USDA-FOREST SERVICE

FS-2500-8 (7/08)
Date of Report: 8/25/17

MODOC CX AND PARKER 2 FIRES BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

The Cove Fire from California State Highway 299 on August 3rd 2017.

A. Type of Report

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

B. Type of Action

[x] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[ ] 2. Interim Report #____
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Modoc Cx and Parker 2 Fires

B. Fire Number: Modoc = CA-MDF-0671; Parker = CA-MDF-0862

C. State: CA

D. County: Modoc

E. Region: 5

F. Forest: Modoc

G. Districts: Big Valley and Devils Garden

H. Fire Incident Job Code: Parker - P5K8YG17; Modoc Cx - P5K7YC0502

I. Date Fire Started: Modoc Cx = July 25, 2017; Parker = August 8, 2017

J. Date Fire Contained: Modoc Cx = August 16, 2017; Parker = August 2017

K. Suppression Cost: Modoc Cx = $35 million; Parker = $11 million

L. Fire Suppression Damages Repaired with Suppression Funds

Modoc Cx = Dozerline repaired / waterbarred: 247 miles

Parker 2 = Dozerline repaired / waterbarred: 114 miles

M. Watershed Numbers and Names

Steelee, Lake and Rimrock Fires - Fletcher Creek-Boles Creek – 1801020401; Mowitz Creek-Clear Lake – 1801020403; North Fork Willow Creek-Willow Creek – 1801020402; Rock Creek-Lost River – 1801020404.

Cove Fire - Blacks Canyon-Pit River – 1802000212; Butte Creek-Ash Creek – 1802000217; Rush Creek-Ash Creek – 1802000215.

Parker 2 Fire - Middle Alkali Lake – 1802000205; Parker Creek – 1808000102.

N. Total Acres Burned: 90,394

Modoc Complex Acres Burned Per Ownership				
FS	Pvt	F&WS	BLM	Total
73823	6298	7	2569	82697
Parker 2 Fire Acres Burned Per Ownership				
7291	380	0	26	7697
81114	**6678**	**7**	**2595**	**90394**

O. Vegetation Types:

Modoc Cx Fire
Eastside pine with ponderosa pine, Jeffrey pine, incense cedar, greenleaf manzanita, mahala mat, big sagebrush, bitterbrush and Idaho fescue. Oregon white oak series with sugar pine, California black oak, buck brush, skunk bush and squirrel tail. Western juniper series with big sagebrush, birchleaf mountain mahogany and bitterbrush. Montane chaparral consisting of greenleaf manzanita, deer brush and rock spiraea.

Parker 2 Fire
Eastside pine consisting of ponderosa pine, Jeffery pine, incense cedar, Klamath plum, California black oak, Bloomer's goldenbush, bitterbrush, wax currant, Idaho fescue and threadleaf sedge. Western juniper series with rubber rabbitbrush, gray pine, big sagebrush, squirrel tail and Sandberg's bluegrass.

P. Dominant soils:

Cove Soils - The mapunits for the Cove Fire with the most acres were, 202 Lawyer deep-Elmore deep families association, 20 to 40 percent slopes. With 4,083 acres, 188 Hunsinger-Chirpchatter complex, 15 to 30 percent slopes with 2,732 acres, 203 Lawyer deep-Elmore deep families association, 40 to 60 percent slopes with 1,930 acres, 156 Deven-Pass Canyon-Keating families complex, 15 to 35 percent slopes, with 1,593 acres, and 273 Oxendine-Sweagert complex, 2 to 9 percent slopes with 1,593 acres.

Steelee Complex Soils - The mapunits for the Steelee Complex with the most acres were151 Deven-Bieber-Barnard families complex, 0 to 5 percent slopes. with 12,208.08 acres, 153 Deven-Bieber-Pass Canyon families association, 1 to 15 percent slopes, with 6,242.874 acres, 236 Puls-Roval-Dishner families complex, 0 to 5 percent slopes, with 3,300.879 acres, and 204 Lawyer-Elmore-Gwin families association, 1 to 20 percent slopes, with 2,870.729 acres.

Parker Soils - The mapunits for the Parker Fire with the most acres were 110 Anatone-Bearskin families-Rock outcrop association, 40 to 70 percent slopes with 1,621.94 acres, 212 Manila-Merlin-Mascamp families association, 10 to 35 percent slopes with 1,019.67 acres, 451 Lyonman gravelly ashy sandy loam, 30 to 50 percent slopes with 708.18 acres, 256 Smarts deep-Cavanaugh families complex, 35 to 60 percent slopes with 701.81 acres, 254 Smarts deep-Bertag deep-Demasters deep families association, 10 to 35 percent slopes with 639.23 acres.

Q. Geologic Types: Tertiary volcanics including basalt lava flows, andesitic pyroclastics and intercalated andesitic lava flows, rhyolite and other volcanics (e.g. obsidian). The east-facing slopes of the Warner mountains also contain late Eocene to early Oligocene (34-41 Ma) volcaniclastic alluvial sandstone and conglomeratic sequence overlain by a series of overlapping volcanic edifices that record Oligocene and younger arc volcanism. The Oligocene sedimentary rocks include thin layers of siltstone and sandstone, but mostly they are rounded cobble conglomerate.

R. Miles of Stream Channels by Order or Class:

Parker 2 = 13.9 Miles Perennial, 11.4 Miles Intermittent, 24.9 Miles Ephemeral

Modoc Cx = 9.6 Miles Perennial, 217.9 Miles Intermittent, 81.6 Miles Ephemeral

S. Transportation System:

Parker2 - Trails: 0.6 miles Roads: 24.5 miles

Modox Cx – Trails 0.0 miles Roads: 180.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity by total and FS (acres):

Soil Burn Severity	U/L	M	H
Steel/Lake/Rimrock	49686 (96%)	2050 (4%)	74 (<1%)
Cove	23,330 (76%)	4907 (16%)	684 (2%)
Parker	4,488 (58%)	2349 (32%)	657 (10%)

B. Water-Repellent Soil by total and FS (acres): Water repellency is a primary element of the soils effects in this fire: severe repellency is widespread and mostly continuous throughout the fire area, occurring in all soil burn severity classes from the bottom of the surface-charred layer (generally 1-2 inches deep), and varying in thickness from ½ -2 inches in low SBS to 4-6 inches in high SBS. Repellency will be largely responsible for moderate soil burn severity expected to have a watershed runoff response similar to high. Repellency also occurred naturally in unburned areas, usually beginning at about 4 inches depth and 1-2 inches thick; repellency was greatly exacerbated by the fire in these coarse-sandy soils. Without repellency, these soils have rapid infiltration rates and surface runoff and erosion would normally be localized to shallow soil areas and/or steep slopes. It is estimated that about 40% of the fire area has water repellency elevated by the fire.

C. Soil Erosion Hazard Rating by total acres:

Cove EHR		
Erosion Hazard Rating	**Acres**	**Percent**
Low	23214	75.77%
Moderate	1727	5.64%
High	260	0.85%
Very High	5436	17.74%
Total	**30637**	**100%**

Steelee Complex EHR		
Erosion Hazard Rating	**Acres**	**Percent**
Low	50756.66	98.12%
Moderate	169.66	0.33%
High	121.83	0.24%
Very High	678.38	1.31%
Total	**51726.54**	**100.00%**

Parker EHR		
Erosion Hazard Rating	**Acres**	**Percent**
Low	6144.38	80.69%
Moderate	3.10	0.04%
High	3.49	0.05%
Very High	1464.16	19.23%
Total	**7615.13**	**100.00%**

D. Erosion Potential:

Total fire area: 2 tons per acre for a 5 year runoff event, as determined using WEPP-ERMiT. Stated model accuracy is +/- 50%. With water repellency levels in this fire, +50% may be more representative for this area.

Parker Fire Sedimentation Rates by Mapunit						
Mapunit	2YR Tons/ Acre	2YR Sediment Rates	5YR Tons/Acre	5YR Sediment Rates	10YR Tons/Acre	10YR Sediment Rates
Total	**1.05**	**1508**	**8.66**	**22578**	**15.34**	**36761**

Steelee Complex Sedimentation Rates by Mapunit						
Mapunit	2YR Sediment Rates	2YR Tons / Acre	5YR Sediment Rates	5YR Tons / Acre	10YR Sediment Rates	10YRTons/ Acre
Total	**121**	**0.03**	**4962**	**0.46**	**8432**	**0.96**

Cove Fire Sedimentation Rates By Mapunit						
Mapunit	2YR Sediment Rates	2YR Tons/ Acre	5YR Sedimentation Rates	5YR Tons /Acre	10YR Sedimentation Rate	10YR Tons / Acre
Total	**375**	**0.06**	**3387**	**3.53**	**5250**	**9.43**

E. Sediment Potential:

ERMiT estimates (part 3D) try to account for hillslope re-deposition, and sediment production numbers are delivery to the bottom of the hillslope. Many modeled hillslopes in this fire do not have streams at the base of the slope; water percolates into the sandy soils and sediment is deposited on the gentle toe-slopes. Therefore it is roughly estimated that 20% of sediment estimates above would be delivered to the fluvial system.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	**3-5**
B. Design Chance of Success, (percent):	**90**
C. Equivalent Design Recurrence Interval, (years):	**5**
D. Design Storm Duration, (hours):	**6**
E. Design Storm Magnitude, (inches):	**1.5**
F. Design Flow, (cubic feet / second/ square mile):	**Steelee – 3.7**
	Cove – 5.2
	Parker 2 – 7.1
G. Estimated Reduction in Infiltration, (percent):	**Steelee – 14**
	Cove – 19
	Parker 2 – 17
H. Adjusted Design Flow, (cfs per square mile):	**Steelee – 4.2**
	Cove – 6.2
	Parker 2 – 8.3

PART V - SUMMARY OF ANALYSIS

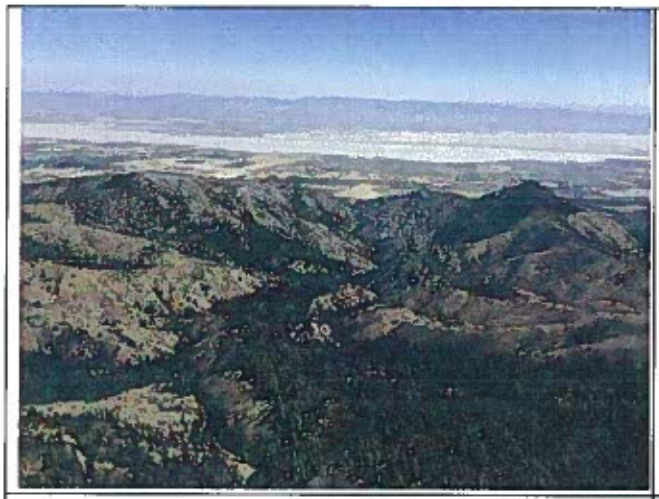
A. Describe Critical Values/Resources and Threats:

Background:

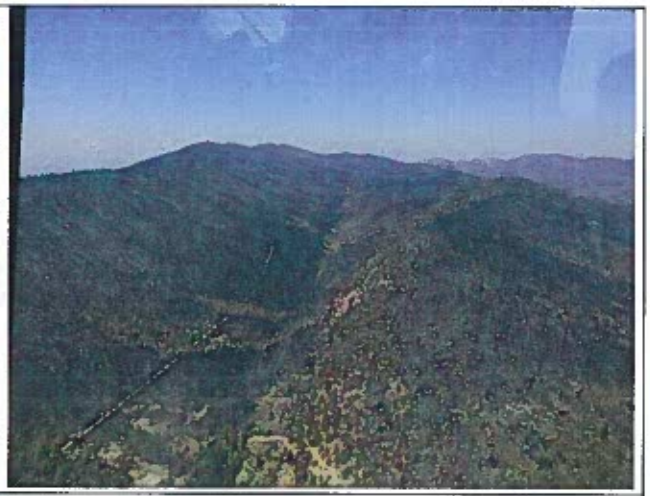
The Modoc Complex fires and Parker 2 fire started by a series of lightning strikes from July 23 to the 25th, 2017 starting 60 new fires across the Modoc National Forest. A few quickly grew out of control with near-record heat and strong gusty southwesterly winds. Parker 2 fire started later as a holdover from the July lightning swarm. Fires were fueled by an abundant grass crop produced by above average rain coupled with local brush suffering from long-term drought effects and old growth stands of vegetation.

