Valley Fire 2020

Picture of the Valley Fire from Barrett Lake

Date of Report: September 24, 2020

BURNED-AREA REPORT

PART I - TYPE OF REQUEST

A. Type of Report

☒ 1. Funding request for estimated emergency stabilization funds

☐ 2. No Treatment Recommendation

B. Type of Action

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

☐ 2. Interim Request #___

☐ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Valley

B. Fire Number: 002833

C. State: California

D. County: San Diego

E. Region: Pacific Southwest (05)

F. Forest: Cleveland

G. District: Descanso

H. Fire Incident Job Code: P5NJ4Q

I. Date Fire Started: 9/5/2020

J. Date Fire Contained: not contained as of 9/24

K. Suppression Cost: $13,020,125 as of 9/20

L. Fire Suppression Damages Repaired with Suppression Funds (estimates):

1. **Fireline repaired (miles):** 0 (deferred due to lack of resources)
2. **Other (identify):** NA

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
180703040802	Taylor Creek	13,431	2,491	19
180703040901	Loveland Reservoir-Sweetwater River	24,127	3,292	14
180703050802	Middle Pine Valley Creek	25.445	1,159	5
180703050803	Lower Pine Valley Creek	12,256	7,651	62
180703050903	Morena Reservoir-Cottonwood Creek	36,271	2,176	6

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	11,290
OTHER FEDERAL	NA
STATE	NA
PRIVATE	5,479
TOTAL	16,769

O. Vegetation Types:
Mixed chaparral, chamise-manzanita chaparral, sage scrub, oak woodlands, non-native grasslands, disturbed chaparral, riparian, and agricultural/pasture lands burned in the Valley Fire.

P. Dominant Soils:
Six soil types make up about 90% of the fire area. The highest topographic points in the fire are mostly 'Acid igneous rock land,' a map unit that describes fractured and jointed grantic bedrock outcrops with sandy-loam or sand soils forming between the unweathered bedrock blocks. The rockland is widespread, but difficult to separate out from other more developed soils because outcrops are discontinuous. Steeper slopes, and shallow sandy-loam soils between rock lands are Tollhouse (higher elevation) and Cieneba (lower elevation). Well developed soils exist on the more stable (or depositional) landforms, Fallbrook and Vista soils on acid granitics, and Las Posta on basic igneous or gabro.

Q. Geologic Types:

The Valley Fire area is located in the Santa Anna Block of the lower Peninsular Range region, a subset of the greater Peninsular Ranges Geomorphic Province of California. The Santa Anna Block is approximately bounded to the east by the Elsinore Fault Zone, bounded to the north by the Transverse Ranges, bounded to the south by Baja California, and bounded to the west by the Pacific Ocean (Baird and Miesch, 1984).

This portion of the Peninsular Ranges is underlain by Jurassic and Cretaceous plutonic rocks of the Peninsular Ranges Batholith. Geologically, the area is underlain by two principle rock types: Tonalite and Gabbro (Geology report, Figure 2). Tonalite is a phaneritic, intermediate-felsic intrusive igneous rock and is composed of primarily feldspar with some quartz and other accessory amphiboles and pyroxenes minerals. Gabbro is a phaneritic, mafic intrusive igneous rock composed of calcium rich plagioclase and pyroxene with minor amounts of amphiboles and olivine (Baird and Miesch, 1984). There are no mapped metamorphic rocks, sedimentary rocks, or Quaternary surficial deposits other than valley alluvial deposits within the area of the Valley Fire (Quaternary Surficial Deposits, California Dept. of Conservation). Quaternary surficial deposits would include geologic mass wasting hazards such as debris flows, rock fall, and landslides.

The faults that bound the structural block post-date the emplacement of the plutonic rock, and movement on the faults have possibly continued to Holocene times. There is a buried fault trace on the southwest boundary of the fire perimeter that strikes to the west-northwest approximately underlying Hauser Canyon and Barrett Lake (Geologic Map of California, California Dept. of Conservation). However, there are no mapped Quaternary faults within the area of the Valley Fire (Earthquake Hazard, USGS Fault and Fold database of United States).

