

**BURNED-AREA REPORT**

Date of Report: 11/5/07  
revised, Brad Rust, 11/8/07  
Version 11-19-07

(Reference FSH 2509.13)



**PART I - TYPE OF REQUEST**

A. Type of Report

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

B. Type of Action

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

**PART II - BURNED-AREA DESCRIPTION**

A. Fire Name: Buckweed

B. Fire Number: CA-LAC-0723185

C. State: CA

D. County: Los Angeles

E. Region: 5

F. Forest: Angeles



- F. Design Flow, (cubic feet / second/ square mile): 14.7 cfsm
- G. Estimated Reduction in Infiltration, (percent): 3
- H. Adjusted Design Flow, (cfs per square mile): 17.2 cfsm

\* *Row, Countryman, and Storey*, USFS 1954 – Hydrologic Analysis Used to Determine Effects of Fire on Peak Discharge and Erosion Rates in Southern California Watersheds; *ERMIT – Erosion Risk Management Tool*, Robichaud, Elliot, Pierson, Hall, Moffett, and Ashmun, Gen. Tech. Rep. RMRS-GTR-188, USDA Forest Service 2006.

## PART V - SUMMARY OF ANALYSIS

### A. Describe Critical Values/Resources and Threats:

*Background:* This fire burned 38,356 acres in three days due to strong Santa Anna winds and was 100 percent contained on October 27. The fire started October 21 in Mint Canyon and rapidly spread to 23,000 acres in one day. The Buckweed fire destroyed 21 homes and 22 outbuildings. Three civilians and one firefighter were injured. Evacuation orders were issued for 5,500 homes (15,000 people), whom have since returned to their homes.

Approximately 10% burned at high and moderate severity (see soil burn severity map below). Forest service lands that burned were 72% and the rest was private ownership. The BAER Team coordinated with NRCS, Los Angeles County agencies, and the City of Santa Clarita in the fire assessment.

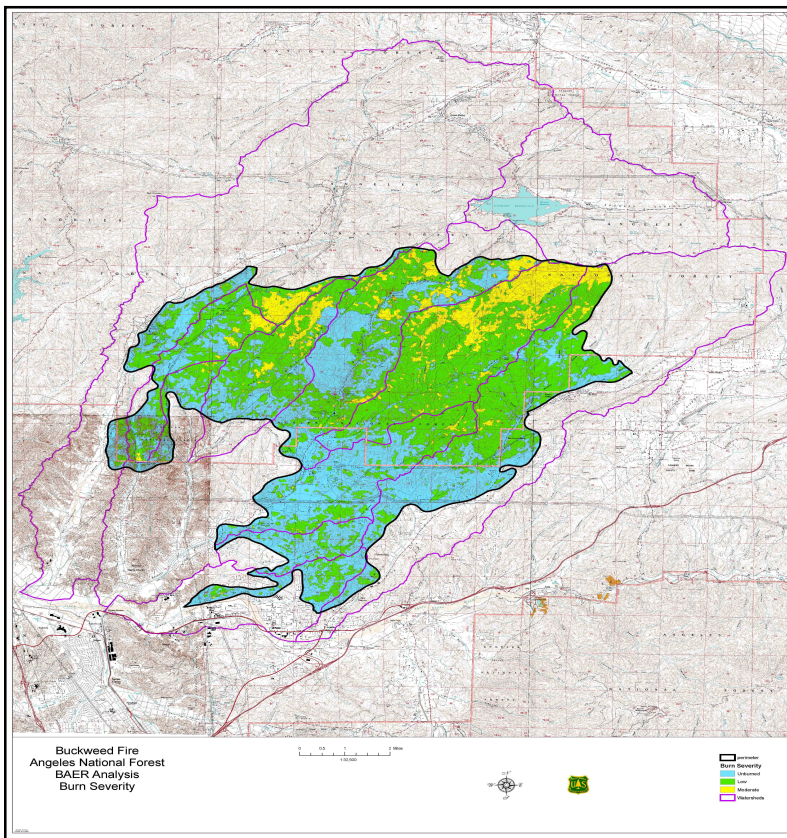


Figure 1 Buckweed Soil Burn Severity Map

The BAER Watershed group stratified the fire into analysis watersheds and analyzed the amount of soil burn severity, the predicted erosion response, and how much of the burn is on National Forest Lands to determine

threats to identified values. The following sub-watersheds were identified as having the greatest risk to identified values: Lower Bouquet Canyon, Texas Creek, and Vasquez Canyon.

## **Threats to Life, Property, and Safety**

### 1) Homes and Infrastructure in lower Bouquet Canyon( FS lands):

The BAER team spent several days evaluating the risk to housing and infrastructure in this area. There are recreational residence houses on the south side of Bouquet canyon with moderate soil burn severity above them on National Forest lands. Additionally soil erosion ratings were high for this area in a shallow mica-schist parent material. The team observed evidence of past debris flows in these areas behind rec. residence homes in Bouquet canyon. The team also identified several residential cabins along Bouquet Canyon are at an increased risk of debris flows as a result of increased runoff and sediment erosion from burned slopes above the properties. Individual sites observed are included in Appendix 1: Table 1. Recreational cabins within the National Forest are located below natural swales and drainages in burned terrain have an elevated risk of debris flow or debris flooding. In addition, there is a risk of ash and sediment crossing the Bouquet Canyon Road in several locations. There are several houses and one business (Big Oak Lodge) along Bouquet Creek drainage that are at risk from an increased flooding potential as well (see Table 1). Several F.S. campgrounds day use areas are at risk from flooding and debris flows (Streamside and Las Cantiles). One fire station is at risk from rock-fall and debris flow from over-steeped canyon walls (Texas Canyon Fire Station). A list of potentially affected properties on private lands was also provided to the NRCS in the Santa Clarita Office.

