Date of Report:

07/01/2021

WILLOW FIRE BURNED-AREA REPORT

Los Padres National Forest
Monterey Ranger District
July 1, 2021

The US Forest Service Burned Area Emergency Response (BAER) team assesses the threats to life, property, cultural and natural resources from post-fire changes to the watershed that can cause erosion, sedimentation, rockfall, flooding, and debris flows. This report is a **brief synopsis** of BAER findings and the Forest Service's internal request for funding to treat values at risk **on Forest Service lands only**. Because the 2,878-acre Willow Fire occurred entirely within the Los Padres National Forest in the Ventana Wilderness, there are no structures immediately downstream of burned slopes. Values at Risk are limited to 1.1 miles of the Tony Trail, 3.5 miles of the Marble Peak Trail, the Willow Springs and Tassajara Creek wilderness camps, and the integrity of the native vegetation. Several homes lie approximately 8 miles downstream of the Willow Fire along the Arroyo Seco River but have withstood high flows from a large storm after the 2021 Dolan Fire that burned over 22,000 acres of the watershed above those structures and post-fire flow increases after the 2008 Basin/Indian fire and 2016 Soberanes fire.

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: Willow

B. Fire Number: CA-LPF- 001579

C. State: California

D. County: Monterey

E. Region: 5

F. Forest: Los Padres

G. District: Monterey

H. Fire Incident Job Code: P5N26C (0507)

I. Date Fire Started: June 17, 2021

J. Date Fire Contained: 73% as of 06/27/2021

K. Suppression Cost:

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

1. **Fireline repaired (miles): All lines repaired; 5.8 miles total.**
2. **Other (identify): 2.3 miles of handlines constructed and repaired.**

M. Watershed Numbers:

Table 1: Acres Burned by Watershed (HUC 7 level and HUC 5 level) Unburned acres within the fire perimeter were not included in acres burned.*

HUC 5 and 7#	Watershed Name	Total Acres	Acres Burned (L, M, H SBS)	% of Watershed Burned
1806000511*	Arroyo Seco*	192,548	2,878	1.5%

*Dolan fire in 2020 also burned approximately 21,152 acres of the Arroyo Seco watershed. See watershed discussion.

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	2,878
OTHER FEDERAL – FORT HUNTER LIGGET	0
STATE	0
PRIVATE	0
TOTAL	0

O. Vegetation Types:

The Willow fire burned almost entirely in the east-west flowing Willow Creek watershed between 1200' and 4000' above sea level. North facing slopes were dominated by dense live oak canopy and heavy cover of mixed chaparral. Much of this slope burned with high soil burn severity due to this heavy fuel. South facing slopes were dominated by chamise chaparral and some live oaks and generally burned with low to moderate fire intensity. The floodplain of Willow Creek supports a robust riparian forest of sycamore, willow, live oak, and alder and soil burn severity varied from unburned to high here.

P. Dominant Soils:

The table below displays the dominant soil map unit names and select soil qualities.

Soil Map Unit Name	Select Soil Qualities
Cieneba-Sur-Rock Outcrop Complex	Loamy, Rocky, Erosive
Rock Outcrop-Xerorthent Association	Loamy, Rocky, Shallow, Erosive
Sur-Junipero Complex	Loamy, Rocky, Erosive

Q. Geologic Types:

The Willow Fire occurred in the Santa Lucia Mountain Range, within the Coast Ranges geomorphic province. The Santa Lucia Mountain Range is about 140 miles long, extending from Carmel in the north (Monterey County) to the Cuyama River in the south (San Luis Obispo County). The physiography of the Santa Lucia mountains is characterized by northwest-trending, steep-sided, sharp-crested ridges that paralleling the numerous faults that transect the area and are separated by youthful V-shaped valleys (Pearson and Fillo, 1967). All associated watersheds flow directly or indirectly into the Pacific Ocean. The topography is complex, however, reflecting active uplift and deformation, a variety of lithological types, rapidly incising stream networks and highly unstable slopes. Stream channels and hillslopes are very steep, with average hillslope gradients exceeding 60% in some sub-watersheds. The coastal side of the range rises directly from the shoreline, with oceanfront ridges rising directly 4,000 to 5,000 feet to the crest ridge.

Bedrock within the Willow Fire burned area consists primarily of plutonic (granitic) rocks with limited exposures of highly fractured, and deeply weathered meta-sediment biotite schist, all part of the "Salinian Block"

Debris Flow Potential

Based on ground observations, the Willow Creek watershed has experienced in the past numerous debris flow events. Some of the debris flow deposits that 'litter' the Willow Creek flood plain and some of the un-names/side drainages that flow into Willow Creek include debris flow levees, boulder fields and un-sorted/un-consolidated debris flow lobe deposits. In addition to these materials that are now available to be transported and mobilized as secondary debris flows, the steep slopes and drainages above Willow Creek are loaded with sediments of all sized (ranging from dry ravel sands and fine sediments to rocks and larger boulders) which will gravitate into drainages and get mobilized by debris flows with any substantial short duration/high

intensity rain storms. Based on the relatively very high percentage of the burn area experiencing moderate and high soil burn severity, the very steep slopes and the large amounts of un-consolidated materials available to be transported, the probabilities of debris flow initiation in the burn area are very high.

Photo of old debris flow evidence in the floodplain of Willow Creek.

