sedimentation within the urban interface, and burned structures and equipment within the fire perimeter may also lead to increases in chemical constituents, oil/grease, and pesticides. Lake Elsinore and Canyon Lake (the lower extent of the San Jacinto River) are on the 2014-2016 303(d) List of Impaired water for the state of California for Nutrients. Lake Hemet is not currently on the impaired water list but is expected to receive ash, sediment, nutrients and debris from the fire area.

Based on historic precipitation patterns, summer thunderstorms may occur during the summer season as well as longer storms in the winter. Flash flooding, mudflows, and debris flows are natural watershed response for this area. The risk of flash flooding and erosional events will increase as a result of the fire, creating hazardous conditions within and downstream of the burned area. The model showed Herkey Creek, the unnamed tributary to Herkey creek above Lake Hemet and the Herkey Creek Campground, and the unnamed stream below Dry Canyon are anticipated to have greater than 5 times normal flow during a 2 year precipitation event. These areas are considered the highest risk for increased risk resulting from the fire. Dry Canyon and Coldwater Canyon as it passes through Mountain Creek will increase by 2-5 times and are considered to have a moderately increased risk of flow resulting from fire impacts.

Erosion Response:

There is very little diversity in the soils within the fire area. Soils are derived either from residuum granitic parent material or alluvium washed from the steep hillslopes. Except for a few alluvial terraces, the soils are shallow with high amounts of boulder rock cover. The soils have low productivity due to the predominance of coarse granitic sands. These coarse textured sandy soils have little water holding capacity and are susceptible to droughty conditions. Because duff and other soil cover was incinerated during the fire, the soils natural ability to resist erosion and surface radiant heating was stripped away, erosion and soil desiccation is predicted to affect the short-term soil productivity.

Fortunately, the vegetation dominating the areas of highest soil burn severity consists of chaparral and conifer species; species that are fire adapted and can utilize available water in bedrock cracks. These species, as seen from the 2013 Mountain Fire, will resprout and reseed and stabilize the soils within 3-5 years.

Geologic Response:

Values at risk were evaluated for earth flow/debris flow hazards in the field and with the aid of USGS debris flow modeling, and for rockfall hazards in the field and with the aid of ArcGIS modeling. The probability for an earth flow/debris flow for several drainages within Strawberry, Dry Creek, and Herkey Drainages is **LIKELY TO VERY LIKELY** from a storm intensity with a 5 year average reoccurrence interval (15-minute storm intensity of 32 mm/hr). The intersection of Dry Creek and Highway 74 will benefit by interagency cooperation to armor the upstream and downstream fill slopes of Highway 74. We identified four key areas susceptible to rock falls within or below a moderate-high soil burn severity, and risks to Values at Risk will benefit by performing treatments. Areas with slope stability issues include: three sites along Highway 74 that will be treated via interagency cooperation. The fourth site is the lower portion of South Ridge Trail which will benefit by a minimum of a 1 year closure. Slope stability issues within the burned area are preexisting conditions that will be exacerbated by the fire.

The NOAA and USGS recommended 15-minute threshold for issuing debris flow warnings within the burned area (San Gabriel, San Bernardino, and steep San Diego Area Mountains) for the 1st year following the fire is 18.6 mm/hr, and for the 2nd year (when the area has been through 1 year of winter rains and had some recovery) is 42.7 mm/hr. The 1st year threshold is less than a 1 year storm return interval, and the 2nd year threshold is equal to a 5-10 year storm return interval (National Oceanic and Atmospheric Administration – Atlas 14, Volume 6, Version 2).

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Values at Risk:

