USDA-FOREST SERVICE FS-2500-8 (6/06)
Date of Report: Aug. 7, 2006

**BURNED-AREA REPORT**
(Reference FSH 2509.13)

## PART I - TYPE OF REQUEST

A. Type of Report

[X] 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)

[X] 2. Interim Report # 1
[X] 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: Horse

B. Fire Number: CA-CNF-2059

C. State: CA

D. County: San Diego

E. Region: 5

F. Forest: Cleveland

G. District: Descanso

H. Fire Incident Job Code: P5C0VQ

I. Date Fire Started: 07/23/2006

J. Date Fire Contained: 07/30/2006

K. Suppression Cost: $16,000,000

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 50 (estimate)
2. Fireline seeded (miles): 0
3. Other (identify):

M. Watershed Number: 1807030502 (Pine Valley), 1807030501 (Upper Cottonwood)

N. Total Acres Burned: 16,681
NFS Acres(15,292 ) Other Federal (0) City (575 ) Private (814)

O. Vegetation Types: Oak Woodlands, Cottonwood Riparian Forest, Mixed Chaparral, Chamiseal Chaparral

P. Dominant Soils: Acid igneous rock land (AcG): very shallow loam to loamy course sand; Tollhouse (ToE2): shallow to very shallow rocky coarse sandy loam in material weathered from granodiorite, La Posta (LcF2): rocky loamy course sands that formed in material weathered from granodiorite. All include rock outcrops and boulders.

Q. Geologic Types: Peninsular Ranges Batholith - Eastern Sequence: Tonalite of Granite Mountain, Western Sequence: Corte Madera Monzogranite and Japatul Valley Tonalite; with lesser components of Prebatholithic and Suprabatholithic metavolcanic and metasedimentary rocks.

R. Miles of Stream Channels by Order or Class: 1st Order-47, 2nd Order-20, 3rd Order-4.9, 4th Order-0

S. Transportation System: Trails: 3.53 miles Roads: 21.36 miles OHV Trail: 9.12 miles

## PART III - WATERSHED CONDITION

A. Burn Severity (acres): 214 (low) 4,153 (moderate) 11,927 (high) 387 (unburned)

B. Water-Repellent Soil (acres): 11,163

C. Soil Erosion Hazard Rating (acres):
2,629 (low) 4,543 (moderate) 9,483 (high)

D. Erosion Potential: 20-50 tons/acre

E. Sediment Potential: 30,000 cubic yards / square mile

## PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 7

B. Design Chance of Success, (percent): 60
C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 15

E. Design Storm Magnitude, (inches): 4.0

F. Design Flow, (cubic feet / second/ square mile): 43

G. Estimated Reduction in Infiltration, (percent): 30-50

H. Adjusted Design Flow, (cfs per square mile): 102

Rowe, Countryman and Storey (1949) provide data for pre- and post-fire peak discharges and erosion rates in southern Califoria watersheds. Data is provided for 2.5, 5, 10, 25, 50 and 100 years post-fire storm events. The 70 year post-fire data is considered a fully recovered hydrological watershed. These data sets were used to estimate pre-fire and post-fire peak discharges at Barrett Honor Comp, Pine Valley Creek, Skye Valley Creek and Lower Cottonwood Creek.

## PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

***Hydrology/Soils***

**Honor Camp Facilities**: The watershed above and around these county facilities was extensively burned. The facility houses a number of residents who have limited access. The threat to human life and property resulting from debris flows or flooding would present an emergency. There is a likelihood that the watershed will generate higher than normal peak flows over the next few years; and some debris flows may occur from steep heavily burned headland draws in the watershed.

The housing facilities themselves are located on a terrace well out of the flood-prone area. However, there is a small headland draw that may create runoff and sediment that can flood or damage some of the buildings because of some drainage modifications that were done for other construction projects in the area. After consulting with NRCS, the suggested emergency action is to sandbag the outwash channel to direct the flows away from the facilities. Costs would be minimal.

There are some non-resident facilities on the lower terrace and flood-prone area associated with the East Fork of the creek. They include some secure outdoor eating facilities, parking lots, and a generator and above-ground fuel storage. Some flooding in this area should be expected, although debris from upstream flows will likely be small. There is a road crossing in proximity (50 feet) to a foot crossing in the channel at this point. Both are masonry structures with two (approximately) 30-inch corrugated metal pipe (CMP) culverts to drain them. It appears that these structures could cause out of channel flows during a significant runoff event. Again, the recommendations focus on sandbagging by the facility manager.

Relatively rapid hydrologic recovery is anticipated over the next few years due to the resiliency of the chaparral ecosystems. It is recommended, however, that the vegetative recovery be monitored (concurrently with similar vegetative monitoring in the Horse Fire area) to assess the effectiveness of the no-treatment actions in the first year.

**Skye Valley Ranch**: Although the private ranch property was not significantly burned, the upstream watershed was. The threat of large-scale debris flows is low due to the low relief and short channel lengths of the surrounding affected slopes. There will likely be some elevated runoff and sediment loads into and through the property; but the residences (which are located on high ground) and other facilities and improvements are not expected to be at great risk.

**Barrett Reservoir:** This facility is one of a system of reservoirs owned by and for the City of San Diego for domestic water supplies. If water quality were to be compromised, an emergency would certainly exist. The threats would come from sediment loading, and perhaps heavy inputs of ash and nutrients. Analysis suggests that the expected elevated sediments will not put at risk the health of downstream water users or the water treatment facilities because the reservoir is isolated from the primary intakes and the relatively small portion the source watershed affected by the fire. The City was consulted. NRCS staff was consulted reguarding the possibility of implementing projects with city and private owners; however no qualifying projects were identified.

