**Date of Report: 7/12/2020**

# 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:** Bringham Fire

**B. Fire Number:** AZ-ASF-000383

**C. State:** AZ

**D. County:** Greenlee

**E. Region:** Southwestern

**F. Forest:** Apache-Sitgreaves National Forests

**G. District:** Clifton RD

**H. Fire Incident Job Code:** P3M503

**I. Date Fire Started:** 06/06/2020

**J. Date Fire Contained:** anticipated 7/15/2020

**K. Suppression Cost**: 8,000,000

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

1. **Fireline repaired (miles): 5**
2. **Other (identify):** Click here to enter text.

**M. Watershed Numbers:**

*Table 1: Acres Burned by Watershed*

| HUC # | Watershed Name | Total Acres | Acres Burned | % of Watershed Burned |
|---|---|---|---|---|
| 150400050301 | Sheep Wash | 23,468.6 | 42.3 | 0.2 |
| 150400040707 | Turkey Creek | 13,709.7 | 24.6 | 0.2 |
| 150400040705 | Oak Creek-Blue River | 22,290.8 | 3,061.8 | 13.7 |
| 150400040702 | Squaw Creek | 23,127.1 | 12,497.9 | 54.0 |
| 150400040701 | Strayhorse Creek | 18,622.4 | 7,209.8 | 38.7 |
| 150400050205 | Bear Canyon | 14,983.4 | 306.0 | 2.0 |

*Table 2. Soil Burn Severity by Subwatershed.*

| Subwatershed HUC 12 | Subwatershed HUC 12 NAME | Total Acres | Acres in fire Perimeter | % HUC 12 in Fire perimeter | Burn Severity | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | High | Moderate | Low | unburned/ Very Low |
| 150400050301 | Sheep Wash | 23,468.6 | 42.3 | 0.2 | 0.00 | 0.08 | 10.72 | 31.51 |
| 150400040707 | Turkey Creek | 13,709.7 | 24.6 | 0.2 | 0.00 | 0.00 | 7.49 | 17.12 |
| 150400040705 | Oak Creek-Blue River | 22,290.8 | 3,061.8 | 13.7 | 60.1 | 1,166.5 | 1,397.4 | 437.8 |
| 150400040702 | Squaw Creek | 23,127.1 | 12,497.9 | 54.0 | 1,125.0 | 4,194.7 | 5,321.4 | 1,856.8 |
| 150400040701 | Strayhorse Creek | 18,622.4 | 7,209.8 | 38.7 | 489.9 | 2,763.5 | 3,435.9 | 520.5 |
| 150400050205 | Bear Canyon | 14,983.4 | 306.0 | 2.0 | 0.04 | 34.43 | 225.24 | 46.32 |
| | | Totals= | 23,142.4 | | 1,675.0 | 8,159.2 | 10,398.1 | 2,910.0 |

## N. Total Acres Burned:

*Table 3: Total Acres Burned by Ownership*

| OWNERSHIP | ACRES |
|---|---|
| NFS | 23,142 |
| OTHER FEDERAL (LIST AGENCY AND ACRES) | |
| STATE | |
| PRIVATE | |
| TOTAL | 23,142 |

**O. Vegetation Types:** Madrean Pine-Oak Woodland - 13,630 acres or 59% of burned area, Interior Chaparral - 6,850 acres or 30% of burned area, Ponderosa Pine Forest - 2,359 acres or 10% of burned area, Dry Mixed Conifer Forest - 217 acres or 1% of burned area, Mixed Broadleaf Deciduous Riparian Forest - 55 acres or <0.5% of burned area, Semi-Desert Grassland - 32 acres or <0.5% of burned area

**P. Dominant Soils:** Lithic Argiustolls - 10,870 acres or 47% of burned area, Lithic Haplustalfs - 6,977 acres or 30% of burned area, Udic Haplustalfs - 2,903 acres or 13% of burned area, Lithic Ustorthents - 1,282 acres or 6% of burned area, Typic Argiustolls - 872 acres or 4% of burned area

**Q. Geologic Types:** Basalt - 11,608 acres or 50% of burned area, Conglomerate - 3,786 acres or 16% of burned area, Rhyolite - 3,703 acres or 16% of burned area, Granite - 2,320 acres or 10% of burned area,Limestone - 1,708 acres or 7% of burned area, Mixed Alluvium - 20 acres or <1% of burned area

## R. Miles of Stream Channels by Order or Class:

*Table 4: Miles of Stream Channels by Order or Class*

| STREAM TYPE | MILES OF STREAM | NUMBER |
|---|---|---|
| PERRENIAL | 15 | N/A |
| INTERMITTENT | 70 | N/A |
| EPHEMERAL | 30 | N/A |
| SPRING/SEEP | N/A | 15 (7 named) |

S. **Transportation System:**
**Trails:** *National Forest (miles):* 19.5 *Other (miles):*
**Roads:** *National Forest (miles):* 0 *Other (miles):* 1.7