Physiographic setting of the Peninsular Ranges which are part of the North American Coast Range that run the length of the Pacific Coast from Alaska to Baja Mexico. The Valley Fire perimeter lies within the southern Laguna Mountains of the Peninsular Ranges, which is largely contained within the Cleveland National Forest. The highest point within the fire perimeter is Gaskill Peak, elevation of 3,836 feet, which is on the west side of the perimeter overlooking Lawson Valley. The lowest elevation is approximately 1600 feet elevation where Pine Creek enters Barrett Lake. Pine Creek is the only major drainage that cuts through the fire perimeter. The highest relief areas (slopes greater than 60 degrees) in the fire perimeter are the northwest slope of Gaskill Peak, the slopes north of Carveacre Road (FS Road 16S03), all slopes along FS Road 17S06, slopes on both sides of Pine creek drainage, and north facing slopes on north end of fire perimeter near Hidden Glen. Most of the slopes within the fire perimeter are low to moderate steepness (Figure 4). One principal debris

flow watch out slope is the northwest facing slope of Gaskill Peak. This slope has a moderate basin probability or likelihood (40-60%) of a design storm of a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h) rate with a moderate combined hazard. This channel funnels directly an existing alluvial fan and private lands of Lawson Valley.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	58
INTERMITTENT	29
EPHEMERAL	347
OTHER (CONSTRUCTED WATER CONVEYANCE)	24

S. **Transportation System:**
Trails: *National Forest (miles):* 0.3 *Other (miles):* 0
Roads: *National Forest (miles):* 16.5 *Other (miles):* 9.6

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal	State	Private	Total	% within the Fire Perimeter
Unburned	682	0	0	424	1,106	6.6
Low	3,093	0	0	2,324	5,416	32
Moderate	7,305	0	0	2,684	9,988	60
High	210	0	0	47	257	1.5
Total	11,290	0	0	5,479	16,769	100

B. Water-Repellent Soil (acres):
4,050 acres (24% of fire)

Hydrophobic soil conditions were not widespread in the Valley fire. In moderate soil burn severity (SBS), only one sample point had strong water repellency, all others (5 samples) had moderate repellency. Typical moderate burn conditions: 30-40% sampled area repelled water for 20 seconds in a layer 1-2 cm thick. High burn severity was rare in the fire, so only 1 sample was made. Typical high SBS conditions: 20% sampled area repelled water for 15 seconds, in a layer 2 cm thick. Repellency was present in some low SBS, but may be due to natural, pre-fire repellency, and probably will not contribute much to watershed response.

C. Soil Erosion Hazard Rating:
Percent of fire area:
Severe: 43% Moderate: 28% Slight: 28% Not rated (hard rock outcrop): 1%

D. Erosion Potential:
1.6 tons/acre (2 year runoff event) – Pre-fire 0.2 tons/acre
4.2 tons/acre (5 year runoff event) – Pre-fire 0.57 tons/acre

E. Sediment Potential:
Rowe, Countryman, and Storey (RCS; 1949) developed estimates of annual erosion rates based on measurements of sedimentation in reservoirs. RCS sediment yield estimates were averaged from representative pour points. On average, across the burn area, annual sediment delivery is estimated to increase 12-18 times greater than normal with an average of 26,000 cubic yards per square mile. Field evidence of high sediment delivery rates includes sediment filled channels and swales, and previously installed

channel treatments filled with sediment. Sedimentation from sediment-laden flows appears to be the main depositional process.

F. Estimated Vegetative Recovery Period (years): 5 – 30 years

Most of the vegetation impacted in the Valley Fire burned at moderate to low intensity, with a few “islands” of individual decadent shrubs and trees that burned at higher intensity in oak woodlands and some swales. Native vegetation recovery time in chaparral may be between 5-10 years, since most of the fire burned at moderate to low intensity with little damage to the native seedbank and underground resprouting bodies. Native vegetation recovery in areas that burned in the 2006 Horse Fire took approximately 14 years, and it is estimated that native recovery in areas that re-burned in the Valley Fire could take 10-20 years, or longer, depending on efficacy of closures, and invasive weed detection surveys and immediate eradication. In the absence of terrestrial ecosystem protections, there is moderate to high potential for type conversion where the Valley (2020) and Horse (2006) fires overlap.

G. Estimated Hydrologic Response (brief description):

Elevation across the Valley Fire burned area ranges from about 1,600 to 4,040 feet. Average annual precipitation for select pour points is about 20 inches annually and mostly arrives between November and April although summer thundershowers are common in August and early fall.

Damaging Storms: Although not the only types of storms that could occur, two common storm types that could cause significant damage within the burn area are monsoonal thunderstorms and storms related to atmospheric rivers. Short duration, high intensity storms (such as a monsoonal thundershowers) frequently trigger debris flows. The second storm type is a long duration storm, commonly linked to atmospheric rivers. Major flooding events have occurred across Southern California due to atmospheric rivers which contain large amounts of water vapor. One such weather system is known as the “Pineapple Express," which moves subtropical moisture from the latitudes of the Hawaiian Islands to Southern California.