Approximately 3% (Steele) 18% (Cove) and 39% (Parker 2) burned at high and moderate soil burn severity (see soil burn severity maps below). 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.



Grainger Canyon coming off the Warner Mtn. Parker 2 Fire



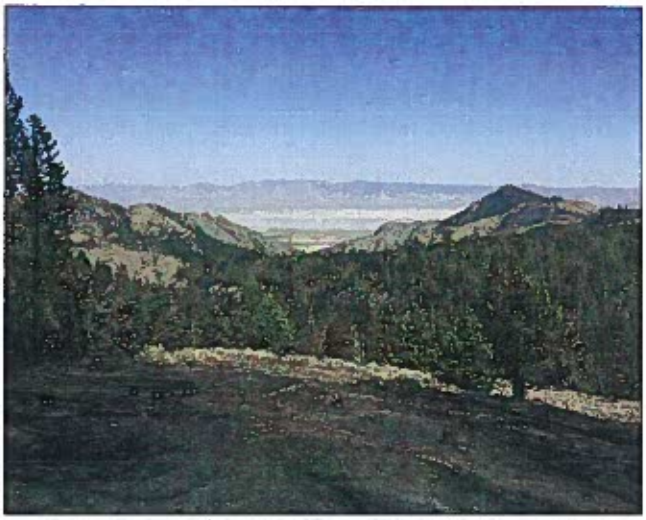
Barber Ridge high soil burn severity in the Cove Fire

General trends are plantation pine forested areas were moderate to high soil burn severity with 80 to 100 percent timber mortality. Open mixed conifer stands areas had moderate to low soil burn severities and with 30 to 70 percent mortality (see pics above and below).

High soil burn severity with deep char in mixed conifer.

Low soil burn severity with shallow surface char in conifer.

High soil burn severity landscape in mixed conifer.

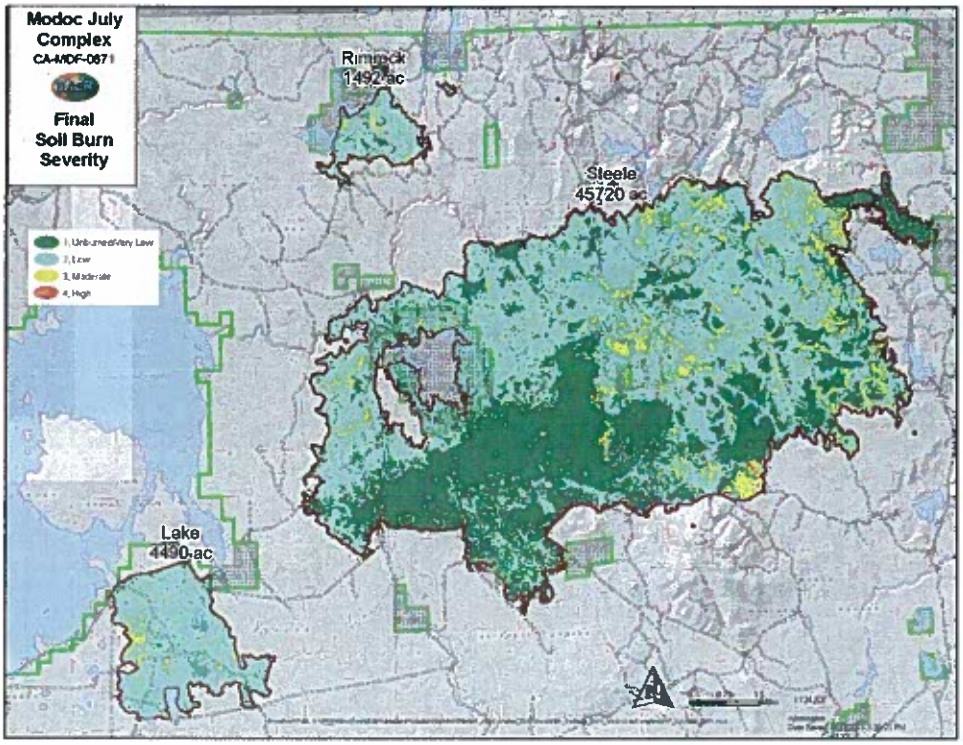


Low soil burn severity looking at Surprise Valley at Warner's.

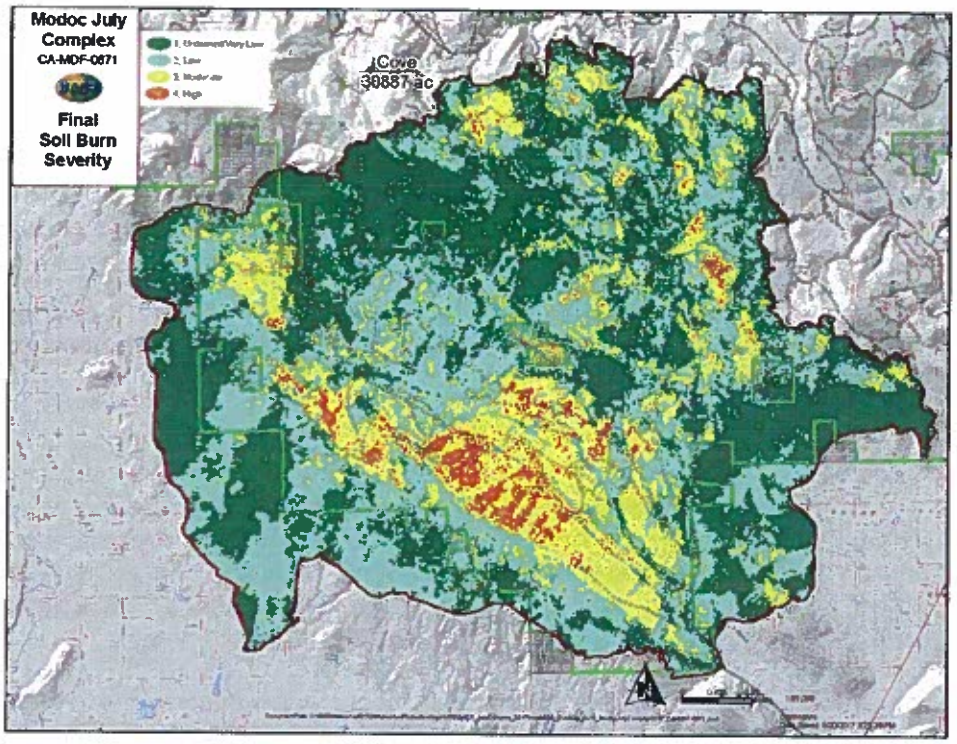
Looking at the soil burn severity maps below shows multiple areas that have the majority of moderate and high soil burn severity. These areas are along Barber Canyon and Willow Springs Canyon on the Cove fire, North fork of Parker Creek, and Grainger Canyon being at risk due to flooding and sedimentation affecting roads, water quality, and fish habitat.

Modoc Cx and Parker 2 Soil Burn Severity Maps:

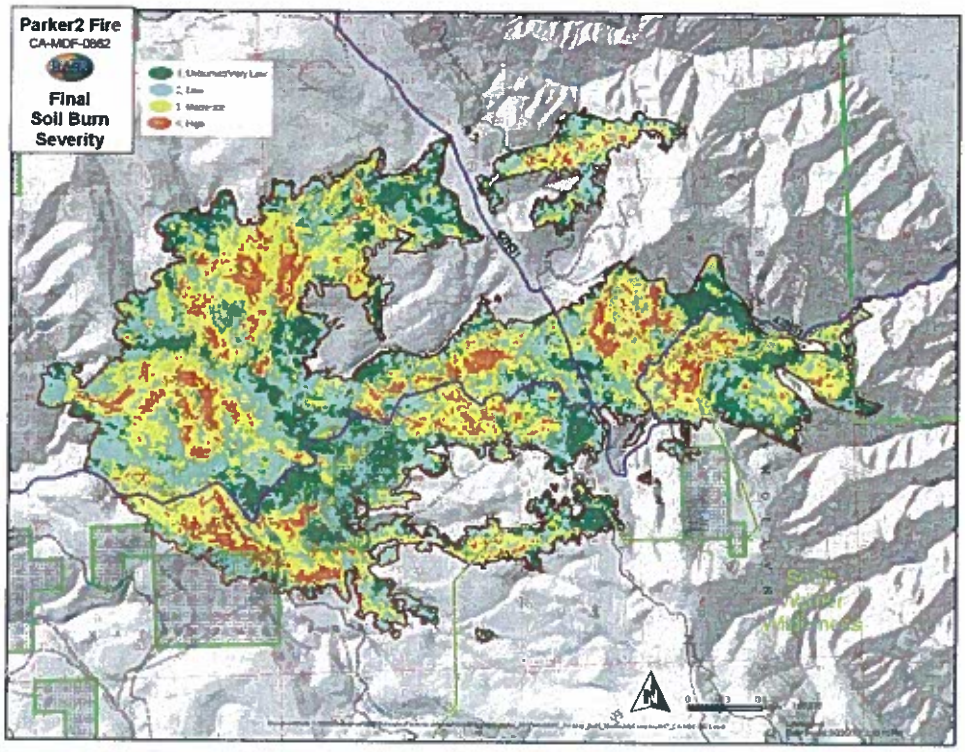
Modoc Cx (Steele, Lake, Rimrock):



Modoc Cx (Cove):



Parker 2 Fire:



Soil Resource Condition Assessment Sections:

Severe soil heating was fairly rare and restricted to forested areas. Soil water repellency was common within moderate and high burn severity, and even in low burn severity areas. Hydrophobic strength was often high in the top 2 inches of both burned and unburned areas. Based on Soil burn severity an increase in hydrophobicity will occur on 40% of the Parker, 46% of the Cove, and 7% of the Steelee Complex. Roughly half of the moderate severity class resulted in near complete vegetation canopy and organic horizon removal, leaving surface rock as the only effective ground cover.