## PART III - WATERSHED CONDITION

## A. Burn Severity (acres) see Figure 1:

*Table 5: Soil Burn Severity Acres by Ownership*

| Soil Burn Severity | NFS | NFS Blue Range Primitive Area | Other Federal (List Agency) | State | Private | Total | % within the Fire Perimeter |
|---|---|---|---|---|---|---|---|
| Unburned | 2,910 | 1,418 | 0 | 0 | 1 | 2,909 | 13 |
| Low | 10,398 | 3,443 | 0 | 0 | 8 | 10,390 | 45 |
| Moderate | 8,159 | 5,034 | 0 | 0 | 0 | 8,159 | 35 |
| High | 1,675 | 109 | 0 | 0 | 0 | 1,675 | 7 |
| Total | 23,142 | 10,004 | 0 | 0 | 0 | 23,142 | 100 |

**B. Water-Repellent Soil (acres):** 5,755

**C. Soil Erosion Hazard Rating:** Severe - 23,034 acres or 99.5% of burned area, Moderate - 108 acres or 0.5% of burned area

**D. Erosion Potential: 8.9 tons/acre Sediment Potential:** 670 cubic yards/square mile

**F. Estimated Vegetative Recovery Period (years):** 5 – 10 years

**G. Estimated Hydrologic Response (brief description):** The fire burned portions of six subwatersheds (HUC 12): The Squaw Creek Subwatershed had the most acres burned at 54%, followed by Strayhorse at 39%, and Oak Ck. - Blue R. at only 14% and negligible amounts of burn in the remaining subwatersheds (Table 5.). Soils are mostly hydrologic soils group D and B with some C type stringers in lowland valley bottoms. Erosion Hazard ratings for these are predominately severe. Bedrock percentages within the burn were observed as being considerable although percentages are not precisely known.

*Table 2. Soil Burn Severity by Subwatershed*

| Subwatershed / HUC 12 | Total HUC 12 Acres | Acres in fire Perimeter | % HUC 12 in Fire Perimeter | Soil Burn Severity Acres | | | | Soil Burn Severity % of Subwatershed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | High | Mod. | Low | Unburned/ Very Low | High | Mod. | Low | Unburned /Very Low |
| Sheep Wash 150400050301 | 23,469 | 42 | 0 | 0.0 | 0.1 | 10.7 | 31.5 | 0.0 | 0.0 | 0.0 | 0.1 |
| Turkey Creek 150400040707 | 13,710 | 25 | 0 | 0.0 | 0.0 | 7.5 | 17.1 | 0.0 | 0.0 | 0.1 | 0.1 |
| Oak Creek-Blue River 150400040705 | 22,291 | 3,062 | 14 | 60.1 | 1167 | 1397 | 437.8 | 0.3 | 5.2 | 6.3 | 2.0 |
| Squaw Creek 150400040702 | 23,127 | 12,498 | 54 | 1125 | 4195 | 5321 | 1857 | 4.9 | 18 | 23.0 | 8.0 |
| Strayhorse Ck. 150400040701 | 18,622 | 7,210 | 39 | 489.9 | 2764 | 3435.9 | 521 | 2.6 | 15 | 19 | 3 |
| Bear Canyon 150400050205 | 14,983 | 306 | 2 | 0.0 | 34.4 | 225.2 | 46.3 | 0.0 | 0.2 | 1.5 | 0.3 |
| Totals | | 23,142 | | 1,675 | 8,159 | 10,398 | 2,910 | 8 | 38 | 49 | 13 |

Water Quality Response

- The most likely effects to water quality will be increased sediment and ash from the burned area into tributaries of the Blue River as well as the Blue River downstream of the fire area during and immediately after storm events which will increase turbidity and contribute to pool infilling. Although most ash has already been blown away by wind, residual amounts remain to degrade water quality somewhat.

- Increased nitrogen and ammonia may occur during the after the fire. Nitrogen & ammonia levels to downstream water reservoirs/river wells are non-significant due to a small percentage of the HUC12 watershed burned. Smaller basins produce proportionally more (4 times greater) nitrate concentrations than larger basins.

Water quality impairments immediately downstream form the burned area are listed as (from State 303d report at https://static.azdeq.gov/pn/pn_303d_2018draft.pdf): 1) Blue River, Strayhorse Ck. To San Francisco River (25.4 mi), E. Coli (category 5 impaired) as is 2) San Francisco River, Blue River to Limestone (18.7 mi.) and to Gila River (12.8 mi.), also just E. Coli.

Hydrologic Response

Pre and post-fire hydrologic modeling was performed on the two subwatersheds mostly affected. Wildcat 5 was selected to model for peak flow discharges. The 1 hour, 10 year event was used as the storm frequency, magnitude and duration parameters for the modeling as derived from the NOAA 14 table generated at the upper reaches of the drainage modeled (https://hdsc.nws.noaa.gov/hdsc/pfds/index.html). Curve Numbers (CN) used in the modeling were generated from GIS information including vegitaion type, hydrologic soils group. The USGS StreamsStats program (https://streamstats.usgs.gov/ss/) was used to obtain basin characterics parameters as well as watershed delineation. Pre-fire peak discharge was also calculated using both StramStats regresion equations and Wildcat CN based model for comparison purposes. Both were found to be within the same order of magnitude for the design storm. Wildcat 5 results are presented below.