The City did identify a potential safety threat to users of the lake from rolling debris off the steep slopes adjacent to the northern shore of the reservoir. Investigations support this concern in the areas east of Boneyard Canyon due to the steep slopes and high burn severity. Use on the lake is daytime only and revolves around fishing. Camping is not permitted, but users occasionally walk on shore to fish (and migrants pass through the area as well.). These users could be at risk of injury. After consultation with the City, it is recommended that users be advised at the docks

which are the only point of entry for day users. Signing on the affected shore could also be utilized. The City will probably affect the advisory messages at the docks as part of their day-to-day operation. Treatment costs are expected to be $1,000 to $2,000.

**Pine Valley Creek riparian areas**: Lower Pine Valley Creek burned extensively, although some of its riparian areas remained intact or partially intact. The emergency is reflected in water quality to Barrett Lake (addressed earlier), risk to parts of the existing trail system, safety risks to users, and threats to some riparian species and their habitats.

**The Espinosa Trail** climbs out of the canyon to the east on steep slopes that have been burned over. The risks of erosion, primarily gullying from the excess runoff from the burn on an already inadequately drained trail are evident. The emergency is that significant sections of the trail will be lost or made unusable and unsafe. The treatment recommendations are to immediately incorporate or improve substantial cross-drains into the climbing sections of the trail and parts of the encroaching trail length in the bottom. Similar features are needed in the climbing sections of the undesignated trail known as the Loop Trail. Treatment costs are expected to be $15,000 to $20,000.

Users of the trails on sections adjacent to severely burned and steep slopes are at risk from ravel and rockfall, particularly during heavy rain or wind events. The treatment recommended is to provide awareness to users at the trail heads, and to monitor the situation for the next two years for adequacy of the notification process.

**Wildlife Habitat** Three important wildlife species utilize and depend on the riparian systems in the drainage. They are the Southern Pacific Pond Turtle that use the pools found in the lower reach of Pine Valley, reaches around the northern fire perimeter, and also in lower Cottonwood Creek east of the reservoir. This species depends on semi-permanent pools. There is some risk that local debris flows from long steep 1st order tributaries may fill some of these pools immediately downstream of the flow. However normal scour events in the following year or two will alleviate the longer term problem. The northern reach of Pine Valley and the Cottonwood Creek reach south of the fire are at minor risk of this situation occurring.

The Arroyo Toad, federally listed endandered, favor the Pine Valley reach that extends approximately 1.5 miles into the burn from the north, and some of the larger tributaries. The species favors disturbed sites associated with the riparian areas. The risks of loss of their habitat are expected to be minimal and very local.

A bird species, the Least Bell's Vireo favors the low (up to 6 feet) riparian brush that occupies much of Pine Valley creek within the fire and lower Cottonwood Creek. Debris flows may disturb or destroy some of this structure locally, but it is not expected to be extensive.

**Six ephemeral stream crossings** using culverts: The road networks, primarily on the east division of the fire, provide (ephemeral) stream crossings at six locations. An emergency would exist if the capacity of these pipes were inadequate for the water and sediment flows that may emanate from the burned areas of their watersheds. The treatments recommended are to harden the road treads and the downstream fill slopes of the crossings to protect them in the event of overtopping. Where the approaches are relatively flat and the chance of water being diverted down the roadway rather than over or through the drain is present, the treatment should include the incorporation of a relief drain (in the form of a rolling dip) over the pipe where the fill is adequate, or adjacent to the pipe in order to contain and control the overflow in the flood event. Pipes with substantial grade or those perched at the outfall should be evaluated for the placement of energy dissipaters. Treatment costs may run from $5,000 to $10,000 per site. (Details of this emergency are in the engineering report.)

**Potential loss of soil productivity**. Soils in the burned area are derived primarily from decomposed granite and igneous rock and have inherently high erosion characteristics. The

immediate threat is primarily in the eastern half of the burned area. The wilderness areas and lands adjacent to the existing roads and OHV trails are vulnerable to damage from unauthorized motorized vehicle travel off of designated routes. The physical and visual barriers provided by the dense Chaparral that has restricted OHV s to designated routes and reduced the potential for unauthorized user developed trails has burned (see Recreation/OHV and Wilderness discussions). With normal/average precipitation, the estimated time frame for Chaparral recovery to establish the vegetative barrier is 6 to 8 years.

Throughout the majority of the burned area, the fire completely consumed the vegetation canopy and effective ground cover (plant litter and duff). This includes the leaf fall and decay of dead plants that replenish the soil nutrient pool. Even with average/normal precipitation, accelerated erosion rates combined with higher surface runoff efficiency may move the exposed soil and nutrient-rich ash off-site. The high potential for increased erosion elevates the possibility for road and trail damage and degradation of critical cultural resources (see Heritage/Cultural Resources and Transportation sections). While secondary vegetative succession will provide about 80 percent canopy and ground cover within 2 years, the estimated time frame for the Chaparral community to completely restore hydrologic function is 5 to 7 years.

***Vegetation Botany***

In relation to the effects of the Horse wildfire, the potential values at risk are the ecological stability of the following plant communities found within the fire area.

- Oak Woodlands
- Cottonwood Riparian Forest
- Mixed Chaparral
- Chamiseal Chaparral

Additionally, Pine Valley Creek Canyon and Cottonwood Creek Canyon area are identified as an "Area of High Ecological Significance" in the 'Southern California Mountain
s and Foothill Assessment'. The probability that the vegetation will recover rapidly, without any treatment, is high. Additionally, natural revegetation of plants and deposition of litter on the soil surface is expected to reduce overland flow and erosion and by providing live vegetation canopy and litter cover.

