

**BURNED-AREA REPORT**  
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST**

## A. Type of Report

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

## B. Type of Action

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

**PART II - BURNED-AREA DESCRIPTION**A. Fire Name: **West Valley**B. Fire Number: **UT-DIF-000265**C. State: **Utah**D. County: **Washington**E. Region: **04 - Intermountain**F. Forest: **07 - Dixie**G. District: **Pine Valley**H. Fire Incident Job Code: **P4LW8G**I. Date Fire Started: **June 27, 2018 (Human)** J. Date Fire Contained: **85% as of 7/18/18**K. Suppression Cost: **\$8,200,000** as of 7/12/18

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fire line water barred and seeded (miles): Dozer 4.28; Hand line 12.82  
 2. 3. Other (identify):

M. Watershed Number (s): 6<sup>th</sup> level hydrologic units, percent of watershed acres within fire perimeter  
**Table 1**

HUC 6 Subwatershed Name	Total Acres	Acres in Fire Perimeter	% of HUC With High SBS	% of HUC With Mod SBS	% of HUC With Low SBS	% of HUC Unburned Inside of Fire	% of HUC Outside of Fire
Ash Creek Reservoir-Ash Creek	24931	180	0.2%	0.4%	0.1%	0.1%	99.3%
Grass Valley Creek	21281	7401	4.9%	22.5%	4.8%	2.5%	65.2%

Headwaters Santa Clara River	21040	170	0.2%	0.6%	0.0%	0.0%	99.2%
North Ash Creek	20103	2709	2.5%	7.7%	1.9%	1.4%	86.5%
Pinto Creek	22071	1272	0.0%	1.7%	2.6%	1.4%	94.2%
Wet Sandy-Ash Creek	31843	38	0.0%	0.05%	0.04%	0.04%	99.9%

N. Total Acres Burned:

NFS [11,770 (10527 in Wilderness)] Private (0.14)

O. Vegetation Types:

Dominant Vegetation	Unburned	Low	Moderate	High	Total
Piñon/Juniper	2	6.6	95.6	0.1	104.3
Basin Big Sage/ Grass Forb	0	0.1	17.7	13.2	31
Grass Forb	13.1	15.7	19.5	0	48.3
Piñon – Juniper/ Mtn Brome	14.8	71.4	64.8	0	151
Mountain Big Sage	2.5	7.3	2.6	0	12.4
Rock outcrop/ Mixed Conifer	42	41.1	119.9	6.8	209.8
Mixed Conifer	754	1493.8	5358.1	1535.7	9141.6
Curl-leaf Mtn Mahogany	335.7	387.3	1270.3	79.1	2072
<b>Total Acres *</b>	<b>1154.1</b>	<b>2023.3</b>	<b>6948.5</b>	<b>1934.9</b>	<b>11770.4</b>

P. Dominant Soils:

Soil Type	Soil Texture	
56	Very Stony Loam	Curl-leaf Mtn Mahogany
64	Gravelly Loam / 40% Rock outcrop	Curl-leaf Mtn Mahogany
65	40% Rock Outcrop/ Very Gravelly Sandy Loam	Mixed Conifer
66	40% Rock outcrop / Gravelly Sandy Loam	Curl-leaf Mtn Mahogany

Q. Geologic Types:

The soils within the West Valley fire were formed from quartz monzonite porphyry, a gray, coarse-grained, intrusive igneous rock similar to granite but with a slightly different mineral composition, and the Pine Valley Latite from vented areas around Rancher peak and Timber Mountain and creates similar soils to the Pine Valley Laccolith. The Pine Valley Mountains, which are capped by an igneous, mushroom-shaped intrusion called the Pine Valley laccolith was emplaced about 21 million years ago as molten rock from deep within the earth moved upward into shallow overlying sedimentary rocks. There it spread out and crystallized into what is one of the largest such intrusions in the world; uplift and erosion have since uncovered this granite-like rock.

R. Miles of Stream Channels by Order or Class:

Perennial: 0.99 Intermittent: 36.8

S. Transportation System (miles)

Roads: 0

Trails: 16.7 Miles Non-Motorized

## PART III - WATERSHED CONDITION

A. Burn Severity (acres): 2,023 low    6,949 moderate    1,635 high    1,164 unburned

B. Water-Repellent Soil (acres): 233 (based on hydrophobicity testing on different burn severities within the fire it is estimated at 10% of the high severity burned areas and 1% of the moderate burn severities)

C. Soil Erosion Hazard Rating on NFS Lands (acres):

**Table 2**

<b>Erosion Hazard Class</b>	<b>Pre-fire Erosion Hazard</b>
Low	91.8
Moderate	11679.1
High	0
Not Rated	0