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

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

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

Cranston Fire BAER - Forest Service Values at Risk Tracking Table

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

Category	Life/ Property/ Resources	Value at Risk	Threat to Value at Risk	Probability of Damage or Loss	Magnitude of Consequence	Risk
Recreation	Resources	Hydrologic function, spread of invasive weeds, soil productivity, vegetative recovery	Human traffic by foot, motorized/ non-motorized travel	Likely	Moderate	High
Recreation	Life and Safety	Human Life and Safety in the burn scar	Hazard trees, debris flow, stump holes, rock fall, unstable trail tread, flash flood	Very Likely	Major	Very High
Recreation	Property	May Valley Adopted Trail System	Loss of water control, soils erosion, loss of trail tread	Likely	Moderate	High
Recreation	Property	Pacific Crest Trail	Loss of water control, soils erosion, loss of trail tread	Unlikely	Minor	Very Low
Recreation	Property	South Ridge Trail Upper Section	Loss of water control, soils erosion, loss of trail tread	Unlikely	Minor	Very Low
Recreation	Property	South Ridge Trail Middle and Lower Section	Loss of water control, soils erosion, loss of trail tread	Very Likely	Major	Very High
State Highway Roads	Life/ Property	Safe Travel along HWY 74 and 243 with FS Special Use Permit	Rockfall, flooding, debris flow	Likely	Major	Very High
National Forest System Roads	Life/Property	NFSR 5S03, 5S08, 5S21	Loss of water control, soils erosion, rockfall, flooding, debris flow, fallen trees, loss of road tread	Likely	Major	Very High
National Forest System Roads	Life/Property	NFSR 5S02, 5S05	Loss of water control, soils erosion, flooding, debris flow, loss of road tread	Likely	Moderate	High

Category	Life/ Property/ Resources	Value at Risk	Threat to Value at Risk	Probability of Damage or Loss	Magnitude of Consequence	Risk
National Forest System Roads	Property	NFSR 5S01, 5S05B, 5S05C, 5S08A, 5S13, 5S23, 5S24, 6S11A, 6S11B	Loss of water control, soils erosion, loss of road tread	Possible	Minor	Low
Other Forest Roads	Property	Unnamed roads near Fleming Ranch	Loss of water control, soils erosion, loss of road tread	Possible	Minor	Low
Special Uses	Property	Powerlines and access roads under special use permit	Rockfall, flooding, debris flow, loss of water control, soil erosion, loss of road tread	Likely	Major	Very High
Engineering	Safety/ Property	Keenwild FS Compound Well Box	rodents able to access water and not get out affecting water quality	Likely	Moderate	High
Engineering	Property	Baldy Bottom Stock Pond, McGaugh Park access road, state highway 74	Burned trees and roots in dam embankment increasing risk of catastrophic dam failure and road failures downstream	Likely	Major	Very High
Wildlife/ Botany	Resources	Quino Checkerspot Butterfly Occupied Habitat/ suitable habitat	Habitat degradation due to sedimentation and weed infestation	Very Likely	Moderate	Very High
Wildlife	Resources	Springs on NFS Lands not related to grazing	Sedimentation	Unlikely	Minor	Very Low
Wildlife	Resources	Herkey Creek & Strawberry Creek-Southwestern Willow Flycatcher	Sedimentation/ channel scour	Likely	Low	Low
Wildlife	Resources	Mountain Yellow Legged Frog	Sedimentation/ channel scour	Unlikely	Minor	Very Low
Botany/ Weeds	Resources	Native and Naturalized Communities	Invasive weed introduction and spread related to fire suppression activities	Very Likely	Moderate	Very High

Category	Life/ Property/ Resources	Value at Risk	Threat to Value at Risk	Probability of Damage or Loss	Magnitude of Consequence	Risk
Botany	Resources	Slenderhorn Spineflower (Dodecahema leptoceras)	Sedimentation	Unlikely	Minor	Very Low
Heritage	Resources	Historic Properties	Debris flow impacting site integrity/ Looting	Likely	Moderate	High
Heritage	Resources	Historic Properties	Sheet erosion	Unlikely	Moderate	Low
Range	Resources	Native and Naturalized Community	Grazing impacting soil stability, recovery of native plant community	Very Likely	Moderate	Very High
Soils	Resources	Soil Productivity	Erosion on low productivity soil	Likely	Moderate	High
Watershed	Resources	Hydrologic Function	Riparian recovery	Very Likely	Moderate	Very High

B. Emergency Treatment Objectives:

The primary objective of this Burned Area Emergency Response Report is to recommend prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to human life and property and prevent unacceptable degradation to natural and cultural resources. The application of these BAER treatments are expected to minimize on-site and downstream damages to the identified values at risk previously mentioned. The emergency treatments being recommended by the Cranston Fire BAER Team are specifically designed to achieve the following results:

Proposed Land Treatments

The objective of the land treatments are to:

- a. Retard the spread of invasive weeds as a result of suppression repair activities, mainly dozer lines. (L1)
- b. Retard the Spread of invasive weed into threatened Quino Checkerspot Butterfly habitat and natural vegetative communities with minimal weeds. (L2)
- c. To mitigate the hazards to life and safety and protect other BAER values. (L3)
- d. Allow for natural recovery on the Garner allotment affected by the fire. (L4)