**Vegetation Recovery Specifically in Relation to Watershed Recovery**

The recovery of watershed function provided by soil cover (litter) and canopy interception (live vegetation) will take time. Table 1 below provides the percent of watershed function recovery to pre-burn levels (assuming average precipitation). These numbers are based on the scientific studies and personal observations discussed above.

| **Years after Fire** | **Watershed Function Recovery to Pre-Burn Levels** (%) |
|---|---|
| First Year | 45 |
| Second Year | 55 |
| Third Year | 60 |
| Forth Year | 70 |
| Fifth Year | 80 |
| Sixth Year | 90 |
| Seventh Year | 100 |

**Table 1** - Average Watershed Function Recovery to Pre-Burn Levels for Chaparral Vegetation found in the Horse Wildfire.

**Forest Service Sensitive plants**
The potential values at risk for sensitive plants are the stability and viability of sensitive plant populations. Two plants listed as Sensitive by the Forest Service are known to occur within the Horse Fire area (see Table 1). Both of these plants are highly restricted in distribution.

**Table 2-** Regional Forester Sensitive Plants in the Horse Fire Area

| Scientific Name | Common Name | Location within Horse Fire Area |
|---|---|---|
| *Astragalus deanei* | Dean's Milkvetch | Western Portion of Fire in Lower Pine Valley Creek Canyon |
| *Ribes canthariforme* | Moreno Currant | SE Portion of the Fire in between Stokes Valley and Bronco Flats |

Known Dean's milk vetch and Moreno currant populations within the fire perimeter on Cleveland NF lands were surveyed after the fire. The three known populations of Dean's milk vetch within the fire perimeter were burned at medium and high burn severity. None of these were impacted by the construction/reconstruction of hand lines, dozer lines and drop points during fire suppression activities.

***Noxious Weeds***

Many non-native plants are found in California wildlands, but some are much more invasive and noxious than others. Some noxious weeds have spiny or sharp parts which can be hazardous or annoying to humans and livestock. Invasive weeds are very effective at occupying disturbed soil and displacing native plants and habitat. Non-native invasive weeds have the potential to displace native vegetation, degrade habitat function, and lower ecosystem stability. Ecological stability relates to the value of native plant communities for wildlife habitat and watershed function.

The potential values at risk, in relation to invasive noxious weeds are the ecological stability of:

- Oak Woodlands
- Cottonwood Riparian Forest
- Mixed Chaparral
- Chamiseal Chaparral

Additionally, Pine Valley Creek and Cottonwood Creek area are identified as an "Area of High Ecological Significance" in the 'Southern California Mountains and Foothill Assessment'. Before the wildfire, Salt Cedar was known to occur in Pine Valley creek, upstream of Barrett lake. Yellow Star Thistle is known to occur in rural areas within the Descanso Ranger District of the Cleveland National Forest. Bull Thistle was suspected to occur along creeks with the Horse wildfire area.

During fire suppression activities, 1 helispot, 7 drop point and approximately 22 miles of dozer lines, were constructed or reestablished. Dozer lines, drop points, and helispots may serve as weed dispersal spots or corridors. Additionally, suppression equipment can act as weed vectors. The movement of fire suppression and rehab equipment can disperse and spread noxious weeds to and from areas within the fire and among home units. Dispersal of weeds from fire equipment movement poses a significant risk to the native plant post-fire regeneration. Roadsides and dozer lines will be most impacted by this threat.

During the Horse fire Equipment tankers, engines, dozers, and excavators were not washed or inspected for dirt/plant parts on the way into the fire during suppression and rehabilitation efforts. Because of this, we have no way of knowing if invasive noxious weed seeds were introduced to roadsides and dozer lines within the fire area.

***Wildlife***

Within the Horse Fire burn area there are known and historical occurrences of two federally listed endangered species. A population of Arroyo Toad occupies habitat in Pine Valley Creek and there is a single data point in Corral Canyon (1999). Both sites are located in high intensity burn areas, and may be subject to increased deposition and/or scouring during future storm events. A post-fire survey of Pine Valley Creek revealed that the riparian vegetation in occupied Arroyo Toad habitat remains intact; however the surrounding upland vegetation is completely burned. The Corral Canyon drainage likewise did not burn, but is surrounded by black. Both sites are located within a ½ mile downstream inside the edge of the burn where post-fire hydrological processes are not likely to adversely affect the habitat.

Lower Pine Valley Creek has supported breeding pairs of Least Bells Vireo as recently as 1994, and there is modeled and suitable habitat intermittently dispersed throughout the drainage. Historically occupied riparian stands immediately upstream of Barrett Lake were not affected by the Horse fire and remain suitable for Least Bell's Vireo. The channel bed in this reach consists of large boulders and bedrock and appears to be hydrologically stable, however, there is concern that storm events will cause increased sediment load and higher peak flows resulting in temporary loss of vireo nesting habitat. Historically occupied reaches further upstream were either partially or completely burned over, resulting in a temporary (5 to 7 year) loss of vireo habitat. There is concern that noxious weeds, specifically Tamarisk occurring in the drainage upstream of the burned riparian, will establish in lower Pine Valley Creek replacing shrubs that make up Least Bells Vireo breeding habitat. Tamarisk is an aggressive colonizer that often forms monotypic stands, replacing willows, cottonwoods, and other native riparian vegetation.