*Table 6. Wildcat Modeling Results.*

| HUC 12 | Pre-Fire (CFS) | Post Fire (CFS) | % Change |
|---|---|---|---|
| Squaw Ck. | 1,451 | 2755 | 47 |
| Strayhorse | 1,867 | 2,402 | 22 |

It is important to note that the pre- and post- peak flow values (cubic feet per second) are not precise predictions and are only an "order of magnitude" estimate, rather it is the percent change from pre-fire conditions that is significant. Past fires were considered for this analysis but largely discounted due to age, extent, and geology/topology.

## PART V - SUMMARY OF ANALYSIS

**Introduction/Background**

The Bringham Fire, located 22 miles north of Morenci, AZ, is currently burning on the Clifton Ranger District of the Apache-Sitgreaves National Forests. The Bringham Fire was caused by a lightning strike on on June 6, 2020. Due to the increasing complexity of the fire, the Apache-Sitgreaves National Forests ordered the Southwest Area Type 2 Incident Management which assumed command of the fire on June 13, 2020. The Bringham fire transitioned back on June 23, 2020 from the Type 2 Southwest Incident Management 4 to the Type 3 Incident Management Team. The Bringham fire has decreased in complexity and has moderated to the point that command of the fire transitioned to a Type 4 Organization. The perimeter of the fire covered approximately 23,000 acres all of which are on Forest Service managed lands. The fire is located in a remote section of the forest with nearly half within the Blue River Primative area. The geology of the area is relatively stable with outcrops of sedimentary and volcanic lithologies. Vegetation in the uplands is ponderosa pine and pinion juniper and desert scrub in the lowlands.

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

**1. Human Life and Safety (HLS) and Property (P):**

## Overview

There are limited Forest Service, County and State roads and no culverts or structures that will be potentially affected from post- fire flooding and debris flows. Forest Service road 475 (Juan Miller) low water crossing located 15 miles downstream of the fire perimeter is a value at risk (VAR) for human health and safety standpoint. However, given the distance from the fire and that the fire (including unburned portions) is only 7.1% of the drainage area upstream, the risk should not change substantially over baseline conditions (Table 7.). The Blue River valley bottom is capable of withstanding very high flows with a wide, sinuous channel and broad and frequent floodplains. The USGS has maintained a streamgage at Juan Miller crossing for a significant period show a broad range of peak floods from 2 year recurrence (2,630 cfs) to a 500 year recurrence interval of over 92,000 cfs. Therefore it is unlikely that peak flows generated in the fire perimeter will be able to generate enough volume to significantly alter channel characteristics. Flooding and debris flows put life and property at risk along trails that cross stream channels or that follow floodplains, terraces or other near-channel locations. There are 15 springs (7 named) in the fire as listed in the NHD I GIS layer. Of those only 4-5 have been reported as having some sort of developed infrastructure associated with them. All these sites are in the uplands near the top of the drainages and will receive some debris input that will likely be easily repaired.

*Table 7. Juan Miller Crossing VAR Sub Basin Data.*

| Value at Risk | Total Sub-basin Acres | Acres fire in Blue River Sub-basin | % Sub-basin in Fire | High | Mod. | Low | Unburned or Very Low | Soil Burn Severity % of Sub-basin | | | | Distance from fire |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | High | Mod. | Low | Unburned/ Very Low | |
| Juan Miller Crossing | 322,993 | 22,772 | 7.1 | 1,044 | 11,430 | 7,485 | 1,044 | 0.3 | 3.5 | 2.3 | 0.3 | 15 mi. |

### *Downstream recreation and VARs downstream on the Blue River*

*The area upstream and downstream of Forest Service Road 475 along the Blue River is heavily used for outdoor recreation activities.*

### *Risk Assessment- Threats to Life and Safety*

*Probability of Damage: Possible. A significant precipitation event (greater than 50- year) could cause flooding downstream on the Blue River where recreation such as hiking, camping and day use occur.*

*Magnitude of Consequence: Major – Injury or worse*

*Risk Level: High*

### *Downstream Recreation Response Actions*

Release public statements and social media posts warning of potential flooding risks downstream of the burned area. Coordinate with local, county, and other Federal agencies such as the Greenlee County, Bureau of Land Management, and National Weather Service. Install warning signs at designated locations.

### *Trails Assessment and VARs*

Approximately 20 miles of trails were directly impacted by the Bringham Fire as shown in Table 8. Of those, almost 10 miles of trail were within the moderate to high soil burn severity classes. These trails are at risk of flooding, debris flow, washout, and hazard trees.