D. Erosion Potential:                      Ranges from 0.4 to 2.6 tons/acre within perimeter avg from 1 to 3 yrs. post treatment

E. Sediment Potential:                      256 to 1664 cubic yards/square mile

#### **PART IV - HYDROLOGIC DESIGN FACTORS**

A. Estimated Vegetative Recovery Period (years):    5-10

B. Design Chance of Success (percent):                      80% no treatment

C. Equivalent Design Recurrence Interval (years):    25

D. Design Storm Duration (hours):                      0.5, 24 hours

E. Design Storm Magnitude (inches):                      1.42, 3.48 inches

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

**Table 3**

<b>Pre/Post Fire estimates of storm flow for the 25 yr., 30 min storm</b>				
<b>Drainage</b>	<b>Basin Size (miles<sup>2</sup>)</b>	<b>Q<sub>pre</sub> cfs</b>	<b>Q<sub>post</sub> cfs</b>	<b>% Increase</b>
<b>Mill Creek</b>	5.6	170	426	151%
<b>Santa Clara River Headwaters</b>	8.9	226	237	5%

G. Estimated Reduction in Infiltration (percent):                      50 to 110%

H. Adjusted Design Flow (cfs per square mile):                      refer to Table 3

#### **PART V - SUMMARY OF ANALYSIS**

Introduction/Background:

The West Valley Fire was a human-caused ignition that started on June 27, 2018. The fire has burned approximately 11,770 acres to date and was 55% contained on July 12, 2018. The burned area is mostly within the Pine Valley Wilderness on the Pine Valley Ranger District on the Dixie National Forest, North of the town of Pine Valley. The soil burn severity (SBS) map shows approximately 73% of the area burned at high and moderate soil burn severity. The rest of the fire was either low soil burn severity or unburned. Although there are some larger contiguous areas of high and moderate SBS, there is a mosaic of small areas that are low SBS within the moderate and high SBS areas. Increased post fire soil erosion, runoff and debris flows within and downstream from these areas is likely to cause flooding, scouring and/or deposition of materials.

High intensity monsoonal thunderstorms are the precipitation events of primary concern. Based on historic precipitation patterns, thunderstorms are likely to occur in the weeks and months following the West Valley Fire. In fact, a monsoonal storm occurred on July 13 while working on the BAER assessment for this fire. As evidenced by the flooding that occurred from this precipitation event, the risk of flooding and erosional events has increased as a result of the fire, creating hazardous conditions within and downstream of the burned area.

The duration, volume, and location of debris flows and stream channel processes are highly influenced by rainstorm patterns and intensities. The predictive values represented in this report are based on rapid assessment models for specific high intensity/short duration storms.

Recovery of pre-fire slope stability and watershed hydrologic response is dependent on many factors and typically occurs within 3-5 years following the fire. Recovery of high burn severity areas is slower because little or no vegetative ground cover remains, the potential for needle cast is low and soils may be impacted by fire effects.

#### A. Describe Critical Values/Resources and Threats (narrative):

A list of values important to the Dixie National Forest was compiled by the BAER team during the assessment kickoff meeting. The BAER team subsequently evaluated this list of values through field assessment and associated analysis to determine the critical BAER values (FSM 2523.1 – Exhibit 01) that may be treated within the BAER program. The risk (FSM 2523.1 – Exhibit 02) to these critical values has been assessed by the BAER team and is described below. A list of treatment numbers has been included below each critical value description to ensure tracking between values and treatments.

##### 1. Human Life and Safety (HLS)

- a. Very High risk to **forest visitors and Forest Service employees** on trails throughout the burn scar due to the increased threat of flooding and debris flow and falling trees and rocks. (*Treatment: T2, T3*)

**Risk Assessment:** Elevated threat to human health and safety from deteriorating trails, flooding and debris flow, and falling trees and rocks on forest trails within the fire perimeter.

**Probability of Damage or Loss:** Likely – Numerous snags along the trail will have potential risk to public safety, and summer monsoonal storms can occur quickly with very responsive flooding.

**Magnitude of Consequence:** Major– Loss of life or injury to humans.

**Risk Level:** Very High

##### 2. Property (P):

- a. High risk to **trail infrastructure** throughout the fire due to an increased threat of damage expected to these forest investments from increased runoff, erosion and deposition. The burned area contains approximately 12 miles of trails at risk.  
(*Treatments: T2*)

**Risk Assessment:** Threats to Forest Service trails and associated structure.

**Probability of Damage or Loss:** Likely – flooding, debris flows, and erosion is imminent.

**Magnitude of Consequence:** Moderate - loss of FS infrastructure

**Risk Level:** High

- b. Intermediate risk to the Pine Valley Campground **road infrastructure** downstream of the fire due to an increased threat of damage expected to the stream crossing from increased runoff, erosion and deposition. This is the only FS road infrastructure at risk. (*Treatments: T6*)

**Risk Assessment:** Threats to Forest Service roads and associated structure.

**Probability of Damage or Loss:** Unlikely – although upstream flooding and erosion is imminent, it is such a small proportion of the watershed that damage would to the road crossing would be unlikely.