### 2) Other Homes and Infrastructure in the Buckweed fire perimeter (F.S. and Private Lands):

Private residence at bottom of Texas and Vasquez Canyon are at risk from flooding due to burned headwaters that are steep with shallow soils that lack cover. Additionally there is a risk of rock fall and debris flows where homes are nested close to over-steepened hillslopes (see Table 1).

LADWP Powerhouse #2 is at risk of debris flows and rock fall due to oversteepened hillslopes from a large deep-seated landslide. Additionally the hillslope is a shallow mica-schist sandy loam soil that has been burned.

Drinkwater Reservoir is at risk from adjacent hillslopes that were denuded of vegetation by wildfire thus exposing sensitive sandy loam soils to sheet and rill erosion.

### 3) Roads and trails throughout the burn area are at risk from flooding and plugging of culverts.

Specifically Texas Canyon (5N14, 5N18, OHV trails), Vasques Canyon (5N15, OHV trails), Rowher Canyon (5N13), Drinkwater Canyon (5N27), Rush Canyon (5N15), Fall Canyon (5N18), Sierra Pelona (6N07), and City Highline Road (6N21) have threats of flooding and plugging of culverts.

5N13 – Rush Canyon Road: This road is the main access to Rower Flat. The road itself is in very good condition, but there are some areas of concern. Nine drop inlets drain water from the side of the paved section of the road. With the vegetation now gone, storm runoff will flow at higher velocities and with greater energy. There is also a significant side drainage that flows into the drainage system. The inlet to the drainage has become buried with ash and debris.

5N14 – Texas Canyon Road: Near Rowher Flat, a culvert passes flow from a significant drainage under the road. The soil at the end of the culvert has been scoured causing the end of the culvert to be a few feet above the ground. With the vegetation no longer present it is at risk from erosion due to increased runoff.

5N15.1 – Vasquez Canyon Road: Several culverts drain under the road into the creek. At some locations, the culverts are at risk of becoming plugged with sediment and debris.

5N27 – Drinkwater Road: This road was partially burned over and looked as though it served as a fire break in some locations. At some locations, the culverts are at risk of becoming plugged with sediment and debris.

6N07 – Sierra Pelona Road: This road was completely burned over at its lower elevations and looked as if it was used as a fire break at its upper elevations. At some locations, the culverts are at risk of becoming plugged with sediment and debris.

6N21 – City Highline Road: This road crosses several significant drainages that were completely burned during the fire, putting this road at a high potential of damage. At four locations, culverts that carry runoff under the road are at risk of becoming plugged due to sediment flow.

4) Public safety is at risk from flooding, falling trees and rocks on main travel routes.

Specifically these are the Bouquet Canyon road (rockfall and hazard trees threatening travel on main road), private roads crossing Haskell Canyon at Copper Hill Road and Sierra Highway (excessive sediment and culvert plugging).

## Threats to Water Quality

### Potential Values at Risk

The following potential values at risk were identified prior to intensive fieldwork by conducting a reconnaissance survey and collecting resource information about the fire area. The purpose of identifying potential values at risk is to provide important resource information and locations to optimize the efficiency of the on-the-ground survey by BAER team members.

#### *Threat to Life and Property*

<b>At Risk</b>	<b>Life or Property</b>	<b>Type of hazards</b>	<b>Ownership</b>
Roads within fire perimeter	Both	Rockfall, flooding, crossing failures	FS and Non-FS
Forest Service Facilities	Both	Rockfall, debris flows, and rockfall	FS
DWP Infrastructure	Property	Landslide	Non-FS
Recreational Residences	Both	Flooding and debris flows	FS
Private residences	Both	Flooding and debris flows	Non-FS
OHV Trails	Both	Rockfall, debris flows, and rockfall	FS

#### *Loss of Water Control*

Loss of water control (flooding) in Mint Canyon, Texas Canyon, Vasquez Canyon, Bouquet Canyon, Plum Canyon, and Haskell Canyon.

### *Deterioration of Water Quality*

Increased sedimentation into Mint Canyon and Bouquet Canyon, which supports unarmored three spine stickleback a federally listed threatened and endangered species. Increased sedimentation into Drinkwater Reservoir.

### **Emergency Determination**

#### ***Threat to Life and Property***

##### *Forest Service Lands and Property*

The threat to life and property from rockfall, flooding and potential debris flows to forest service facilities, roads, recreational residences, and the Big Oaks Lodge is an emergency. Specific values have already been identified in table 1 in *Findings of the Ground Survey* (see hydrology specialist report).

##### *Non Forest Service Facilities*

The threat to life and property from rockfall, flooding and potential debris flows to non-forest service residences, roads, and lands is an emergency. Specific values have already been discussed in table 2 in the *Findings of the Ground Survey* section (see hydrology specialist report).

#### ***Threat to Ecosystem Stability***

The threat to ecosystem stability as a result of increased runoff and erosion on unclassified routes within the fire perimeter is an emergency. Of particular concern are the 0.5 miles of routes that route runoff and sediment into the drainage, which houses archeological site 53-89. Increased runoff from these routes poses a threat to the archeological site too.

The threat to ecosystem stability on the system road by archeological site 53-89 is an emergency, as increased runoff into three 4-foot deep gullies will cause accelerated erosion of unstable hill slopes. The gullies also threaten the road if not treated.