Cottonwood Creek supports several breeding pairs of Least Bells Vireo making up approximately 0.5 percent of the total known population. It is currently the only consistent known breeding location for Least Bells's Vireos on the Cleveland National Forest Although Cottonwood Creek is not within the Horse Fire burn perimeter, debris flow draining Salazar Canyon may result in a temporary (5 to 7 year) loss of occupied vireo habitat. Salazar Canyon sub-watershed drains a large area designated by BAER team specialists as a high-severity burn, and most slopes are steeper than 60%. No treatment options are a available to mitigate loss of Least Bell'S Vireo habitat.

In addition to endangered species, there are known occurrences of Southern Pacific Pond Turtle which is listed as Forest Service Sensitive. Populations of this species have been declining for years largely due to loss of habitat, and there may be a trend toward listing this species as endangered. There are known and historic occurrences of Pond Turtle in Pine Valley Creek and Cottonwood Creek. Post-fire debris flow and sediment loading of these creeks may result in a temporary loss of pool habitat for turtles to hide and bask in. Some hatchling and eggs may have been lost in upland breeding habitat during the fire. As the Southwest Pacific Pond Turtle is only listed as a Forest Service Sensitive Species, BAER treatments were not determined to be appropriate.

***Heritage/ Cultural Resources***

Significanct pre-historic sites have been exposed as a result of the wildfire removing the vegetation that has protected and obscurred these sites. Many of these sites are significant and potentially eligible for placement into the National Historic Register. Five sites are now vulnerable to damage from accelerated soil erosion and overland flow. The soils that are protecting and/or stabilizing these sites will likely erode, taking portions of these sites away

before re-establishment of surrounding vegetation. Three to four years are predicted before vegetative recovery will provide the visual screen and physical stability needed to protect these sites. These are critical cultural resources that need emergency stabilization treatments to protect their significant and irreplaceable values. Treatment of these five sites include road resource protection and hillslope stablization utilizing wood strand mulch. Cost for these treatements are $105,000.

***Transportation***

The Forest Service road system is considered a value at risk. These roads are considered a government investment or asset and are needed for fire and other emergency vehicle, administrative, and recreational access.

The majority of the topography within the Horse Fire Burn is steep and rugged, with large rolling Mesa in the low lying areas. There are approximately 16 miles of Forest Development Road (FDR) contained within the burn. Roads within the Skye Valley Ranch and campground roads were determined to be unaffected by the fire and not surveyed. All roads have an objective maintenance level - 2 (high clearance vehicles), and are single lane, native surface. Most roads are designed on the contours both insloped and outsloped, with large outside road edge berms, inside ditches, rolling dips, lead off ditches, overside drains and some culverts.

A summary of the Forest Service road system in the burn follows:

| | | |
|---|---|---|
| 16S04 | Horsethief Canyon road | 1.5 miles FS / mix |
| 16S05 | Corte Madera road | 4.0 miles FS / mix |
| 17S04 | Corral Canyon road | 2.6 miles FS |
| 17S06 | Skye Valley road | 7.7 miles FS / mix |
| | Total miles | 15.80 miles |

As a result of the Horse Fire, runoff from future storms is expected to increase, compared to pre-burn conditions. The absence of normal ground cover and vegetation will result in increased, flashy runoff, debris flow potential, and potential for damage caused by unauthorized off road access. In their current condition, the forest roads are expected to be impacted if increased runoff occurs. In most areas of the fire existing drainage features adequate for pre-burn runoff are expected to be inadequate for increased post-burn runoff. The expected result, if no action were taken, would be moderate amounts of erosion from road surfaces, diversion of runoff down roads, concentration of runoff resulting in hillslope and stream bank gully erosion, and road washouts. The resulting sedimentation from “no action” could negatively affect water quality, aquatic species habitat and sensitive plants. Road surface erosion and washouts would make many of the forest roads inaccessible for critical fire suppression activities desired public access and Forest Service administrative access. The emergency treatments need to stabilize the transportation system and restore drainagage function over 16 miles of road cost $192,000.

***Recreation/OHV/Wilderness***

The area of the Horse Fire burn is a unique juxtaposition of recreation that includes developed and dispersed camping, a designated OHV area, and two wilderness areas, all literally adjacent to each other. The combination of these uses compounded by the effects of the fire pose several risks among these competing resource areas as well as risks to other critical natural and cultural resource values.

Half of the OHV roads /trails and 79% of Corral Canyon OHV area (an area specially designated and managed for OHV recreational experience) have been severely impacted by the Horse Fire. Corral Canyon OHV area consists of 1,800 acres, 26 miles of designated OHV trails and 28 miles of maintenance level 2 roads which are also open for OHV and street legal vehicles. Corral Canyon offers a variety of riding experiences for motorcycles, ATVs and 4x4s. The area is supported by 2 staging areas and 2 campgrounds. The Cleveland National Forest has restricted OHV use to designated areas since 1986. Corral Canyon OHV area makes up 90% of the forest's designated routes/areas and is the most popular off-road park in San Diego County. Corral Canyon is the largest legal OHV riding area in San Diego County, serving over 3 million people and 65,000 registered OHV vehicles. A person can leave downtown San Diego and begin their OHV riding experience within 30 minutes. The population of San Diego County continues to increase as has the popularity of OHV activities and the numbers of OHV recreation users. This has caused a surge in use at the Corral Canyon OHV area. Forest Service records indicate that use has nearly doubled since 2000 with an estimated 47,000 visitor days in 2005.

As an increasing number of historic riding areas are lost to development or closed to protect sensitive natural resources, Corral Canyon OHV area has become an essential recreation asset for San Diego County residents. With such restricted OHV opportunities within San Diego County, the demand on this facility and the importance it has on the recreational activity is significant. The Corral Canyon OHV area is rich in cultural resources as well as provides water to the City of San Diego municipal water supply.