*Table 8. Mileage of Trails by Soil Burn Severity class.*

| Trail Name | Unburned | Low | Moderate | High |
|---|---|---|---|---|
| AD BAR | 0.48 | 1.78 | 0.09 | 0.00 |
| RED MOUNTAIN | 0.17 | 2.31 | 3.24 | 1.52 |
| STRAYHORSE | 0.41 | 3.72 | 2.56 | 0.02 |
| MALLET | 0.01 | 0.00 | 0.00 | 0.00 |
| BEAR PEN SPRINGS | 0.09 | 0.72 | 2.01 | 0.30 |
| ROSE PEAK | 0.00 | 0.44 | 0.09 | 0.00 |
| TOTAL MILES | 1.17 | 8.96 | 7.98 | 1.84 |

In addition, 16.5 miles of trail (Table 9.) located outside of the fire perimeter have the potential to be impacted by future runoff events. These trails are located in drainages down slope of the fire area resulting in risk of flooding and debris flow occurrences within the trail prism.

*Table 9. Miles of Trails Potentially Impacted by Runoff Events*

| Trail Name | Miles |
|---|---|
| Blue River | 9.5 |
| AD Bar | 2.7 |
| Thomas Creek | 4.3 |
| TOTAL MILES | 16.5 |

The probability of loss/failure for the trails currently impacted by the Bringham Fire and those that have the potential to be impacted by future runoff events will vary. Trail prisms located down slope from high burn severity areas have a higher probability of failure compared to the trail prisms that are up slope from high burn severity areas or are located within the low burn severity areas. Trails located outside of the fire perimeter area will also vary in the degree of risk of failure depending on the post fire weather and runoff events. The overall risk for portions of the trails listed above to fail is moderate.

***Risk Assessment – Threats to Life or Safety on FS Trails***

*Probability of Damage or Loss: within and downslope burned area: possible – steep side slopes with high and moderate soil burn severities will likely have increased runoff and the potential to initiate debris flows and rock falls. Dangerous flood flows could also occur downstream of the burned area near stream crossings during heavy precipitation events.*

*Magnitude of Consequence: Major – Injury or worse possible*

*Risk Level: High*

***Risk Assessment – Threats to Property - FS Trails***

*Probability of Damage or Loss: Possible – trail become conduits for accumulating runoff, causing trails to become gullies and channelizing sediment into streams.*

*Magnitude of Consequence: Moderate – damage of trail prism*

*Risk Level: Intermediate*

## Trails Emergency Response Actions:

Response actions to be considered should include the installation of flood, debris, and hazard tree warning signs at designated areas and access points identified through the initial assessment period to help protect the health and safety of the public. The majority of failures within the listed trail prisms will occur following the next large runoff event. Due to this, a trail crew will be needed to assess and complete repairs to the areas of trail that failed.

Monitoring of the trails listed in Tables 1 and 2 will need to be completed following runoff events for several years until the area has stabilized. Initial monitoring by storm inspection and response actions should occur throughout the immediate monsoon season to locate, document, and assess sections of trail that failed, are a risk to public safety and should be repaired/maintained by a trail crew. A trail crew will be needed post monsoon season to continue monitoring trail conditions and begin repairs of the failed areas.

## *Roads* Condition Assessment and VARs

No roads were within the burned area, however approximately fifteen miles downstream on the Blue River there is a low water crossing for NFSR 475. Also, upstream of the low water crossing NFSR 475C parallels the Blue River for a short distance. The drainages leading to the Blue River have large buffers of live unburned trees and vegetation greatly reducing the chance for large debris flow mobilizing downstream. The Blue River has very large flood plains and should allow ash and sediment to settle out prior to reaching the NFSR 475 crossing.

### *Risk Assessment – Threats to Property - Roads*

*Probability of Damage or Loss: Possible – Low water crossing at NFSR 475 possibly impacted by sediment accumulation or scouring. NFSR less likely to be impacted as on the floodplain.*

*Magnitude of Consequence: Moderate – damage of roads and disruption of ingress, egress*

*Risk Level: Intermediate*

### *Risk Assessment – Threats to Life and Safety - NFS Roads*

*Probability of Damage or Loss: Possible to Unlikely – Low water crossing at NFSR 475 possibly impacted during heavy precipitation events. NFSR less likely to be impacted is on the floodplain.*

*Magnitude of Consequence: Major – potential for injury or worse*

.

*Risk Level: High for NFSR 475, and Intermediate for NFSR 475C*

## Roads Recommended Emergency Response Actions:

Installation of warning signs on Forest Service Roads 475 and 475C to alert travelers of potential hazards on and off the road. Inform public of potential hazards through press releases and social media. Communicate information regarding post-wildfire hazards with cooperators such National Weather Service and other Federal/ Local County governments.