Hydrologic Processes: Functioning of hydrologic processes is connected to vegetation (type, density, litter and organic matter accumulation) and soil types. Fire causes impacts to several hydrologic processes including reduction in interception, transpiration, and infiltration, and increases in soil moisture and the rate of runoff (due to lack of litter and decreased surface roughness). Removal of vegetation and changes to soil such as increases in hydrophobicity, changes in soil structure, and removal of duff and organic matter alters these processes and ultimately lead to increases in runoff, peak flows and erosion. These alterations are typical of soils classified as having incurred moderate to high soil burn severity.

The majority of the Valley Fire burned at moderate and low soil burn severity with very little high soil burn severity. Prior to the Valley Fire, a portion of the affected area last burned in 2006 by the Horse Fire and in the entire Valley burned area was burned in 1970 by the Laguna Fire. There did not appear to be a thick accumulation of duff available to burn in the Valley Fire. In general, the depth of soil heating was relatively shallow with minimal ash. These characteristics along with significant rock content and low gradient slopes may help temper post-fire watershed response (Table 5). Despite those characteristics, bulked discharge within the burn area is still expected to increase approximately 175-250%, which is significant (see modeling results in Hydrology report). Rock content could both prevent erosion by intercepting rainfall and providing surface roughness but could also increase erosion downslope by shedding water quickly. In unburned conditions, vegetation helps stabilize soils around boulders and bedrock outcrops, slow runoff, and aid infiltration. It is possible that those exposed shallow soils could be mobilized in post-fire flows due to lack of vegetation. Areas with rock content (LSBS) that were not expected to contribute to increased erosion and runoff were adjusted in the model. Other areas still anticipated to contribute to increased runoff and erosion were not adjusted.

Channel crossings, depositional fans, and floodplains have an inherent risk of flooding which will be exacerbated by the fire. Increased runoff and sediment delivery (ex. surface erosion, sediment-laden flows) may cause channel migration, flooding in low-lying areas, and filling-in of pools.

Watershed response in the burn area will pose a high risk to life, safety, and infrastructure. The combination of increased flows, sediment loads, and woody debris increase the volume of post-fire flows, which could

negatively impact culverts, constructed channel ways, and other infrastructure designed to pass “normal” flows. It is important to note that downstream areas that experience regular flooding or difficulty controlling drainage during small storms will be very likely to experience flooding and/or failure in post-fire storms. Bulking and increased flows may cause channels to flood, divert, or migrate to areas that do not usually flood.

Table 5. Comparison of pre- and post-fire peak flow related to the 2 and 10 year return interval.

			2 yr. RI Peak Flow				10 yr. RI Peak Flow			
RCS Watershed	Modeled Pour Point	% of Mod & High SBS	Pre-Fire Q (CFS)	Post-Fire Q (CFS)	Post-Fire Bulked Q (CFS)	Percent increase in Q (bulked)	Pre-fire Q (CFS)	Post-Fire Q (CFS)	Post-fire Bulked Q (CFS)	Percent increase in Q (bulked)
Pine Valley Creek	P1. Barrett Camp	84%	58	101	147	252%	296	396	574	194%
Pine Valley Creek	P2. Barrett Reservoir	4%	1,570	1,627	1,669	106%	14,300	14,540	14,910	104%
Sweetwater Reservoir	P3. Hidden Glen	62%	53	77	104	197%	269	323	438	163%
Sweetwater Reservoir	P4. Japatul Road	48%	57	78	100	176%	294	342	441	150%
Pine Valley Creek	P5. Japatul Station	64%	15	25	34	227%	62	82	113	183%
Peterson Valley	P6. Lawson Community	68%	27	43	60	222%	122	154	215	176%
Peterson Valley	P7. Rudnick Road	69%	60	97	135	224%	311	397	552	177%
Skye Valley Watershed	P8. Skye Valley Reservoir	59%	11	17	23	204%	44	55	75	170%
Peterson Valley	P10. Lawson Creek	22%	194	233	263	136%	1,210	1,318	1,490	123%
Pine Valley Creek	P12. Lyons Valley Road	76%	13	23	32	245%	103	139	197	191%

Water Quality: Wildfires primarily affect water quality through increased sedimentation. As a result, the primary water quality constituents or characteristics affected by this fire include color, sediment, suspended material, and turbidity. The loss of riparian shading and the sedimentation of channels may increase stream temperature. Vegetation mortality can result in increases in floatable material such as large woody debris. Post-fire delivery of organic debris to stream channels can potentially decrease dissolved oxygen concentrations in streams, pools, and lakes. Fire-derived ash inputs can increase pH, alkalinity, conductivity, and nutrient flux (e.g. ammonium, nitrate, phosphate, and potassium), although these changes are generally short lived.