The area of the Horse Fire involved two wilderness areas on the Cleveland National Forest, Pine Creek Wilderness and Hauser Wilderness. These two wilderness areas are the closest to San Diego and are part of a larger system of wilderness areas in southern California that provide important watersheds for ecosystem, recreation, and community needs. Both wilderness areas support a wide diversity of habitats, including habitat for the endangered Arroyo Toad, Least Bell's Vireo, and the California Gnatcatcher. Both wilderness areas are rich in cultural resources as well as provide water to the City of San Diego municipal water supply.

The emergency treatments identified to treat the Recreation/OHV/Wilderness include installation of pipe barriers, pipe swing gates, stock fence, horse gates, road gates, road signage and OHV patrols. These treatments are estimated to cost $1,024,423.

B. Emergency Treatment Objectives:

***Hydrology/Soils***

Prevent loss of soil and degradation of resources due to sedimentation.

***Vegetation Botany***
No treatments recommended.

***Noxious Weeds***
Noxious weed detection survey is needed to assess the possible introduction and/or expansions of existing noxious weed populations.

***Wildlife***

Treatments that would benefit wildlife in Pine Valley Creek are addressed in Lands - noxious weeds treatment.

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***Heritage/ Cultural Resources***

Mitigation of accelerated soil erosion and overland flow is required to stabilize these sites. The significance of these cultural sites have a unique requirement that limit any disturbance at the

surface and downward into the soil. This unique requirement limits the ability to utilize traditional mitigation treatments such as installation of straw/rice wattles, hand trenching, or log erosion barriers. Application of some biodegradeable organic product serving as a protective ground cover and overland flow inhibitor is recommended to stabilize these sites.

***Transportation***

The treatments proposed will help protect road investments and adjacent resource values and/or preserve road function, and assure future access. Proposed treatments will provide for control of water and run off stabilize soil, sediment and debris movement and reduce the threat to life, property, and other downstream values.

***Recreation/OHV/ Wilderness***

Half of the OHV roads /trails and 79% of Corral Canyon OHV area (an area specially designated and managed for OHV recreational experience) have been severely impacted by the Horse Fire. Previous to the fire, the dense chaparral served as a formidable physical barrier restricting the users to the designated trails. Now that the dense chaparral is gone in 79% of the area, the deterrent for OHV's to stay on the designated routes is removed. This increases the risk of: accelerated soil erosion (the majority of the fire area was severely burned with highly erosive soils); reduction in water quality (much of the watersheds serve as a source for the City of San Diego's municipal water supply); adverse effects on critical cultural resources; and intrusion into the two adjacent wilderness areas. At least 6-8 years will be needed to provide adequate natural vegetation recovery to re-establish physical and visual barriers. The resources identified will be at risk until natural vegetative recovery occurs.

About one-third of the Pine Creek Wilderness, and more than two-thirds of Hauser Wilderness, were consumed in the fire. Of the two, Pine Creek Wilderness receives the heaviest recreation use. There are three important recreation trails in Pine Creek Wilderness; Secret Canyon, Espinosa and Loop trails. The southern portion of the Secret Canyon trail is within the burn area and extremely vulnerable to erosion from the steep, denuded slopes of Secret Canyon. As the Espinosa trail exits the wilderness at its eastern boundary, it becomes a popular OHV trail that links with a larger system of OHV trails in the Corral Canyon OHV Area. Seven miles of the combined use roads that are part of the OHV experience form a perimeter of both wilderness areas. Over 4 miles of Forest Road 17S06, Skye Valley Road form the northern boundary of Hauser Wilderness and 3 miles of Forest Road 17S05 Corte Madera Road form the eastern boundary of Pine Creek Wilderness. Due to the adjoining boundaries of the wilderness areas to that of the OHV designated area, there is a significant risk to intrusion of OHV vehicles into the wilderness areas.

The lack of vegetative cover from the burn leaves the wilderness portion of the Espinosa trail vulnerable to intrusion from OHV's using the motorized portion of the trail. Intrusion of off road vehicles into the two adjacent wilderness areas and into areas rich in cultural resources pose a significant risk to both the wilderness and cultural resource values within this area. Unauthorized, illegal vehicle intrusions pose the greatest threat to wilderness and natural and cultural resource values in Pine Creek and Hauser Wilderness, but particularly Hauser.

OHV and wilderness trail investments need to be protected by adding additional drainage and erosion control features along the Secret Canyon, Espinosa, and Loop trails to accommodate the accelerated runoff of water due to the loss of protective vegetation consumed by the fire. Protection of critical cultural resources, wilderness resource values, TES habitats, soil and watershed resources including municipal supply watersheds, can be accomplished by erecting physical barriers and gates along strategic areas to prevent and or control motorized vehicle intrusions into the wilderness and within the designated Corral Canyon OHV area. In order to minimize threat to life and safety of wilderness users, develop and erect warning signs at designated entry points into the wilderness areas.

*Protect Wilderness Users*

Develop and install signs warning wilderness users of safety hazards at Horsethief and Pine Creek trailheads.

