

Date of Report: 7/19/2002

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☐ 1. Funding request for estimated EFFE-FW22 funds
☐ 2. Accomplishment Report
☒ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)
- ☐ 2. Interim Report
☐ Updating the initial funding request based on more accurate site data and design analysis
☐ Status of accomplishments to-date
- ☐ 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Garnet B. Fire Number: CNF-1740

C. State: CA D. County: San Diego

E. Region: 05 F. Forest: Cleveland

G. District: Descanso

H. Date Fire Started: 7/13/2002 I. Date Fire Controlled: 7/17/02

J. Suppression Cost: \$1,250,000

K. Fire Suppression Damages Repaired with Suppression Funds:

1. Fireline waterbarred (miles) 2 (dozer)
2. Fireline seeded (miles) 0
3. Other (identify) n/a

L. Watershed Number: 10020017 - Vallecito Creek

M. NFS Acres Burned: 466 Total Acres Burned: 1166
Ownership type: (700)BLM

N. Vegetation Types: Montane Mixed Chaparral

O. Dominant Soils: MrG, SrD - Metamorphic rock land, and Sloping gullied land

P. Geologic Types: gneiss, schist, granodiorite and associated alluvial fan

Q. Miles of Stream Channels by Order or Class: n/a - no perennial streams
Order 1: Order 2: Order 3: Order 4:

R. Transportation System:

Trails: 0.3 (miles) Roads: 0 (miles)

PART III - WATERSHED CONDITION

A. Fire Severity (Acres): 600 (low) 566 (moderate) (high)

B. Water Repellent Soil (Acres): 200

C. Soil Erosion Hazard Rating (Acres):
600 (low) 566 (moderate) (high)

D. Erosion Potential: 98 tons/acre

E. Sediment Potential: 50,000 cu. yds/sq. mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 4 years.

B. Design Chance of Success: 90 percent.

C. Equivalent Design Recurrence Interval: 20 years.

D. Design Storm Duration: 6 hours.

E. Design Storm Magnitude: 0.6 inches.

F. Design Flow: 110 cfs.

G. Estimated Reduction in Infiltration: 75 percent.

H. Adjusted Design Flow: 250 cfs.

PART V - SUMMARY OF ANALYSIS

A. Describe Emergency:

The fire burned 1166 acres of which 466 acres were on the Cleveland National Forest and 700 acres on Bureau of Land Management (BLM) property. The fire burned through Storm Canyon, which empties into Vallecito Creek near County Road S-2 . The burned area is mostly within the BLM Sawtooth Mountain Wilderness.

The Garnet fire severity was low to moderate with a few unburned islands (10%). The area is steep with erosive soils and large boulders. It is expected that on the average the top inch or two of surface soil material may erode from the moderate severity burn area, the majority of which may affect the wilderness located below the burn area. Fuel accumulations were high and left a 1 to 2 inch ash layer above the soil surface. Some areas of the soil surface in the moderate intensity areas is hydrophobic, causing concern for the upcoming rainy season which usually starts in mid-October. If significant rainfall occurs, substantial movement in the form of debris flows of ash, soil and rock is likely to occur. However, the total number of acres with hydrophobic soils is small which would minimize the effect.

There were no resources, life, or property at risk and no emergencies identified on National Forest System lands. Although two small segments of the Pacific Crest Trail were within the burned area, they are both in flat areas and are not at risk as a result of the fire. Relatively few acres of National Forest lands were burned and no needs for burned area rehabilitation were identified.

Most of the acres burned were within a Bureau of Land Management Wilderness. Due to the minimal impact of suppression activities, the desire to preserve wilderness values and archaeological sites, and the absence of risks to downstream property or homes, BLM staff recommended that no suppression rehabilitation nor burned area rehabilitation be completed on these lands, including National Forest system lands upslope.

The BAER team considered a seeding alternative. The team concluded that the bulk of the burn area was too steep for seeding to be successful. Vegetation specialists concluded that studies and research show that most sites recover successfully under natural conditions with native vegetation, and that seeding may set back native vegetation recovery.

B. Emergency Treatment Objectives:

No treatment. Due to the low risks to life and property, the wilderness area located within and downstream of the burned area, and the limited effectiveness of available treatments, the BAER team recommends that no treatment be applied.