Loveland and Barrett reservoirs (municipal water supplies) as well as a few of their tributaries have been included on the 303d list of impaired waters. Both reservoirs have sizable watersheds with the fire burning only a small fraction (4-6%) of the total acreage. Increases in post-fire runoff to the reservoirs will not be significant. Sediment, ash and woody debris delivery could be more impactful to water quality in Barrett Reservoir due to the proximity of the burn, which burned up to the reservoirs edge. Annual sediment delivery to Barrett Reservoir in year one following the fire is estimated to be ~12 times that of normal. Low-lying riparian areas at the reservoir inlets are likely to experience sedimentation. Transported sediment from the fire to the reservoir is likely to settle in the reservoir and not travel further.

The burn perimeter above Loveland Reservoir is about 0.5 miles upstream so threats of sedimentation are lower than for Barrett Reservoir. Ash and sediment delivered to Loveland Reservoir are likely to settle in the reservoir, not travel further downstream, and not significantly impact water quality.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Valley Fire is located on the Cleveland National Forest on the Descanso Ranger District. The Fire was started on Saturday September 5th, 2020. The cause of the fire is unknown/under investigation and started

near the Carveacre community in Lawson Valley. As September 20th, the Valley Fire was being reported as 95% contained and stable at 16,769 acres.

The soil burn severity (SBS) shows 61.5% burned at high and moderate soil burn severity. The rest of the fire was ether low soil burn severity or unburned. It is very important to understand the difference between fire intensity and burn severity, and soil burn severity as defined for watershed condition evaluation in Burned Area Emergency Response analysis. Fire intensity is the heat output of a fire and is typically measured in the field flame height, rate of spread, thermal potential, etc. Fire severity is the effect fire has on resources and assets. Vegetative fire severity is commonly confused with soil burn severity, though vegetative severity is typically measured by changes to above ground vegetative material, canopy consumption, tree mortality, etc. For BAER analyses, mapping is not simply vegetation mortality or above-ground effects of the fire – soil burn severity considers additional surface and below-ground factors that relate to soil hydrologic function, runoff and erosion potential, and vegetative recovery. Areas of high SBS are small percentage of the fire area (1.5%) and limited to riparian areas where there were concentrations of oak trees prior to the fire. A good porition of the burned area is in the moderate SBS (60%). Areas of moderate SBS do present a risk post-fire due to flooding and sedimentation because these areas have potential to affect life and safety, invasive plants, archeological sites, and roads.

Based on historic precipitation patterns, it can be expected that fall storms have a high probablity in occuring within the weeks following the Valley Fire. The risk of flooding and erosion events will increase as a result of the fire, creating hazardous conditions within and downstream of the burn area.

The fire was divided into sub-watersheds with “pourpoints” established at the bottom of the burned watersheds or where critical values are located. Watershed runoff response is referenced to these points.

A. Describe Critical Values/Resources and Threats (narrative):
A BAER team began assessing the area for post-fire emergencies on September 15, 2020. In that time the team has identified the following critical values and post-fire threats. The full list of critical values analyzed and risk determinations is included in Appendix 3. The values at risk described below are included within the report as these values were brought forward with proposed treatments later in the report.

Interim reports may be submitted as additional assessments are completed.

The risk matrix below (Table 6), Exhibit 2 of Directive No.: 2500-2020-1 was used to evaluate the Risk Level for each value identified during Assessment.

Table 6: Critical Value Matrix

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

1. Human Life and Safety (HLS):

Based on the potential for flooding, sediment laden flows, rock falls, etc., the BAER team identified an **intermediate** to **high** risk for human life and safety of the public and USFS employees within the burn area. The burn area in general will experience flows 175% to 250% of normal. Rockfall is prevalent throughout the fire and some boulders may have become unstable due to changes in vegetation. Debris flows are **possible** in some drainages. There are popular areas off-trail and along non-system routes within the burn and in riparian areas were recreationist like to hangout. Post-fire flows and rock fall could pose a threat to recreationist in these areas. Use of USFS trails including Secret trail (inside the burn perimeter) and other trails outside the burn area do not pose an i**ntermediate** risk to human life or safety.