Thus, erosion rates are elevated high enough to constitute an emergency situation to soil productivity, but no hillslope treatments are proposed due to no direct impingement on values at risk and slopes being too steep or too level to treat. Point treatments on roads are recommended to protect localized / specific soil resources adjacent to infrastructure.

Hydrology

Field evaluations were conducted to identify potential values at risk. The only concern was found on the 40N11 road at the bottom of Barber Canyon. 61% of this drainage has moderate and high soil burn severity. Recent thunderstorms mobilized sediment on the hillside and plugged culverts on the road, resulting in sediment overtopping the road and reaching the main channel. This situation will continue unless culverts and catchment basins are cleaned out and maintained.

Potential post-fire peak flow increases were estimated using a modeling technique to evaluate watershed response in the HU10 watersheds within the fire areas. On the Steelee, Lake and Rimrock fires increase in runoff ranged from 4 to 24 percent with the largest increase occurring in the North Fork Willow Creek-Willow Creek watershed. On the Cove fire the change in runoff increased from 9 to 34 percent. The largest increase came from the Rush Creek-Ash Creek watershed that includes Barber Canyon. The Barber Canyon drainage alone shows an increase in runoff of 82%. The Parker 2 fire has two HU10 watersheds with Middle Alkali Lake showing an increase in flow of 4%. Parker Creek Watershed has greater soil burn severity and shows an increase in runoff of 24%

The potential for flooding from increased runoff from these fires is low. The Steelee Fire has two perennial streams, Boles Creek and Willow Creek These streams flow into Clear Lake Reservoir and present no flooding threat. No perennial streams were found on the Cove Fire. The increase in runoff from Barber Canyon and Dutch Flat are predicted to increase the flow in Ash Creek (which runs through the town of Adin) by 10%. The Parker 2 Fire has two perennial streams, Parker Creek and Granger Creek. Neither of these streams are predicted to pose the threat of flooding to downstream values.

Debris Flow Potential:

There is a moderate potential for the occurrence of earth flows/debris flows within the burned area (Figure 3). Most of the streams and stream segments at risk for earth flows/debris flows are located within Barber Canyon, Dutch Flat Canyon, and 42N31 (Parker Road) that will have moderate to major impact on values at risk. Values that are at risk include channel crossing along multiple road segments in the Cove and Parker2 burned areas (***see Figures 2-5 in the geology report for debris flow potential maps***). Flow consistency will mostly be earth flows, but debris flows are possible.

Rock Fall Potential:

Rockfall hazards occur along 42N31 (Parker Road), Dutch Flat Road, and Granger Canyon Road (Figure 8) and (Figure 6-7) in the geology report. The latter is an existing condition that is not significantly

impacted by the fire, but there is a large amount of cobbles and boulders in this portion of the fire (east-facing slope of the Warner Mountains) and lose material susceptible to rock falls. The condition above Parker Road and Dutch Flat Road are a direct result of the fire caused by the burning of vegetation that was stabilizing material on the steep slopes.

Values at Risk: (see Appendix B)

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

Forest Service Roads and Hazard Trees

Cove Fire:

Life: **High Risk** (Likely, Moderate) – It is likely that storms would provide increased runoff and sediment delivery to various roads within the Cove Fire due to the moderate to high burn severity in the area. If not mitigated, runoff and sediment delivery to the road prism would cause a safety issue to road users and increase the chance of injury. In the Cove Fire, National Forest System Road (NFSR) 41N11, 39N17, and 41N11 are managed as Forest Distinctive Route and are the primary forest road for the fire. Potential rock fall could also occur on NFSR 39N17. In addition, NFSR 40T27G, 40N27F, 41T11U, 40T11Z, 40T11Y, 40T11X, and 40N11B are secondary routes with moderate and high burn severity which could cause a safety issue to road users and increase the chance of injury.

Property: **High Risk** (Likely, Moderate) – It is likely that storms would provide increased runoff, sediment delivery, and mudflow to NFSR 39N17, 40N27, 41N09, 41N11, 40N19, and 40N11 due to the moderate to high burn severity in the area. Protection of the cross-drain culvert inlets and road prism is necessary to handle the increased runoff and sediment delivery. In addition, these roads lack the amount of drainage structure to handle the increased runoff and sediment delivery. If not mitigated, the cross-drain culverts would not function as intended and cause damage to the road prism. Potential washouts could occur on road segments where there is a lack of drainage structures for the increased runoff and sediment delivery. NFSR 39N17, 40N27, 41N11, and 40N11 are operational maintenance level 3 roads while NFSR 41N09 and 40N19 are operational maintenance level 2 roads.

Parker 2 Fire:

Human Life and Safety

High Risk (Likely, Moderate) – It is likely that the 2017-2018 winter storms will provide increased runoff, sediment delivery, and increase the likelihood of rock fall to various roads within the Parker Fire due to

the moderate to high burn severity areas. If not mitigated, runoff and sediment delivery to the road prism will cause safety concerns to road users and increase the chance of injury for the public especially on high use roads. In the Parker Fire, the National Forest System Roads (NFSR) 42N31, 42N51, and 42N51C have rock fall potential which is likely to increase the chance of injury.

Property

High Risk (Likely, Moderate) – It is likely that the winter storms will cause increased runoff, sediment delivery, and/or rock fall potential to NFSRs 42N51, 42N31, 42N052, 42N16, 42N51C, and 42N73. This is due to the moderate to high burn severity areas that are above these roads. Erosion on roads is very likely to occur if drainage structures and cross drain culvert inlets are not protected sufficiently to handle the upcoming storms. If not mitigated, drainage structures will not function as intended and will cause damage to the road prisms. Potential washouts could occur on segments of these roads.

Intermediate Risk (Possible, Moderate) – It is possible that the winter storms will cause increased runoff and sediment delivery for NFSR 42N51B. This road is in a moderate to high burn severity area and is located above a segment of NFSR 42N51. Increased concentration of flows due to berms along the road would raise the possibility of drainage problems and erosion on the road below.

Water Quality and Quantity

Hydrology Values at Risk

Flooding and water quality are a concern after a wildfire. Critical values at risk that are considered include human life and safety on or in close proximity to burned NFS lands. Buildings, water systems, wells or other significant investments on or in close proximity to the burned NFS lands can be at risk. 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. As well as hydrologic function on burned NFS lands are a concern.

Identified Values at Risk

No Flooding or water quality risks were identified on any of the five fires. The high and moderate soil burn severity in the Cove fire was a concern for flooding in the town of Adin, but modeling determined that increased runoff from the fire would only increase the flow in Ash Creek as it flows into by Adin 9% in a five year storm event.

Forest roads will be impacted by the increased runoff. Many of the intermittent and ephemeral channels in the Barber Canyon and Dutch Flat drainages of the Cove fire area were full of sediment. A significant storm event occurred between fire containment and the assessment by the BAER team. Much of this sediment was mobilized and on some of the stream crossings culverts were plugged and sediment flowed onto the road. This will continue to be a problem until the landscape has recovered.

The most noticeable effects of post fire effects on water quality would be increased sediment and ash from the burned area into drainages and water-bodies in and downstream of the fire area. During storm events this will increase turbidity and contribute to pool filling. Due to the moderate and high burn severity, water quality and quantity is expected to be significantly affected.

Threatened, Endangered, Sensitive Aquatics and Fisheries

There are 9 HU10 watersheds which were affected to varying degrees by the Modoc July Complex Fire. Inside the Steelee Fire 4 watersheds were affected,1) Fletcher Creek-Boles Creek, 2) Mowitz Creek-Clear Lake, 3) North Fork Willow Creek-Willow Creek, and 4) Rock Creek-Lost River. For the Cove Fire

3 watersheds were affected, 1) Blacks Canyon-Pit River, 2) Butte Creek-Ash Creek, 3) Rush Creek-Ash Creek. Inside the Parker Fire 2 watersheds were affected, 1) Middle Alkali Lake, and 2) Parker Creek. Impacts to these watersheds were also evaluated as part of the hydrology, and other BAER specialist reports.

This assessment evaluates the effects of the Modoc July Complex Fire and the potential effects of the burned area emergency response (BAER) treatments on the following federally-listed fish species:

Critical Values
Federally endangered Lost River sucker (*Catostomus luxatus*) and shortnose sucker (Chasmistes brevirostris) populations and designated critical habitat inside the Steelee Fire perimeter.

Table XX. A summary of determinations for Endangered Species and the related emergency condition.

Species	Emergency Condition
Lost River sucker	Impacts to Designated Critical Habitat from cattle grazing. Impaired habitat due to damaged exclosure fencing leading to loss of cover, increased sedimentation and decreased water quality.
Shortnose sucker	Impacts to Designated Critical Habitat from cattle grazing. Impaired habitat due to damaged exclosure fencing leading to loss of cover, increased sedimentation and decreased water quality.

Willow Creek – Willow Creek is predominantly a perennial stream within the fire area and experienced some moderate severity fire adjacent to the area. Under existing conditions Willow Creek has an exclosure fence that protects the federally endangered shortnose and Lost River suckers from grazing impacts. Inside the Steelee Fire perimeter this exclosure fence experienced damage to portions of the wood infrastructure resulting in cattle getting inside the exclosure fencing. This resulted in the probability of damage or loss to Designate Critical Habitat along Willow Creek as *very likely* due to the burned perimeter fence and the magnitude of consequence is *major* resulting in a *very high* risk. Treatment Recommended (Repair Willow Creek Exclosure Fence and fell identified hazard trees to mitigate safety hazard while repairing fence).

Boles Creek – Boles Creek is an intermittent stream within the fire area and experienced some moderate severity fire adjacent to the area. Boles Creek has an exclosure fence that protects the federally endangered Shortnose and Lost River Suckers from grazing impacts. Given the current situation of this exclosure fence, the probability of damage or loss to Boles Creek is *very likely* due to the burned perimeter fence and the magnitude of consequence is *major* resulting in a *very high* risk. Treatment Recommended (Repair Boles Creek Exclosure Fence and fell identified hazard trees to mitigate safety hazard while repairing fence).

An assessment of fisheries Values at Risk (VAR) in relation to potentials for, soil erosion/sedimentation events, decreased water quality and loss of cover indicated that federally endangered Lost River sucker and shortnose sucker populations and habitats (designated critical habitat) are likely to be adversely affected by post-fire impacts. Impacts to these populations, particularly from cattle grazing, may result in direct effects to local populations. However, when appropriate repairs to range fences are made environmental conditions will recover. Post-fire impacts to habitat can also be problematic. Under average environmental conditions, riparian aquatic systems may recover from post-fire effects in 4-5 years. However, cattle grazing will exacerbate wildfires impacts and delay the regeneration of riparian vegetation if the fencing is not reinstalled in an appropriate timeframe.