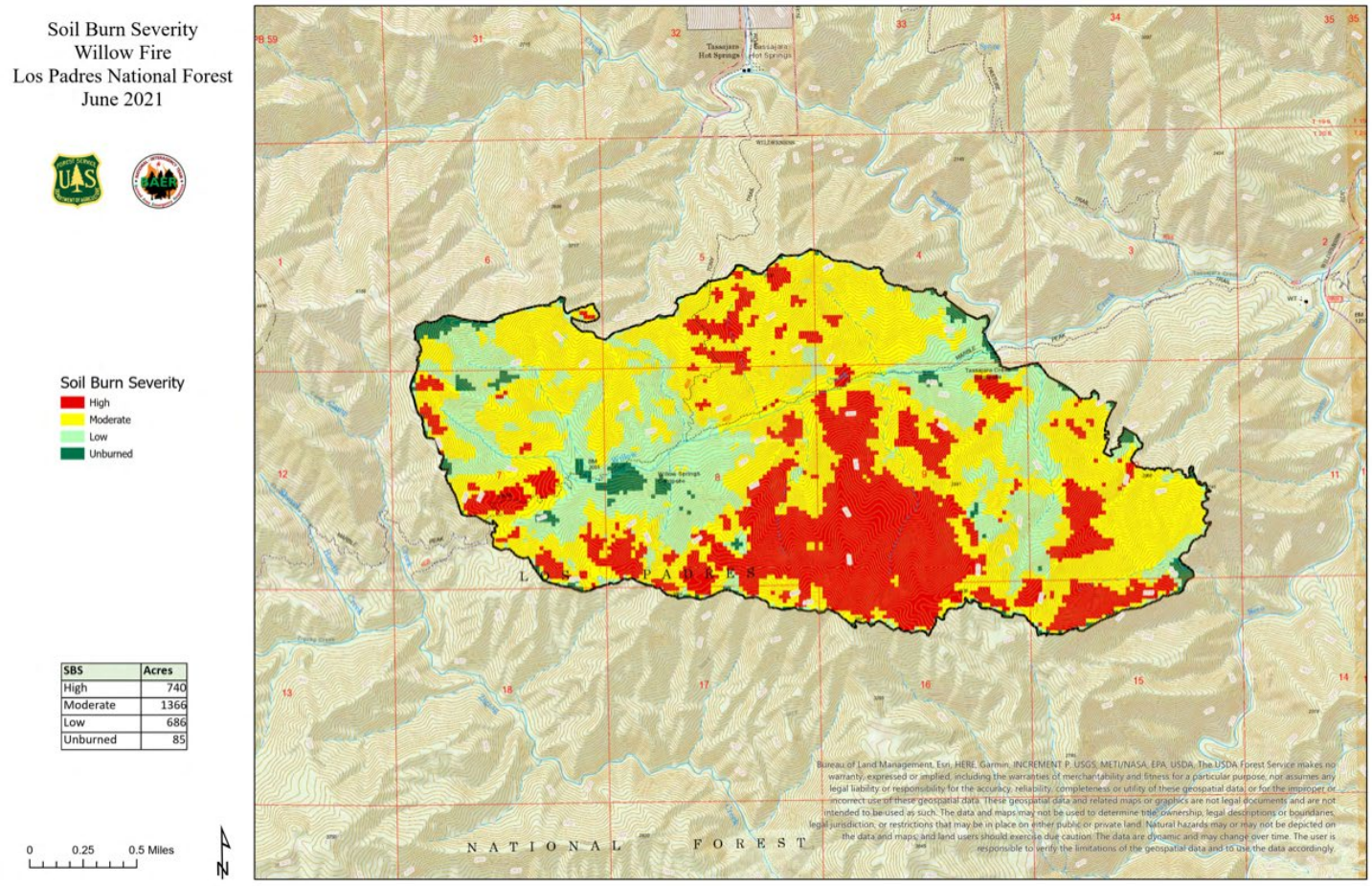
R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	5
INTERMITTENT	0
EPHEMERAL	XX
OTHER (DEFINE)	

S. **Transportation System:**
Trails: *National Forest (miles):* 4.6 *Other (miles):* 0
Roads: *National Forest (miles):* 0 *Other (miles):* 0

PART III - WATERSHED CONDITION



Soil Burn Severity Map of the Willow Fire.

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	Private	State	Total	% within the Fire Perimeter
Unburned	84	0	0	0	84	2.9
Low	686	0	50	0	686	23.8
Moderate	1,367	0	0	0	1,367	47.5
High	740	0	0	0	740	25.7
Total	**2,877**	**0**	**0**	**0**	**2,877**	

B. Water-Repellent Soil (acres on NFS lands):

C. Soil Erosion Hazard Rating (acres & % extent on NFS lands):

D. Erosion Potential:

Soil map units on NFS lands across the Willow Fire with the following were identified: A) inherent susceptibility to high soil erosion given their properties, B) large predicted increases in soil loss from pre-fire

conditions, and C) occupy a considerable extent (>5%) of the burned area. The soil map unit which has the greatest concern for high erosion potential post-fire is the Rock Outcrop-Xerorthent Association; it has a high run-off potential, a severe erosion hazard rating, and exhibited an increase in soil loss per modeling from 7 tons per acre to 97 tons per acre (calculated on the adjacent Dolan Fire in 2020). For some context, 150 tons per acre soil loss is roughly equivalent to losing a one-inch layer of soil over an acre. High soil erosion potential map units make up more than three quarters of the burned area on NFS lands. More information about these units can be referenced in the table below.

Map Unit Name	Slope Range	Run-off Potential	Erosion Hazard	Pre-fire Soil Loss (tons/acre)	Post-fire Soil Loss (tons/acre)
Cieneba-Sur-Rock Outcrop complex	50-85%	High	Severe	0.1	44
Rock Outcrop-Xerorthent Association	30-75%	High	Severe	6.8	97
Sur-Junipero Complex	50-85%	Moderately Low	Severe	0.1	45

E. Sediment Potential:

F. Estimated Vegetative Recovery Period (years):

Vegetative recovery primarily depends upon annual precipitation which can be extremely variable, but usually after 5 -7 years post burn erosion and runoff rates as well as debris flow potential approaches pre-burn levels. However, dangerous debris flow potential can linger for 2-3 years and should be evaluated during the second and third winters following the burn in order to determine the risk to recreationists entering this burn scar in the future.

G. Estimated Hydrologic Response (brief description):

The Willow Fire took place in a Mediterranean climatic region with moist winters and dry summers and receives about 23 inches per year total. The bulk of the precipitation occurs from October through April during frontal storms which account for nearly all moisture. Infrequent thunderstorms occur in summer and fall. Historically, major flooding has occurred when a weather system dubbed the “Pineapple Express" taps into subtropical moisture from the latitudes of the Hawaiian Islands. These warm and long duration storm events will cause major deluges and torrential rains leading to catastrophic flooding across the region. Stream channels in the burn area have the potential to flash flood when these events are coupled (e.g., burned area and above normal precipitation, (Warrick, 2008)). An atmospheric river dropped over 15 inches of rain in two days of January 2021 over the upper Arroyo Seco watershed, resulting in debris flows in the 2020 Dolan fire scar which has started to recover.