#### ***Loss of Water Control***

Flooding during a 10-year event is expected in Vasquez Canyon, Texas Canyon and in Lower Bouquet Canyon and thus creates an emergency under post-burn flow conditions. There are a high number of values at risk in the bottoms of both these drainages. In an unburned environment, the 10-year storm in Lower Bouquet Canyon, Texas Canyon and Vasquez Canyon is 13.1 cfs/square mile. Post-fire runoff in each watershed respectively increased to 15.1 cfs/sq. mile, 17.2 cfs/sq. mile, and 15.2 cfs/sq. mile (Table 5) (see hydrology specialist report).. Increased runoff is expected in the other watersheds, but an emergency does not exist in San Francisquito Canyon, Plum Canyon, or Bouquet Canyon above Dam, as there are no values at risk from increased runoff. An emergency does exist in Dry Canyon, Soledad Canyon, Mint Canyon, and Haskell Canyon from a loss of water control. A loss of water control drives the threats to life and property, discussed in tables 1 and 2 (see hydrology specialist report)..

### ***Deterioration of Water Quality***

Increased sediment and ash in Bouquet Canyon over the next three years is an emergency to domestic water users. Post-fire sedimentation of Bouquet Canyon will increase from 570 yd<sup>3</sup>/mi<sup>2</sup> to 5,517 yd<sup>3</sup>/mi<sup>2</sup> over the next two

years if the area experiences average precipitation. Texas Canyon has the highest increase in sediment yield from 570 yd<sup>3</sup>/mi<sup>2</sup> to 10, 213 yd<sup>3</sup>/mi<sup>2</sup>. Texas Canyon is downstream of habitat for unarmored three spine stickleback. Located in San Francisquito Canyon, increased sediment into Drinkwater Reservoir is an emergency. Post-fire sedimentation of San Francisquito will increase from 384 yd<sup>3</sup>/mi<sup>2</sup> to 4,181 yd<sup>3</sup>/mi<sup>2</sup>.

The risk of hazardous materials from burned recreational residences and the district office reaching Bouquet Canyon is an emergency.

## **Threats to Soil Productivity/Ecosystem Stability**

### **Soils - Emergency Determination**

#### *Soil Productivity:*

The BAER soils team did identify an emergency to the soil resource. Soil hydrologic groups combined with complete removal of soil cover will result in increased sedimentation and potential for debris flow in large portions of the burn area, constituting hazards to life and property and water quality in specific locations with values at risk. Specific emergency situations include the following:

1. There is a high potential for debris flow and rockfall affecting houses and the main commuter road in Bouquet Canyon, constituting a hazard to life and property.

These hazards can not be mitigated with natural recovery or administrated closure. Treatments were developed in conjunction with Hydrology and Geology specialists.

2. Soil erosion and OHV-related soil disturbance have been determined to constitute a hazard for specific archeological sites (see Archaeology specialist report).

Hazards for specific identified values at risk can not be mitigated with natural recovery and administrative closure alone, as demonstrated locally with past fire incidents. Treatments were developed in conjunction with the Archaeology and adjunct Recreation specialists to prevent unacceptable degradation of cultural and soil resources.

3. Sedimentation will occur in Bouquet Creek, which contains a federally listed T&E species (see Biology specialist report).

The T&E species is tolerant of short-term disturbance, and experienced extreme flow events and sediment inputs in the winter of 2005. Short-term fire-caused effects are expected to be minor in comparison. Natural recovery is expected to be adequate in providing soil cover within 3-5 years in most of the burned area, so land treatments are not proposed for suitable upland slopes to mitigate sediment source areas for water quality.

#### *Noxious Weed Potential:*

The unknowing introduction of invasive noxious weeds into areas disturbed by wildfire, fire suppression and fire rehabilitation has the potential to establish persistent weed populations. These persistent populations could affect the structure and habitat function of plant communities within the burn area. Forest Service direction is to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. Consequently, delayed assessment of roads, off-road vehicle trails, dozer lines, drop points, and staging are necessary to detect the spread and introduction of weeds in the first year after fire. Assessing the establishment of weeds and treating small outlying populations before they expand, will prevent the weeds from becoming serious threats to the recovery of native plants (see Botany specialist report for details).



- Yellow Starthistle is known immediately to the west of the fire around Lake Castaic and along the Ridge Route Road. Tocolote is found in these same areas.
- Arundo or giant reed occurs in the riparian areas along San Francisquito, Bouquet, and Mint creeks.
- Tamarisk occurs sporadically the lower/middle portions of San Francisquito creek, Bouquet creek, and Mint creek.

*OHV incursion:*

- The Rowher Flats OHV area has an extensive network of trails on the eastern portion of the burn area. Fire conditions have resulted in the removal of natural vegetative OHV barriers which may incur the creation of unclassified trails. Additional unclassified trails will result in additional soil quality degradation and delayed vegetative recovery.

**Geology – Emergency Determination**

The values at risk considered in this assessment include the possible loss of life and property due to landsliding, debris flow, rock fall, debris torrents, and flooding from increased surface water runoff. In general, the risk from landslides, debris flows and rock falls are possible where roads, residences or other development are located on alluvial fans, colluvial footslopes and debris fans and the risk from debris torrents and flooding from increased surface water runoff are possible where residences or other development are near stream channels or on low stream terraces.

It should be noted that rockfalls, debris slides/flows/torrents, landslides and erosion are part of the natural processes in this environment, these risks were present under pre-fire conditions, and the area has regularly experienced wild fires. Many existing structures are in areas that have been, and will continue to be, at risk from these hazards. The potential for these processes to be exacerbated by fire is primarily dependent upon burn severity and slope steepness. In general, where the burn severity is higher and the slopes are steeper, the potential for increased hazard is greatest.