Following the fire it is recommended that biologists work with range staff to and ensure the appropriate mitigations are in place to reduce the risk of impacts to federally endangered species. This will inform

staff on the Modoc NF regarding whether natural recovery is occurring as anticipated, or whether additional conservation measures might be necessary.

Threatened, Endangered, Sensitive and Invasive Plants

Native Vegetation Recovery and Diversity

In areas of the Modoc July Complex / Parker 2 Fire that burned at high intensity and areas disturbed by suppression activities, the cover of native vegetation and other soil-stabilizing ground covers (e.g., cryptobiotic soil crusts, fungi, wood, litter, and duff) have been diminished. In turn, these disturbed landscapes are at a greater risk of the incursion and spread of invasive and non-native plant species. Such plant species would displace native vegetation and other ground covers, which would hinder the recovery of the native plant community, compromise species diversity, and hinder natural ecosystem dynamic.

The Modoc July Complex / Parker 2 Fire includes fires that were located on all four ranger districts (RDs) of the MDF (i.e., Big Valley RD, Doublehead RD, Devil's Garden RD, and Warner Mountains RD) and occurred between July 24, 2017 and August 15, 2017. The total area burned by these fires is 90,817 acres. Due to the expanse and size of these fires, the burned area contains a high variety of ecosystems and landscapes, which allows for a high diversity of plant and wildlife species. The haphazard introduction of noxious weeds and other invasive and non-native plant species into areas disturbed by wildfires, fire suppression, and suppression rehabilitation has the potential to establish and/or exacerbate persistent weed occurrences. These persistent occurrences could alter the structure and function of native plant communities within burn areas, including the ability to support native wildlife. Forest Service (FS) direction is to minimize the establishment of invasive and non-native species to prevent unacceptable degradation of the burned areas. Consequently, the assessment of bulldozer (i.e., dozer) lines, safety zones, and roads is necessary for detecting the introduction and spread of weeds in the first few years after a fire. Identifying newly established noxious weeds and treating small outlying occurrences before they expand is well demonstrated to prevent weeds from becoming serious threats to the recovery on native plant and wildlife species within burned areas.

Federally-Listed Plant Species

Two federally-listed (i.e., Threatened, Endangered, or Proposed) plant species are known to occur on the MDF: Greene's tuctoria (*Tuctoria greenei*), an Endangered species, and slender Orcutt grass (*Orcuttia tenuis*), a Threatened species. Both of these plant species are annual grasses that are endemic to vernal pools. No federally-listed plant species are known to occur within the Modoc July Complex / Parker 2 Fire burn area. The nearest known slender Orcutt grass occurrence is approximately 1.7 miles west of the Steelee Fire, while the nearest known occurrence of Greene's tuctoria is approximately five miles west of the Cove Fire. The northern fires of the July Complex (i.e., Steelee Fire, Lake Fire, and Rimrock Fire) contain vernal pools that may offer suitable habitat for these two federally-listed grass species. A list of federally- and regionally-listed plant species for the MDF is included as Appendix A.

The value at risk related to botany for the July Complex / Parker 2 Fire is native vegetation recovery and diversity. Invasive and nonnative plants impede the recovery of native plant assemblages through their direct and indirect effects on soil chemistry and ecosystem function. For example, invasive and nonnative plants may modify the soil environment through root exudates that kill native plants, affect soil structure, and mobilize and/or chelate nutrients (Weidenhamer and Callaway 2010). The long-term impact of invasive species presence can include modified soil nutrient pools, and altered nutrient cycles that impede

native vegetation recovery and diversity; in addition to permanent replacement of native plants relied upon by pollinators and wildlife.

Prevention and early detection of invasive, nonnative plant species are the principal strategies to successful management. Eradication efforts are most successful for infestations less than 2.5 acres in size (Rejmanek and Pitcairn 2002). Once infestations are more than 250 acres, eradication efforts are largely unsuccessful, costly, and unsustainable (Rejmanek and Pitcairn 2002). Nonnative plants can significantly alter the local flora and yield economic consequences estimated at greater than $120 billion dollars per year nationwide (Pimentel et al. 2005). Further, the U.S. Congress, Office of Technology Assessment (1993), stated that the environmental and economic benefits of supporting prevention and early detection initiatives significantly outweigh any incurred costs, with the median benefit-to-cost ratio being 17:1 in favor of being proactive.

There is an emergency related to native vegetation recovery and diversity due to the likely introduction and expansion of invasive and nonnative weeds on at least 10,368 acres of the burned area (Very High, High, and Intermediate risk) on Forest Service lands. Native vegetation was identified as a Critical Value by the BAER team, as there is the potential for weed incursion in the majority of the burned areas. The July Complex / Parker 2 Fire provided conditions conducive to the establishment and rapid spread of weeds known to be within and adjacent to the fire areas. Furthermore, suppression activities have likely vectored weed seeds into or spread them further through the burned areas.

Mechanized equipment was not cleaned prior to line implementation. The utilization of a weed wash unit for cleaning equipment and vehicles prior to entering fire areas would have significantly reduced the potential of weeds arriving in disturbance associated with fire or suppression activities. Weed propagules in and adjacent to the fire may have been spread through fire line construction in addition to potentially arriving from elsewhere on contaminated equipment. Field reconnaissance noted evidence of dozer and other equipment passing through known occurrences of noxious weeds.

The results of the botany BAER assessment of the July Complex / Parker 2 Fire conclude that vegetation communities in burn areas are at risk of an irreversible loss of healthy native vegetation and native plant species diversity and a reduction in the rate of native vegetation recovery. This BAER emergency can be mitigated by detecting and treating new occurrences of noxious weeds and controlling known noxious weed occurrences to limit the spread of weed species that may be exacerbated by fire and/or fire suppression activities. During the first year after the fires, the Very High, High, and Intermediate risk areas will likely lag in the recovery of their native plant communities with reductions in both native plant cover and diversity. However, the early detection and rapid response (EDRR) of noxious weeds can mitigate these fire effects if this weed removal method is implemented aggressively within the first year post-fire.

Threats to Cultural Resources: Post-fire effects on cultural resources result from two types of disturbances. The first is natural; the degradation of sites from burned hazard trees falling and increased erosion within the burn area which causes an increase in sediment deposition, debris flows, and scouring of the landscape. The second is cultural; increased access to the resource as a result of a denuded landscape that leads to a greater risk of looting, vandalism, and unauthorized OHV use. Each of these effects can also cause or exacerbate the other.

Critical Values for Heritage include all cultural resources which are listed on or potentially eligible for the National Register of Historic Places, Traditional Cultural Properties and Indian Sacred sites on National Forest lands. There are 308 known sites within the Modoc July Complex and the Parker 2 burn

perimeters, some of which are traditional ceremonial locations; 76% of the area has never been surveyed for cultural resources, and therefore the exact number of cultural resources is unknown.

Field assessment of historic properties for the Modoc July Complex/Parker 2 Fire BAER was conducted over the span of six days. The fire areas are rich in cultural resources that represent Native American use of the area, as well as historic homesteading, ranching, sheepherding, and logging. It was necessary to prioritize sites as this is a large assessment in a relatively short amount of time. Twenty [20] sites that were identified as most "at risk" from post-fire effects were visited for assessment, although it should be noted that all sites that burned are at increased risk of vandalism and looting. Of the 20 visited, 14 were prehistoric, four [4] were historic, and two [2] had both prehistoric and historic components.

Of these, two [2] have been identified as at particular risk from an increase in public access (via motor vehicle, OHV, and pedestrian) due to the loss of vegetative barriers resulting from the fire. Both sites are located adjacent to well-traveled roads in areas with recent evidence of unauthorized off-road use. This makes these sites particularly vulnerable to increased disturbance and looting.

- For both sites, the probability of damage or loss is "**Very Likely**;" there is clear, repeated, and recent use of these areas for off-road recreation and travel

- The magnitude of consequences is "**Major**" for one site, which has traditional ceremonial use; and "**Moderate**" for the other
- This places the risk to both sites at "**Very High**"

Threats to Public Safety:

Geologic Values-at-Risk (VARs) all involve public safety and property damage (rockfall, debris flow).
Rock falls - VARs below slopes steeper than 39% which experienced moderate to high soil burn severity were often locations where rockfall activity was present due to loss of vegetation. Road segments at a high risk include the western portion of 42N31 (Parker Road) within the Parker2 burned area, (2) Granger Canyon Road within the Parker2 burned area, and (3) a portion of Dutch Flat Road within the Cove burned area.

Earth flow/debris flow – The soil burn severity was also an important element in the determining the potential for debris flow occurrence. Debris flow threat to VARs was evident. Like VARs initially seen as threatened by rockfall, some VARs which appeared at risk from debris flows were shown to be in locations where this threat was unlikely or only of minor consequence. The Roads Engineers designed road treatments for earth flows/debris flows.

Threats to Wildlife: There are no wildlife concerns for the Modoc Cx and Parker 2 due to limited impacts on T&E species (see wildlife report). Only on T&E species (Clearlake Sage Grouse) was minimally affected by the Lake Fire, part of the Modoc July Complex.

No emergency exists for wildlife habitat as result of the Modoc Cx and Parker 2 .

B. Emergency Treatment Objectives: To allow safe passage of water to protect infrastructures and watersheds from accelerated sheet and rill erosion. To protect watersheds from the spread of noxious weeds and unfettered OHV access.

Risk determination is dependent on the design storm selected and downstream values at risk. By using an average storm (2-year event) emergency planning measures can be designed to mitigate and minumize anticipated risks. Using a 2-year design storm the values at risk can be evaluated to determine if an emergency exists. Emergency determination matrix displayed below shows if an emergency exists, probability of failure if untreated or treated, and treatment proposed to mitigate the emergency.

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

Land **90** % Channel **-** % Roads/Trails **85** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80%	85%	90%
Channel	-	-	-
Roads/Trails	95%	90%	85%
Protection/Safety	95%	90%	85%

E. Cost of No-Action (Including Loss): $1,219,000

F. Cost of Selected Alternative (Including Loss): $406,895

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Brad Rust

Email: brust@fs.fed.us Phone: 530-226-2427 FAX: 530-226-2485

Summary of Modoc Parker BAER Values at Risk

Based on field observations and assessment of burned watershed conditions and expected responses the BAER team identified potential for post wildfire impacts on the following BAER values at risk:

Human Life and Safety

- Increased risk for the general public to be impacted by rolling rocks, flooding, landslides, debris flows and hazardous trees along road and trails

Property
- USFS system roads
- USFS trails
- USFS campgrounds

Natural Resources
- Water for domestic and agricultural uses
- Native or naturalized plant communities
- Soil productivity and hydrologic function
- Fisheries and Aquatics

Cultural Resources
- Prehistoric sites
- Historic sites

Risk Assessment Process:
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:
The values at risk (VAR) matrix displayed in Appendix C below summarizes values at risk, post wildfire threats and risk ratings for forest service lands. Other lands that are not forest service (BOR, State, County, and Private) were noted but not evaluated for risk. Values with high or very high risk ratings are addressed, where possible, with BAER response actions (treatments). Generally, response actions are not recommended for values with low and intermediate risk ratings (except in the case for life).