Proposed Road and Trail Treatments:

The objective of the road and trail treatments are to:

- a. Protect and stabilize Forest Service infrastructure at risk of damage as a result of increased sedimentation, stream diversion, and erosion from the fire. (R1, R2, R3, T1, T2)
- b. Reduce risk to water quality and other natural resources by reducing risk of infrastructure contamination, damage, and failure. (L3, R1, R2, R3, T1, T2, P3)
- c. Mitigate public safety hazards along NFS roads and trails. (P1, P2)
- d. Reduce risk to downstream infrastructure where possible. (P5)

Proposed Protection/Safety Treatments:

The objective of the protection and safety treatments are to:

- a. To caution forest visitors recreating and administrative users about the potential hazards that exist within the burned area. (L3, P1, P2, P5)
- b. Improve public safety by keeping Forest users out of the burn area during major storm events. (L3)
- c. Protect historic properties from irreversible impacts. (P5)

Proposed Channel Treatments:

The objective of the channel treatments are to:

- a. Protect and stabilize Forest Service infrastructure at risk of failure as a result of dam internal structural instability (C1).
- b. Reduce risk to water quality and other natural resources by reducing risk of infrastructure failure (C1).
- c. Reduce risk to public safety and dam hazard by installing an emergency spillway (breach) (C1).
- d. Reduce risk to downstream infrastructure (C1).

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

Land 75% Channel 75% Roads/Trails 80% Protection and Safety 80%

D. Probability of Treatment Success

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

E. Cost of No-Action (Including Loss): \$316,500

F. Cost of Selected Alternative (Including Loss): \$210,938*

*All treatments were evaluated for cost benefit in order to justify the treatment. Proposed treatments are justified see cost/ benefit spreadsheet in project record.

G. Skills Represented on Burned-Area Survey Team:

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

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Deb Nelson- Botanist	Lance Criley- Range
Drew Farr- Wildlife	Joe Svinarich- Archaeology
Casey Shannon- Recreation/ Hazmat	Jay Marshall- Archaeology
Kelsha Anderson- Hydrology	

H. Treatment Narrative:

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

Land Treatments:

L1 - Invasive Weed Detection and Control Treatment related to suppression:

Early weed detection will be necessary to determine whether ground disturbing activities related to the Cranston Fire Incident suppression have resulted in new introductions or spread of existing weed infestations. Detection work is proposed for the first year following the fire to document the suspected infestations and assess the feasibility of effective treatment and potential impact on native plant communities in the area.

If weeds are detected, eradication efforts will be initiated if the target weed species is/are not found to be widespread in the area and can be effectively treated.

Eradication response efforts would occur upon detection or when removal of the target species is most effective in decreasing reproductive capability (e.g. prior to seed development in annual or biennial weeds).

Only manual eradication efforts such as clipping/bagging seed heads and hand pulling will be implemented. This early detection and rapid response (EDRR) protocol dramatically increases the likelihood of preventing weed spread to sensitive habitats and irreversible type conversion.

Proposed treatment locations:

Treatment will occur along dozer lines that intersect mapped suitable Quino habitat where non-native invasive plants are absent or present in small amounts. To protect native plant communities, detection and treatment will also occur where invasive weeds are currently absent or present in minor amounts along select dozer lines and drop points, as well as 1 helispot in the Wilderness. Dozer lines along level 2 roads or above will not be included in the detection efforts.

Locations:

1. Dozer lines that run through, or are in close proximity to mapped suitable/occupied Quino Checker spot habitat.
2. Dozer lies in areas where the native plant community is at risk from known existing weed occurrences such as adjacent to or downstream of suppression activity.
3. Drop points including log decks, a helipad and repeater site that created new disturbance.

A total of 14 miles out of 21 miles of dozer line will be treated.

This plan takes into account that field staff should work in pairs for safety reasons due to difficult access and steep terrain.

Treatment	Units	Unit Cost	# of Units	Total Cost
Invasive Plant detection/control	mile	\$1,753	14	\$24,550

L2 - Invasive Weed Detection and Control Treatment related to the fire (BAER):

Early weed detection and rapid response (EDRR) will be necessary to mitigate the risk of weed introduction and spread in vulnerable areas of suitable habitat for the Endangered Quino Checkerspot butterfly.