There is an **intermediate** to **high** risk of travel on specific roads (such as 16S05, 17S06, 16S04) from debris flows, rockfall and flooding that could wash out the road, block ingress/egress, and lead to injury or death of an

individual. 17S06 is the primary ingress/egress for a private inholding. 16S05 is heavily used year-round and 16S04 is the only access road to a fire station, which is also used year-round. For the rest of the roads within the burn area, there is still a risk from post-fire watershed response but to a lesser degree.

It is **possible** that several ephemeral drainages will experience a doubling ov averafe flow and flood or deposit rock/sediment at Japatul Station. The crew working out of this site told BAER team members they remove debris and try to direct flow during storm events prior to the fire. With **moderate** consequences, the risk to life or safety is **intermediate.**

2. Property (P):

Private Property and Other Jurisdictions

Federal and private landownership are checkerboarded throughout the fire area. The fire burned in, around, and adjacent to the small in-holding communities of Kearchoffer Flat, Carveacre Ranch, Hidden Glen, Skye Valley. Eichenlaub Ranch is utility area an inholding owned by City of San Diego and Camp Barrett owned by San Diego County. Lawson Valley community is downstream of the burned area.

Loveland Reservoir downstream of the burned area is managed by the Sweetwater authority. Barrett Reservoir is managed by City of San Diego Water Authority (Public Utilities Department).

There are several roads managed by the County that traverse the burned area on National Forest lands including, Lyons Valley Road and Japatul Road.

The BAER Team shared information on watershed response and potential threats to non-Forest assets with affected entities and responsible agencies, such as San Diego County, Natural Resources Conservation Service, National Weather Service and U S Army Corp. of Engineers. Non-Forest assets were addressed by the respective responsible agencies as of September 20, 2020.

Roads and Trails:

The National Forest transportation system consists of approximately 26 miles of National Forest System Roads (NFSR) within the fire perimeter. All these roads are suitable for high-clearance vehicles and are a variety of maintenance levels. Some of the NFS roads within the burned area are maintained by cooperators (Private). Other roads have shared maintenance responsibility between cooperators and the forest. The majority of the NFS Roads in high and moderate burn severity areas throughout the burned watersheds are **likely** to be impacted by runoff, sediment, and debris derived from burned areas.

National Forest System roads were assessed in order to determine the probability and magnitude of road damage or loss as a result of the changed watershed condition. User safety on roads in the burned area is also an equally important consideration. The table below shows the risk assessment for each road based on the probability of damage or loss and the magnitude of consequences.

Of the 16.5 NFSR miles in the burned area, 2.5 miles of road are proposed for treatment and have a risk rating of **high**. These roads include: 16S02, 16S04 and 16S05. Additional roads are proposed for storm response and signage. Roads proposed for treatment exhibit an unacceptable risk of failure that warrant specific treatments to help mitigate this risk. Up to 8 miles of road are vulnerable to post-fire watershed response, which can be mitigated by patrolling and removing obstructions to road drainage when storm events occur. The forest has a vested interest in preserving access on these roads for the administration of National Forest lands.

3. Natural Resources (NR):

Water Quality for Municipal and Domestic Use:

Fire can negatively impact both physical and chemical constituents of water quality. Chemical impacts will be relatively short as ash is flushed through the system. Increased sediment delivery can be expected to continue until vegetation reestablishes and erosion is slowed. Water quality in Barrett Reservoir will be negatively impacted by fire effects. Hazmat outside NFS lands resulting from burned infrastructure could pose a risk to

water quality if mobilized. Most observed hazmat is in low-lying areas subject to flooding. Changes to water quality will need to be considered prior to use and how increased sediment may impact treatment facilities.

Hydrologic Function:

Fire impacts proper functioning of hydrologic processes. These impacts are recoverable and expected to diminish as vegetation reestablishes. The greatest threats to recovery are threats from incursion of OHV and failure of infrastructure to control drainage (such as roads and trails). Increased sediment delivery and mobilization of woody debris increase the risk of channel diversions down roads and ditches. Channel diversion could lead to complete road prism loss and irrecoverable damage (major hillside gullies) to hillslopes.

Botanical Resources:

An emergency exists with respect to native vegetative community recovery as a result of the threat of post-fire weed introduction and spread and unauthorized off-road vehicle (OHV) use. There are 7 species of R5 sensitive plants in the burned area. Though these resources are not a stand-alone BAER critical values, they are at risk of degradation in the post-fire environment and a component of native vegetative communities. Invasive plant populations may affect the structure and habitat function of native plant communities especially in arid and riparian ecosystems by aggressive colonization, reduction of water availability, and outcompeting native species causing type conversion and changes in fire regimes. Where the Valley (2020) and Horse (2006) fires overlap, native vegetation is particularly vulnerable to type conversion due to increased fire frequency and the presence of weeds prior to this season's fire. Localities within the burn area have a history of concentrated unauthorized OHV use and high potential for tamarisk encroachment into critical habitat in designated wilderness areas. Weed detection surveys and rapid response eradication treatments are strongly recommended for all weed dispersal corridors to prevent weed introductions and spread into wilderness areas and critical habitat. There was no weed wash available to Valley Fire suppression resources. Many non-native weeds occur within and around the Valley Fire burn area and at suppression ICP.