**Magnitude of Consequence:** Major - loss of FS infrastructure

**Risk Level:** Intermediate

### 3. Natural Resources (NR):

- a. Low risk to **soil productivity and hydrologic function** due to the threat of increased soil erosion within those areas that burned at moderate to high severity. Because effective groundcover was marginally decreased as a whole within the fire burn perimeter (most of the soils have a very large proportion of rock greater than 2 inches in diameter), measured and predicted hydrophobicity was not spatially extensive, and soil tolerance erosion values are minimally exceeded. Hydrologic function of those watersheds that sustained moderate to high burn severity is expected to be impacted by reduced infiltration, accelerated runoff and debris flows. However, due to the colluvial narrow valleys that these streams run through, riparian area is naturally limited in width and typically does not have sedges and other obligate species that would suffer from channel downcutting (many of the riparian species are woody plants that have deep roots that extend to below the likely scour level).

**Risk Assessment:** Threats to soil productivity and hydrologic functioning of watersheds

**Probability of Damage or Loss:** likely,

**Magnitude of Consequence:** minor.

**Risk Level:** Low

(*No Treatments are recommended due to expected natural recovery over time and no critical values at high risk*)

- b. Very High risk to **native plant communities** due to the threat from the spread of noxious weeds and invasive plant species. Known noxious weed populations (Field Bindweed and Scotch Thistle) exist primarily immediately adjacent to the burned area with very few locations inside the burn area. Known populations occur along dozer lines, hand lines, helispot, and drop points created during suppression activities.

**Probability of Damage or Loss:** likely,

**Magnitude of Consequence:** major.

**Risk Level:** Very High

(Treatments: T01)

- c. High risk to agricultural supply water in Grass Valley Creek from expected inflows of ash, sediment, and debris. In particular two structures under special use permit on NFS lands are at risk: 1- the intake structure that accesses a trans-basin diversion is at risk of being plugged up or damaged. 2- the diversion structure that takes water from Main Canyon onto private property is at risk of being blown out from flooding. The risk for damage to the water diversion structure on NFS lands under special use permit for New Harmony agricultural use was discussed with the NRCS engineer who designed it and he felt that it was not at risk of damage from the likely occurrence of increased flows into Dam Canyon (this structure was built to withstand increased flows due to the Mill Flat fire.

**Probability of Damage or Loss:** likely,

**Magnitude of Consequence:** moderate.

**Risk Level:** High

(Coordination with NRCS is recommended to the SUP holder for this water diversion that is on NFS lands T5)

4. Cultural and Heritage Resources (CHR):

- a. High risk to known **cultural sites** that are **potentially eligible** for the NRHP due to the increased threat of erosion from upslope burned areas and flooding. Although artifacts exposure is greater due to the loss of groundcover, looting concerns are negligible due to the remoteness of the sites and recent flood events which have either washed away or inundated smaller artifacts and features. There are numerous eligible historic/cultural sites within the burned area that were located during suppression and post fire recon operations.

**Probability of Damage or Loss:** from erosion and flooding is likely,

**Magnitude of Consequence:** moderate. Looting could become a greater concern if more events expose artifacts.

**Risk Level:** High

(Treatments T04)

B. Emergency Treatment Objectives:

The goal of the burned area emergency response treatments is to:

- Warn users of Forest roads and trails of hazards present in the burned area. Consider temporary closure to protect public users of NFS lands.
- Protect or minimize damage to National Forest System investments within the burned area. Minimize damage trails that access the wilderness inside of the fire boundary.
- Protect or mitigate potential post-fire impacts to significant cultural resources within or downstream from the burned area.
- Protect naturalized vegetation communities through the control of expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of the fire and/or suppression activities.
- Continue to work with affected parties and stakeholders through ongoing interagency coordination

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

Land 70 %    Channel NA %    Roads/Trails 60 %    Protection/Safety 90 %

#### D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	75	80	80
Channel	--	--	--
Roads/Trails	70	80	90
Protection/Safety	90	90	90

E. Cost of No-Action (Including Loss): Cost of No-Action (Including Loss): **\$181,700**

Resource/Value Affected (Potential)	Estimated Cost
Increase 78 acres of noxious weeds (\$900 per acre for treatment after infestation due to difficulty to access remote area in wilderness)	\$70,200
Loss of 12 miles of trail that could be affected by moderate/high severity post fire runoff (\$14,000 per/mile)	\$168,000
Loss of agricultural use water infrastructure.	New water delivery infrastructure if lost would be more than 200,000 dollars.
<b>Total</b>	<b>\$438,200</b>
Loss of road passage by one stream crossing that could be affected by moderate/high severity post fire runoff	Cannot be valued
Possible loss of life/injury from additional danger of hazard trees	Cannot be valued.
Loss of cultural artifacts due to erosion and flooding.	Cannot be valued.