H. Treatment Narrative for Forest Service:

(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.)

Land Treatments:
The proposed treatments on National Forest System lands can help to reduce the impacts of the fire, but treatments will not completely mitigate the effects of the fire. The treatments listed below are those that are considered to be the most effective on National Forest System lands given the local setting including topography and access.

Natural Recovery: Vegetation in the mixed conifer and fir forests will recover slowly. Even in areas of moderate soil burn severity, the canopy was mostly killed and the seed source removed. Stands with an

element of Jeffrey, sugar, western, or ponderosa pine will likely recover more quickly, since at least a few mature trees are likely to have survived to produce seed into newly exposed mineral soil. Meadows dominated by grasses and forbs will recover within a year, because for the most part soil temperatures were not hot enough to kill root systems. The montane chaparral shrubs were mostly killed by the fire, but fire stimulates manzanita seeds stored in the soil to germinate. In riparian areas along Parker and Willow creeks, sedges and grasses were resprouting within 10 days of the fire, and most riparian shrubs are also likely to resprout.

Invasive weed detection surveys: and hazard tree removal for project implementation are the selected treatments (see treatment map).

Noxious Weed Detection and Eradication Treatment

Treatment Type

EDRR treatments for noxious weeds would be completed in locations determined to be Very High, High, and Intermediate risk areas, which represent fire lines, mechanical equipment concentration areas, and moderate or high severity fire near anthropocentric disturbance. EDRR is a strategy developed to increase efficiency of weed work by combining surveying, mapping, and immediate treatment of new weed populations as they are discovered.

Treatment Objective

The objective of early detection surveys and rapid response treatments is to reduce the potential for the expansion of noxious weeds by detecting plants at the early stage of invasion, in order to promptly eradicate new weed infestations and prevent the spread of noxious weeds beyond known pre-fire occurrence boundaries, which would, in turn, assist in the successful recovery of native vegetation by eliminating competition from noxious weeds.

Treatment Description

Weed detection surveys in Very High, High, and Intermediate risk areas would be conducted in the spring (or as soon as the weed species are identifiable) of the first year post-fire to detect and control early-season noxious weeds and/or in the summer to detect and control late-season noxious weeds. Large weed infestations that cannot be immediately removed during their detection will be mapped with a Global Positioning Systems (GPS) unit, photographed, and flagged. New or isolated infestations would be manually removed during detection surveys. For most noxious weed species that are likely to occur in or near the July Complex / Parker 2 Fire areas, hand pulling would consists of digging up individual plants, pulling them up by the roots and, if flowers or seed heads/fruits are present, bagging entire plants for proper disposal.

Weed detection surveys and treatments would be conducted by a two-person crew with the goal of timing the visits appropriately so that, if possible, only one site visit is needed for optimal weed control. However, some noxious weed infestations may require control measures to be conducted more than once in the first year post-fire, depending on phenology, infestation size, and treatment strategy. Emergency EDRR surveys and treatments would be conducted for one year only post-fire with BAER funds per BAER policy. Surveys and treatments in subsequent years may be accomplished through a combination of FS program funding and/or coordination with outside partners.

Treatment Cost

The overall estimate to complete priority EDRR surveys for the July Complex / Parker 2 Fire is $67,344 (Table 10). Appendix D provides a cost per acre comparison with recent fires in northern California that have been approved for similar BAER treatments. Treatment cost estimates for the July Complex / Parker 2 Fire are within the range of those for other recent fires that have occurred in the region and on similar terrain, produced similar amounts of high and moderate burn severities, and dealt with the absence of washing heavy equipment and vehicles prior to fire line construction.

Table 10: Estimated Cost for Weed EDRR Surveys and Treatments

		1,106 acres, including 44 miles of fire line		370 additional burned acres at High risk	
		Priority 1		**Priority 2**	
Item	**Daily Rate per Person or Mileage Rate ($)**	**# Days (8 hours/day)**	**Total ($)**	**# Days (8 hours/day)**	**Total ($)**
PERSONNEL					
GS-11 Botanist (1) (hiring, training, supervision, reporting)	$360	25	$9,000	5	$1,800
GS-7 Temporary Botanist (surveys and treatment)	$186	250	$46,500	40	$7,440
MATERIALS AND SUPPLIES					
Vehicle Mileage (surveys and treatments)	$0.54	2,000	$1,080	600	$324
Supplies & Materials (e.g., trash bags, gloves, flagging, and safety items)			$1,000		$200
PRIORITY TOTALS			**$57,580**		**$9,764**
COMBINED TOTAL	**$67,344**				

Road Treatments:

Cove Fire:

Safety – Within the Cove Fire, warning signs would need to be installed to warn road users of the fire area. In addition, on NFSR 39N17, warnings about rock fall would need to be installed due to the potential of rock fall on the road. In addition to warning signs, several roads within the Cove Fire would need a temporary closure for the winter due to potential runoff and sediment delivery that would likely be a safety issue to road users. Temporary road closures would include a forest order, barricades, and warning signs to warn the public.

Storm Proofing – NFSR 39N17, 40N27, 41N09, 41N11, 40N19, and the 40N11 are expected to see an increase in runoff and sediment delivery to the road prism due to the moderate to high burn severity and steep terrain of the Cove Fire. On NFSR 39N17, 41N09, 41N11, and 40N11, all the cross-drain culverts don't have pipe risers in place and would need them to mitigate against the higher runoff and sediment delivery. In addition, several culverts would need to be cleaned to prepare for the upcoming storms.

On NFSR 39N17, 40N27, 41N11, and 40N11, the lack of additional drainage structure could compromise the road infrastructure. To mitigate against the increased runoff and sediment delivery, it is recommended to install critical dips to provide additional relief and cross-drains for these roads. In addition, debris clean-up is needed on some treatment locations prior to the installation of the critical dips.

On NFSR 40N19 and 40N11, existing low water crossings are present. These low water crossings are not armored and the increased runoff and sediment delivery could compromised the road infrastructure. To mitigate against the increased runoff and sediment delivery, it is recommended that the low water crossings be armored to protect the road infrastructure.

Storm Patrols – NFSR 39N17, 40N27, 41N09, 41N11, 40N19, and 40N11 are within a moderate to high burn severity. There is a future threat to travelers along the roads due to the increased runoff and sediment delivery and the potential for culverts to be plugged with sediments. Storm patrol would allow the forest to monitor the road drainage structure treatments to ensure the treatments are functioning, clean the area to ensure they continue to function in the future, and maintain and/or repair any damage to the road surface to the sediment delivery.

Parker Fire:

Storm Proofing – NFSRs 42N31, 42N16, 42N51, 42N02, 42N51B, 42N73 are all expected to see an increase in runoff and sediment delivery to the drainage structures on the roads. On 42N31, only one existing 36-inch culvert has a riser. The rest of the culverts either need cleaning and/or risers in order to help mitigate against the increase in runoff, sediment delivery, rock fall, and debris. NFSR 42N16 needs the same treatments as NFSR 42N31 except for culverts with existing flared end sections which do not require treatment. NFSR 42N51 requires cleaning of culvert inlets to allow for drainage features to function properly in addition to the construction of a few armored dips. NFSR 42N02 needs out sloping of the road with construction of a few armored dips since this road has no culverts. NFSR 42N51B only needs to be out sloped. NFSR 42N73 needs only one armored dip to protect the road from flooding and allow debris and increased runoff to go over the road.

Safety – NFSR 42N51C is recommended for temporary closure over the winter season to reduce the risk of injury to the public. NFSRs 42N51, 42N31, 42N49, 42N16 would need to have burned area warning signs that would make the public aware of rock fall, erosion, falling trees, etc. upon entering the burn areas for the Parker 2 Fire. Two additional signs are recommended for the east road segment of NFSR 42N31 between mileposts 1 and 3 to warn people of potential rock fall. This is especially important since the road is a maintenance level 3 road with high use which makes the chances of injury much higher.

Storm Patrol – NFSRs 42N51, 42N31, 42N02, 42N16, 42N51B, and 42N73 were in areas in or below moderate to high burn severity areas. There is a future risk to the public and the roads if drainage treatments are not working properly during the storms. The public runs the danger of running into washouts or rock fall while the road has culverts with potential to be plugged up with sediment and burn debris. Storm patrol would allow the forest to monitor treatments and maintain and/or repair damage to the road surface.

Road Treatments Cost Estimate:

Cove Fire:

Treatment Objectives

Treatment Type	Treatment Objective	Treatment Description	Treatment Cost
Storm proofing	To protect the road infrastructure, by reducing likelihood of culverts plugging up and road washouts due to increased runoff and sediment delivery.	Clean culverts, install risers where recommended, construct armored dips, install armored fords on low water crossings. The forest will send out a storm patrol after rain events to monitor and/or repair treatments as needed to prevent further damage to infrastructure.	$193,380
Safety	To protect the lives of people by making them aware of the hazards they may encounter in the burned areas.	Install warning signs that describe hazards that can be encountered such as hazardous trees, falling rocks, and road debris. Install barricades and signs for temporary road closures for upcoming winter storms.	$15,000
		Total Cost	**$208,380**