Vegetation Recovery in Burned Area:
Probability of damage or loss is **very likely** because the burned area is vulnerable to colonization of tamarisk and other weeds, portions of the burned area had not fully recovered from the Horse Fire (2006), and unauthorized OHV use is common on the Cleveland National Forest. The magnitude of damage will be **major** because occupied endangered species habitat has been altered by the fire and weed colonization in these communities will degrade critical habitat, ecosystem integrity and vegetative community type conversion will alter landscape processes (fire frequency). Given the opportunity, tamarisk in Pine Valley Creek can change the existing wilderness character of Pine Creek Wilderness by converting native riparian communities to non-native tamarisk stands. It is for these reasons that risk to vegetation recovery in the overall burned area is **very high**.

Vegetation Recovery on Suppression Repair Features:
No equipment washing occurred during fire suppression operations and equipment was staged/operating in weed infestations. It is **very likely** that fire suppression resources spread existing and introduced new weed species to the burned area. Unauthorized OHV use on suppression lines is **likely**, especially if these areas are not rehabilitated in the near future due to lack of resources. Potential for type conversion of chaparral to annual exotic grassland is high. The magnitude weed threats is **major** because community types within the burned area are vulnerable to type conversion and associated degradation of ecosystem integrity and altered natural processes (increased fire frequency). The risk to vegetative recovery is **very high** where suppression activities occurred and within the greater burned area as a result of suppression operations.

Wildlife Resources:

There are two federally listed species within the fire perimeter – Least Bell's Vireo and Arroyo Toad. These both occur in the Middle and Lower Pine Valley Creek watersheds. Both are expected to be impacted by erosion and increased sediment, with potential loss or displacement of habitat. Arroyo Toads could be buried by additional sediment. Flows are expected to increase up to 200% over normal, and sediment deposition may increase up to 1000 % of normal.

Post-fire effects to Least Bell's Vireo habitat may include increased flows, sediment and debris delivery that may further scour riparian vegetation. Post-fire effects to arroyo toads may include death/injury due to being buried during debris flows or drowning. In addition, water quality from fine/sediment and ash may also lead to death/injury if animals are present in the water. Over the long term, the deposition of sediment may improve habitat for the arroyo toad.

These effects are considered **very likely** to occur, with **major** consequences and **very high** risk of impacts. However, treatments are not recommended for Federally listed Threatened and Endangered species or critical habitat within the fire area because most of the soil burn severity was at low to moderate levels and there are not readily available and effective treatments to mitigate the risks.

4. Cultural and Heritage Resources:

Post-fire effects on cultural resources result from one, or both, of two types of disturbances. The first is the degradation of sites from increased erosion within the burn area which causes an increase in sediment deposition, debris flows, and scouring of the landscape. The second is from increased access to the resource as a result of a denuded landscape that leads to a greater risk of looting, vandalism, and unauthorized OHV use.

Assessment of historic properties for the Valley Fire BAER was conducted remotely over four days. Of the 87 sites that were initially identified, only thirteen sites were identified as eligible or potentially eligible critical values within the fire's perimeter.

Five pre-contact sites have been identified as critical resources at risk from an increase in public access due to loss of vegetative cover across vast areas of the burned area that typically "disguise" sites. The overlap of these historic properties with heavily used roads makes these sites vulnerable to increased disturbance. Given the amount of public vehicle use near the sites, the loss of vegetative barriers due to the fire, and the amount of unauthorized cross country OHV use in the ranger district, the protection of cultural resources from the effects of off-route use, vandalism, and looting in these locations is a concern.

- The probability of damage or loss to these five sites is **very likely** due to the increased visibility of archaeological site features and the potential for increased unauthorized OHV activity through the burn area where vegetative cover once protected the area from OHV access.
- The magnitude of consequences is considered **major** because the potential for increased and continual unauthorized activity in the area of these sites could result in additional user created trails into the site areas, increased erosion, damage to features, displacement of artifacts, and the potential for incidental looting and vandalism.
- Therefore, the risk to these sites is considered **very high**, due to the high public use of the area and potential loss of cultural critical values.