## Range Infrastructure Assessment and VARs

Two allotments (AD Bar and Strayhorse) have associated impacts from the fire. Rangeland resources on these allotments experienced moderate impacts from wildfire. 07/01/2020 aerial reconnaissance over the Bringham Several miles (7 – 12 miles) of fence improvements and corral infrastructure were located within high and moderate burn severity areas and the amount of improvements within low to very low burn severity are negligible. Monitoring of the rangeland resource and reconstruction/repair of range developments can be accomplished through the administration of the Forest Service's grazing and livestock use permit system. In general, the range forage resource will only improve over the next few years.
Additional considerations need to be made for the natural pothole water sources that will either be filled by ash or eroded out leaving behind slot canyons inaccessible to livestock. Further considerations should also include downstream effects of silt and ash sedimentation. Within the burn area there are a few dirt stock tanks and corrals that were affected as well as the old AD Bar ranch HQ and corrals.

***Risk Assessment – Threats to Property – Spring Boxes and Piping***

*Probability of Damage or Loss: Possible* – Damage from sheet flow or debris flows within moderate soil burn severity areas.*

*Magnitude of Consequence: Moderate – Necessary for grazing operations, difficult to repair given remoteness of area.*

.
*Risk Level: Intermediate*

**Note: we were unable to adequately access risk to spring boxes without a field visit.*

**Range Infrastructure Recommended Response Actions**

None Recommended

**11. Natural Resources (NR):**

**Aquatics Resource Condition Assessment and VARs**

The major threat to consider following wildfire in this area is the associated ash flow generated during the first heavy monsoon rains. Downstream fish kills are possible if the amount of ash deposited in the stream is of a high enough concentration. However, considering that the high intensity portion of the burn is only 7% of the HUC 6 watershed, the impact is expected to be within the historical concentration of suspended solids, therefore threats to ESA listed species downstream in Blue river are expected to be negligible. Strayhorse Creek is occupied by Longfin dace, Sonora and Desert suckers, which have no designated federal listing status. Squaw creek is occupied by Speckled dace, which is also not a species of concern. Under current definitions set forth by the US Fish and Wildlife Service, Narrowheaded gartersnakes are currently considered present along the entire Blue river, and Critical Habitat has also been proposed for this same area. Since the threat to native soft-rayed fishes is minimal, the potential effects to Narrowheaded gartersnakes is also considered to be minimal. Aquatic species in this area are locally adapted to the effects of wildfire, including increased flow rates and transport of sediment and ash. These effects are temporary, and in this instance tolerable by resident species.

***Risk Assessment – Threats to Natural Resources – T & E habitat***

*Probability of Damage or Loss: Likely – likely to be fish kill from ash and sediment immediately downgradient/downstream of high and moderate soil burn severity areas.*

*Magnitude of Consequence: Minor – T&E fish species were salvaged and relocated, many other miles of T&E habitat across the forests*

*Risk Level: Low*

## Aquatics Recommended Emergency Response Actions

AZ Department of Game and Fish performed a fish salvage and relocation operation during the early stages of the Bringham fire, in order to relocate fish from the lower Blue river into the upper Blue river in an attempt to reduce the potential threat from ash and sediment flow. Approximately 800 Spikedace were moved to the stream adjacent to the Upper Blue campground, and a few hundred Loachminnow were relocated to Campbell Blue, as well as a similar amount being retained for captive propagation. These mitigation measures were proactive and very appropriate considering the unknown trajectory and intensity of the fire at that point. Seeding the moderate and high soil burn areas was discussed, but since the area would only constitute 10% of the watershed, the option was dismissed as a poor return on investment. Pre- fire soil conditions are expected to return within 1-5 years.

## Wildlife Resource Condition Assessment and VARs

Mexican spotted owls (*Strix occidentalis lucida*)(MSO) have several Protected Activity Centers (PACs) near or within the Bringham fire boundary. Within the boundary itself, there was only one PAC (Bringham Peak PAC) comprising 740 acres. The other PACs nearby the fire were, the Engineer Springs PAC (half a mile north of the fire), the Hot Air PAC (two miles north west and across highway 191 from the fire), and the Raspberry creek PAC (approximately 2.5 miles north of the fire). The only PAC with direct effects from the fire was the Bringham Peak PAC, while the others were probably disturbed from fire activities (helicopter flights, dozer lines, and smoke) none of the others should have effects past this breeding season, while the Bringham Peak PAC was effected by the fire itself.

The Soil Burn Severity (SBS) map was used along with GIS analysis to determine the acres of the affected Bringham Peak PAC. The Bringham Peak PAC was completely encompassed in the Bringham fire, with the PAC consisting of 740 acres of the 23,000+ acre fire. The SBS shows that, of the 740 acres of the Bringham Peak PAC, 172 were considered in the high burn severity category, 339 fall into the moderate burn severity category, 228 were in the low burn severity category, and less than an acre was unburnt. Pockets of timber, within or adjacent to PACs, that burned at low severity may provide refuge for displaced owls. With the potential loss of only one out of four PACs in the area near the fire perimeter, it is probable that the damage or loss of the species or habitat as being low, and the magnitude of the consequences to this species and its habitat being minor overall.