Locations:

Detection and treatment will occur only in these Quino habitat areas:

1. Select areas of large, continuous suitable habitat that are at elevated risk due to weeds being present adjacent to burned habitat.
2. Select areas of Quino habitat where known weed infestations occur upstream from the suitable habitat in drainages that have been identified by hydrology/soils specialists as being at a 5 x elevated risk of runoff and erosion.

There are 156 acres out of a total of 350 acres of mapped suitable Quino Checkerspot butterfly habitat within the burn perimeter or within 1km outside the burn perimeter that are proposed for treatment. Treatment areas include known occupied habitat that was affected by the fire.

Treatment	Units	Unit Cost	# of Units	Total Cost
Invasive Plant detection/control	acres	\$94	156	\$14,600

L3 - Forest Closure:

Currently the Forest has issued a closure area surrounding the Cranston Fire (Order NO. 12-18-05) and expires July 31, 2018. It is recommend that this closure stays in place and the risk associated the burn scar are reevaluated prior to lifting the closure. **No funding request see M1 for closure effectiveness monitoring.**

L4 - Rest Garner Allotment Subunit:

It is recommended that Garner Allotment subunits of May Valley, Baldy Top and Bottom and Johnson Meadow should be rested to allow for significant vegetation recovery. In the case of May Valley and Baldy Top and Bottom subunits, this should not result in significant hardship to the permittee. Johnson Meadow should be rested as well. This will impact the permittees operation.

It is expected that the actual meadow just needs through the end of the next growing season without grazing, which should end in June/July 2019 depending on rainfall. However, recovery of the vegetation and hydrologic function of the slopes surrounding Johnson Meadow should be assessed to determine if non-use of the subunit needs to be extended. **No funding request see M2 for resting Garner allotment effectiveness monitoring.**

Roads Treatments

Road drainage features are at risk from adjacent burned 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. Road failure can also contribute to failure of infrastructure downstream. Culverts associated with these roads are at risk of plugging from debris carried down channels from burned watersheds. Of the NFSR miles in the burned area, 6.7 miles of road are proposed for treatment. Proposed road treatments include: drainage structure cleaning, additional drainage structure overside drains and riprap spillways, culvert inlet basin cleaning, berm removal, rolling dips, leadoff ditches, and riprap armoring of slopes and drains.

R1- Storm Inspection/Response:

Storm inspection/response will keep culvert and drainage features functional by cleaning sediment and debris from in and around features between or during storms. This work will be accomplished through contractor equipment and labor. **Total request is for \$21,500.**

Locations: 1) FSR 5S02, 5S03, 5S05, 5S08, 5S21

Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Response	Days	\$ 3,500	5	\$ 17,500
Storm Inspection	Days	\$ 400	10	\$ 4,000

R2- Road Stormproofing:

Road stormproofing involves cleaning or armoring of existing drainage structures, as well as recently installed treatments, and is intended to help ensure road drainage performs optimally and to improve structure performance under increased runoff and debris. This work will be accomplished using contractor equipment and labor. **Total request is for \$31,750.**

Locations: 1) FSR 5S02, 5S03, 5S05, 5S08, 5S21

Treatment	Units	Unit Cost	# of Units	Total Cost
Contract Prep / Admin	Day	\$ 400	10	\$ 4,000
Mobilization	Lump Sum	\$ 3,000	1	\$ 3,000
Installation of Rolling Dips	Each	\$ 400	14	\$ 5,600
Reshaping of Rolling Dips	Each	\$ 250	32	\$ 8,000
Installation/Reshape Leadoff Ditches	Each	\$ 300	18	\$ 5,400
Install Riprap Armored Overside Drain Outlet – (2 locations)	Cubic Yard	\$ 200	6	\$ 1,200
Clean 24 Inch Culvert Inlet Basin	Each	\$ 750	1	\$ 750
Clean Double 24 Inch Culvert Inlet Basin	Each	\$ 1,000	1	\$ 1,000
Clean 48 inch Culvert Inlet Basin	Each	\$ 1,000	1	\$ 1,000
Outslope, Berm Removal, Clean Dips	Mile	\$ 2,000	0.9	\$ 1,800

R3- Road Drainage Structure Replacement/Improvements:

Road drainage structure improvements involves replacing existing deficient structures and installation of additional drainage structures to help ensure road drainage performs optimally and to improve drainage performance under increased runoff and debris.

This work will be accomplished using contractor equipment and labor. The proposed treatments are designed to be the minimal treatment necessary to reduce the risk of road failure to an acceptable level. Total request is for **\$45,370**.