F. Cost of Selected Alternative (Including Loss): Cost of Selected Alternative (Including Loss): \$55,300

Resource/Value Affected (Potential)	Estimated Treatment Cost Including Loss	Total
Loss of 12 miles of trail that could be affected by moderate/high severity post fire runoff (\$14,000 per/mile)	\$60,979 for proposed treatment plus \$16,800 for potential loss. Due to the requirement for minimal tool use analysis with trail protection work in the wilderness treatment cost is higher than what it otherwise might be.	\$77,779
Increase 78 acres of noxious weeds (\$900 per acre for treatment after infestation due to difficulty to access remote area in wilderness)	\$10,320 for proposed treatment (\$132/acre) plus \$14,040 for potential loss.	\$24,360
Possible loss of life/injury from additional danger of hazard trees	\$6,558 for Safety Signs. However human life cannot be valued if lost.	\$6,558
Loss of road passage by two stream crossings that could be affected by moderate/high severity post fire runoff	\$14,575 Treatment. However cannot be valued if access from road is lost.	\$14,575

Loss of Cultural artifacts due to flooding and erosion.	\$3,390 Treatment. However, cannot be valued if artifacts are lost.	\$3,390
Loss of agricultural use water infrastructure.	\$1,322 for coordination with other local, state, and federal agencies that can assist working with non-NFS property and infrastructure. New water delivery infrastructure if lost would be more than 200,000 dollars. There still may be a 10% loss with treatment.	\$21,322
<b>Total</b>		<b>\$147,984 (\$97,144 treatment without loss cost)</b>

#### G. Skills Represented on Burned-Area Survey Team:

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

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#### Team Members:

Del Orme	Brooke Shakespeare
Sarah Davis	Connie Zweifel
Randy Beckstrand	Mark Madsen
Natalie Cabrera	Vaughn Thacker
Laurie Parry	Devin Johnson

#### H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

#### Land Treatments:

#### **T01 - Early Detection & Rapid Response**



**General Description of Treatment:** Use personnel to monitor the West Valley fire area on NFS lands for new invasive weed sites. Upon location, document the site, treat it and return within two weeks and determine the effectiveness of the treatment and retreat if required.

**Suitable Sites:** The West Valley Fire burned area with special focus areas adjacent to known point locations of noxious weed populations (Field Bindweed and Scotch Thistle) exist primarily immediately adjacent to the burned area with very few locations inside the burn area. Known Areas inside of the burn perimeter that were relatively free of such weeds are now prone to infestations from various travel ways and suppression activities. Special attention will be given to areas (78 acres worth) leading from known populations that occurred along dozer lines, hand lines, helispot, and drop points created during suppression activities.

**Design/Construction Specifications:** Early Detection/Rapid Response Monitoring System will provide early detection of new infestations. Regular monitoring of the West Valley burned area on NFS lands will take place. When new invasive species infestations are detected, a prompt and coordinated containment and eradication response will occur to eliminate the proliferation of these noxious weeds on NFS lands. Upon location, document the site, treat it and return within two weeks and determine the effectiveness of the treatment. Repeat the treatment and effectiveness monitoring until new noxious weed sites are eradicated.

**Purpose of Treatment:** The purpose of this treatment is to eliminate the spread of noxious weeds into the West Valley fire area on NFS lands. Preserving the weed free nature, where it exists, of the those portions of the Pine Valley District and Wilderness area retains a high level of priority, especially since much of the Pine Valley District is not weed free.

**Describe Treatment Effectiveness Monitoring:** Early Detection/Rapid Response monitoring system will be set up within the West Valley Fire area on NFS lands.

#### Road and Trail Treatments:

### **T02 - Trail Drainage Improvement**

**General Description:** Treatment would provide immediate protection to the trail system. Trails may capture increased surface runoff caused by the presence of water repellent soils and lack of effective ground cover to inhibit excessive flow. Flows will intercept system trails and cause severe tread erosion and initiation of soil rutting adjacent to the trails. The trail system would be improved to withstand increased runoff, protecting property, and workers and users.