B. Emergency Treatment Objectives:

The objectives of Valley BAER treatments are to:

- Protect life and safety on NFTS routes, at Japatul Station, and on trails.
- Prepare vulnerable forest road infrastructure for post-fire watershed response.
- Survey for and rapidly treat weeds to protect natural vegetative recovery, reduce potential for type conversion and fire regime alterations (frequency), and protect federally listed arroyo toad and least bell's vireo populations and designated critical habitat.
- Protect heritage resources from vandalism, looting, and degradation.
- Keep people out of the burned area to reduce potential post-fire disturbance to natural vegetation, critical habitat and heritage sites.
- Coordinate post-fire response with other agencies and interested parties.

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

Land: 80
Channel: N/A
Roads/Trails: 70

Protection/Safety: 80

D. Probability of Treatment Success

Table 5: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	80	90	100
Channel			
Roads/Trails	70	80	80
Protection/Safety	90	90	100

E. Cost of No-Action (Including Loss): Potential lost market value plus assessment costs.This does not include a monetary value on loss or harm to human life.

F. Cost of Selected Alternative (Including Loss): Potential lost market value plus assessment costs plus treatment costs. This does not include a monetary value on loss or harm to human life.

G. Skills Represented on Burned-Area Survey Team:

☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☒ Archaeology
☒ Weeds ☐ Recreation ☐ Fisheries ☒ Wildlife
☒ Other: Geology

Team Leader: Chris Stewart
Email: christopher.s.stewart@usda.gov **Phone(s):** 360-854-2634; 360-764-4251

Forest BAER Coordinator: Emily Fudge
Email: emily.fudge@usda.gov **Phone(s):** 858-674-2993; 619-430-3092

Team Members: *Table 6: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead	Chris Stewart
Soils	Curtis Kvamme
Hydrology	Emily Fudge
Engineering	Foster Kuramata
GIS	Celia Yamagiwa
Archaeology	Eraina Nossa, Jay Marshall
Weeds	Lauren Quon, Emma Williams
Wildlife	Kirsten Winter, Rari Marks
Recreation	Tracy Knapp
Geology	Barton Wills
Interagency Coordination	Todd Ellsworth

H. Treatment Narrative:

Land Treatments:

Early Detection, Rapid Response – Related to Burned Area:
Weed detection surveys and rapid response eradication treatments are strongly recommended for all weed dispersal corridors to prevent weed introductions and spread into burned wilderness areas and critical habitat by OHV incursions. Tamarisk and other noxious weed infestations within the burned area will be surveyed and treated as a part of rapid response implementation related to burned areas. Early Detection and Rapid Response treatments are requested on trails (0.29 miles), roads (22.09 miles), and streams (10.59 miles) in

the burn area. Streams and trails will be the first priority for survey and treatment in burn areas. Roads will be the second priority for survey and treatment.

Early Detection, Rapid Response – Related to Fire Suppression:
Early Detection and Rapid Response treatments are requested on suppression related disturbance features including dozer line (11.14 miles), hand line (12.34 miles), helispots, drop points, and staging areas. Constructed dozer line will be the first priority for survey and treatment in fire suppression areas. Hand line, helispots, drop points, and staging areas shall be second priority for survey and treatment. Since there was no weed wash present on the Valley Fire incident, there is an increased risk for weed introductions on fire suppression lines constructed by unwashed heavy equipment. All unwashed heavy equipment on the incident are vectors of weed seed dispersal on newly disturbed ground related to fire suppression activities. Herbicide use to eradicate invasive weeds from fire suppression activities may require tribal consultation by a Heritage Program Manager or designated specialist. Tribal communities use forest lands as gathering areas and should be notified of any chemical treatments occurring on the landscape.

Channel Treatments: No channel treatments are proposed at this time.

Roads and Trail Treatments:
Road drainage features are at risk from adjacent burned watersheds. Increased runoff and sediment from the burned areas can negatively affect the road prism, damaging the road, eroding land downslope of the road and routing flow and sediment directly to stream channels. Road failure can also contribute to failure of infrastructure downstream. Drainage features associated with these roads are at risk of plugging from debris carried down channels from burned watersheds. A detailed assessment of NFS roads within the burned area was performed and minimum treatment prescriptions were developed to help reduce the risk of road failures to a more acceptable level. Proposed road treatments include drainage structure cleaning, upsizing over side drains and culvert inlet basin cleaning, rehabilitation of rolling dips and leadoff ditches.