Burn severity was greatest (but still only moderate) within the National Forest, with very light or no burn in most of the region to the south. Steep slopes are concentrated in the principal canyons to the north and in badland terrain in the south. The confluence of moderate soil burn severity and steep slopes (where the hazards would be most enhanced by the fire) with occupied structures is along parts of San Francisquito Canyon, Bouquet Canyon and Mint Canyon. Risk to cultural, soils and biologic assets are covered in other specialist reports. Steep, convex-up slopes adjacent to portions of the urban development to the south generally experienced very light soil burn intensity, but are nevertheless naturally susceptible to shallow slope failures and erosion.

**Threats to Wildlife and Botany**

*1) Wildlife:*

Habitat for threatened, endangered, and sensitive species found in the fire area include the unarmored threespine stickleback, California condor, San Diego coast horned lizard, and arroyo chub.

**Threatened, Endangered and Forest Service Sensitive Species**

The potential values at risk for federally threatened, endangered and Forest Service sensitive wildlife species are stability and viability of suitable habitat. Federally threatened and endangered species are those listed under the Endangered Species Act by the US Fish and Wildlife Service. There are one federal endangered species, and two Forest Service sensitive species known to occur within the Buckweed Fire area (see Table 1). In addition, there is suitable habitat for one federal endangered species that has historically occurred in the area.



**Table 1. Federal Threatened, Endangered and Forest Service Sensitive Wildlife Species in the Buckweed Fire Area**

Scientific Name	Common Name	Status and Location within Buckweed Fire Area
<i>Gymnogyps californianus</i>	California condor	Historical and potential occurrences throughout area.
<i>Gasterosteus aculeatus williamsoni</i>	Unarmored threespine stickleback	Present throughout Bouquet Creek and found in San Francisquito Creek upstream of Power Plant 1.
<i>Gila orcutti</i>	Arroyo chub	Bouquet and San Francisquito Creeks.
<i>Phrynosoma coronatum blainvillei</i>	San Diego horned lizard	Potentially throughout the fire area.

**Resource Condition Resulting from the Fire**

All known populations of federal endangered and Forest Service sensitive wildlife species (above) were overlaid with the Buckweed Fire boundary. One of the federal endangered and both of the sensitive species potentially occur along or within the fire perimeter. These are listed below:

- Unarmored threespine stickleback
- San Diego horned lizard
- Arroyo chub

The wildlife locations and suitable habitat areas were also overlaid with new dozer line and hand line construction areas. None of these species were disturbed by suppression activities.

**Consequences of the fire on values at risk**

Based on conditions found in the field survey, suitable habitat for both aquatic species was not directly impacted by the fire. The Bouquet Creek area has the potential for increased debris flow, erosion and sedimentation as a result of the fire burning in adjacent hillsides during the rainy season. In addition, hazardous materials may flow into the creek from recreation residences that burned in the fire.

Habitat for the San Diego horned lizard was nearly completely burned in the Rowher Flats OHV Area and the Drinkwater Flats OHV trail system. Both areas have resulted in temporary loss of thermal cover due to the loss of shrubs and herbaceous vegetation in the area. Erosion during the rainy season may contribute to degradation of suitable habitat.

**2) T&E Plants and Vegetative Recovery:**

**Sensitive plants**

The potential values at risk for sensitive plants are the stability and viability of sensitive plant populations. There are 4 sensitive plants are known to occur within the Buckweed Fire area (see Table 1). All of these sensitive plants are highly restricted in distribution. Within the Fire area there are 2 species of plants that are listed as Federally Endangered with the US Fish & Wildlife Service, Nevin’s Barberry and Slender-Horned Spineflower.

**Table 1. Regional Forester Sensitive and Federally Endangered Plants in the Buckweed Fire Area**

Scientific Name	Common Name	Location within Buckweed Fire Area
<i>Berberis nevini</i>	Nevin’s Barberry	Around Power House 2 in San Francisquito Creek Canyon
<i>Opuntia basillaris</i> var. <i>brachyclada</i>	Short Joint Beavertail	Rowher Canyon OHV Area, Mint Canyon
<i>Calochortus clavatus</i> var. <i>gracilis</i>	Slender Mariposa Lily	Rowher Canyon OHV Area, Drinkwater Flat OHV Area San Francisquito Canyon, Mint Canyon
<i>Dodecahema leptoceras</i>	Slender-Horned Spineflower	Mint Canyon

### **Resource Condition Resulting from the Fire**

All known populations of sensitive plant species (above) were overlaid with the burn severity map. No known populations were found to have burned with moderate burn severity. Based on this GIS analysis, all known populations within the Buckweed Fire were burned at low to low/moderate soil burn severity, with the rest being unburned. Some known populations were surveyed for direct plant effects, site burn severity, soil effects, and the extent of remaining organic horizon.

The only Nevin's Barberry site is located at Powerhouse 2 in San Francisquito creek canyon. This site consists of 4 sub-populations. The southernmost sub-population was the only one burned in the Buckweed fire. This population is located on the mid and toe-slope of a steep north facing slope directly south of the Fire Station. This sub-population was surveyed and it experienced a patchy low/moderate soil burn severity. A smaller sub-population located on the east side of the Fire Station was burned just up to the edge, but not consumed by the fire. This sub-population is being negatively affected by about 10 invasive Tamarisk plants. Both of these sites were affected by a backfiring operation, and not the wildfire, proper.