**Suitable Sites:** 16.7 Miles of National Forest System Trail (NFST) are within the West Valley Fire perimeter. This is all non-motorized and nearly all of it is within the wilderness area. 12 miles of the trail are within the moderate to high burn severity. Priority trails to be worked on include those that are within or below moderate to high soil burn severity slopes and those with sustained steep grades that have inadequate drainage.

**Design/Construction Specifications:** According to USFS Trails Handbook 2309.18. Installation should be designed to last no more than 3 years. Permanent structures are not part of this treatment. The trail protection work is all in the wilderness area and therefore must meet the requirement for minimal tool use analysis with completing this work. Due to this requirement and the remoteness of the trails the cost is higher than what it otherwise might be.

1. Install water-bars depending on steepness of trail (18 per mile) in areas of moderate or high severity.
  - a. Install water bars in sections of trail that have continuous gradient for a length of greater than 50 feet and are either insloped (cupped) or show evidence of routing water (rills, gullies).
2. Construct tread retention structures where necessary and downslope, stabilizing vegetation has been consumed.
3. Hazards within the trail route that restrict access to work sites will be removed (rocks, trees).
4. Clean existing water bars.
5. Removal of identified hazards surrounding work site locations.
6. If the area has to large a safety risk then the work will be delayed until safety risk is stabilized

**Purpose of Treatment:**

- i. What value(s) is (are) mitigated by this treatment?

Human life and safety, Property

Trails within the West Valley fire are located within and downslope of moderate to high soil burn severity slopes. Predicted increased runoff due to water repellant soils and lack of effective ground cover will be intercepted and captured by trails, leading to severe trail tread erosion that will render the trails unusable or dangerous to use. Additional hazards caused by the fire such as hazard trees and rock fall will create unsafe conditions at trail access points and worksites along the trails to workers.

- ii. How does the treatment relate to damage or changes caused by the fire? The fire has burned adjacent slopes above and along the trail routes that will result in runoff that will damage the system substantially enough to prevent future use of the trails. The increased erosional risk to some of the trails can be mitigated with drainage structures and scheduled drainage maintenance. The treatments directly mitigate these increased threats in that adequate trail tread drainage will pass accelerated erosional runoff off the tread and prevent tread erosion, and fire-generated hazards such as hazard trees and rock fall will be removed as necessary to safely complete the work.

In sum:

- These treatments would prevent unacceptable erosion and loss of trail investment.
- Treatments ensure drainage structures are sufficient to divert water effectively given increased runoff and increased sediment movement.
- Treatments will protect property.
- Treatment will prevent injury and remove risk to workers and users.

**Describe Treatment Effectiveness Monitoring:** The drainage improvements will be inspected throughout the year and in the spring of 2019 to monitor the effectiveness of water run-off and the trail drainage condition.

Protection/Safety Treatments:

**T03 – Warning Signs**

**General Description:** This treatment is for the installation of trail and burned area closed (before trail treatment) and warning signs (after trail treatment) at 8 trailheads leading into the Wilderness and burn area.

Closed signs will inform the public of the need to stay out of the burned area and off the trails until the emergency trail treatments have occurred. Burned area signs warn the public of the possible dangers associated with a burned area on trails that are major entry points into the burned area. It shall contain language specifying items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods.

**Description of Suitable Sites:** Signs will be installed at 8 trailheads leading into the Wilderness and burn area.

Locations on FS lands for trail closed signs on major entry points are (8 total):

Locations on FS lands for burned area warning signs on major entry points are (8 total):

**Design/Construction Specifications:**

Trail closed signs at trail heads consist of 0.08" aluminum sheet, with white and black letters. Burned Area warning signs at trail heads consist of 0.08" aluminum sheet, with yellow and black letters.

All signs shall conform to EM-7100-15.

**Purpose of Treatment:**

i. What value(s) is mitigated by this treatment? Human Life and Safety, Emergency Ingress and Egress, Unauthorized travel and impacts to riparian, water quality, and wildlife.

The purpose of the Burned Area signs is to provide safety to trail user's upcoming dangers and/or objects

ii. How does the treatment relate to damage or changes caused by the fire? The risk to human and life and safety is increased by post fire effects such as falling trees, rolling rocks, and flash floods. The need to warn the public of these hazards with which they be totally unfamiliar is a direct result of the fire.

**Describe Treatment Effectiveness Monitoring:** District personnel will monitor or check signs after events to ensure that they will be effective for the future.

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#### **T04-Cultural Resource Protection Monitoring Patrols**

**General Description:** The fire area contains a variety of cultural resources, including a historic logging district, and the remains of the Anderson cabin. Additionally, prehistoric sites are known to occur in the mountain range, though lack of survey has limited formal recording. These sites have exposed artifacts and are subject to erosion and surface collecting.