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

Land **80** % Channel **NA** % Roads/Trails **80** % Protection/Safety **90** %

D. Probability of Treatment Success

| | Years after Treatment | | |
|---|---|---|---|
| | 1 | 3 | 5 |
| Land | 60 | 70 | 85 |
| | | | |
| Channel | NA | | |
| | | | |
| Roads/Trails | 60 | 70 | 80 |
| | | | |
| Protection/Safety | 60 | 75 | 85 |
| | | | |

E. Cost of No-Action (Including Loss): **$2,600,000**

F. Cost of Selected Alternative (Including Loss): **$3,338,000**

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

**The following Prevention Requirements will be followed when implementing emergency treatments.**

1. **Prevention requirements**. During BAER treatment activities authorized individuals will need to monitor to insure that:
   a. All equipment and vehicles, (Contract and USFS) brought into the site are cleaned before beginning earth-disturbing activities associated with BAER emergency response activities. Materials such as hay, straw, seed, or mulch that are used for rehabilitation and reclamation activities shall be free of noxious weed seed, and shall comply with the 1995 weed-free forage special order against use of non-certified hay, straw, or mulch. Materials that are not covered under a weed seed free certification, and that have the potential to contain noxious weed seed, shall be inspected and determined to be free of weed seed before purchase and use.
   b. Staging of equipment and/or rehabilitation materials will not be allowed in known infestation sites.

   Land Treatments:

   ***Heritage/ Cultural Resources***

   Wood strand erosional control material was determined to be the most appropriate for the sites. The advantages of wood strand over agricultural straw for these sites are: more effective in controlling soil erosion and sedimentation; less vulnerable to wind redistribution as these sites are in the areas frequented by the Santa Ana Winds; and they are inherently weed free which eliminates the concern for introduction of non-native species on these sites. Plus it simply will not break down as quickly so it will provide longer lasting protection until the natural vegetative growth (estimated to take 6-8 years) restores sufficient soil cover and erosion protection to maintain heritage site integrity.

   ***Noxious Weeds***

   The unknowing introduction of invasive noxious weeds into areas disturbed by fire suppression and 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. Consequently, surveys of roads, dozer lines, drop points and existing infestations (especially in the riparian communities of the Pine Creek drainage), is necessary to detect the spread and introduction of noxious weeds in the first year after fire. Noxious weed detection surveys will prevent the weeds from becoming serious threats to the recovery of native plants.

   ***Recreation/OHV/Wilderness***

Determining thee selection of emergency treatment measures utilized the order of treatment preferences identified in FSM 2523.2 – Emergency Stabilization Treatments as described below.

- Natural recovery-The length of time it would take for vegetation recovery to re-establish physical and visual barriers is approximately 8 to 10 years. The emergency treatment needs to be accomplished in a much sooner timeframe than that to insure that illegal vehicle intrutions into the wilderness areas, within the designated Corral Canyon OHV area and the adverse effects to critical cultural and other sensitive areas do not occur.
- Administrative closures-If the National Forest does not provide for an adequate experience for the OHV users, they will create other places to ride. A closure would facilitate the possibility of illegal OHV trail use and creation of illegal trails. Because of the high profile of the trails and roads involved, closure to public use is not desirable. The Descansco Ranger District has a history of non-compliance with administrative closures following wildfires and has determined that they are ineffective.
- The treatments that have been recommended, especially the stock fencing, have been proven to be effective on both the Cedar Fire and the Sierra Fire that are located on the Descanso Ranger District.

Safety for wilderness users:

- Develop and install signs warning wilderness users of safety hazards at Horsethief and Pine Creek trailheads.

Stabilize OHV and wilderness trails resulting from increased water runoff:

- Using hand crews, and tools and methods compatible with wilderness policies, remove hazard trees and install drainage and erosion control features along the following sections of trails within Pine Creek Wilderness: 4 miles of the Espinosa trail from the Horsethief trailhead east to its junction with Corte Madera Road;

- 1 mile of the Secret Canyon trail from the intersection of the Secret Canyon and Espinosa trails north to the fire perimeter;

- 1 mile of the Loop trail from the Horsethief trailhead east and north to its junction with the Espinosa trail.

Prevent Motor Vehicle Intrusions

- Remove hazard trees and install pipe barriers and stock fencing to define the road corridor along the following sections of Skye Valley road and in the following areas to prevent motorized vehicle intrusions into the wilderness:

- Install approximately 3942 feet of pipe barrier and two horse gates, 294 feet of pipe barrier and one horse gate at Horsethief trailhead, 210 feet of pipe barrier and one horse gate at junction of Espinosa trail and Corte Madera road, 2640 feet of pipe barrier along south edge of Skye Valley road at Stokes Valley, and 798 feet of pipe barrier along south edge of Skye Valley road at Bronco Flats.

- Install pipe barrier swing gates at the junction of Skye Valley road and Stokes Valley and Bronco Flats, and road gates at the junction of Skye Valley road and the south entrance to the Skye Valley Ranch, and at the junction of Corte Madera road and the north entrance to Skye Valley Ranch.

- Install approximately 34,800 feet of four-foot stock fencing along the southern edge of Skye Valley road, south boundary of Stokes Valley inholding, and eastern edge of Corte Madera road.

Channel Treatments:

No channel treatment recommended.

Roads and Trail Treatments:

***Transportation***

The following treatments were identified as BAER treatments for the Horse Fire burned area:

A. Restore drainage function
B. Install rolling dips
C. Install rolling dips with lead-off ditches
D. Install 18” overside drains
E. Repair and re-install overside drains
F. Install rip rap on existing overside drains
G. Install flared (metal) end sections
H. Install drainage armor

I. Install hardened crossing
J. Install aggregate base
K. Install Geo-Tech fabric
L. Install gates
M. Install warning signs
N. Monitoring and storm patrol

***Recreation/OHV/Wilderness***

- On OHV trails that are at risk from increased runoff from the effects of the fire, use a SWECO tractor, mini excavator and trained operators and using methods compatible with OHV trail maintenance and design, remove hazard trees and install drainage and erosion control features along the 9 miles OHV trails within Corral Canyon OHV Area.