The Short Joint Beavertail site located within the Rowher OHV area is strung out along the upper portion of the Flat trail. This site was visited after the fire and it experienced low to moderate soil burn severity. When burned at low/moderate soil burn severity, beavertail cactus is only top-killed. The roots remain viable and respond by sprouting from the soil surface. If the proposed 18 month OHV closure is put in place, this should be enough time for this population to sufficiently recover.

All Slender Mariposa Lily occurrences known across the fire were burned at low and moderate soil burn severity. These populations should be monitored to assure recovery from this natural disturbance. No BAER assessments were possible because of phrenology and the removal of above ground evidence of plant presence.

The Slender-Horned Spineflower site recorded for mint canyon is thought to be near Forest Park. The record is based on information from 1937 and the exact location is very non-specific. This occurrence has not been relocated since the initial collection. Additionally, this spineflower is an annual herb which germinates, grows, flowers, and dies over the span of three months, in the winter and spring. Annual plants of this type are usually very well adapted to take advantage of the opportunity created by fire. Therefore, no attempt was made to determine the effects of the fire on this plant, except to note that this historic occurrence could have been theoretically affected.

Known plant locations were also overlaid with dozer line construction areas. Based on this analysis, no TES plant populations were identified as being disturbed but dozer activities.

### **Consequences of the fire on values at risk**

Based on conditions found in the field survey and references on the specific fire ecology of each species, populations of Short Joint Beavertail, Slender Mariposa Lily, Slender-Horned Spineflower should not be adversely affected by the wildfire. In fact, all of these species are well adapted to endure and/or thrive following wildfire.

### **Chaparral (Mesic, Xeric, Interior Sage Scrub)**

The Buckweed Fire burned approximately 25,800 acres of Chaparral and Interior Sage Scrub or 67 % of the fire area. Many different types of chaparral or shrublands were burned. The major shrub types are dominated by California Sagebrush (*Artemisia californica*), Buckwheat (*Erigonium fasciculatum*), Chamise (*Adenostoma fasciculata*), Manzanita (*Arctostaphylos glauca*, *A. greggii*), Scrub Oak (*Quercus berberidifolia*), and Canyon Live Oak (*Quercus chrysolepis*).

Most of these plant communities recover quickly after fire (see Botany specialist report Figures 1-5). All species of Chaparral shrubs, forbs, and grasses are well adapted to regenerate rapidly after fire through seed germination and/or re-sprouting. Fire usually kills any seed on the ground surface. However, buried seed and bulbs remain insulated from extreme temperatures. Some seeds, especially those of ceanothus, manzanita, and fire-following herbs, only germinate after fire. California chaparral has numerous species which are obligate seeders after fire. Some of these species can endure fire-free intervals of more than 100 years. The seeds of these species only germinate when soil heating and/or certain unique chemicals in the leachate of charred wood break the seed coat dormancy.

## **Threats to Cultural Resources**

### **Emergency Determination**

It is well known that wildfire incidents have potential to directly affect irreplaceable heritage resource properties through burning/smoke damage and from implementation of emergency suppression/watershed rehabilitation treatments. Additionally, indirect effects to heritage resources may include downslope movement of destabilized rock/ soil, storm-related flooding and debris flows, increased artifact looting due to increased visibility of sites, and greater accessibility to sites by Off-Highway Vehicles (OHVs). These post-fire processes may alter the context of archaeological remains vital to any scientific analysis/interpretation and, in worst cases, have potential to completely destroy the resource.

In this case, vegetation at most of the 70 heritage sites within the perimeter of the Buckwheat Fire was completely removed. It is expected that varying degrees of erosion will occur at all these sites during winter storms, but will clearly be most significant at sites that are situated along creeks and at canyon floors. BAER analyses indicate six “at-risk” resources. Three Native American archaeological sites exhibit extremely high potential for damage or destruction as result of winter storm flood events. Additionally, the increased visibility and accessibility at three additional archaeological sites are likely to result in site damage from OHVs, looters/vandals, and other Forest users. Emergency circumstances exist at the following sites:

- *05015300089 – Whiskey Spring Earth Oven.* This earth oven complex at the confluence of Whiskey Spring Canyon and an unnamed drainage may be subjected to considerable damage from water and debris flows in the narrow deteriorated drainages. The east and western flanks of the site are expected to be most affected, and there is a real possibility that the entire deposit could be destroyed.
- *05015300028 – Reservoir Road Site (LAN-531).* The burning of vegetation at this site, which is located adjacent to residences, has made the numerous artifacts highly visible to collectors/looters and more susceptible to damage from on-going mountain biking and hiking activity.
- *05015300029 – Rowher Flat No. 1 (LAN-856).* Two rock art (cupule) boulders (one previously undetected) were exposed by burning of vegetation. The rock art resources are now susceptible to damage/displacement by OHVs and other motorized vehicles.
- *05015300030 – Rowher Flat No. 2 (LAN-857).* An unfenced approximate 200 yard section along the site boundary perimeter, which was previously protected by thick chaparral, is now opened up for potential OHV damage.
- *05015300085 -Table Rock Narrows.* Expected debris flows and flooding through the rock shelter containing the Native American pictograph panel will likely cause significant damage to the remaining motifs).
- *05015300123 (Rick’s “Tunnul” Site).* The Native Californian pictograph panel, which has been nominated for inclusion to the National Register of Historic Places, was adversely by heat spalling and smoke damage from burning of nearby organic flood debris in Texas Creek. As result of the intense burning of the Texas Canyon watershed, the site is now at significant risk of additional damage or even destruction from flooding and debris flows. Without protective treatments, flows in Texas Creek may channel directly through the rock shelter containing the rock art panel. Similarly, an adjacent oak skeleton must be removed to avoid exacerbation of the spalling and flooding.