Treatment Costs

	Temp Closure/Debris Clean Up			Armored Dips			Risers				Culvert Cleaning			Armored Ford				
Road Segment	Qty (each)	Each ($)	Total Cost	Qty (each)	Each ($)	Total Cost	Size	Qty (Each)	Cost Each	Total Cost	Each	cost/each	Total Cost	Each	cost/each	Total Cost	Length (mi)	Overall Total
39N17_1			$ -	1	$ 2,250.00	$ 2,250.00				$ -	0	$ -	$ -		$ -	$ -	0.1	$ 2,250.00
39N17_2	1	$ 1,250.00	$ 1,250.00	1	$ 2,250.00	$ 2,250.00	24	1	$ 1,875.00	$ 1,875.00	1	$ 4,375.00	$ 4,375.00			$ -	0.2	$ 9,750.00
39N17_3			$ -			$ -	18	3	$ 1,500.00	$ 4,500.00			$ -			$ -	0.3	$ 4,500.00
40N27_1			$ -	2	$ 2,250.00	$ 4,500.00				$ -			$ -			$ -	0.3	$ 4,500.00
40N27_2	1	$ 1,250.00	$ 1,250.00	6	$ 2,250.00	$ 13,500.00				$ -			$ -			$ -	1.9	$ 14,750.00
41N09_1			$ -			$ -	18	2	$ 1,500.00	$ 3,000.00	2	$ 4,375.00	$ 8,750.00			$ -	0.2	$ 11,750.00
41N11_1			$ -	1	$ 2,250.00	$ 2,250.00	18	2	$ 1,500.00	$ 3,000.00	1	$ 750.00	$ 750.00			$ -	0.4	$ 6,000.00
			$ -			$ -				$ -	1	$ 4,375.00	$ 4,375.00			$ -		$ 4,375.00
41N11_2			$ -	1	$ 2,250.00	$ 2,250.00	18	5	$ 1,500.00	$ 7,500.00	5	$ 750.00	$ 3,750.00			$ -	0.7	$ 13,500.00
40N19_1			$ -			$ -				$ -			$ -	3	$ 5,000.00	$ 15,000.00	0.9	$ 15,000.00
40N11_1	5	$ 1,250.00	$ 6,250.00	19	$ 2,250.00	$ 42,750.00	18	10	$ 1,500.00	$ 15,000.00	10	$ 750.00	$ 7,500.00			$ -	3.8	$ 71,500.00
			$ -			$ -	24	8	$ 1,875.00	$ 15,000.00	8	$ 750.00	$ 6,000.00			$ -		$ 21,000.00
40N11_2			$ -	2	$ 2,250.00	$ 4,500.00				$ -			$ -	2	$ 5,000.00	$ 10,000.00	1.1	$ 14,500.00
40T27G (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.4	$ 1,000.00
40N27F (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.5	$ 1,000.00
41T11U (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.1	$ 1,000.00
40T11Z (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.2	$ 1,000.00
40T11Y (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.1	$ 1,000.00
40T11X (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.3	$ 1,000.00
40N11B (Temp Closure)	1	$ 1,000.00	$ 1,000.00			$ -				$ -			$ -			$ -	0.7	$ 1,000.00
Warning Signs			$ -			$ -				$ -			$ -			$ -		$ 6,000.00
	14		$ 15,750.00	33		$ 74,250.00		31		$ 49,875.00	28		$ 35,508.00	5		$ 25,000.00	12.2	$ 208,375.00

Parker Fire:

Treatment Objectives

Treatment Type	Treatment Objective	Treatment Description	Treatment Cost
Storm proofing	To protect the road infrastructure, by reducing likelihood of culverts plugging up and road washouts due to increased runoff and sediment delivery.	Clean culverts, install risers where recommended, construct armored dips, install armored fords on low water crossings. The forest will send out a storm patrol after rain events to monitor and/or repair treatments as needed to prevent further damage to infrastructure.	$193,380
Safety	To protect the lives of people by making them aware of the hazards they may encounter in the burned areas.	Install warning signs that describe hazards that can be encountered such as hazardous trees, falling rocks, and road debris. Install barricades and signs for temporary road closures for upcoming winter storms.	$15,000
		Total Cost	**$208,380**

Treatment Costs

	Blade Road/ Ditch Clean			Armored Dips			Risers				Culvert Cleaning			
Road Segment	Length	cost/ mi	Total Cost	Qty (each)	Each ($)	Total Cost	Size	Qty (Each)	Cost Each	Total Cost	Each	cost/each	Total Cost	Overall Total
42N31 (1.2-2.6)							18	9	$ 1,500	$ 13,500	2	$ 750	$ 1,500	$ 15,000
							36	1	$ 2,250	$ 2,250				$ 2,250
42N16 (0.1-1.0)							18	8	$ 1,500	$ 12,000	2	$ 750	$ 1,500	$ 13,500
42N31 (4-5.9)							18	11	$ 1,500	$ 16,500	3	$ 750	$ 2,250	$ 18,750
							36	1	$ 2,250	$ 2,250				$ 2,250
42N73(1.4-1.6)				2	$ 2,250	$ 4,500								$ 4,500
42N02 (0.7-1.3)	0.6	$ 10,000	$ 6,000	6	$ 2,250	$ 13,500								$ 19,500
42N51 (1.4-1.5)				2	$ 2,250	$ 4,500								$ 4,500
42N51 (2.1-2.5)				4	$ 2,250	$ 9,000	36	1	$ 2,250	$ 2,250	1	$ 4,375	$ 4,375	$ 15,625
							24	1	$ 1,925	$ 1,925	1	$ 4,375	$ 4,375	$ 6,300
42N51B (0-0.1)	0.1	$ 10,000	$ 1,000											$ 1,000
42N51C(temp close)			$ 1,000											$ 1,000
Warning Signs														$ 6,000
			$ 8,000			$ 31,500				$ 50,675			$ 14,000	$ 110,175

The average value of the road and the cost of repairing these road segments without BAER treatment if damage occurs is approximately $50,000/mile with the average cost to of the BAER treatment of approximately $5,500/mile.

Natural Resource Values at Risk - Threatened and Endangered Fisheries

This rapid aquatic analysis is based on site reconnaissance, ground-truthing and GIS between August 16 to 20, 2017. Due to time constraints, streams designated by the United States Fish and Wildlife Service (USFWS) as designated critical habitat for federally endangered Lost River sucker and Shortnose sucker were given highest biological priority for field assessments. Areas with moderate to high burn severity were the areas of focus for this assessment on stream systems within the Modoc National Forest (MNF) impacted by the Modoc July Complex Fire.

A significant percentage of the fire areas burned at low to very low burn intensity (88%) leaving much of the riparian vegetation intact along Boles Creek and North Willow Creek. The burn severity of the entire area within the Modoc July Complex Fire was estimated as 34 % unburned/very low, 54 % low, 10 % moderate, 2 % high.

There were 9 watersheds (HU10) affected by the Modoc July Complex Fire, and 2 of those have Lost River sucker and shortnose sucker Designated Critical Habitat impacted by the fire. An average of only 19 % of these watersheds (i.e., having Designated Critical Habitat within them) were burned by the Modoc July Complex Fire.

Areas of moderate to high burn severity have the greatest potential to mobilize sediment into stream systems, reduce productivity and benthic macroinvertebrate populations and reduce the availability of spawning and rearing habitat, all impacting fisheries. Stream ecosystem impacts include changes in geomorphology (e.g., sediment filled pools and riffles), decreased pool depth, loss of habitat, increased solar radiation owing to losses in riparian cover, changes in water quality, increased dissolved nutrients and pH, and changes in pool:riffle ratios. For fish, habitat loss, reduced riparian cover, changes in water quality, increased temperature, and reduced prey availability all affect fish population responses to fire including increased mortality and extirpation. However, these effects may be pronounced or muted depending on the fire burn severity, timing of subsequent rainfalls, intensity and duration of ensuing rains, and volume of debris and sediment entering streams.

Based on the above assessment, it is my determination that an emergency does exist for federally endangered Lost River sucker and Shortnose sucker and designated critical habitat and water quality in Boles Creek and Willow Creek. Specific treatments inside the Steelee Fire that repair cattle exclosure fences along Boles Creek and Willow Creek will reduce risks to habitat impacts to federally listed species (See range specialist report for more details). These steps should also include monitoring fencing and gates to ensure the mitigations are effective. Biologically no treatments are recommended inside the Cove Fire or the Parker Fire.

However there is a potential for stream habitat degradation owing to increased sedimentation, greater channel instability, and higher nutrient concentrations and alkalinity in the Cove Fire and Parker Fire. Mitigation measures to reduce potential impacts to stream habitat and water quality will rely on road

treatment packages to minimize these effects and eliminate the "emergency" situation under BAER guidelines.

Cost Estimate for Enclosure Fencing

Use horse fencing to build rock braces and create 3 braces out of one roll of fencing. Estimate, for 40 braces, the cost would be about $3,500 for the horse fencing material. Not knowing the condition of all the barbed wire that may have been damaged by the fire, recommend rounding out the materials for this repair work to $4,000 to allow for approximately 7 rolls of barbed wire to be purchased that would go toward replacing any burned wire that is no longer functional. 1 roll of barbed wire generally covers ¼ mile of fence.

Numerous juniper trees and some coniferous trees that acted as stretching points along the fence that are now compromised by the fire. In order to ensure the safety of repair crews and the longevity of the fence, compromised trees that are part of the fence or directly adjacent to the fence will be removed (hand felled and left on site). This can be accomplished using the same Cal-Fire Inmate crews that may be utilized to repair the rest of the fence.

The average rate of one Cal Fire Inmate crew is $225/day. Estimate, given the remoteness of the fence location and roughness of terrain, it will take approximately 22 days for 1 inmate crew to complete repair work along the identified area. This would total approximately $4,950.00.

Summary of Costs:

Fence Materials:
Horse Fencing - $3,500 (approximately 14 rolls of wire)
Barbed Wire - $500.00 (approximately 7 rolls of wire)
Labor:
Cal Fire Inmate Crew @ 22 days - $4950.00
Total : $8,950.00

It is also recommended that the following work/monitoring be pursued by local, state and federal agencies (e.g., CDFW, NOAA) using non-BAER funding:

- Monitor Lost River sucker and shortnose sucker populations in Boles Creek and North Willow Creek to evaluate post-fire effects. Snorkel surveys and electrofishing surveys over several years will determine the status of these fish populations.
- A bullfrog and invasive fish suppression plan should be implemented to help native species recover in Boles Creek and Willow Creek. A high density of bullfrogs and invasive centrachids (sunfish) were observed in Boles Creek and Willow Creek which is Designated Critical Habitat for Lost River sucker (*Catostomus luxatus*) and shortnose sucker (*Chasmistes brevirostris*).

- Water quality samples in Boles Creek, Willow Creek and mainstem Parker Creek should be collected to detect chemical changes post-fire with potential consequences for all aquatic biota.

Protection/Safety Treatments:

Burned area road signs:

Safety: Posting of areas burned will alert the public to potential dangers of falling trees and rolling rocks. Repair of road signs burned will insure public safety (see treatment map). Closure signs for roads that have potential for flooding and debris-flows with a 2yr-6hr storms.

Heritage Resource Prescriptions:

Several treatments are proposed to minimize additional damage to heritage resources. The first is to post signs on major roads and at campgrounds near the burned areas to educate the public about resource protection laws. The second is to obscure the recent off-road vehicle use that has left tracks from major roads to the two particularly vulnerable archaeological sites discussed above; the existence of these tracks encourages others to venture off-road in that area. Local materials such as boulders and brush would be used to obscure these tracks. The third is to re-seed one of the sites that the fire made particularly visible with native grass seed to reduce ground visibility. These treatments would serve to help reduce damage to all sites in the burned area, and to disguise and protect the two sites identified as most at risk of vandalism. In addition to these treatments, post implementation monitoring is proposed to assess the effectiveness of the treatments.