**Suitable Sites:** Mill Creek canyon contains the remains of several historic logging and mill operations dating to the second half of the nineteenth century. These remains are located along and near a popular hiking trail that accesses the Pine Mts., and include metal objects and other artifacts that have survived the fire. The Anderson cabin vicinity likely contains historic artifacts that will be uncovered as the rains remove soot and burned debris from the fire. Monsoon rains may expose additional artifacts. Treatment units have been identified using the following criteria: the Forest Service Manual (2523.02, 2523.1 Exhibit 01) identifies cultural resources as a critical value for the purposes of BAER

**Detailed Design/Construction Specifications:** N/A

**Purpose of Treatment:** The purpose of monitoring is to determine if artifacts are exposed and vulnerable to collecting, or if other stabilization needs arise as a result of heavy rains.

i. What value(s) is (are) mitigated by this treatment? Cultural resource sites determined eligible for listing on the National Register of Historic Places (NRHP) that are at risk of having characteristics impacted.

These sites are of special concern because little inventory and research has been performed in the area, which makes it important to protect these NRHP eligible resources.

ii. How does the treatment relate to damage or changes caused by the fire? Exposure of previously hidden artifacts and features due to vegetation loss and increased ground surface visibility intensify the potential for looting which affects resource integrity. Monitoring will help reduce the possibility of looting of sites by having archaeologists inspect sites for exposed artifacts in addition to any signs of looting activity.

**Describe Treatment Effectiveness Monitoring:** Monitoring will assist with documenting changes to the sites in terms of artifact and feature composition that could indicate archeological looting. The results of monitoring will be used to determine if additional management action is required to protect these sites.

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#### **T05 – Interagency Coordination/Team Leader Implementation**

**General Description:** There is a need to continue the interagency coordination initiated during the BAER assessment. This involves communication and coordination with other federal, state and local agencies with jurisdiction over lands where life and property and water quality are at risk from post-fire conditions. Actions include but are not limited to cooperating with other agencies on hazard notification systems, exchanging information and coordinating the BAER implementation plan as needed when subsequent recovery plans are developed by other

agencies. Threats to life, property and water quality requires coordination with many agencies. The Forest Service plans on continuing to collaborate and communicate with partnering agencies, other entities and organizations and the public.

**Description of Suitable Sites:** The community of Grass Valley and irrigation systems using Pinto Creek and Dam Canyon are at risk and coordination with other federal, state and local agencies will be for the benefit of these landowners and downstream irrigation water systems that are at risk from post-fire conditions.

**Design/Construction Specifications:** Coordination with other federal, state and local agencies with jurisdiction over lands where life and property and water quality are at risk from post-fire conditions.

**Purpose of Treatment:** See description in section A.

**Describe Treatment Effectiveness Monitoring:** N/A

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## **T06 – Road Storm Patrols and Response**

**General Description:** The patrols are used to identify those road problems such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that have received damage. The storm patrollers shall have access to at least a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged, and to repair roads which are exhibiting severe surface erosion.

**Description of Suitable Sites:** The patrols should first focus on roads that receive the most traffic, are of more value to the transportation system, and/or have high-risk structures that are prone to storm damage. Not listed in any order of preference, these roads include the following:

- Forest Service Road 255
- Forest Service Road 252
- Forest Service Road 2113
- Forest Service Road 035
- Forest Service Road 425

### **Design/Construction Specifications:**

1. FS personnel will direct the work.
2. Immediately upon receiving heavy rain and during significant spring snowmelt the FS will send out patrols to identify road hazard conditions – obstructions such as rocks, sediment, washouts, and plugged culverts, so the problems can be corrected before they worsen or jeopardize forest road users.
3. The road patrols shall bring in heavy equipment necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins where necessary. All excess material and debris removed from the drainage system shall be placed outside of the bank-full stream channel where it cannot re-enter the stream.

### **Purpose of Treatment:**

i. What value(s) is mitigated by this treatment? Human Life and Safety (Public Safety of Forest Visitors and administrative personnel), Property (Forest Roads and Bridges), Emergency ingress/egress. Indirectly, debris that is not removed immediately could cause more substantial

loss of infrastructure and associated sediment/debris that in turn causes an impact to Water Quality and Riparian areas.

Roads adjacent to the West Valley Fire contain drainage structures that cross primarily intermittent streams located in watersheds that have a moderate and high burn severity. These streams now have the potential for increased runoff and debris flows. These increases in flows pose a threat to the existing crossings which may result in plugging culverts or exceeding their maximum flow capacity. If these flows plug drainage structures, the result will likely be additional erosion and debris further down the drainage due to the failures of the fill slopes of the roads.