Given the large percentage of moderate and high soil burn severity on the steep slopes in the Willow Fire, watershed response will be high in most catchments. Dry ravel is pre-loading transport dominated channels. Any sediment and woody debris in those channels will be mobilized in post-fire flows increasing runoff volume and possibly impacting access. Dry ravel, lack of ground cover and surface roughness, and reduced infiltration especially in the moderate and high soil burn severity will result in high watershed response. Larger flows have been known to entrail riparian vegetation, transporting it downstream as increased bulk.

Channel crossings, floodplains, and depositional fans have an inherent risk of flooding which will be exacerbated by the fire. In areas downstream of the fire aggradation can increase the probability of lateral channel migration, braiding, and flooding. Lateral channel migration can erode cut banks and undercut slopes, including terraces where infrastructure such as homes and roads might be located. Changes in hydrologic processes can also lead to slope instability and result in post-fire debris flows, mudflows, and other mass wasting (as described under geologic response).

Watershed response within the burn area will pose a very high risk to life and safety if recreationists are allowed to enter this area during potential storms. The combination of increased flows, sediment loads, and woody debris increase the volume of post-fire flows, which make any creek crossing or camping in low lying areas very dangerous. Bulking and increased flows may cause channels to flood, divert, or migrate to areas that do not usually flood. The Marble Peak trail will likely be severely eroded by debris flows and could require rerouting if high intensity rain hits this burned area the first or second winter.

Because the Dolan Fire burned 22,500 acres of the upper Arroyo Seco watershed in 2020, the watershed response is already higher than normal, but the addition of 2,878 acres within the Willow Fire will cause a relatively minor increase. Low water crossing and residences occur along the Arroyo Seco River about 8 miles downstream of the Willow Fire and will experience a continued elevated flood risk from both the Dolan and Willow fires. The total size of the Arroyo Seco watershed above these structures is 71,000 acres. The Willow Fire represents 4% of this upper Arroyo Seco watershed so increases in peak flow runoff and sedimentation from this fire will not significantly increase peak flows at the residences. However, the Dolan fire burned an additional 22,500 acres of the Arroyo Seco watershed above the residences and the combined area of both the Willow and Dolan burned areas in the Arroyo Seco watershed above the residences is 25,378 acres or 36% of that area. Our team flew over the Dolan fire scar to examine recovery of the watershed and saw that most of the sediments in the channels had been moved out by the January rain event, and that the vegetation had started to regrow, covering between 20 and 40% of the bare soil.