B. Emergency Treatment Objectives: The treatment objectives are focused on protecting the property and homes and in Bouquet Canyon from debris flows, flooding and rockfall. Most of the proposed treatments are to mitigate threats to F/S/ buildings and infrastructure and recreation residences homes. Areas of elevated erosion located in Texas Creek and Rowher will be gated and signed. This area is priority for closure and should remain closed fore one full year to allow BAER treatments to fully function and the natural enviroment to heal.

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

Land 90 % Channel 95 % Roads/Trails 95 % Protection/Safety 85 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	100	80	30
Channel	90	80	70
Roads/Trails	95	95	85
Protection/Safety	95	90	80

E. Cost of No-Action (Including Loss):5,510,273

F. Cost of Selected Alternative (Including Loss):850,000

G. Skills Represented on Burned-Area Survey Team:

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

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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: ( total costs - \$37,452)**

1. *Hand Mulch:*

Objectives:

To provide for immediate ground cover in high priority areas where natural ground cover is anticipated and there is high probability of accelerated hillslope erosion and sedimentation of downstream values at risk.

Methods:

Using a hand crew, apply wood straw mulch on approximately 24 acres surrounding the Drinkwater Reservoir. Detailed specifications on straw mulch application can be in the BAER Treatments catalog (0625 1801 – SDTDC). To reduce sedimentation into Drinkwater Reservoir, wood straw mulch will be applied by hand to 24 acres, *cost - \$28,800.*

2. *Spot Tamarisk Treatment:*

Objectives:

To provide for the removal of noxious plant species encroaching on R5 Forest Service sensitive plant - Nevin's Barberry (*Berberis nevinii*).

Methods:

Consult with Forest Botanist prior to Tamarisk removal. Using a hand crew, manually cut and remove all Tamarisk plants from the area of Nevin's Barberry (*Berberis nevinii*). This area is located within San Francisquito Canyon near the fire station and LA Country DWP Power House #2. *Cost - \$600.*

3. *Noxious Weed Detection Survey*

Objectives:

Evaluate and eliminate the potential for noxious invasive weed establishment and spread, in all areas affected by the Buckweed fire. Early detection dramatically increases the likelihood of successful treatment.

Methods:

Inspect selected areas and monitor for newly established weed occurrences. Monitoring will include documentation and hand pulling small new weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastics bags, and properly disposed. *Cost -*

Documentation of new infestations will include:

- ☐GPS negative and positive inspection results
- ☐Incorporate data into GIS spatial database
- ☐Establish photo points
- ☐Map perimeter of new infestation
- ☐Estimate number of plants per square meter
- ☐Treatment method
- ☐Dates of treatment
- ☐Evaluate success in subsequent inspection
- ☐Inspections and monitoring should be accomplished during May/June 2008. Based upon the first year's survey, additional surveying may be requested for up to three years. BAER funding is only requested for the first year after fire.

**Channel Treatments: (total costs -)**

1. *Early Flood Warning Awareness*

National Weather Service Bulletins for 2 years for forecasted rain events for all affected lands, especially Bouquet Canyon, Texas Canyon, Vasquez Canyon, and Mint Canyon @ (805) 988-6610 in Oxnard. Also communication with LA County about early alert coordination, especially Bouquet Canyon, Texas Canyon, Vasquez Canyon, and Mint Canyon. @ <http://ladpw.org/wrd/precip/>

2. *Channel Clearing and Armoring –cost*

Areas along Bouquet Creek below recreational residence homes and various day use campgrounds to protect from flooding (see treatment map).

3. *Loss of Water Control*

We have acknowledged that there will be a loss of water control throughout the burned area. However, there is no treatment to control runoff other those suggested in emergency treatments to protect threat to life and property. The early warning system will alert people in Bouquet Canyon, when a certain amount of rain has fallen over a certain amount of time. Coordination with the experts at the National Weather Service is necessary in determining a trigger. Meteorologists at the Oxnard office have more knowledge and experience in developing a trigger. Inter agency coordination with LA County Public Works and the National Weather Service is essential and should issue the trigger.

4. *Deterioration of Water Quality*

Increased sediment and ash in Bouquet Canyon over the next three years is an emergency to domestic water users. No treatments have been proposed as treating the watershed with some type of wood or hydromulch is cost prohibitive. Domestic water users should take precautions to protect their systems during storm events, such as taking intakes out of the stream; not using diverted water during and after storms until the water returns to its normal water clarity. Those with groundwater systems should be aware that there may be a change in odor and taste. Changes in water quality will last for 3 years.

**Roads and Trails Treatments: (total costs - contract and admin)**

1. *Objective:*

The treatments are designed to stabilize the road prism and prevent enhanced watershed response from the road prism.

The following treatments were identified as BAER treatments for the Buckweed Fire burn area:

- A. Unclassified Road Stabilization
- B. Road Drainage Armoring
- C. Over Side Drain Repair or Installation
- D. Culvert Riser Installation or Maintenance
- E. Sandbag Drop Inlets
- F. Clean Inlet Channels

2. *Methods:*

5N13 – Rush Canyon Road: Lay sandbags on the downhill side of the nine drop inlets to keep runoff directed into the drainage system. Sediment from this drainage should be removed to uncover the drain inlet. Estimated cost for this treatment is \$.

5N14 – Texas Canyon Road: Line channel area near Rowher Flat culvert with 4 cubic yards of 6” cobble to dissipate the energy of the water flowing from the end of the culvert. Install a 24” overside drain with 10 feet of flume at this location to direct runoff off the road and protect the road prism from erosion due to increased runoff. Estimated cost for this treatment is \$.