Potential post-fire flooding will threaten to interrupt access to visitors, local residents, and Forest Service personnel who are implementing treatments. With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate rill and gully erosion on the slopes and it is possible that this runoff could cover the roads or cause washouts. These events make for hazardous access along steep slopes and put the safety of Forest visitors and administrative personnel at risk.

Engineering and District personnel will survey the roads adjacent to the fire perimeter after high-intensity summer thunderstorms and spring snow-melt. Survey will inspect road surface condition, ditch erosion, and culverts/inlet basins for capacity to accommodate runoff flows.

ii. How does the treatment relate to damage or changes caused by the fire? Increased runoff resulting from burned slopes and stream channels which are adjacent to roads will likely cause damage to roadway surfaces, drainage structures, or block roads with debris slides. Storm patrol during post fire runoff events provides early discovery of damaging processes and the opportunity to respond with equipment to minimize damage to property and the personnel to secure the scene to protect the public.

**Describe Treatment Effectiveness Monitoring:** Monitor the storm-patrol response time to ensure objectives are being met. Identify the type of storm event that mobilizes material.

---

#### I. Monitoring Narrative:

Monitoring for individual treatments is described in above treatment narratives.

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

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands				All Total \$
			# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	
<b>A. Land Treatments</b>										
T01-Early Detection & Rapid	acre	132	78	\$10,320	\$0		\$0		\$0	\$10,320
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$10,320	\$0		\$0		\$0	\$10,320
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
T02-Trail Drainage Rehabil	miles	5,082	12	\$60,979	\$0		\$0		\$0	\$60,979
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road and Trails</i>				\$60,979	\$0		\$0		\$0	\$60,979
<b>D. Protection/Safety</b>										
T03-Warning Signs	each	820	8	\$6,558	\$0		\$0		\$0	\$6,558
T04-Cultural Resource Prote	each	3,390	1	\$3,390	\$0		\$0		\$0	\$3,390
T05-Interagency Coordinatio	each	1,322	1	\$1,322	\$0		\$0		\$0	\$1,322
T06-Storm Patrol	each	14,575	1	\$14,575			\$0		\$0	\$14,575
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Protection/Safety</i>				\$25,845	\$0		\$0		\$0	\$25,845
<b>E. BAER Evaluation</b>										
Initial Assessment	Report	\$12,789	1	---	\$0		\$0		\$0	\$12,789
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				---	\$0		\$0		\$0	\$12,789
<b>F. Monitoring</b>										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$97,144	\$0		\$0		\$0	\$109,933
Total for this request				\$97,144						

**PART VII - APPROVALS**

1. /s/ Angelita Bullett  
Forest Supervisor (signature)

07/23/2018  
Date

2. /s/Mary Farnsworth (for Nora Rasure)  
Regional Forester (signature)

7/26/2108  
Date

**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										
T01-Early Detection & Rapid	acre	132	78	\$10,320	\$0		\$0		\$0	\$10,320
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$10,320	\$0		\$0		\$0	\$10,320
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
T02-Trail Drainage Rehabil	miles	5,082	12	\$60,979	\$0		\$0		\$0	\$60,979
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road and Trails				\$60,979	\$0		\$0		\$0	\$60,979
D. Protection/Safety										
T03-Warning Signs	each	820	8	\$6,558	\$0		\$0		\$0	\$6,558
T04-Cultural Resource Prote	each	3,390	1	\$3,390	\$0		\$0		\$0	\$3,390
T05-Interagency Coordinat	each	1,322	1	\$1,322	\$0		\$0		\$0	\$1,322
T06-Storm Patrol	each	14,575	1	\$14,575			\$0		\$0	\$14,575
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Protection/Safety				\$25,845	\$0		\$0		\$0	\$25,845
E. BAER Evaluation										
Initial Assessment	Report	\$12,789	1	---	\$0		\$0		\$0	\$12,789
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				---	\$0		\$0		\$0	\$12,789
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals										
				\$97,144	\$0		\$0		\$0	\$109,933
Total for this request				\$97,144						

**PART VII - APPROVALS**

1. /s/ Angelita Bullets  
Forest Supervisor (signature)
2. /s/ [Signature]  
Regional Forester (signature)

07/23/2018  
Date

7/26/18  
Date



Under the Southwest Forest Health and Wildfire Prevention Act of 2004, Institutes were created to “promote the use of adaptive ecosystem management to reduce the risk of wildfires, and restore the health of forest and woodland ecosystems, in the interior West.” Under the Act, three Institutes were originally established – in Arizona, Colorado, and New Mexico. Utah State University is currently proposing an additional Institute to be added, the Utah Forest Institute, which will investigate fire and forest health in all Utah forest types. Utah State University is seeking endorsement from the Chief and the Secretary of Agriculture for their proposal. The Intermountain Region strongly supports the establishment of this Institute. The University has already successfully procured funding from the University, State legislature, and private sources to launch this effort. At this point, they would appreciate the Chief’s Office to move this request for endorsement forward to the Secretary. The establishment of this Institute will benefit the Intermountain Region and the State of Utah in advancing the research on our ecosystems in Utah as they relate to wildfire and risk. We see this Institute as complementary to the work that our Forest Service Rocky Mountain Research Station is involved in, rather than duplication. I am attaching a briefing prepared by the University to provide additional information for you to consider.