Locations: 1) FSR 5S02, 5S03, 5S05, 5S08, 5S21

Treatment	Units	Unit Cost	# of Units	Total Cost
Contract Preparation / Administration	Day	\$ 400	10	\$ 4,000
Mobilization	Lump Sum	\$ 4,270	1	\$ 4,270
Install Riprap Armored Side Drain (16 locations)	Cubic Yard	\$ 200	100	\$ 20,000
Install 24 inch Overside Drain, 20 LF Flume	Each	\$ 3,000	4	\$ 12,000
Install 24 inch Overside Drain, 40 LF Flume	Each	\$ 4,600	1	\$ 4,600
Remove Drain and Reshape Low Water Crossing	Each	\$ 500	1	\$ 500

Trail Treatments:

Work will include the installation of drainage features (out sloping, rolling grade dips, knicks, water bars) and snagging trees as appropriate for worker safety. This work is necessary to protect the trail asset by diverting anticipated increases in surface runoff off the trail. This request also includes mitigation of worker hazards including felling of hazard trees along the portion of trail to be worked on in order to mitigate safety concerns. The trail work will be implemented by ACE crews (contract) and administered and supervised by Forest Service personnel.

T1- May Valley Trails:

The Forest recently adopted or designated a group of popular user-created unauthorized non-motorized trails to system trails (25.5 miles of trails) through an environmental assessment and decision. The trails have not yet been given trail ID numbers. This project is referred to as the May Valley Non-Motorized Trail Project. 21 miles of the trails are located within the Cranston Burn area. Analysis of the trails in the burned area identified 12.7 miles of trails located on moderate and high burn areas on steep to moderately steep slopes where most of the vegetative and ground cover was removed by the fire. Because the trails currently have a lack drainage features and erosion control design, accelerated tread erosion and loss of trail structure could occur during heavy rainfall events.

T2- Lower South Ridge Trail:

4.2 miles of the Lower South Ridge Trail (FS Trail 3E08.1) is within the fire and has a high use for recreation. The trail is mostly located within high and moderate burn severity areas, existing drainage structures are in disrepair and 1 mile of the trail is deeply incised and in need of grade stabilization structure installation. Trail storm proofing and grade stabilization of 3.5 miles of the trail is needed to prevent loss of trail tread, trail structure and will reduce soil erosion.

See treatment map for specific locations of trail segments to be worked on. **Total request is for \$ 24,300.**

Treatment	Units	# of Units	Unit Cost	Total Cost
T1- May Valley Non-Motorized Trails – Storm proofing treatments	Miles	12.7	\$1,362	\$17,300
T2- Lower South Ridge Trail Storm proofing/Grade Stabilization treatments	Miles	3.5	\$2,000	\$7,000

P1 – Road Hazard Warning Signs and Gates:

This treatment will design and install burned area warning signs to caution forest visitors recreating and administrative users about the potential hazards that exist within the burned area.. It is consistent with the language provided in the BAER Treatments Catalog. The warning signs will identify the types of hazards to watch for on roads in the burned area. This treatment will place hazard warning signs to inform users of the dangers associated with entering/recreating within a burned area. The purchase and installation of signs at each of the identified locations will be consistent with Forest Engineering Standards at these locations. A Forest Service employee will inspect the signs for visibility, damage, or loss and replace as needed.

Installation of gates will be utilized to support the forest closure and closure treatments. Gate location is just outside of the burned area on the northern end of the 5S21.

A Forest Service employee shall also monitor the closure to make sure it is effective, and see if any deficiencies in the closure need to be corrected. This treatment will keep Forest users out of the burn area during major storm events. Total request is for \$13,200.

Treatment	QTY	Rate	Method	UOM	Total
Mobilization	1	\$ 1,500	Contract	Lump Sum	\$ 1,500
Hazard Signs for 5S05, 5S21, 5S08 Aluminum Panels and Posts	5	\$ 500	Contract	Each	\$ 2,500
Replacement Signs for 5S05, 5S21, 5S08	5	\$ 300	Contract	Each	\$ 1,500
Gates – Medium Duty (6 Inch Pipe)	1	\$ 6,500	Contract	Each	\$ 6,500
Hazard Signs for State Highway 74, 243	4	\$ 300	Cooperator	Each	\$ 1,200

P2 - Trail Hazard/Closure Signs:

Signs will inform users of the danger associated with entering and using trails and dispersed recreation areas within the burned area, and where certain trails are closed because of hazards. The installation of trail signs include posts and associated hardware. There are a large number of portals or access points to these trails. Locations are shown on the treatment map. Total request is for \$ 3,090.