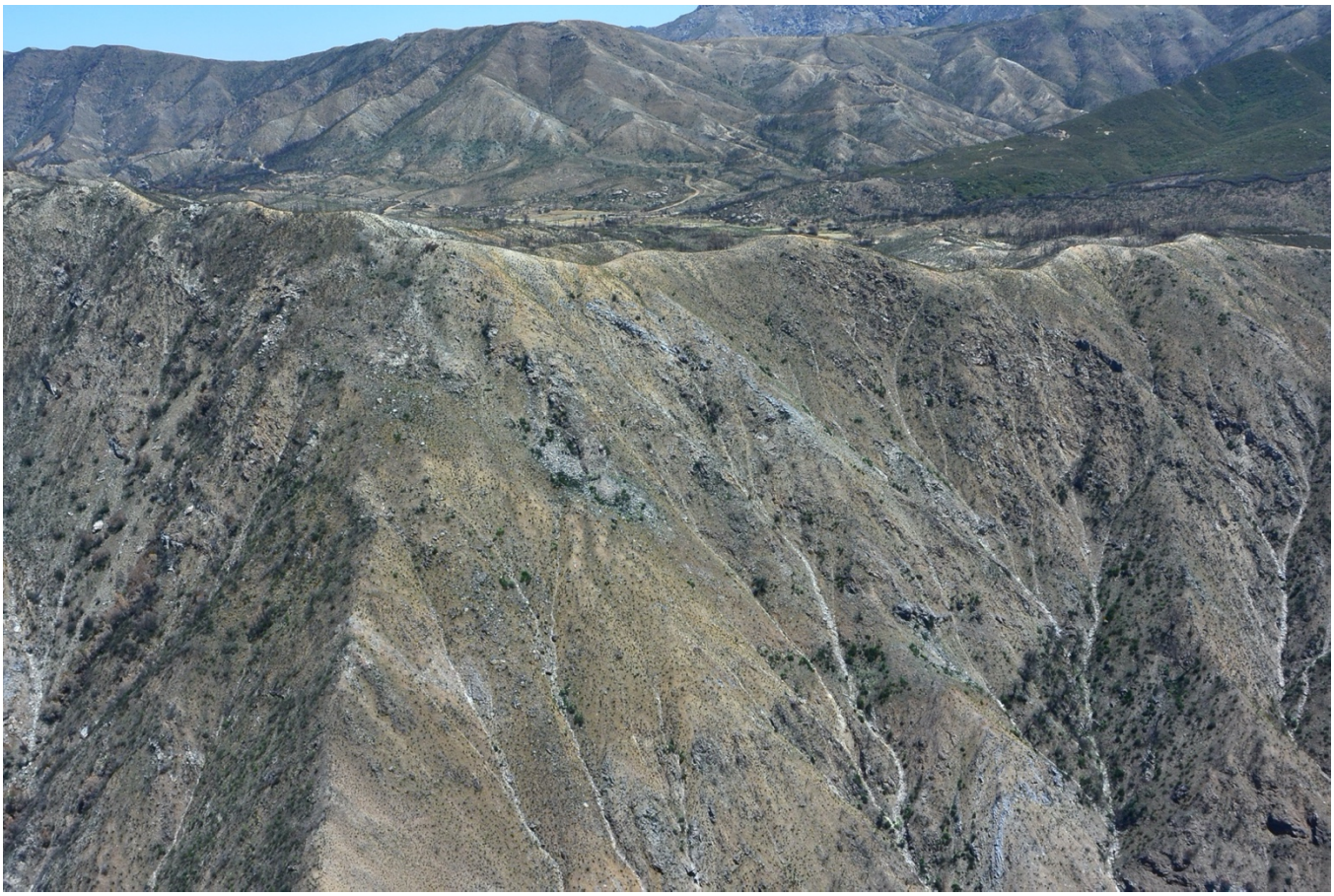
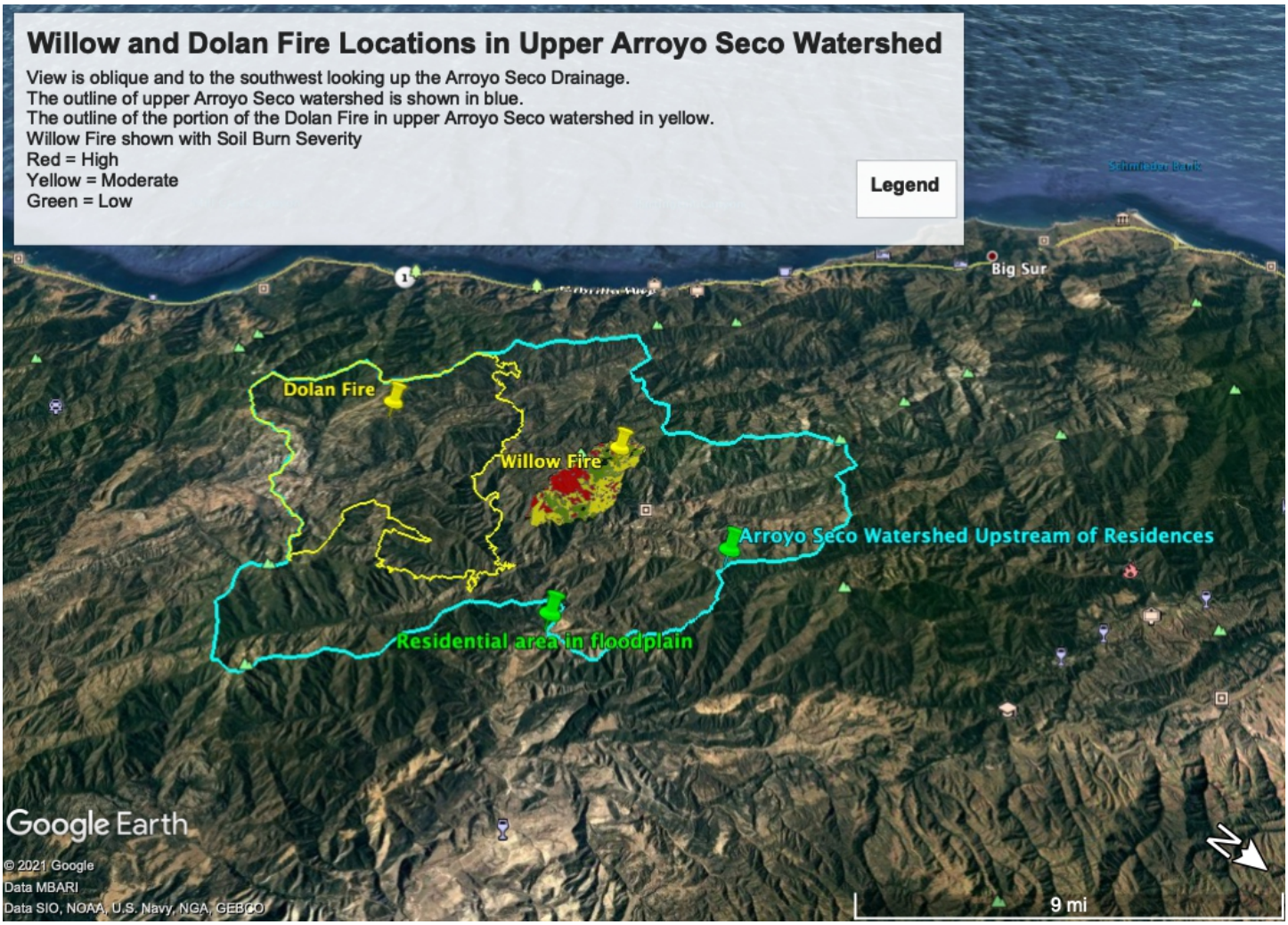
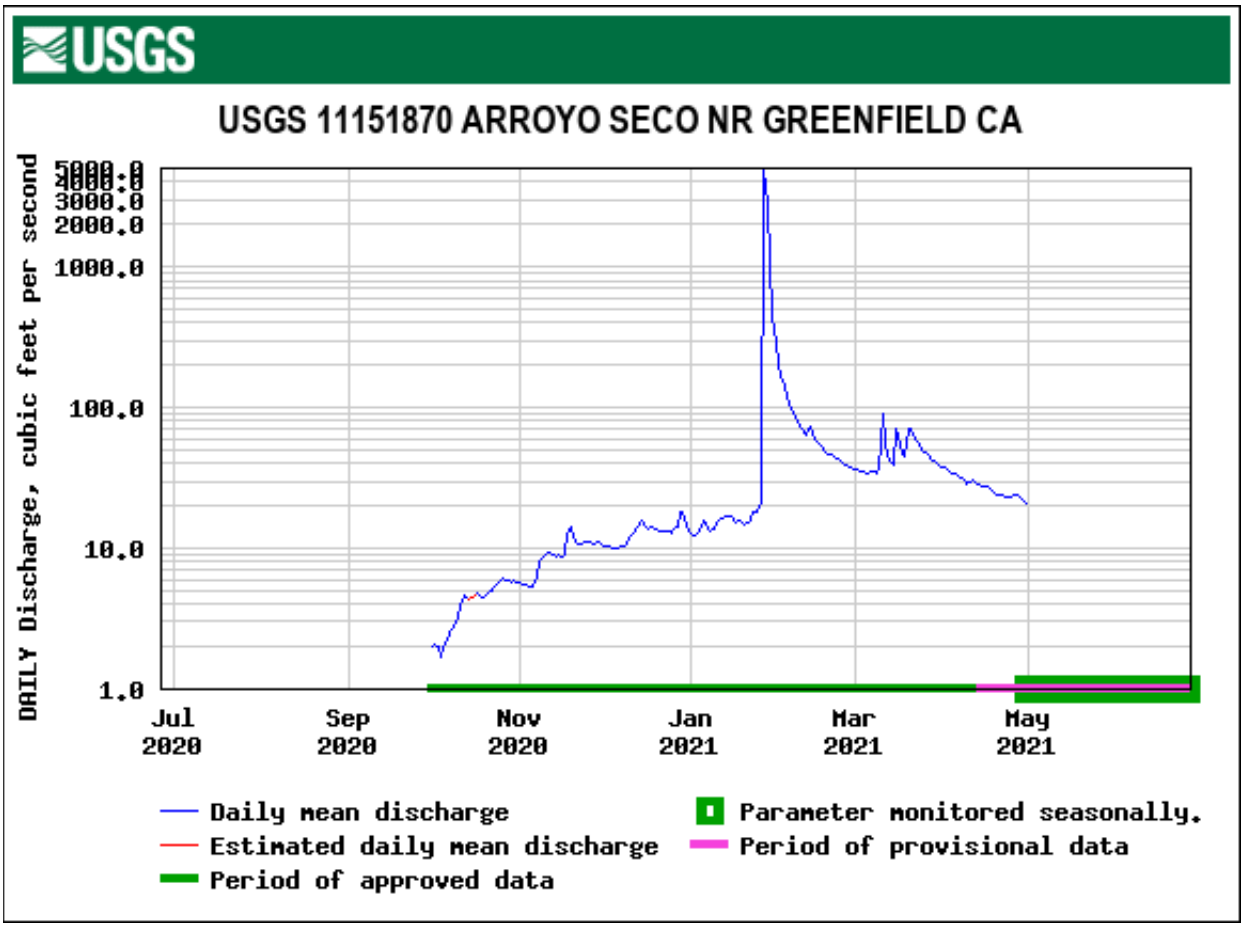