***Risk Assessment – Threats to T&E Terrestrial Species habitat**: Mexican Spotted Owl and Narrow-Headed Gartersnake*

*Probability of Damage or Loss: Mexican Spotted Owl, roosting avian species– Unlikely, Narrow-Headed Gartersnake-Possible- habitat near likely impacted stream segments.*

*Magnitude of Consequence: Minor for both, many areas of occupied habitat across the Forests*

*Risk Level: Mexican Spotted Owl – Very Low, Narrow-Headed Gartersnake - Low*

## Wildlife Resource Recommended Response Actions

Although no short-term emergency responses were recommended, long-term rehabilitative treatments, including seeding of high and moderated soil burn severity areas to restart herbaceous early seral succession were proposed in the Wildlife specialist report. Aerial seeding treatments were initially considered for emergency soil stabilization and would have if successful provided benefits to multiple resources but were

dropped from further consideration because of the low potential for success given the soil and vegetation types.

## Cultural and Heritage Resources Assessment and VARs

4.

The Apache-Sitgreaves National Forests contain high densities of cultural resources, however, much of the Bringham Fire burn area is located in the Blue Primitive area where few Federal undertakings requiring archaeological inventory have taken place. Furthermore, those areas burned by the Bringham Fire which are outside of the Blue Primitive area are at elevations where prehistoric site densities drop-off considerably (ca. 7500 ft above mean sea level). As a result, few known archaeological sites are located within the Bringham Fire perimeter. Archaeological sites within these high elevation areas tend to date to the historic period though high elevation Native American shrine locations are known in the area. There are eight known archaeological sites and/or heritage related values at risk located in the Bringham Fire burn area. All of these heritage resources have never been formally evaluated for inclusion in the National Register of Historic Places and all have an unevaluated determination of eligibility. Field assessments revealed that the majority of archaeological sites were located within areas that experienced either a very low or low burn severity. Only two sites, sites AR 03-01-03-0001 and AR 03-01-03-0027, were located in areas that experienced a moderate burn severity. However, this assessment of severity may have been influenced by vegetation thinning that took place during suppression efforts to prepare the Rose Peak lookout complex for burn-out operations. Because all sites experienced a relatively low severity burn, all pose low to very low risk of damage or loss from post-fire effects and the consequences of post-fire effects are deemed to be minor.

***Risk Assessment: Threats to Cultural Resources*** *– two sites present*

*Probability of Damage or Loss: Unlikely, sites located in low soil burn severity areas*

*Magnitude of Consequence: Minor for both, many areas of occupied habitat across the Forests*

*Risk Level: Minor, no* potentially eligible National Register of Historic Places

### Cultural and Heritage Resources Recommended Response Actions

No treatment recommendations are warranted to protect these resources from post-fire effects.

## Soils Resource Condition Assessment and VAR

Increased levels of soil erosion and sediment delivery can be expected in locations of high burn severity as well as some areas of moderate. Soil erosion modeling for high and moderate severity burned areas showed an increase in soil loss from approximately 0.05 tons per acre average pre-fire to 8.9 tons per acre average post-fire. To provide some context, generally about 150 tons per acre is the equivalent of one cubic inch per acre. In addition, the extent of these impacts across the fire as a whole to long-term soil productivity are relatively minor when you consider burn severity class extent. While high severity fire locations do generally experience some impacts to long-term site productivity from soil erosion via loss of vegetative canopy / ground cover and soil hydrophobicity in some cases, only 7 percent of the entire burned area experienced high burn severity. Approximately 35 percent of the fire burned moderate while the remaining 58 percent was low/unburned. Low and unburned areas generally exhibit soil loss rates similar to that of pre-fire conditions.

***Risk Assessment: Soil Productivity***

*Probability of Damage or Loss: Likely in the high and moderate soil burn severity areas*

*Magnitude of Consequence: Minor, should recover in 5-10 years*

## Soils Resource Response Actions

The BAER team discussed the possibility of seeding to protect soil productivity as a BAER critical value. Discussion centered around considering the majority of the high and moderate burn severity within the area of the headwater valley of Strayhorse Creek downstream to where it intersects the burn perimeter. It was concluded, however, that the return on investment of implementing a seeding treatment solely for the purpose of trying to protect soil productivity through mitigation of some soil loss and sedimentation just wasn't there. The proposed seeding area would only treat about 10 percent of the entire watershed. The vast majority of the slope gradients within the valley are 40 percent or greater. More than half of the considered treatment area would be in primarily chaparral and woodland vegetation types which are typically less productive due to having warmer and drier climatic regimes compared to forest types. This would not bode well for successful grass response. In addition, more than half the soils within the considered area are shallow to bedrock (< 50 cm), have a high water run-off potential, and are very to extremely gravelly at the soil surface (45% to 60%+ cover). These soil characteristics are not conducive to a good probability of success for a seeding treatment.

Overall, it is anticipated that the majority of the high and moderate burn severity areas across the fire should naturally recover herbaceous vegetation adequately within the first 5-10 years which should considerably reduce increased soil loss in these locations. It was ultimately deemed that the magnitude of consequence for soil productivity as a BAER critical value is minor and the probability of damage or loss is likely which rates as a **Low** risk.