5N15.1 – Vasquez Canyon Road: Several culverts drain under the road into the creek. Excavate material from the culvert basin to create more storage capacity for sediment in front of the culvert. Install a 24” overside drain with 10 feet of flume at the area near the top of the road to prevent erosion of the road prism. Estimated cost for this treatment is \$.

5N27 – Drinkwater Road: Beyond the reservoir near the intersection with City Highline Road, the road is in need of an overside drain and 10 feet of flume. Estimated cost for this treatment is \$.

6N07 – Sierra Pelona Road: Three locations were determined to be in need of a 24” overside drain with a total of 40 feet of flume to protect the road prism from erosion due to increased runoff. Estimated cost for this treatment is \$.

6N21 – City Highline Road: Six locations were determined to be in need of overside drains to prevent erosion of the road prism. Estimated cost for this treatment is \$14,100.00. At four locations, culverts that carry runoff under the road are at risk of becoming plugged due to sediment flow. At three of these sites, it is proposed to fit the culverts with slotted risers, which will prevent clogging of the culverts and allow the culverts to function properly in the case of sediment flows. At the fourth site, removing sediment from the culvert basin will create extra storage capacity in front of the culvert will be sufficient to keep the culvert operating effectively. Estimated cost for this treatment is \$.

3. *Threat to Ecosystem Stability*

Install water bars on 0.5 miles of unclassified routes already identified, *cost - \$.*

<b>Gradient</b>	<b>Length</b>
<b>%</b>	<b>Feet</b>
10 to 14	150
15 to 20	90
21 to 40	50
41 to 60	25

Source: <http://www.fs.fed.us/r5/baer/six-d.html>

**Protection/Safety Treatments: (total costs - \$)**

1. Fire Perimeter Closure Order for the Buckweed Fire for 12 months for ecosystem recovery from December 2007 to December 2008 and reissued for 2009 for six months, *cost - \$.*
2. OHV gates, fencing, barriers, railing, law enforcement to ensure fire closure order to protect burned areas from erosion and public safety, *cost - \$.*  
 OHV gates @ \$ea (4ea needed)  
 Closure signs @ \$ ea (10ea needed)  
 Law enforcement and public notices - \$.  
 Enforcement vehicle miles - \$
3. Early Warning System in Bouquet Canyon for flood warning, *cost - \$.*  
 Installed and administered by: U.S. Weather Service and U.S.F.S.  
 Installed on ridge between Texas and Bouquet Creek  
 Self Reporting Rain Station  
 Software, Installation, Set-up, and Maintenance
4. Recreational Residences, *cost - \$*  
 Structure protection and debris deflection structures will be constructed to protect form potential debris flows. Materials will include sand bags and K-rails where appropriate. Plywood will be supplied for windows at ground level.



Cost: \$for supplies, 10 person fire crew (GS-05) and OT, backhoe and operator, watershed specialist (GS-11), archeologist (GS-11), Contracting officer.

5. Treatment costs for hazardous materials stabilization, total \$.  
Recreational residence site evaluation, and stabilization treatments-\$.  
Mojave River/Santa Clara River District Office hazmat stabilization treatments-\$.  
Hand apply wood straw mulch to 3 acres around rec. houses and district office to stop erosion of soil -\$.
6. Big Oaks Lodge, *cost* - \$  
Improve current structures in channel adjacent to the lodge to trap and hold sediments-\$1,750.  
Includes sand bags and an 8 person crew.
7. Forest Service Facilities includes Texas Canyon Fire Station, Los Cantilles Day Use Area, and Streamside Day Use Area, *cost* - \$  
Debris removal from each facility for 5 storms and pre-storm removal from the Texas Canyon Fire Station before the first storm to increase capacity of existing structures-\$ (Includes operator and equipment).  
Remove two water bars from PT trail in Texas Canyon Camp to reduce amount of runoff onto burned rocky slope above Bouquet Canyon Road-\$  
Split rail protection fence (50 ft for \$) and gate to stop OHV incursions at Los Cantilles Day Use Area -\$  
48 k-rails for structure protection-\$ (Texas Canyon Fire station for structure protection).  
Construction of gabion wall behind Texas Canyon kitchen and barracks to catch rockfall-\$.
8. Tree felling/Channel clearing in Bouquet Canyon to reduce flooding, *cost* - \$  
Removal of burned bridges used by recreational residences to reduce debris in Bouquet Ck..  
Removal of vegetation in channel at 32828 Bouquet Canyon Road.  
Removal of tree at 33144 Bouquet Canyon Road to protect culvert from plugging.
9. Inform Texas Canyon Fire Station about increased rockfall on PT trail and need to increase routine maintenance.
10. Cultural resources at risk from OHV incursion due to being near the fire perimeter closure and proximity to Rowher Flat OHV staging area- protection treatments, *cost* - \$  
  
NHPA 106 Compliance for Other Treatment Areas (estimated 15 days x \$), *cost* - \$  
  
FS #05-01-53-28: Implementation Personnel (2-person crew), Heritage Personnel (1 Person-day),  
Materials: 100' Hogwire Fencing, *cost* - \$  
  
FS #05-01-53-29: Implementation Personnel (4-person crew) x 5 days, Heritage Personnel (5 Person-days),  
Materials: 600' cable, 60 posts (@32.80/10ft), Auger Rental (60/day), *cost* - \$  
  
FS #05-01-53-30: Implementation Personnel (4-person crew) x 4 days, Heritage Personnel (4 Person-days),  
Materials: 600' cable, 60 posts (@32.80/10ft), Auger Rental (60/day), *cost* - \$  
  