Treatment	Units	Unit Cost	# of Units	Total Cost
Trail Warning Signs	Sign	\$50	22	\$1,100
Sign Post and Hardware	Sign/Post	\$20	22	\$440
Labor for Installation	Days	\$300	3	\$900
Trail Closure Signs	Sign	\$50	5	\$250
Sign Post and Hardware	Sign/Post	\$20	5	\$100
Labor for Installation	Days	\$300	1	\$300

P3 – Keenwild Wellhead Enclosure Repair:

This treatment will reduce the risk of water system contamination from rodent intrusion, which could negatively impact drinking water quality and pose a risk to employees who use the water system at the Keenwild Fire Compound. This treatment includes replacing the steel roof doors and wood ledger and replace burned wellhead enclosure PVC drain pipe. Total request is for \$2,000.

Treatment	QTY	Rate	Method	UOM	Total
Replacement of wood ledger and metal roof access doors	1	\$ 1,500	Contract	Lump Sum	\$ 1,500
Replacement of 20 lineal feet of PVC drain line	1	\$ 500	Contract	Lump Sum	\$ 500

P4 – Deleted

P5- Interagency Coordination:

Continued distribution of public information is considered essential for public safety in conveying the risk within the burn. Communication with special use holders such as CalTrans, Anza Electric, and Southern California Edison will help to communicate hazards on National Forest System lands. Additional coordination with Cal Trans will be required to facilitate work along both Highway 74 and 243 both within and outside of their current right of way.

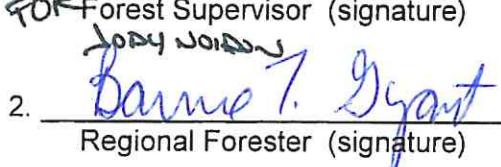
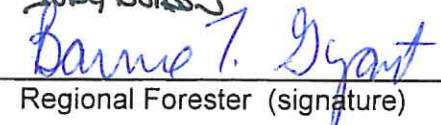
Work out of CalTrans right of way may include, debris catchment basin, rock fall hazard removal, culvert down drains and potentially others. (On going interagency coordination 10 days, 20 days to help facilitate working with Cal Tans in and adjacent to their right of way.)

Treatment	Units	Unit Cost	# of Units	Total Cost
Interagency Coordination	Days	\$450	30	\$13,500

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

Line Items	Units	Cost	NFS Lands			# of units	Other Lands			All Total
			Unit	# of Units	WFSU SULT \$		Other \$	Fed \$	# of Units	
A. L- Land Treatments										
L1- Weeds related to Suppression	miles	\$1,753	14	\$24,542	\$0		\$0	\$0	\$0	\$24,542
L2- Weed EDRR	acres	\$94	156	\$14,664	\$0		\$0	\$0	\$0	\$14,664
L3- Forest Closure	NA			\$0	\$0		\$0	\$0	\$0	\$0
L4- Rest Garner Allotment Subunits	NA			\$0	\$0		\$0	\$0	\$0	\$0
<i>Subtotal Land Treatments</i>				\$39,206	\$0		\$0	\$0	\$0	\$39,206
B. C- Channel Treatments										
C1- Dam Hazard Mitigation (interim #1)	Lump	\$52,500	1	\$52,500	\$0		\$0	\$0	\$0	\$52,500
<i>Subtotal Channel Treatments</i>				\$52,500	\$0		\$0	\$0	\$0	\$52,500
C. R/T- Road and Trails										
R1- Storm Inspection and Response	Lump	\$21,500	1	\$21,500	\$0		\$0	\$0	\$0	\$21,500
R2- Road Stormproofing	Lump	\$31,750	1	\$31,750	\$0		\$0	\$0	\$0	\$31,750
R3- Rd Drain Replace/Improve	Lump	\$45,370	1	\$45,370	\$0		\$0	\$0	\$0	\$45,370
T1- May Valley Trail Stabilization	Miles	\$1,362	12.7	\$17,297	\$0		\$0	\$0	\$0	\$17,297
T2- South Ridge Trail Stabilization	Miles	\$2,000	3.5	\$7,000	\$0		\$0	\$0	\$0	\$7,000
<i>Subtotal Road & Trails</i>				\$122,917	\$0		\$0	\$0	\$0	\$122,917
D. P- Protection and Safety										
P1- Rooad Hazard Warning Sign/ Gate	Lump	\$13,200	1	\$13,200	\$0		\$0	\$0	\$0	\$13,200
P2- Trail Hazard/Closure Signs	Lump	\$3,090	1	\$3,090	\$0		\$0	\$0	\$0	\$3,090
P3- Keenwild Wellhead Enclosure Repair	Lump	\$1,500	1	\$1,500	\$0		\$0	\$0	\$0	\$1,500
P4- Deleted										\$0
P5- Interagency Coordination	Days	\$450	30	\$13,500	\$0		\$0	\$0	\$0	\$13,500
<i>Subtotal Protection & Safety</i>				\$31,290	\$0		\$0	\$0	\$0	\$31,290
E. BAER Evaluation										
				\$75,000	\$0		\$0	\$0	\$0	\$75,000
<i>Subtotal Evaluation</i>				\$75,000	\$0		\$0	\$0	\$0	\$75,000
F. M- Monitoring										
M1- Monitoring of Area Closure	Days	\$300	30	\$9,000	\$0		\$0	\$0	\$0	\$9,000
M2- Deleted										\$0
<i>Subtotal Monitoring</i>				\$9,000	\$0		\$0	\$0	\$0	\$9,000
G. Totals										
				\$254,913	\$0		\$0	\$0	\$0	\$254,913
				\$202,413	\$0		\$0	\$0	\$0	\$202,413
				\$52,500	\$0		\$0	\$0	\$0	\$52,500