## Noxious Weeds Assessment

The fire perimeter has no new known class A or B noxious weed infestations that may require aggressive treatment for control. Therefore, there are no recommended emergency treatments for noxious weeds other than the fore-mentioned preventive measures.

## Noxious Weeds Recommended Response Actions

No treatments are recommended.

**Emergency Treatment Objectives**: Reduce risk to public health and safety by means of a temporary closure of the area until after the first damaging storms occur. This in addition to communicating with the public via press releases and social media and contacting cooperating agencies directly regarding post-wildfire hazards. We are requesting funding for installation of warning signs to place near roads and trails reagarding potential post-wildfire hazards. Maintain safe ingress and egress on roads via storm inspection and response on likely impacted Forest Service maintained trails and roads.

**B. Probability of Completing Treatment Prior to Damaging Storm or Event:**
**Land** NA **Channel** NA
**Roads/Trails** NA, proposing storm inspection and response **Protection/Safety** 90%

**D. Probability of Treatment Success**

*Table 3: Probability of Treatment Success*

| | *1 year after treatment* | *3 years after treatment* | *5 years after treatment* |
|---|---|---|---|
| ***Land*** | | | |
| ***Channel*** | | | |
| ***Roads/Trails*** | | | |
| ***Protection/Safety*** | 100 | 100 | 100 |

**E. Cost of No-Action (Including Loss):** $40,000

**F. Cost of Selected Alternative (Including Loss):** $18,600

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

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

**Team Leader:**
**Email:**paul.a.brown@usda.gov **Phone(s)** (928) 333-6308

**Forest BAER Coordinator:**
**Email:**paul.a.brown@usda.gov **Phone(s):** (928) 333-6308

**Team Members:** *Table 4: BAER Team Members by Skill*

| Skill | Team Member Name |
|---|---|
| *Team Lead(s)* | Paul Brown |
| *Soils* | Eric Robertson |
| *Hydrology* | John Rihs |
| *Engineering* | Chris Miller |
| *GIS* | Mary Ellen Komnath |
| *Archaeology* | Elizabeth Toney and Matthew Talioferro |
| *Weeds* | Michael Stephens |
| *Recreation* | Amber Swinney |
| *Aquatics* | Ben Cram |
| *Wildlife* | Steven Zanoni |

**H. Treatment Narrative: (see Figure 2)**
I.

**Land Treatments:** Although the Bringham Fire resulted in a combined high and moderate soil burn severity of 42%, there are a number of considerations why aerial treatments such as seeding and mulching were not recommended. Because the absence of life, safety, and property VARs immediately downstream of the burned area and not out of control of the land manager, mulching was eliminated as a treatment option. The probability of success of an aerial seeding treatment was considered low given the mostly southernly aspect of the burned area, and soil and vegetation types. The soils are very shallow, high rock fragment content and high runoff potential (Hydrologic Soil Group D) under pre-fire conditions. The vegetation which is 80% woodland and chaparral is not well suited for successful seeding.

**Channel Treatments:** None proposed

**Roads and Trail Treatments:** Forest Road 475 and 475C are popular routes for NF visitors and used by grazing permitees to access an active allotment. Therefore, inspection of these roads following significant precipitation events and maintaining them to be passable if impacted is warranted.

Road Inspection and Response
$2,000*/ storm inspection and response x 5 events = $10,000

Trail Inspection and Response

| | | |
|---|---|---|
| Storm Inspection | One GS-04 and one GS-05 for 30 days to hike trails post storm events | 10,000 |
| Trail Crew | One GS-05 and two GS-04s for trail repair for 4 x 8day hitches (32 days) | 16,000 |
| Material packing/livestock | Contract to pack equipment and materials in for trail repair | 20,000 |
| | Total | $46,000 |