C. Probability of Completing Treatment Prior to First Major Damage Producing Storm: N/A - no treatment recommended.

D. Probability of Treatment Success: Prescribed treatment is natural vegetation recovery. Based on experience with past fires on the Cleveland, predicted success is as follows:

Years after Treatment			
	1	3	5
Land	95%	95%	95%
Channel	N/a	N/a	N/a
Roads	N/a	N/a	N/a
Other	N/a	N/a	N/a

E. Cost of No-Action (Including Loss): **\$ 50,000 (soil loss)**

F. Cost of Selected Alternative (Including Loss): **\$ 50,000 (soil loss)**

G. Skills Represented on Burned-Area Survey Team:

<input type="checkbox"/> Hydrology	<input type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input type="checkbox"/> Range
<input type="checkbox"/> Timber	<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Botany
<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/> Wilderness Specialist		

** note: Soils and hydrology information was adapted from the Laguna 100 Fire BAER report. The Laguna 100 fire burned 5000 acres in an area immediately south of Garnet Fire, in the same terrain and soil types.

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H. Treatment Narrative:

No emergency treatments are recommended.

Suppression Rehabilitation

To protect the native vegetation and wildlife resources on National Forest System lands, bulldozer lines and staging areas will be ripped and revegetated. Revegetation will be accomplished by pulling back brush that was cleared (on bulldozer lines). Natural barriers such as boulders and constructed barriers such as wood posts will be installed to prevent foot traffic or vehicle traffic on rehabilitated lines and staging areas.

I. Monitoring Narrative: No monitoring is recommended at this time.

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

[illegible]

PART VII - APPROVALS

1. /s/ **Bernice A. Bigelow** for 7/19/02
Forest Supervisor (signature) Date
2. _____
Regional Forester (signature) Date

BAER TEAM/ SUPPRESSION REHAB TEAM PARTICIPANTS

Clayton Howe, Fire Management Specialist, Bureau of Land Management, Jamul

Joel Schultz, Wildlife Biologist, Bureau of Land Management, Palm Springs

Margaret Hannigan, Archaeologist, BLM, El Centro

Kirsten Winter, Biologist/BAER Team leader, Cleveland National Forest

ATTACHMENTS

1. Biologist Report. Cleveland National Forest and Bureau of Land Management.
2. Vegetation Specialist Report. Cleveland National Forest.
3. Cultural Resources Assessment, Garnet Fire. Bureau of Land Management.

BIOLOGIST REPORT
GARNET FIRE
CLEVELAND NATIONAL FOREST

Prepared by Kirsten Winter - Forest Biologist and Joel Schultz – BLM Biologist

THREATENED, ENDANGERED, PROPOSED, AND SENSITIVE SPECIES

There are populations of one endangered species, the Peninsular Bighorn Sheep (*Ovis canadensis*) (PBHS), within the burned area on Bureau of Land Management (BLM) lands. Impacts to individual PBHS are unknown. If sheep were within burning habitat, there is the potential of direct mortality. Escaping sheep could be stressed to the point of death due to exhaustion and/or dehydration. Indirect impacts could occur from lost forage and less escape cover to avoid potential predators. Potential beneficial effects from the fire include increased nutritional forage for PBHS from pioneering species growing in after the burn.

There are no populations of threatened or endangered plant or animal species and there is no potential habitat for any threatened or endangered species within the burned area on National Forest System lands.

There is one historic sighting of the San Diego Mountain Kingsnake (*Lampropeltis zonata pulchra*), a Regional Forester's Sensitive list species, within the area affected by the fire suppression activities. This was at Oasis Springs. The only activity in this area was construction of hand line. This activity was expected to have no effect on Mountain Kingsnake.

There are no records for Regional Forester's Sensitive plant species within or immediately adjacent to the Garnet Fire.

VEGETATION SPECIALIST REPORT
GARNET FIRE
CLEVELAND NATIONAL FOREST

Prepared by Kirsten Winter - Forest Biologist

EXPECTED VEGETATION RECOVERY

Based on the following information, the probability that the vegetation will recovery rapidly, without any treatment, is high. Natural revegetation is expected to reduce erosion and overland waterflow in high hazard areas. The following information is derived from the Fire Effects Information System except where otherwise cited.

Shrub Recovery

All chaparral species have the ability to regenerate rapidly after fire through seed germination or resprouting (Keeley 1977). Fire usually kills seeds on the soil surface. However, buried seeds remain insulated from extremely high temperatures, provided that the soil is relatively dry (summer and fall conditions). Some seeds, especially those of ceanothus and fire-following herbs, only germinate after fire. Chaparral species that are obligate seeders after fire are resilient to fire-free intervals of 100 years or more (Keeley, 1976). Some of these species germinate in response to fire-related opening of the seed coat, while others respond to chemicals in the ash.