Storm Inspection/Response**:**
Storm inspection/response will keep over side drains and drainage features functional by cleaning sediment and debris from in and around features between or during storms. Storm inspection and response includes approximately 8 miles of NFS roads. This work will be accomplished through contractor equipment and labor.

Locations: FSR 16S02, 16S04, 16S05

Road Stormproofing**:**
Road stormproofing involves cleaning or armoring of existing drainage structures, as well as recently installed treatments, and is intended to help ensure road drainage performs optimally and to improve structure performance under increased runoff and debris. This work will be accomplished using contractor equipment and labor. Stormproofing includes approximately 3 miles of NFS roads within the burned area.

Locations: FSR 16S02, 16S04, 16S05

Road Drainage Structure Replacement/Improvements:
Road drainage structure improvements involves replacing existing deficient structures and installation of additional drainage structures to help ensure road drainage performs optimally and to improve drainage performance under increased runoff and debris . This work will be accomplished using contractor equipment and labor. The proposed treatments are designed to be the minimal treatment necessary to reduce the risk of road failure to an acceptable level. These treatments are located on the segments of road within the burned area and in combination with stormproofing.

Locations: FSR 16S02, 16S05,

Protection/Safety Treatments:

Japatul Station Deflection Wall & Sediment Filtration:
Placement of sandbags and fiber rolls to deflect the flow around the structures to ensure structures are safe and functional. This work will be accomplished using Force Account crews. The Forest Watershed Specialist will assist the crew in structure placement to maximize efficacy. The proposed treatments are designed to be the minimal treatment necessary to reduce the risk of road failure to an acceptable level.

Road Warning Signs
This treatment will install burned area warning signs at key road entry points to caution forest administrative users about the potential hazards that exist within the burned area and will be consistent with the language provided in the BAER Treatments Catalog. The purchase and installation of signs at each of the identified locations will be consistent with Forest Engineering Standards at these locations. A Forest Service employee will inspect the signs for visibility, damage, or loss and replace as needed. This work will be accomplished using contractor equipment and labor.

Locations: 16S02, 16S03,16S03,16S05, 17S06

Trailhead Hazard Warning Signs:
Signs to warn forest visitors of post-fire hazards are needed at trailheads. This work will be accomplished by Force Account staff assigned to patrol the burned area (see Closure/Barrier section below).

Heritage Site Protection:
Five cultural sites are at risk of looting, vandalism and degradation in the burned area. Installing new and extending existing fences is proposed to protect these sites. Barrier treatment consists of installing 1-mile fencing in strategic locations to limit the unauthorized site incursions and detrimental activities. Barriers would be installed by Force Account staff under the oversight of cultural resource personnel. The use of a gas-powered t-post driver is recommended to reduce the personnel days needed to install fencing by one week.

Barriers to Prevent OHV Trespass:
The objective of these treatments is to reduce expansion of OHV impacts and associated impacts on critical BAER values at risk. These impacts include increased risk for establishment of noxious weeds in the burned area and disturbance that will prevent or delay vegetation recovery. The Forest had previously secured these areas with barriers, but due to the loss of vegetation and brush barriers there are a number of areas where OHVs could now access the sensitive habitats within the burn area. To restrict OHV use, 0.38 mile of new barrier is needed at Corte Madera Road.

Patrol - Barriers to Prevent OHV Trespass:
Through past BAER experience, the Cleveland National Forest has determined that signage, barriers and other hard closures that are installed to discourage soil disturbance and assist in allowing natural vegetative recovery are not effective by themselves. Patrolling within and adjacent to the burn area is needed ensure barriers are effective and deter unauthorized access, vandalism, and damage to National Forest System lands. The following treatment would be accomplished by Force Account staff.

Interagency/Partner/Permittee Coordination:
The Forest Service plans on continuing to collaborate and communicate with partnering agencies, other entities and organizations and the public. Many non-Forest Service entities, partners and permittees (*e.g.,* San Diego Department of Public Works, San Diego County Erosion and Sedimentation specialist, NOAA NWS, NRCS, US Army Corp of Engineers, private landowners, etc.) that have infrastructure in the fire area are actively repairing damaged infrastructure and/or implementing mitigations to reduce post-fire damage. The BAER team's findings will be shared with those entities and other responsible agencies so that they can plan measures to protect/prepare infrastructure from post-fire watershed response events.

The cost reflects time the Forest spends with coordination and facilitation of emergency treatments from partners and permittees.

Above and beyond facilitating protection measures for non-Forest Service entities threats to life, property and water quality requires continued coordination with many agencies.

I. Monitoring Narrative: No monitoring is proposed.