Photo of 2020 Dolan Fire vegetation recovery in the upper Arroyo Seco watershed.

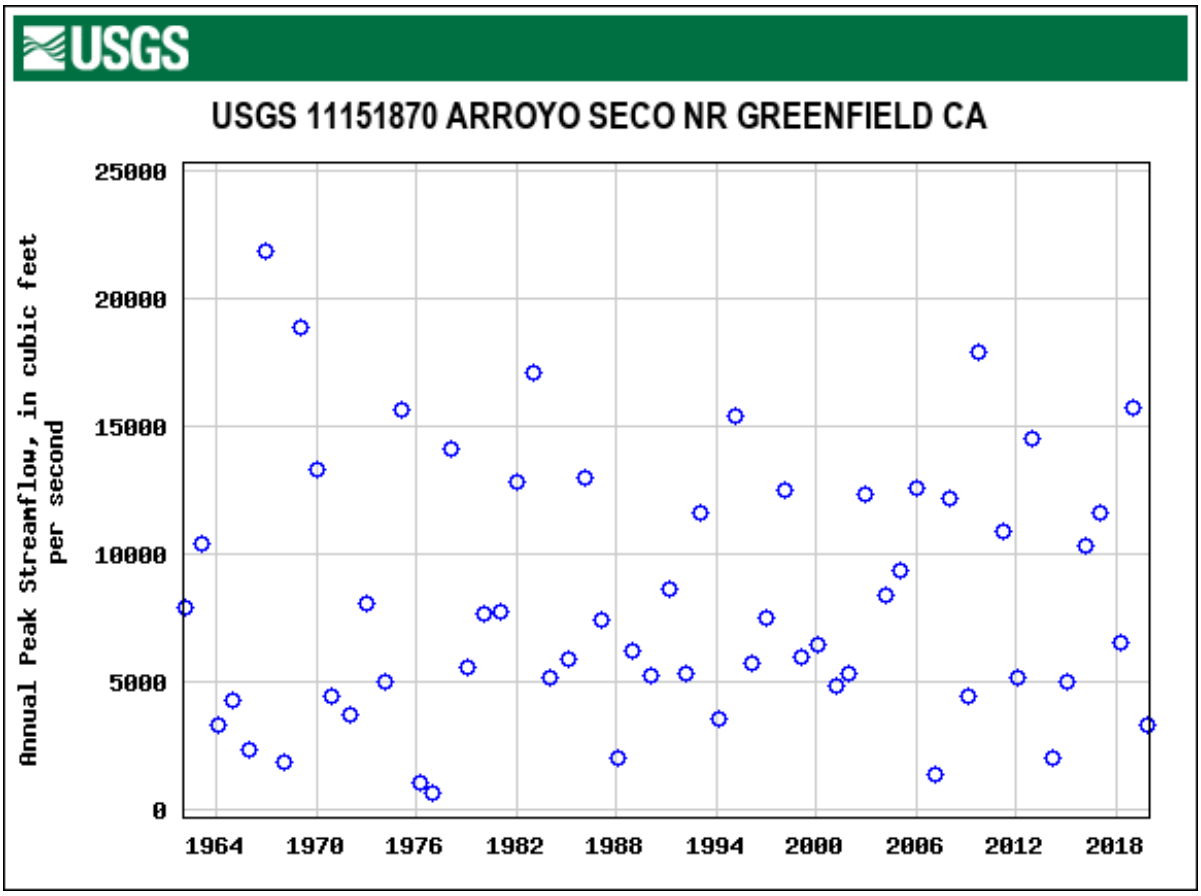


Google Earth image of the Dolan and Willow Fires within the upper Arroyo Seco watershed.

Because the developed area around Arroyo Seco survived the January 2021 atmospheric river event (see chart below) and many other post-fire heavy rain events, it appears that the structures here are built in areas away from flood effects, and so do not seem easily susceptible to small increases in peak flows. Because the Willow Fire only covers 4% of the watershed affecting this area, and because of some recovery of the Dolan Fire burn scar, the flood risk to the structures here is approximately the same as in the winter of 2020/21. Caution should still be used when evaluating the potential impact of a storm as flood risks in the Arroyo Seco River. Short-lived, high intensity rainfall of 0.95 inches per hour for a period of only 15 minutes such as during a thunderstorm may initiate dangerous debris flows in steep, small side channels of the Willow fire burn scar and then possibly deliver mud, ash, and woody debris in a flash flood into the main stem of the Arroyo Seco River that could create a sudden risk to those driving across low water crossings or otherwise near the Arroyo Seco River. But this kind of storm would not deliver a large total volume of water into Arroyo Seco such as during an atmospheric river, and so would not likely overwhelm the bankfull capacity of the Arroyo Seco river 8 miles downstream near the residences.



Peak flow chart for Arroyo Seco River near Greenfield during the 2020 atmospheric river event.



Peak historic flows of the Arroyo Seco River near Greenfield.