Treatment Cost: Immediate treatments

Line Item	Units	Unit cost	Total Cost
GS-9 Archaeologist	3 Days	$233	$699
GS-9 Engineering Tech	4 Days	$233	$932
GS-5 Archaeological Tech	2 Days	$134	$268
Excavator/operator/local boulders/etc.	2 Days	$750	$1,500
GSA Vehicle Mileage	600 miles	$0.44	$240
12" x 16" Metal Signs	12	$40	$480
Local native grass seed	3 Acres	$0	$0
Total			**$4,119**

Treatment Cost: Post-Implementation Monitoring

Line Item	Units	Unit cost	Total Cost
GS-9 Archaeologist	2 Days	$233	$466
GS-5 Archaeological Tech	2 Days	$134	$268
GSA Vehicle Mileage	300 miles	$0.44	$132
Total			**$866**

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.)

See Appendix C below for road, heritage, and trail monitoring.

Part VI – Emergency Stabilization Treatments and Source of Funds Interim # 1

ModocParker BAER Costs	NFS Lands					Other Lands				Money Left
Line Items	Units	Unit Cost	# of Units	BAER $	Spent $	Units	Fed $	Units	Non Fed $	Total $
A. Land Treatments (L)										
NX Weed Det. Survey - Modoc NF	acres	$46	1,478	$67,335	$0		$0		$0	$0
Subtotal Land Treatments				$67,335	$0		$0		$0	$0
B. Channel Treatments (L)										
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails (R&T)										
Cove Fire - Stormproofing	mile	$16,115	12	$193,380	$0		$0		$0	$0
Parker 2 Fire - Stormproofing	mile	$14,740	7	$103,180	$0		$0		$0	$0
Subtotal Road & Trails				$296,560	$0		$0		$0	$0
D. Protection/Safety (P&S)										
Heritage Site Protection (2 sites)	project	$5,000	1	$5,000	$0		$0		$0	$0
T&E Riparian Fencing	project	$9,000	1	$9,000	$0		$0		$0	$0
Cove Fire - Safety (warning signs and barriers)	each	$1,000	15	$15,000	$0		$0		$0	$0
Parker 2 Fire - Safety (warning signs and barriers)	each	$1,000	7	$7,000	$0		$0		$0	$0
Subtotal Protection				$36,000	$0		$0		$0	$0
E. BAER Evaluation										
Assessment Team	0520	H5BAER	—	—	$74,393	—	$0	—	$0	$0
Subtotal Evaluation				—	$74,393	—	$0	—	$0	$0
F. Monitoring (M)										
Road Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Heritage Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Subtotal Monitoring				$2,000	$0		$0		$0	$0
G. Totals				**$401,895**	**$0**		**$0**		**$0**	**$0**
Previously approved						Comments:				
Total for this request				**$401,895**						

PART VII - APPROVALS

1. Forest Supervisor (signature) — Date: 8/30/2017

2. for Regional Forester (signature) — Date: 9/6/17

Randy Moore

APPENDICES: Supporting Information:

Appendix A: Modoc Cx and Parker 2 BAER Team

Appendix B: Monitoring for Roads and Heritage

Appendix C: Values at Risk Spreadsheet

Appendix D: Summary of Cost-Risk Analysis

Appendix A: Modoc Cx and Parker 2 BAER Team:

Modoc July CX / Parker 2 BAER Assessment Team Members				8/16/2017
NAME	AGENCY	FUNCTION	CELL PHONE	OFFICE PHONE	E-MAIL
Brad Rust	USFS	Team Leader	530 917-0434	530 226-2427	brust@fs.fed.us
Dave McComb	USFS	Hydrologist	775 225-7714	994 3401x663	dmccomb@fs.fed.us
Kendal Young	USFS	Lead Botanist	209 283-4008	209 283-4008	kendalyoung@fs.fed.us
Celia Yamagiwa	USFS	GIS	530 640-0827	530 669-8620	cyamagiwa@fs.fed.us
Glenn Martin	USFS	Technical Specialist	530 708-7736	530 279-8317	glmartin@fs.fed.us
Laura Sechrist	USFS	Archaeologist - Trainee	503 730-3898	530 233-8731	lsechrist@fs.fed.us
Pamela Bumsted	USFS	Forest Archaeologist	907 539-2022	530 233-8730	mbumsted@fs.fed.us
Heidi Guenther	USFS	Botanist - Trainee	970 988-7760	530 233-8827	hguenther@fs.fed.us
Dave LeBlanc	USFS	Technical Specialist	530 640-1719	530 667-8631	dleblanc@fs.fed.ud
Alvin Sarmiento	USFS	Road Engineer	530 708-1363	530 233-8846	alvinsarmiento@fs.fed.us
Chris Bielecki	USFS	Forest Engineer	530 801-1637	530 233-8850	csbielecki@fs.fed.us
Will Tripp	USFS	Soil Scientist	254 459-9262	530 841-4591	wtripp@fs.fed.us
Cathy Carlock	USFS	Logistics-Coordinator	530 640-0390	530 279-8331	ccarlock@fs.fed.us
Dave Annis	USFS	Geologist	559 760-7108	530 621-5226	dannis@fs.fed.us
Dorit Buckley	USFS	Lead Archaeologist	530 680-3347	530 333-5554	dbuckley@fs.fed.us
Dan Teater	USFS	Fisheries	530 613-7040	530 367-2224	dteater@fs.fed.us
Angie Perez-Delgado	USFS	Engineer-Trainee	530 638-6367	530 226-2323	aperezdelgado@fs.fed.us
Chris Christofferson	USFS	West Side District Ranger	530 708-7037	530 299-8410	cchristofferson@fs.fed.us
Greg Moon	USFS	East Side District Ranger	530 708-1364	530 233-8812	gmoon@fs.fed.us
DD Harrison	USFS	Acting Forest Supervisor		530 233-8700	ddharrison@fs.fed.us

Appendix B: Monitoring Protocols:

Modoc Cx and Parker 2
Road Effectiveness Monitoring

The 2500-8 report requests funds to monitor the effectiveness of road treatments on Modoc Cx and Parker 2 roads.

4. Monitoring Questions
- Is the road-tread stable?
- Is the road leading to concentrating runoff leading to unacceptable off-site consequences?

2. Measurable Indicators
- Rills and/or gullies forming of the road
- Loss of road bed.

3. Data Collection Techniques
- Photo documentation of site
- Inspection Checklist (attached)

4. Analysis, evaluation, and reporting techniques

- Monitoring will be conducted after storm events. If the monitoring shows the treatment to be ineffective at stabilizing road and there is extensive loss of road bed or infrastructure an interim report will be submitted. A several page report would be completed after the site visit. The report would include photographs and a recommendation on whether additional treatments are necessary.

Road Inspection Checklist

Date:_____ Inspector_____
Time:_____ Forest Road_____

Describe locations reviewed during inspection:_____

_____

_____

Was there road damage?

Was culvert plugged?_____.

GPS _____

Describe damage and cost to repair? (GPS)_____

Photo taken of road damage_____

Recommended actions to repair:_____

Modoc Cx and Parker 2
Cultural Site Mulching Effectiveness Monitoring

The 2500-8 report requests funds to monitor the effectiveness of straw handmulch treatments on Iron-Alps Complex heritage sites.

4. Monitoring Questions
- Is the straw mulch with good cover stable?
- Is the straw mulch being undercut by concentrated runoff leading to unacceptable on-site erosion?

2. Measurable Indicators
- Rills and/or gullies forming around the artifacts
- Loss of artifacts

3. Data Collection Techniques
- Photo documentation of site
- Inspection Checklist (attached)

4. Analysis, evaluation, and reporting techniques

- Monitoring will be conducted after storm events. If the monitoring shows the treatment to be ineffective at stabilizing and there is extensive rilling an interim report will be submitted. A several page report would be completed after the site visit. The report would include photographs and a recommendation on whether additional treatments are necessary.

Heritage Protection Inspection Checklist

Date:_____ Inspector_____
Time:_____ Forest Road Nearby_____

Describe locations reviewed during inspection:_____

_____

_____

Was there artifact damage?

Was artifacts covered or eroded?_____.