Moreno and Oechel (1991) investigated the effect of fire intensity on the germination of shrubs and herbs in chaparral. They piled brush onto established plots prior to burning to achieve different fire intensities. Increasing fire intensities promoted earlier germination of Ceanothus greggii, but resulted in decreased germination of chamise (Adenostoma fasciculatum). Amongst herbs, fire-following annuals such as Phacelia brachyloba were resistant to increasing fire intensity. Deerweed (Lotus strigosus) was stimulated by all levels of increased fire intensity.

In the Garnet Fire, the chaparral that burned was dominated by Manzanita (Arctostaphylos glandulosa), Mountain Mahogany (Cercocarpus betuloides) and Scrub Oak (Quercus berberidifolia). All of these species sprout vigorously after fire and also recruit vigorously from seed. Evidence of this was present at the northern perimeter of the fire. In a fuelbreak adjacent to the Garnet Fire that was cleared in 1995, resprouting manzanita bushes are already 2 feet tall.

Herbaceous Vegetation Recovery

In the first spring after a fire there is abundant growth of deciduous semi-woody and herbaceous plants that arises from the seed bank or from underground rhizomes or bulbs. Keeley et al. (1981) studied first year post-fire herbaceous cover within the perimeter of the Garnet and Boulder Fires in San Diego County. These fires occurred during late September and early October in 1970. Average herbaceous cover measured between 30 and 80 percent. Common native species included annual snapdragon (Antirrhinum coulterianum), pincushion flower

(Chaenactis artemisiaefolia, popcorn flower (Cryptantha intermedia), and annual lotus (Lotus salsuginosus).

Personal observations of post-fire recovery after the Ortega Fire, which burned 10,000 acres of the Cleveland National Forest in 1993, and of recovery from the Vail Fire which burned 10,000 acres on the Palomar Ranger District in 1989, indicate that recovery of herbaceous vegetation after fire is rapid and abundant. Cover values of 70% or greater were observed during the spring following the fire, even in areas where the burn intensity was high (see photo files, Cleveland National Forest).

Herbaceous species that can be expected to be abundant after fire include Morning Glory (Calystegia macrostegia), Popcorn Flower (Cryptantha intermedia), Whispering Bells (Emmenanthe penduliflora), Phacelia (several species), and Deerweed (Lotus scoparius).

EFFECTS OF SEEDING

Due to the steep and rocky nature of the slopes in the burned area, seeding of the slopes is unlikely to be an effective treatment for maintaining slope stability. In the event that a seeding treatment is selected, adverse effects on the recovery of native vegetation are to be expected.

Seeding with Non-native Annual Grasses

Chaparral is a fire-adapted plant community that typically burns in high-intensity crown fires. In studies of the effects of seeding with annual ryegrass (Lolium multiflorum), a non-native grass, unseeded and seeded areas have had similar rates of vegetation recovery and erosion. Conard (1993) studied three Southern California fires over 2 years. Only one site had significantly higher cover in seeded vs. unseeded plots, and her analysis showed "no evidence that the seeding of ryegrass significantly reduced the amount of surface erosion in the post-fire environment at any of the three sites." A study conducted in chaparral in San Diego County obtained similar results (Keeley 1981).

Soil loss is accelerated after fire and the risk of flooding is increased. Wells (1985) studied fires in the San Gabriel Mountains, and found that dry ravel and formation of rill networks account for most of the increased erosion. In areas where hydrophobic soils were present, large debris flows occurred. As little as 15 mm of rainfall could initiate a flow. According to Rice (1974), almost 70 per cent of the sediment flow from burned watersheds occurs in the first year following fire. Since much of the erosion may occur soon after the fire, and before there has been enough rain to allow seeds to germinate, seeding with ryegrass has little effect on postfire erosion (Wakimoto, 1979; Krammes and Hill, 1963).