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. Floods and debris flows can entrain large material, which can physically damage infrastructure. The loss of riparian shading and the sedimentation of channels by floods and debris flows may increase stream temperature. Fire-induced increases in mass wasting along with extensive 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. 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.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

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

Table 5: 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 debris flows, flooding, rock falls, etc., the BAER team identified a serious risk to the public, employees, special use permittees, and cooperators within and immediately downstream of the Willow Fire area. FS critical values such as trails, recreation areas, campgrounds are in flood prone areas, at the base of steep, unstable slopes or in the steep unstable headwaters that are also at risk of post-fire debris flows, rock fall, increased runoff, and hazard trees. Use of these areas would put life and safety at risk to post-fire threats. Post-fire watershed response may not threaten infrastructure downstream and downslope of the burn area; but impact low water crossings. Impacts to access could leave forest users stranded, possibly exposed to poor weather, in areas with poor cell coverage, and/or areas subject to rockfall, flooding, and debris flows, especially if they try to evacuate or pass through during storms. Impacts from the post-fire environment on human life and safety is considered LIKELY with MODERATE TO MAJOR consequences. This results in a VERY HIGH risk to human life and safety from post-fire threats.

Closure of the burn area and at-risk downstream areas are recommended to prevent long-term exposure to risk and protect life and safety. Because of the VERY HIGH risk of these post-fire threats, it is recommended that the burned area closure applies to the public, FS staff before and during storm events, and trails and roads leading into the burn area. Anyone who attempts to access channels and low-lying areas within the burned area prior to or during a storm is at a VERY HIGH risk of injury or death. Risks associated within the burn scar should be re-evaluated prior to lifting the closure.

2. Property (P):

Because of the small size and distance from structures, the probability of damage or loss from the Willow Fire is considered unlikely but if it occurred the magnitude of consequences could be moderate to major, resulting in low to intermediate risk. Continued vigilance regarding National Weather Service flood warnings should be maintained due to the lingering and additional impacts of the Dolan Fire. High intensity storms could bring mud and woody debris over low water crossings in the Arroyo Seco and Millers Landing area.

3. Natural Resources (NR):Soil Productivity:

It was determined that there is a likely probability of some damage or loss to soil productivity, but the magnitude or consequence was deemed minor which rates risk as **Low**. Therefore, no treatments are being recommended to specifically address soil productivity as a critical value.

Overall, detrimental impacts to soil productivity as a by-product of soil loss in certain areas within the fire perimeter are expected, but these impacts will be localized and recoverable with time. Given more than two-thirds of the existing vegetation is chaparral and its ability to regenerate successfully after fire, vegetative ground

cover should recover relatively well within 2 to 7 years across a large portion of the landscape impacted by the Willow Fire.

Fisheries and Wildlife

Critical habitat exists for Steelhead trout (*Onchorhynchus mykiss)* SCCC DPS along Tassajara and Willow Creeks and the Arroyo Seco River within the Willow Creek watershed. Habitats along the Arroyo Seco, Willow and Tassajara stream systems were determined to be occupied from historic surveys completed by California Dept of Fish and Wildlife (CDFW) and are known to contain the remnants of the Salinas River steelhead population (CNDDB 2019).

Suitable habitat for California red-legged frog (*Rana draytonii*) exists along Tassajara and Willow Creeks, both within the fire affected area and downstream on the Arroyo Seco River. While the closest known occupied habitat occurs along the Miller Fork of the Carmel River, other occupied habitats may potentially occur within the fire affected area, as remote parts of the Ventana Wilderness have not been thoroughly or regularly surveyed.

While negative impacts to SCCC steelhead, critical habitat and California red-legged frog are considered likely, it is considered infeasible for BAER treatments to effectively prevent debris flows, landslides, mass wasting events and sedimentation which are expected to result post-fire. Treatment of all possible federal acres would have a negligible effect on reducing the resulting impacts from geology, hydrology and soils due to extremely steep slopes and proportions of moderate and high burn severity within the fire.

Left: Photo of unburned riparian and aquatic habitat.

Left: Photo of burned riparian habitat.

The Willow Creek stream system is expected to be significantly impacted as a result of post-fire effects. Natural recovery of this system is projected to take 5-7 years, while sediment loads and debris flows are pushed downstream towards the ocean, and hydrophobic soils are broken down. However, recovery times are highly dependent on local precipitation. As elevated sediment loads and debris flows are processed through the river systems, breeding pools and emergent vegetation (CRLF) and deeper pools and redds (steelhead) are expected to reestablish along the stream channels.

Native Vegetation

Almost 6 miles of dozer lines were placed on Los Padres National Forest lands and it is crucial to prevent further spread of noxious and invasive weeds into these areas. These dozer control lines have been used in many fires, including the recent Dolan Fire, but new noxious weed introductions will not be detectable until one growing season, so additional weed survey and treatment will need to occur in 2022.

Photo of a contingency dozer line for the Willow Fire near Arroyo Seco Station.

Many noxious weeds are known to occur within the Willow Fire area, but there are five that dominate the landscape (Table 1).

Table1. Most Common Noxious Weeds Known in and near to the Willow Fire Area

Scientific Name	Common Name
Carduus pycnocephalus	Italian thistle
Centaurea melitensis	Tocalote
Centaurea solstitialis	Yellow starthistle
Genista monspessulana	French broom

Short species summaries for each of these weeds are located in Appendix A

Italian thistle occurs northeast of the fire near Chew's Ridge off both private and public land and is also found along the coast on the western side of the fire.

Tocalote is found north of the Indians Special Interest Area, the Arroyo Seco area, the Piney area, and on the northeast side of the fire along Chew's Ridge. All of these sites surround the Willow Fire and could be seed sources for equipment and personnel accessing the fire.

Yellow starthistle is known primarily and in large infestations from the southeastern side of the fire adjacent to Fort Hunter Liggett (FHL) military reservation. Approximately 25% of FHL is severely (25-100% canopy) infested with yellow starthistle. Records indicate that yellow starthistle was spreading on FHL in the early 1940s, control measures began in 1955, and yellow starthistle was considered "almost uncontrollable" by 1958. Every road used for travel by vehicles and equipment to and from suppression activities is lined with yellow starthistle. Every turnout or ground suitable for driving a vehicle or landing a helicopter is infested with yellow starthistle.

French broom is known from several location on the Monterey District including Botcher's Gap, Big Sur and the valley walls above, North Coast Ridge Road, Arroyo Seco, and in the Carmel Valley on the north perimeter of the district.