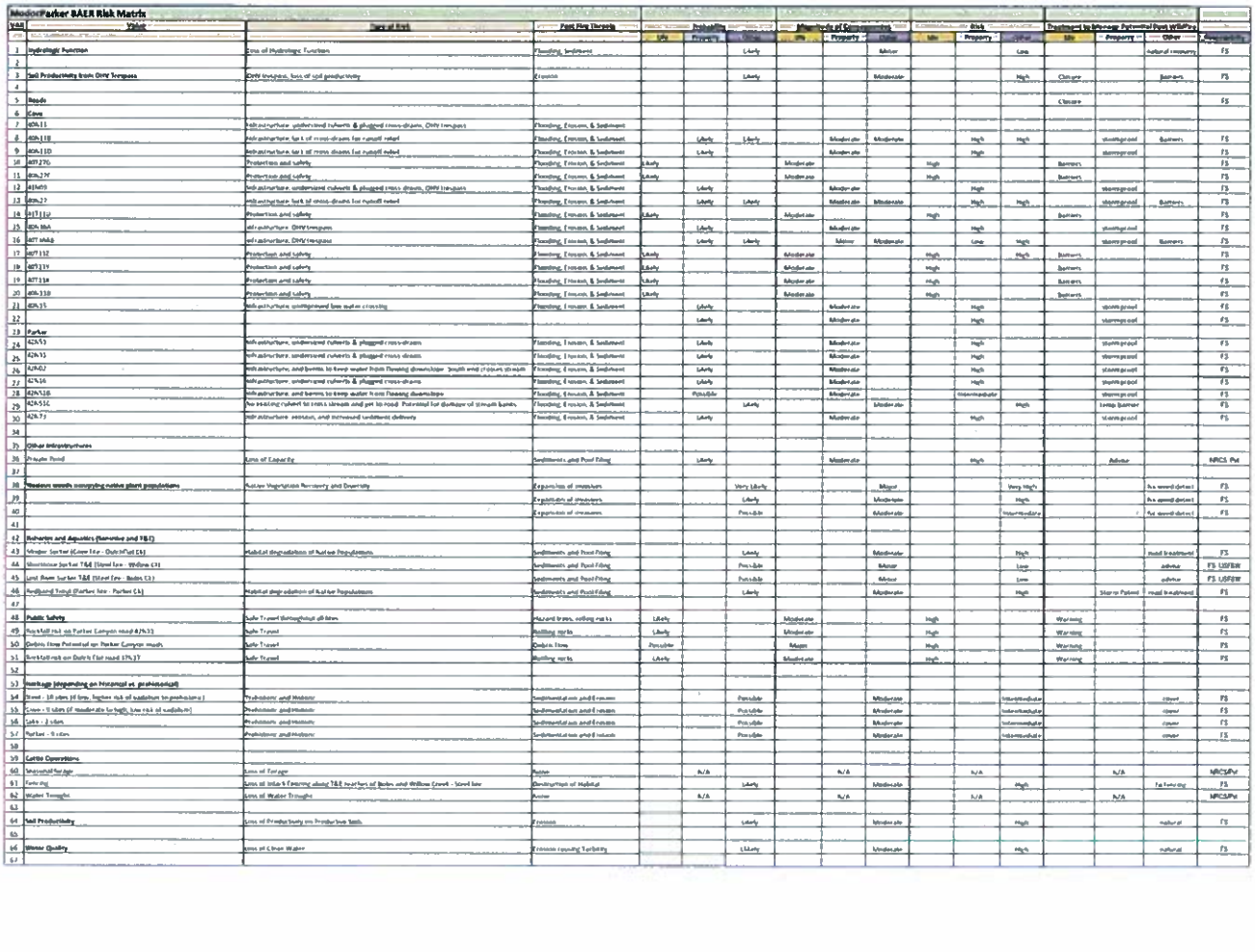
GPS)_____

Describe damage and cost to repair? (GPS)_____

Photo taken of artifact damage_____

Recommended actions to repair:_____

Appendix D: Values at Risk Spreadsheet



Modoc/Parker BAER Risk Matrix															
Val#	Value	Type of Risk	Post Fire Threats	Probability			Magnitude of Consequences			Risk			Treatment to Mitigate Potential Post Wildfire			
				Life	Property	Other	Life	Property	Other	Life	Property	Other	Life	Property	Other	Recommended
1	Hydrologic function	Loss of Hydrologic Function	Flooding, Sediment			Likely			Minor			Low			natural recovery	FS
2																
3	Soil Productivity from OHV Trespass	OHV trespass, loss of soil productivity	Erosion			Likely			Moderate			High	Closure		barriers	FS
4																
5	Roads												Closure			FS
6	Crews															
7	40N11	Infrastructure: undersized culverts & plugged cross-drains, OHV trespass	Flooding, Erosion, & Sediment													
8	40N11B	Add appropriate # of cross-drains for runoff relief	Flooding, Erosion, & Sediment			Likely	Likely		Moderate	Moderate		High	High		shoulder rock	Barriers	FS
9	40N11D	Infrastructure, lack of cross drains for runoff relief	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
10	40N27G	Protection and safety	Flooding, Erosion, & Sediment	Likely			Moderate			High			Barriers			FS
11	40N27F	Protection and safety	Flooding, Erosion, & Sediment	Likely			Moderate			High			Barriers			FS
12	40N09	Infrastructure: undersized culverts & plugged cross drains, OHV trespass	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
13	40N22	Infrastructure: lack of cross-drains for runoff relief	Flooding, Erosion, & Sediment			Likely	Likely		Moderate	Moderate		High	High		storm proof	Barriers	FS
14	41T11U	Protection and safety	Flooding, Erosion, & Sediment	Likely			Modrate			High			Barriers			FS
15	40N18A	Infrastructure: OHV trespass	Flooding, Erosion, & Sediment			Likely			Moderate			High			shoulder rock		FS
16	40T04A	Infrastructure, OHV trespass	Flooding, Erosion, & Sediment			Likely	Likely		Minor	Moderate		Low	High		storm proof	Barriers	FS
17	40T11Z	Protection and safety	Flooding, Erosion, & Sediment	Likely			Modrate			High		High	Barriers			FS
18	40T11Y	Protection and safety	Flooding, Erosion, & Sediment	Likely			Modrate			High			Barriers			FS
19	40T11R	Protection and safety	Flooding, Erosion, & Sediment	Likely			Modrate			High			Barriers			FS
20	40N11D	Protection and safety	Flooding, Erosion, & Sediment	Likely			Modrate			High			Barriers			FS
21	40N15	Infrastructure: undersized box culvert crossing	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
22																
23	Parker					Likely			Moderate			High			storm proof		FS
24	42N43	Infrastructure, undersized culverts & plugged cross-drains	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
25	42N41	Infrastructure, undersized culverts & plugged cross drains	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
26	42N07	Infrastructure, add berms to keep water from flowing downslope south and around south	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
27	42N16	Infrastructure, undersized culverts & plugged cross-drains	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
28	42N16	Infrastructure, add berms to keep water from flowing downslope	Flooding, Erosion, & Sediment			Possible			Moderate			Intermediate			storm proof		FS
29	42N51C	No existing culvert to route stream and pot to road. Potential for damage of trough base.	Flooding, Erosion, & Sediment			Likely			Minor	Moderate		High			temp barrier		FS
30	42N73	Infrastructure: culvert, and outward sediment delivery	Flooding, Erosion, & Sediment			Likely			Moderate			High			storm proof		FS
31																
32	Other Infrastructure															
33	Dragon Pond	Loss of Capacity	Sediment and Pond Filling			Likely			Moderate			High			Advise		NRCS Pol
34																
35	Noxious weeds impacting native plant populations	Native Vegetation Recovery and Diversity	Expansion of invasives			Very Likely			Major			Very High			N.A weed control	FS
36			Expansion of invasives			Likely			Moderate			High			N.A weed control	FS
37			Expansion of invasives			Possible			Moderate			Intermediate			N.A weed control	FS
38																
39	Habitats and Aquatics (Narrative and T&E)															
40	Winter Sucker (Lower Ice - Outlet Ck)	Habitat degradation of native populations	Sediment and Pond Filling			Likely			Moderate			High			Road treatment	FS
41	Shorthose Sucker T&E (Upper Ice - Willow Cr)		Sediment and Pond Filling			Possible			Minor			Low			Advise	FS USFWS
42	Lost Boom Sucker T&E (Upper Ice - Boles Cr)		Sediments and Pond Filling			Possible			Minor			Low			Advise	FS USFWS
43	Redband Trout (Parker Ice - Parker Ck)	Habitat degradation of native populations	Sediment and Pond Filling			Likely			Moderate			High		Stay on Patrol	road treatment	FS
44																
45	Public Safety	Safe Travel throughout all Area	Hazard trees, rolling rocks	Likely			Moderate			High			Warning			FS
46	Rockfall risk on Parker Canyon road #/Mi	Safe Travel	Rolling rocks	Likely			Minor			High			Warning			FS
47	Debris flow Potential on Parker Canyon road	Safe Travel	Debris flow	Possible			Major			High			Warning			FS
48	Rockfall risk on Dutch Flat road (Mi)	Safe Travel	Rolling rocks	Likely			Moderate			High			Warning			FS
49																
50	Heritage (depending on historical or prehistorical)															
51	Road - 16 sites (if low, higher risk of vandalism to prehistoric)	Prehistoric and Historic	Sediment delivery and erosion			Possible			Moderate			Intermediate			closure	FS
52	Crew - 11 sites (if moderate to high, low risk of vandalism)	Prehistoric and Historic	Sediment delivery and erosion			Possible			Moderate			Intermediate			closure	FS
53	Lake - 2 sites	Prehistoric and Historic	Sediment delivery and erosion			Possible			Moderate			Intermediate			closure	FS
54	Parker - 9 sites	Prehistoric and Historic	Sediment delivery and erosion			Possible			Moderate			Intermediate			closure	FS
55																
56	Cattle Operations															
57	Structural damage	Loss of Range	Fallen		N/A			N/A			N/A			N/A		NRCS Pol
58	Fencing	Loss of Intake & Fencing along T&E reaches of Boles and Willow Creek - Sand Lake	Destruction of Habitat			Likely			Moderate			High			Fencing	FS
59	Water Troughs	Loss of Water Troughs	Water		N/A			N/A			N/A			N/A		NRCS Pol
60																
61	Soil Productivity	Loss of Productivity on Productive Soils	Erosion			Likely			Moderate			High			natural	FS
62																
63	Water Quality	Loss of Clean Water	Erosion resulting Turbidity			Likely			Moderate			High			natural	FS
64																

ModocParker Fires Benefit Cost Analysis:

Total benefits of resources for whole fire FS lands:

All Resource	Value $
All roads (FS)	$760,000
Native plants	$750,000
Water quality	$200,000
Aquatics/fisheries	$500,000
Soil productivity	$75,000
Public safety	$1,000,000
Heritage sites	$60,000
	$3,345,000

Proability of loss without and with treatments:

All Resource	Proability loss no treatments:	Proability loss w/ treatments:	Reduction in proability of loss
All roads (FS)	75%	10%	65%
Native plants	65%	15%	50%
Water quality	20%	15%	5%
Aquatics/fisheries	20%	15%	5%
Soil productivity	35%	15%	20%
Public safety	50%	20%	30%
Heritage sites	35%	15%	20%

Total cost of treatments on Forest Service:

ModocParker BAER Costs	NFS Lands					Other Lands				Money Left
Line Items	Units	Unit Cost	# of Units	BAER $	Spent $	Units	Fed $	Units	Non Fed $	Total $
A. Land Treatments (L)										
NX Weed Det. Survey - Modoc NF	acres	$46	1,476	$67,335	$0		$0		$0	$0
Subtotal Land Treatments				$67,335	$0		$0		$0	$0
B. Channel Treatments (L)										
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails (R&T)										
Cove Fire - Stormproofing	mile	$16,115	12	$193,380	$0		$0		$0	$0
Parker 2 Fire - Stormproofing	mile	$14,740	7	$103,180	$0		$0		$0	$0
Subtotal Road & Trails				$296,560	$0		$0		$0	$0
D. Protection/Safety (P&S)										
Heritage Site Protection (2 sites)	project	$5,000	1	$5,000	$0		$0		$0	$0
T&E Riparian Fencing	project	$9,000	1	$9,000	$0		$0		$0	$0
Cove Fire - Safety (warning signs and barriers)	each	$1,000	15	$15,000	$0		$0		$0	$0
Parker 2 Fire - Safety (warning signs and barriers)	each	$1,000	7	$7,000	$0		$0		$0	$0
Subtotal Protection				$36,000	$0		$0		$0	$0
E. BAER Evaluation										
Assessment Team	0520	H5BAER	---	---	$74,393	---	$0	---	$0	$0
Subtotal Evaluation				---	$74,393	---	$0	---	$0	$0
F. Monitoring (M)										
Road Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Heritage Treatment Monitoring	ea	$1,000	1	$1,000	$0		$0		$0	$0
Subtotal Monitoring				$2,000	$0		$0		$0	$0
G. Totals				**$401,895**	**$0**		**$0**		**$0**	**$0**
Previously approved						Comments:				
Total for this request				**$401,895**						

Benefit/cost ratio:

All Resource	Benefit of treatment	Treatment Cost	B/C ratio	Justified
All roads (FS)	$494,000	$303,560	1.6	yes
Native plants	$375,000	$67,335	5.6	yes
Water quality	$10,000	natural	none	n/a
Aquatics/fisheries	$25,000	$9,000	2.8	yes
Soil productivity	$15,000	natural	none	n/a
Public safety	$300,000	$31,000	9.7	yes
Heritage sites	$12,000	$5,000	2.4	yes
	$1,219,000	**$406,895**	**3.0**	**yes**