FS #05-01-53-85: Implementation Personnel (4-person crew), 200 Sandbags (0.50 each), Heritage Personnel (1 Person-day), *cost* - \$  
  
FS #05-01-53-89: Deflection barriers to route converging streams around clay oven archeological site, (4-person crew) x 4 days, Heritage Personnel (4 Person-days), 200 Sandbags (0.50 each)*cost* - \$

FS #05-01-53-123: Implementation Personnel for sandbags (4-person crew), 200 Sandbags (0.50 each), Implementation Personnel for dead oak removal (3-person sawyer crew), Heritage Personnel (2 Person-days), cost - \$

Monitoring Treatments: Heritage Personnel @ at-risk sites (3 days x 3 monitoring events), Heritage Personnel, annual monitoring (5 days x 3 monitoring events), cost - \$

11. Non-Forest Service Property:
  - Provide list of private properties in flood-prone areas and those not evaluated to NRCS
  - Determine landowners in Haskell Canyon upstream of Copper Hill Road and provide information about risk of using roads during storm events.
  
12. Sierra Highway, Vasquez Canyon Road, and Bouquet Canyon Road
  - Inform local jurisdictions (L.A. Water and Power, L.A. Public Works, L.A. County Fire Protection) about increased rockfall, sediment on roadways, and increase runoff on roads and the necessity to be vigilant with road maintenance.
  - Recommend signing on roads, especially Bouquet Canyon Road.
  
13. Alert jurisdictions about the following problems:
  - Bouquet Canyon Road-Plugged outlet on 1 of 3 CMP's at Steamside Day Use Area
  - Sierra Highway-Mile Post 42.62, double box culvert (5'x6'x30') are 90% plugged for the entire length.

**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 B below on OHV sign, road, fence, and hillslope monitoring.

**Part VI – Emergency Stabilization Treatments and Source of Funds**

**Interim #**

Line Items	Units	Unit Cost	NFS Lands			Other \$	Other Lands			All Total \$
			# of Units	BAER \$	# of units		Fed \$	# of Units	Non Fed \$	
<b>A. Land Treatments</b>										
Hand Mulch	acres		24	\$0	\$0		\$0		\$0	\$0
Noxious Weed Detection	Days		22	\$0	\$0		\$0		\$0	\$0
Spot Tamarisk Treatment	Hours		4	\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$0	\$0		\$0		\$0	\$0
<b>B. Channel Treatments</b>										
channel clearing	mile		0.5	\$0	\$0		\$0		\$0	\$0
channel armoring	feet		200	\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
Unclassified road stabilization	miles		0.5	\$0	\$0		\$0		\$0	\$0
road drainage armoring	cubic yard		4	\$0	\$0		\$0		\$0	\$0
over side drains	each		12	\$0	\$0		\$0		\$0	\$0
culvert riser	each		3	\$0	\$0		\$0		\$0	\$0
sandbag drop inlets	each		9	\$0	\$0		\$0		\$0	\$0
clean inlet channel	cubic yard		75	\$0	\$0		\$0		\$0	\$0
contracting and administration			1	\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road &amp; Trails</i>				\$0	\$0		\$0		\$0	\$0
<b>D. Protection/Safety</b>										
Closure order	order		1	\$0	\$0		0		0	\$0
OHV gates	gates		4	\$0	\$0		0		0	\$0
OHV closure signs	sign		10	\$0	\$0		\$0		\$0	\$0
OHV closure order	personnel days		1	\$0	\$0		\$0		\$0	\$0
OHV public information	personnel days		5	\$0	\$0		\$0		\$0	\$0
law enforcement	personnel days		200	\$0	\$0		\$0		\$0	\$0
OHV vehicle mileage	miles		0.6	\$0	\$0		\$0		\$0	\$0
OHV boulder barriers	boulders		8	\$0	\$0		\$0		\$0	\$0
OHV guard rail extension	feet		75	\$0	\$0		\$0		\$0	\$0
OHV hog wire	feet		1300	\$0	\$0		\$0		\$0	\$0
Los Cantillos day use area gate	feet		10	\$0	\$0		\$0		\$0	\$0
Los Cantillos day use area gate	gates		1	\$0	\$0		\$0		\$0	\$0
k-rails	feet		246	\$0	\$0		\$0		\$0	\$0
gabion	square feet		150	\$0	\$0		\$0		\$0	\$0
debris removal	storms		5	\$0	\$0		\$0		\$0	\$0
water bar removal	water bars		2	\$0	\$0		\$0		\$0	\$0
flood protection	recreation residence		16	\$0	\$0		\$0		\$0	\$0
flood protection	Big Oak Lodge		1	\$0	\$0		\$0		\$0	\$0
hazardous material stabilization and mulch	residence		8	\$0	\$0		\$0		\$0	\$0
hazardous material stabilization and mulch	district office		1	\$0	\$0		\$0		\$0	\$0
flood protection	archeologic site		1	\$0	\$0		\$0		\$0	\$0
Protection	archeologic site		1	\$0	\$0		\$0		\$0	\$0
flood early warning system			1	\$0	\$0		\$0		\$0	\$0
flood warning system maintenance + site location			1	\$0	\$0		\$0		\$0	\$0
site protection	archeologic site		1	\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0		\$0		\$0	\$0
<b>E. BAER Evaluation</b>										
personnel/travel	ea		1				\$0		\$0	
<i>Subtotal Evaluation</i>					\$0		\$0		\$0	
<b>F. Monitoring</b>										
treatment effectiveness			1	\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$0	\$0		\$0		\$0	<b>\$402,862</b>
Previously approved										