Cultural Resources:

The burn area is prehistorically attributed to the Salinan and Esselen tribes who occupied the environs prior to European contact and settlement. In the mid-eighteenth century this area began to be influenced by Spaniards, Mexicans and later Euro-Americans. Sites attributed to turn-of the 20th century homesteading, Forest Service resource management; Depression-era Civilian Conservation Corps public works projects, and post-World War II mineral exploration and developed recreation sites are located within the fire contingency area.

Wildfires impact cultural resources in numerous ways that are considered when assessing the Heritage values both during suppression efforts and afterwards. Fire can adversely affect archaeological sites by the following: 1) direct effects from the fire can destroy flammable materials or damage non-flammable materials due to intense heat (i.e. spalling on rock structures, degrading rock art, burning down buildings or other structures); 2) ground disturbing suppression and rehabilitation activities can cause surface and subsurface damage to artifacts/features of a site (i.e. dozer line construction, road reconstruction, motorized ground re-seeding); 3) effects caused by the fire can cause damage or destroy sites over a period of time that may occur after the fire has been suppressed (i.e. erosion due to lack of vegetation, damage from recreational use of ATV/UTVs due to lack of vegetation and loosened soils, looting/vandalism to sites due to lack of vegetation and high visibility of features and artifacts).

These impacts stated above can completely destroy or damage cultural resource surface and subsurface contexts to the point where no further information stands to be gained from a scientific analysis or interpretation. Destruction or damage to these sites could also alter the context, historical, religious/sacred, or ceremonial significance of a site to the affiliated modern cultural groups who trace their history, culture, and religions through the use and preservation of these sites.

Of immediate concern for BAER is identifying cultural resources at risk resulting from post-fire erosional or depositional processes, that could damage or destroy cultural resources. Cultural resources sacred to the Esselen and Salinan tribes, or that have scientific, interpretative, or administrative values may be adversely altered or lost by increased runoff, erosion, and debris flows during inclement weather. Increases in runoff can also expose previously-buried cultural resources, subjecting them to risk from vandalism and theft.

There are two sites located within the Willow Fire perimeter and one within a few hundred feet of the fire perimeter. The sites within the fire perimeter are bedrock mortars. The site within close proximity of the fire perimeter is a prehistoric shell midden. The greatest threat to the bedrock mortar sites are from debris flows that could cover them or dislodge them from their original location and transport them elsewhere. Erosion could undercut the features and dislodge them. This risk to the sites is, however, low, because burn severity surrounding the sites was low or unburned (see the June 2021 Burn Severity map). The site located in close proximity of the fire boundary is located upslope from the floodplain. The area closest to the site either did not burn, or burn severity was low. The site, therefore, will not likely be affected by debris flows or erosion.

Of greater threat to the sites would be post-fire reconstruction of the trail which passes by them. Trail reconstruction could expose buried cultural deposits and make them susceptible to vandalism. This concern, which is not part of the BAER efforts, will be addressed when it is decided to reopen the trails within the fire perimeter.

In sum, there are no immediate cultural resource concerns within the Willow Fire perimeter. No funding for BAER treatments are requested.

B. Emergency Treatment Objectives:

To protect watersheds from the spread of noxious weeds.

Probability of Completing Treatment Prior to Damaging Storm or Event:
Land: N/A
Channel: N/A
Roads/Trails:
Protection/Safety:

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	85%	80%	75%
Channel	N/A	N/A	N/A
Roads/Trails	N/A	N/A	N/A
Protection/Safety	N/A	N/A	N/A

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Kevin Cooper
Email: KevinCooper@ResoluteAssoc.com **Phone(s)** 805-459-4281

Forest BAER Coordinator: JonathanYonni Schwartz
Email: jonathan.schwartz@usda.gov Phone(s): 805-698-9752

Team Members: *Table 7: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead(s)	Kevin Cooper
GIS	Marilyn Porter
Archaeology	Esther Morgan
Weeds/Fisheries/Wildlife	Patrick Lieske
Recreation	Mike Heard
Geology	Jonathan Schwartz

H. Treatment Narrative:

Land Treatments:

Noxious Weed EDRR

A. Treatment Type
The treatment is noxious weed detection surveys of all roads, dozer lines, drop points, and safety zones affected by the Willow Fire on NFS lands. These areas will be surveyed for evidence of introduction or spread of noxious weeds. If any new or outlying populations are found, these will be mapped and documented for future treatment and where possible hand treatments will be applied at the same time the surveys are conducted. Almost 6 miles of dozer lines were established on the Los Padres National Forest during this fire.

B. Treatment Objective
Evaluate and control the potential for noxious weed establishment and spread, in all areas affected by the Willow Fire suppression activities.

C. Treatment Description
Inspect all areas and monitor for newly established weed occurrences or the introduction of new non-native invasive species. Monitoring will include documentation and hand pulling small new weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastics bags, and properly disposed.

Documentation of new infestations will include:

- GPS negative and positive inspection results
- Incorporate data into GIS spatial database - NRIS
- Establish photo points
- Map perimeter of new infestation
- Estimate number of plants per square meter
- Treatment method
- Dates of treatment
- Evaluate success in subsequent inspection

Inspections and monitoring should be accomplished during April/August 2022. Based upon the first year's survey, additional surveying may be requested for up to three years. BAER funding is only requested for the first year after fire.

D. Treatment Cost

GS –11 Botanist/Resource Officer	$358/day x 5 days =	$1790
GS – 9 Botanist/Biologist (2)	$291/day x 1 pay periods (5 days) =	$1455
GS – 5 Bio Tech (2)	$225/day x 1 pay periods (5 days) =	$1125
Mileage:	1500 miles @ 0.45/mile =	$675
Per Diem	5 days @ $216/day =	$1080
	Total Cost Estimate for FY 2021 =	**$6125**

Channel Treatments: None

Trail Treatments:

Human Life and Safety Treatments pertinent to Forest Service Recreation Sites and Trails:

- Protect the public from injury or death resulting from exposure to post-fire hazards such as flooding, high water flow, rock fall, falling trees, and debris.

Photo of the Tony Trail looking downhill and into Willow Creek to the left.

Treatment Narrative

The BAER team recommends that the Marble Peak and Tony trails within the Willow Fire footprint be closed to public access to protect from tree fall, rock fall, and debris flow/flooding hazards. A closure order and signage will be necessary and need to be placed at trailheads and junctions that lead into this area. Installation of signs will be done by a Wilderness Ranger and volunteers. Estimated cost for the warning signs is $115. The BAER team also recommends that normal USFS trail work and access into and through the Willow Fire also be curtailed unless done to assess the level of risk abatement due to watershed recovery or for monitoring purposes.