PART VII - APPROVALS


 Tom Johnson (signature)
 1. 
 2. 
 Regional Forester (signature)


 Brian T. Bryant (signature)
 Date: 12/13/18
 Date: 12/20/18

I. Monitoring Narrative:

M1- Monitoring of Area Closure:

Monitoring of area closure is considered essential to ensuring critical values including human life and safety, hydrologic function, soil productivity and native plant communities. Effectiveness monitoring will take place at road and trail entrances to the fire to monitor for trespass and effects to critical values at risk within the closure area and assess need for additional enforcement and/or implementation of barriers.

Monitoring plan includes periodic check of major trailheads and closed road entrances to see if any trespass is observed.

Treatment	Units	Unit Cost	# of Units	Total Cost
Monitoring of Area Closure	Days	\$300	30	\$9,000

M2 – Deleted

Channel Treatments

A stock pond located off NFSR 5S08 (Lake Meggo) is currently at risk of failure and is within the burned area. The dam embankment has many burned trees and root structures along the upstream and downstream faces. Large voids in the embankment now exist, which substantially increase the risk of internal erosion and dam failure. A private access road and state highway 74 are at risk of damage or failure if the dam were to fail. Refer to the attached geotechnical assessment for more information. The proposed treatment is to breach the dam by removing a section of the dam embankment, thus reducing the storage capacity and reducing the risk of failure to an acceptable level.

C1 – Dam Hazard Mitigation:

This treatment includes: excavation of dam embankment material creating a lower stable emergency spillway 25 feet wide with sloped sides, placement of excavated material into the reservoir area, minor vegetation removal, installation of erosion control, and armoring of emergency spillway. Armoring includes installation of rock-filled reno mattress surface and HDPE liner subsurface.

This treatment is necessary to help reduce the risk of dam failure and to help protect property downstream.

Total interim request is for \$52,500.

Treatment	Units	Unit Cost	# of Units	Total Cost
<u>Earthwork</u>				
Excavator (rental)	Hours	\$ 90	30	\$ 2,700
Dump Truck (Govt.)	Miles	\$ 2	500	\$ 1,000
Dozer (Govt.)	Hours	\$ 40	30	\$ 1,200
Force Account Labor	Lump Sum	\$7,500	1	\$ 7,500
<u>Spillway Armoring</u>				
Reno Mattresses	Lump Sum	\$ 9,600	1	\$ 9,600
3-6" rock	Lump Sum	\$ 6,500	1	\$ 6,500
Concrete	Lump Sum	\$ 3,500	1	\$ 3,500
HDPE liner	Lump Sum	\$ 4,000	1	\$ 4,000
Miscellaneous materials	Lump Sum	\$ 1,500	1	\$ 1,500
Force Account Labor	Lump Sum	\$15,000	1	\$ 15,000
			Total	\$ 52,500