For additional information on the proposal, Kristine Lee, Natural Resource Director, or Mary Farnsworth, Deputy Regional Forester are our points of contact.

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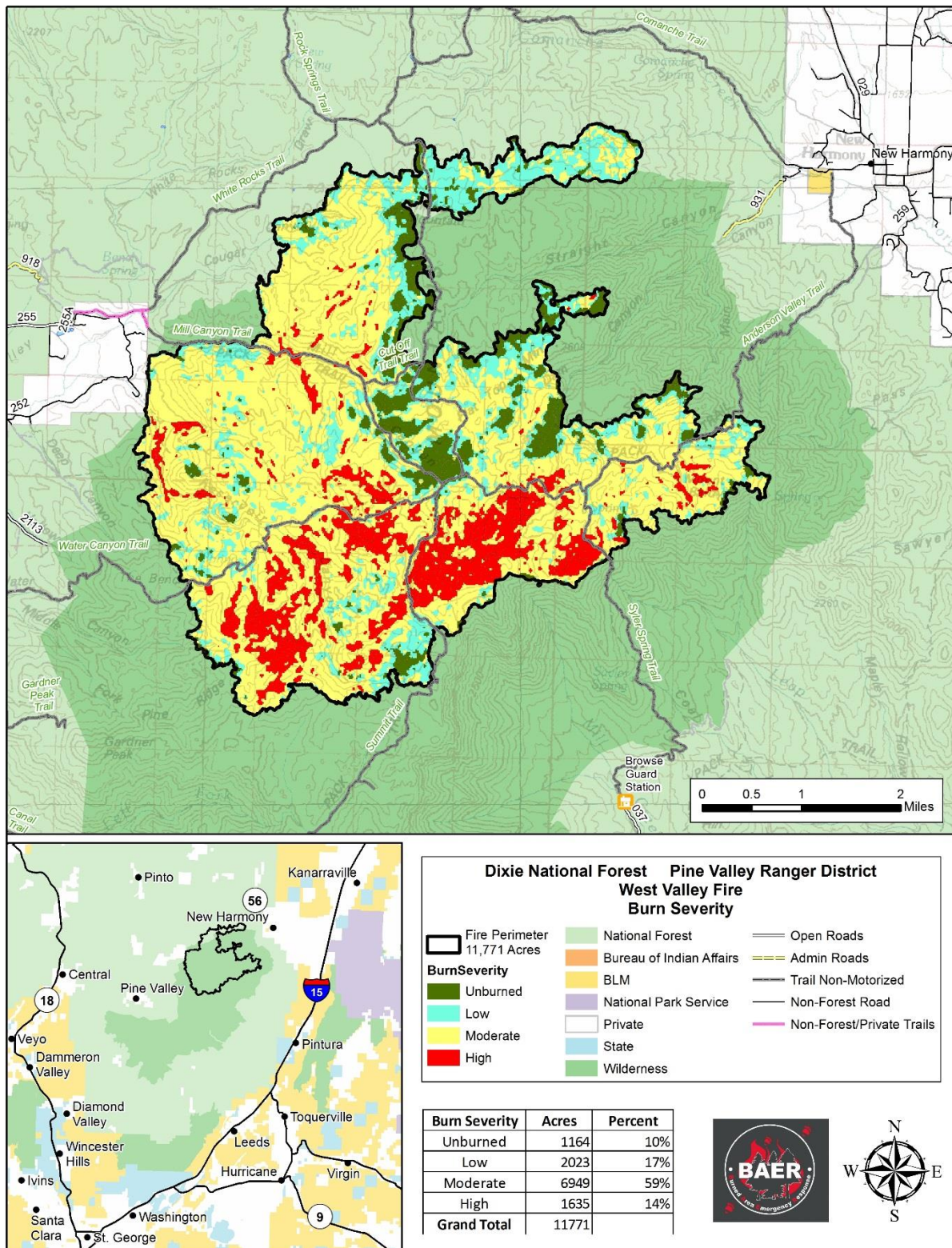


Figure 1: Soil Burn Severity