Prior to lifting the closure, it is recommended to inspect all recreation sites and trails to determine if they can safely be opened. These inspections can be done by a Wilderness Ranger and District volunteers.

Item	Unit	Unit Cost	# of units	Total Cost
Trailhead warning signs	Project	$12.0	10	$120
GS-5 Wilderness Ranger	Project	$225/day	4 days	$900
Total				**$1,020**

Cultural Resources

I. Monitoring Narrative: Assess impacts from geological hazards on resources throughout the burn area during the rainy season and beyond.

Recreation and Trail Treatments:

It is proposed District volunteers will conduct routine patrols in the burned area to monitor effectiveness of the closure and to educate visitors on the hazards. It is also proposed that volunteers conduct post-rain season surveys to gauge the recovery of the watershed and to determine when to start repair work. This approach has proven to be of value in previous fires and results in no cost to the agency.

Interagency Coordination and Administrative Management

Forest BAER Coordinator will continue investing time in interagency coordination and administrative management of BAER Implementations.

Item	Unit	Unit Cost	# of units	Total Cost
Interagency Coordination & Administrative Management	Project	$525	3	$1,575
Total				$1,575

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

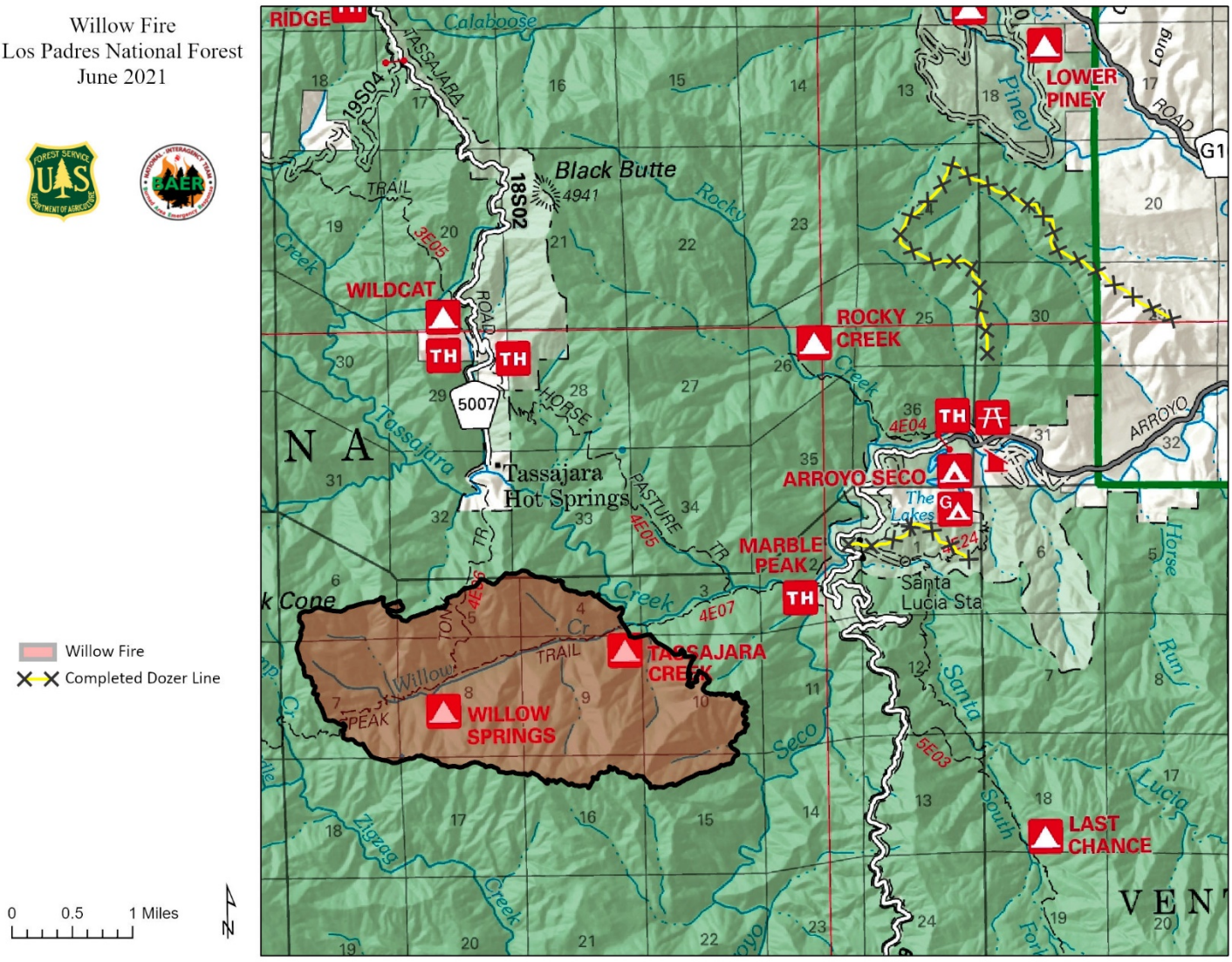
			NFS Lands				Other Lands			All
		Unit	# of		Spent	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
Invasive Weed Detection Survey	Project	6,125	1	$6,125	$0		$0		$0	$6,125
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$6,125	$0		$0		$0	$6,125
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$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										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
Closure Signs - Trails	Project	102	10	$1,020	$0		$0		$0	$1,020
Inter Agency Coordination & Administration		525	3	$1,575	$0		$0		$0	$1,575
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$2,595	$0		$0		$0	$2,595
E. BAER Evaluation										
Initial Assessment	Report			---	$6,600		$0		$0	$6,600
				$0	$0		$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$0	$6,600		$0		$0	$6,600
F. Monitoring										
				$0	$0		$0		$0	$0
				$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				$8,720	$6,600		**$0**		**$0**	**$15,320**
Previously approved										
Total for this request				**$8,720**						

PART VII – APPROVAL [of REQUEST]

Admin Unit(s): Kevin B. Elliott Digitally signed by Kevin B. Elliott Date: 2021.07.01 10:57:34 -07'00' 07/01/2021

Forest Supervisor (Los Padres National Forest) Date

Appendix A. Treatment map



Map of dozer lines established for control of the Willow Fire that need invasive plant surveys.