  Keep Motorized Vehicles on Designated Routes

- In order to keep motorized vehicles on designated routes, remove hazard trees and install stock fencing to define the road corridor along the following sections of the Skye Valley road & Corte Madera road that are not included in the Wilderness section, both sides of Corral Canyon road south of Corral Canyon Campground to prevent motorized vehicle from leaving designated OHV routes (see costs sheets itemized list). Remove hazard trees and install stock fencing to define OHV trails within Corral Canyon OHV Area.

Other recommended treatments were examined in order of preference:

- Natural recovery-The length of time it would take for vegetation recovery to re-establish physical and visual barriers is approximately 6-8 years. The emergency treatment needs to be accomplished in a much sooner timeframe than that to insure that illegal vehicle intrusions into the wilderness and other sensitive areas do not occur.
- Administrative closures-If the National Forest does not provide for an adequate experience for the OHV users, they will create other places to ride. A closure would facilitate the possibility of illegal OHV trail use and creation of illegal trails. Because of the high profile of the trails and roads involved, closure to public use is not desirable.
- The treatments that have been recommended, especially the stock fencing, have been proven to be effective on both the Cedar Fire and the Sierra Fire.

Protection/Safety Treatments:

*Protect Wilderness Users*

Develop and install signs warning wilderness users of safety hazards at Horsethief and Pine Creek trailheads.

**I. Monitoring Narrative:**

***Hydrology/Soils***

Monitoring recommened under specialist area risk relates to.

***Vegetation Botany***

Forest Activity Tracking Database (FACTS). Data tracking for entry into FACTS database.

*Noxious Weeds*

**Noxious Weed Detection Survey and monitoring of areas disturbed by suppression actions and the burned area**.

Survey will be at an intensity and frequency to identify the spread or occurrence of weed infestations following the fire event and recovery. This survey will be funded in part by BAER . Noxious Weed Detection Survey will be conducted during the 2007 growing season under BAER authorization. Infestations of noxious weeds will be identified and an appropriate treatment will be implemented to eradicate or control the infestation. If noxious weeds are detected and some treatment done within one year of the fire containment date, then a BAER interim report will be completed to obtain monitoring funds for the 2008 growing season to determine if further treatments are necessary. Any detection or treatment beyond the 3 year period cover under BAER will be conducted under normal program authorities.

Noxious weed detection surveys will include surveying roads, dozer lines and known locations, (specifically in the riparian communities of the Pine Creek drainage), for evidence of noxious weeds and the removal of any small infestations. Inspect and survey for newly established weed occurrences. Survey will include documentation and hand pulling small new weed occurrences at the time of inspection. New weeds occurrences will be pulled to root depth, placed in sealed plastics bags, and properly disposed.

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 will be once during May/June 2007. Based upon the first years survey, additional surveying/treatments may be requested for up to three years. BAER funding is only requested for the first year after fire.

These sites will be monitored by crews on foot or by vehicle as appropriate.

***Wildlife***

Monitoring that would benefit wildlife in Pine Valley Creek are addressed in noxious weeds monitoring

***Heritage/ Cultural Resources***

The intent of treatment effectiveness monitoring is to determine if the wood straw mulch is continuing to provide adequate soil protection (following significant precipitation events) and whether and further re-treatment is necessary to protect the heritage sites. The five sites are proposed to be monitored using a random hoop placement to estimate ground cover and condition of wood straw mulch. Monitoring should be conducted following significant rainfall events and wind events to determine the effectiveness of the wood straw as well as the potential need for additional treatment measures following these weather related events. One photo point would be established and recorded following each significant weather event to document and provide a visual record of the wood straw.

***Transportation- Storm Patrol***

Monitor conditions and initiate corrective action, when safe to do so, during and after storm events, for risk such as flash flooding, rock fall, debris flow clean up, plugged drainage facilities, and closing gates, when warranted. Clean blockages to restore drainage function for next storm. Remove minor slump and slide material from road ways to assure access for continued operation of drainage facilities. Document and determine follow up drainage restoration needs

***Recreation/ OHV/Wilderness***

**1. OHV Trail Stabilization Monitoring:**
Conduct motorized patrols of OHV routes after storm events to monitor effectiveness of erosion control features and to determine the need for emergency closure of trails for public safety. If effectiveness monitoring does not show desired results, additional treatments may need to be developed and implemented. An interim BAER report can be submitted by the Forest to request additional funding.

**2. OHV Road Fence/Gate Monitoring:**
Conduct daily vehicle patrols on weekends along all OHV routes impacted by the Horse Fire to monitor the effectiveness of fencing to keep motorized use on designated routes and repair any damage to the fence. If effectiveness monitoring does not show desired results, additional treatments may need to be developed and implemented. An interim BAER report can be submitted by the Forest to request additional funding.

**3. Wilderness Trail Stabilization Monitoring:**

Conduct foot patrols of wilderness trails after storm events to monitor effectiveness of erosion control features and to determine the need for emergency closure of trails for public safety. If effectiveness monitoring does not show desired results, additional treatments may need to be developed and implemented. An interim BAER report can be submitted by the Forest to request additional funding.

**4. Wilderness Vicinity Road/Gate Monitoring:**

Conduct daily vehicle patrols on weekends along Skye Valley road and Corte Madera road to monitor the effectiveness of barriers to prevent motorized intrusions into the wilderness and protect wilderness and other resource values. If effectiveness monitoring does not show desired results, additional treatments may need to be developed and implemented. An interim BAER report can be submitted by the Forest to request additional funding.

**5. Trail Hazard Warning Sign Monitoring:**

Regularly visit Horsethief and Pine Creek trailheads to ensure that signs warning wilderness users of safety hazards are posted. Replace signs when necessary.