Response of Native Vegetation

Many studies have reported the inhibition of chaparral shrubs, conifers, and native herbaceous species by exotic grasses used in fire rehabilitation in Southern California. Nadkarni and Odion

(1985) compared seeded areas with unseeded areas. Unseeded plots had higher native species diversity and biomass. Seeding of ryegrass apparently inhibited growth of fire-following herbs (Helianthemum scoparium, Turricula parryi) and inhibited shrub seedlings (Ceanothus crassifolius). Conard (1993) studied three fires and concluded that in all cases, species diversity was higher on unseeded plots. Seeding appeared to facilitate introduction of other non-native grasses. The Marble Cone Fire on the Monterey District of the LPNF was studied for three years by Griffin (1982). Ryegrass seeding was associated with high mortality of ceanothus shrub seedlings and decreased regeneration of pines. Other researchers have confirmed that ryegrass seeding inhibits the regeneration of native shrubs and herbs (Taskey et al. 1988, Keeley et al. 1981).

Zedler et al. (1983) studied a fire in San Diego County that was seeded with annual ryegrass. Where ryegrass was successfully established, it provided a fuel layer that supported a reburn of the area just one year later. The native shrubs had reseeded and sprouted after the first burn, but nearly all were killed by the second fire. This resulted in a type conversion of the area from native chaparral to non-native grassland.

REFERENCES

- Conard, S. 1993. The effects of fire and post-fire rehabilitation measures on surface erosion and vegetation development in California chaparral. Work Plan No. 8, 1993-94 Fiscal Year. Agreement 8CA53048(PSW-86-CL-031). Los Padres National Forest Files.
- Griffin, J.R. 1982. Pine seedlings, native ground cover, and Lolium multiflorum on the Marble Cone burn, Santa Lucia Range, California. Madrono 29: 177-188.
- Keeley, S.C., J.E. Keeley, S.M. Hutchinson, A.W. Johnson. 1981. Postfire succession of herbaceous flora in southern California chaparral. Ecology 62(6):1608-1621.
- Keeley, J.E. 1977. Seed production, seed populations in soil, and seedling production after fire for two congeneric pairs of sprouting and non-sprouting chaparral shrubs. Ecology 58:820-829.
- Keeley, J.E. 1976. Resilience of mediterranean shrub communities to fires. in Resilience in mediterranean-type ecosystems. B. Dell, ed. DR W Junk Publishers, Boston. 168 pp.
- Krammes, J.S. and L.W. Hill. 1963. First aid for burned watersheds. Research Note PSW-29, Pacific Southwest Range and Experiment Station, Berkeley, CA.
- Moreno, J.M. and W.C. Oechel. 1991. Fire intensity effects on germination of shrubs and herbs in Southern California chaparral. Ecology 72(6):1993-2004.
- Nadkarni, N.M. and D.C. Odion. 1985. Effects of seeding an exotic grass

Lolium multiflorum on native seedling regeneration following fire in a chaparral community. In: Proceedings of the Chaparral Ecosystems Management Conference. California Water Resources Center, Univ. of Calif, Davis.

Rice, R.M. 1974. The hydrology of chaparral watersheds. In M. Rosenthal (ed.) Symposium on living with the chaparral-Proceedings. Sierra Club, San Francisco, CA.

Taskey, R.D., C.L. Curtis, and J.Stone. 1988. Wildfire, Ryegrass seeding, and watershed rehabilitation. In Proceedings of the symposium on fire and watershed management. USDA Forest Service General Technical Report PSW-109.

Wakimoto, R.E. 1979. Major points against the use of annual ryegrass (*Lolium multiflorum*) for emergency revegetation of burned chaparral watersheds. CHAPS Newsletter, Chaparral Research and Developmenmt Program. Pacific Southwest Forest Fire Lab, Riverside, CA.

Wells, W.G. 1985. The influence fo fire on erosion rates in California chaparral. In: Proceedings of the Chaparral Ecosystems Management Conference. California Water Resources Center, Univ. of Calif, Davis.

Zedler, P.H., C.R. Gautier and G.S. McMaster. 1983. Vegetation change in response to extreme events: the effect of a short interval between fires in California chaparral and coastal scrub. Ecology 64:809-818.

Archaeology Report

Prepared by Margaret Hannigan – BLM Archaeologist – El Centro

The El Centro Archaeological base maps showed no previous surveys or recorded archaeological or cultural resources within the burned area. Based on the topography of the area, it was deemed that only the mouth of Storm Canyon was likely to contain significant cultural resources. A Class III (100) survey was conducted for a bulldozed access road leading to the mouth of Storm Canyon and the hand cleared fire line that crosses Storm Canyon. No cultural or archaeological resources were identified.

Recommendations:

None.