## Updates included in Interim #1:

In order to protect known archaeological sites within and adjacent to Corral Canyon within the burn area, we have grouped the sites which require protection into 12 polygons for fencing; the grouping was determined to be a more effective way to not call attention to any one site (which would be a target for destruction), particularly since there has been frequent unauthorized traffic within the burned area.

Based on personal observation of District staff, unauthorized vehicle entry to the Wilderness Areas and Corral Canyon OHV has been occurring, and the need for 5 gates has been identified, in addition to the gates authorized in the Initial 2500-8.

Because of the number of unauthorized vehicles within and near the OHV Area, the Forest has determined that additional patrol staffing is needed, particularly on weekends and holiday periods, and will involve overtime pay for the periods of heaviest use. The additional funds addressed at this time are for the entire Fiscal Year 2007.

Specialist time to prepare documentation for required clearances (archaeologic and biologic) and provide on-site monitoring during treatment implementation has been added, which was not previously addressed. Several dozen heritage properties are within the burned area, and occupied habitat of federally-listed riparian biologic species are in the vicinity of several treatment areas.

Part VI – Emergency Stabilization Treatments and Source of Funds does not include treatments and other costs identified in the Initial 2500-8 and which were not funded; these include 30% administrative costs added by the Assessment Team, and stock fencing along 22 miles of motorized routes within Corral Canyon OHV Area. The cost of previously-approved treatments are shown in the amount already approved, while additions to previously-approved treatments are identified as “additional” (e.g., gates).

**New items being requested are shown in red in Part VI.**

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

| | | | NFS Lands | | | | Other Lands | | | All |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Unit | # of | | Other | # of | Fed | # of | Non Fed | Total |
| Line Items | Units | Cost | Units | BAER $ | $ | units | $ | Units | $ | $ |
| | | | | | | | | | | |
| **A. Land Treatments** | | | | | | | | | | |
| Wood straw application | acres | 2500 | 30 | $75,000 | $0 | | $0 | | $0 | $75,000 |
| Noxious weed detection | days | 200 | 21 | $4,200 | $0 | | $0 | | $0 | $4,200 |
| *Subtotal Land Treatments* | | | | $79,200 | $0 | | $0 | | $0 | $79,200 |
| **B. Channel Treatments** | | | | | | | | | | |
| *Subtotal Channel Treat.* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **C. Road and Trails** | | | | | | | | | | |
| Restore drainage function, r | job | 1 | 49505 | $49,505 | $0 | | $0 | | $0 | $49,505 |
| Storm patrol | ea | 1 | 6000 | $6,000 | $0 | | $0 | | $0 | $6,000 |
| Arch site protection at rds | ea | 1 | 91875 | $91,875 | $0 | | | | | $91,875 |
| Pipe barriers | ft | 29 | 3942 | $114,318 | $0 | | | | | $114,318 |
| Gates, incl install, pipe barrier sw | job | 18800 | 1 | $18,800 | $0 | | | | | $18,800 |
| **Gates - additional** | ea | 6760 | 5 | $33,800 | $0 | | | | | $33,800 |
| **Stock fence to protect arch sites** | ft | 5 | 54100 | $270,500 | $0 | | | | | $270,500 |
| Trail tread stabilization | mi | 7500 | 14.7 | $110,250 | $0 | | | | | $110,250 |
| Hazard tree removal | mi | 1000 | 4 | $4,000 | $0 | | $0 | | $0 | $4,000 |
| *Subtotal Road & Trails* | | | | $699,048 | $0 | | $0 | | $0 | $699,048 |
| **D. Protection/Safety** | | | | | | | | | | |
| Signs | job | 5000 | 1 | $5,000 | $0 | | $0 | | $0 | $5,000 |
| OHV patrols | days | 250 | 228 | $57,000 | $0 | | $0 | | $0 | $57,000 |
| **OHV patrols - add'l** | days | 250 | 250 | $62,500 | $0 | | $0 | | $0 | $62,500 |
| **Wilderness trail patrol** | days | 250 | 52 | $13,000 | $0 | | | | | $13,000 |
| *Subtotal Structures* | | | | $137,500 | $0 | | $0 | | $0 | $137,500 |
| **E. BAER Evaluation** | | | | | | | | | | |
| Assessment Team | total | | | $102,600 | $0 | | | | | $102,600 |
| Implementation team leader incl travel | total | | | $20,000 | $0 | | $0 | | $0 | $20,000 |
| **Implementation manager** | days | 250 | 84 | $21,000 | $0 | | | | | $21,000 |
| **Specialist clearances** | days | 300 | 40 | $12,000 | $0 | | $0 | | $0 | $12,000 |
| *Subtotal Evaluation* | | | | $155,600 | $0 | | $0 | | $0 | $155,600 |
| **F. Monitoring** | | | | | | | | | | |
| Heritage/Cultural | days | 380 | 10 | $3,800 | $0 | | $0 | | $0 | $3,800 |
| *Subtotal Monitoring* | | | | $3,800 | $0 | | $0 | | $0 | $3,800 |
| | | | | | | | | | | |
| **G. Totals** | | | | $1,075,148 | $0 | | **$0** | | **$0** | **$1,075,148** |
| Previously approved - RO | | | | $484,243 | | | | | | |
| Previously approved - WO | | | | $178,105 | | | | | | |
| **Total for this request Interim 1** | | | | **$412,800** | | | | | | |

## PART VII - APPROVALS

1. /s/ Tina J. Terrell — 10/31/06
   Forest Supervisor (signature) — Date

2. _____ _____
   Regional Forester (signature) — Date