** Given the remote location of these roads, mobilization costs are more than usual.*

**Protection/Safety Treatments:**

Sign Installation

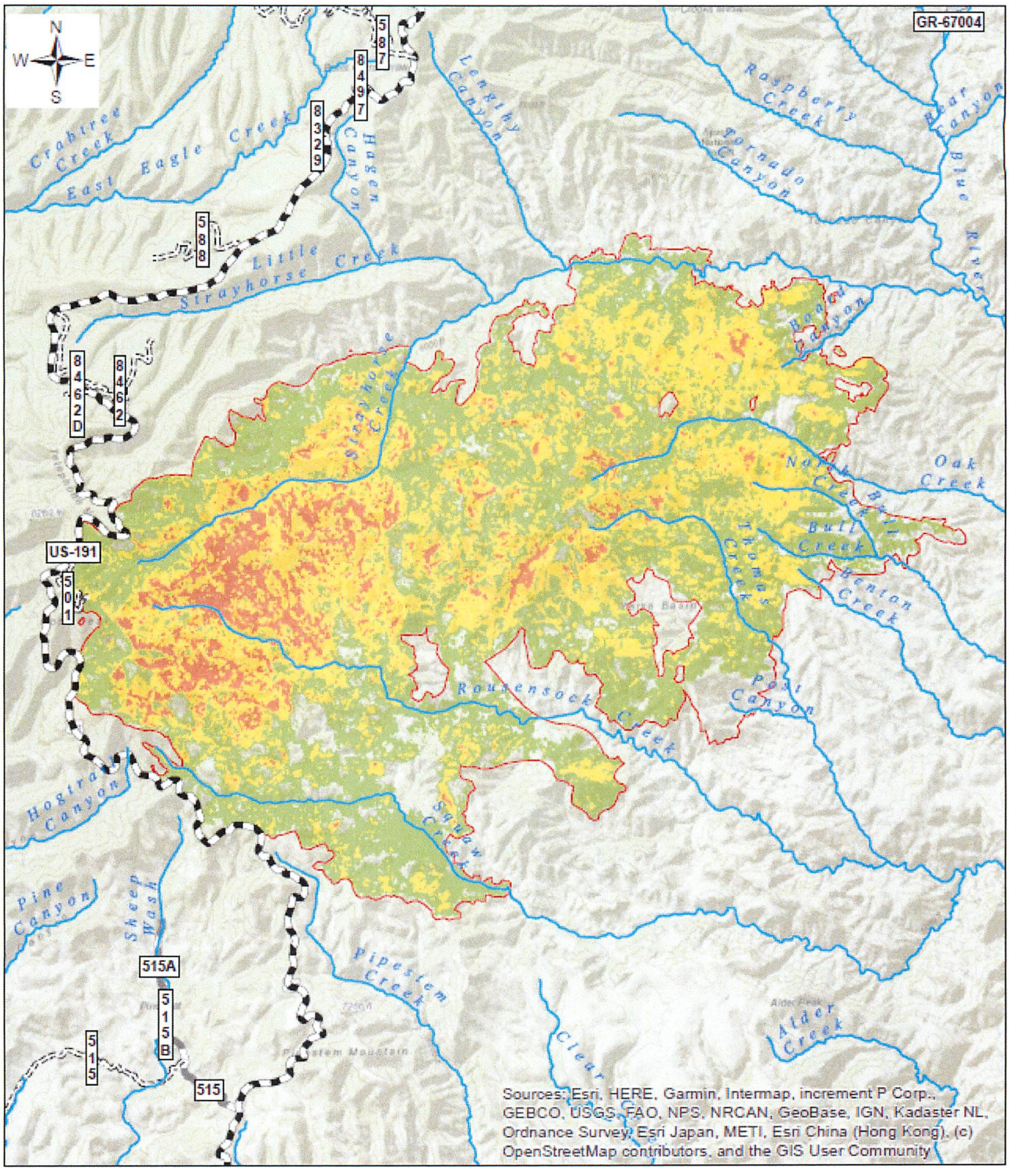
| | Price Each | Quantity | Cost |
|---|---|---|---|
| 48" x 36" fire damage signs | 180 | 10 | 1800 |
| 36" x 24" fire damage signs | 140 | 10 | 1400 |
| 6' long 3 lb U-Channel posts | 25 | 40 | 1000 |
| 3' long 3 lb U-Channel posts | 20 | 40 | 800 |
| Bolts, 5/16 x 3" carriage Box | 20 | 2 | 40 |
| Nuts, 5/16: #10 per 100 Box | 30 | 2 | 60 |
| Labor per day 2 people | 700 | 5 | 3500 |
| | | Total | $8,600 |

## PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **A. Land Treatments** | | | | | | | | | | |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Land Treatments* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **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** | | | | | | | | | | |
| Road Inspection and Respo | 5 | 2,000 | 5 | $10,000 | $0 | | $0 | | $0 | $10,000 |
| Trail Inspection and Respon | 0 | 0 | 0 | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Road and Trails* | | | | $10,000 | $0 | | $0 | | $0 | $10,000 |
| **D. Protection/Safety** | | | | | | | | | | |
| Road and Signs | 4 | 430 | 4 | $1,720 | $0 | | $0 | | $0 | $1,720 |
| Trail Signs | 16 | 430 | 16 | $6,880 | $0 | | $0 | | $0 | $6,880 |
| *Insert new items above this line!* | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Protection/Safety* | | | | $8,600 | $0 | | $0 | | $0 | $8,600 |
| **E. BAER Evaluation** | | | | | | | | | | |
| Initial Assessment | Report | $20,300 | 1 | $0 | $20,300 | | $0 | | $0 | $20,300 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | --- | $0 | | $0 | | $0 | $0 |
| *Subtotal Evaluation* | | | | $0 | $20,300 | | $0 | | $0 | $20,300 |
| **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** | | | | $18,600 | $20,300 | | **$0** | | **$0** | **$38,900** |
| Previously approved | | | | | | | | | | |
| Total for this request | | | | **$18,600** | | | | | | |

## PART VII - APPROVALS

1. for Forest Supervisor — 07-13-2020 Date




The USDA Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification.

Map Created By: Paul Brown
On: July 11th, 2020

FIGURE 1

Legend

Stream Route

Bringham_Final_SBS
Soil_Burn_Severity

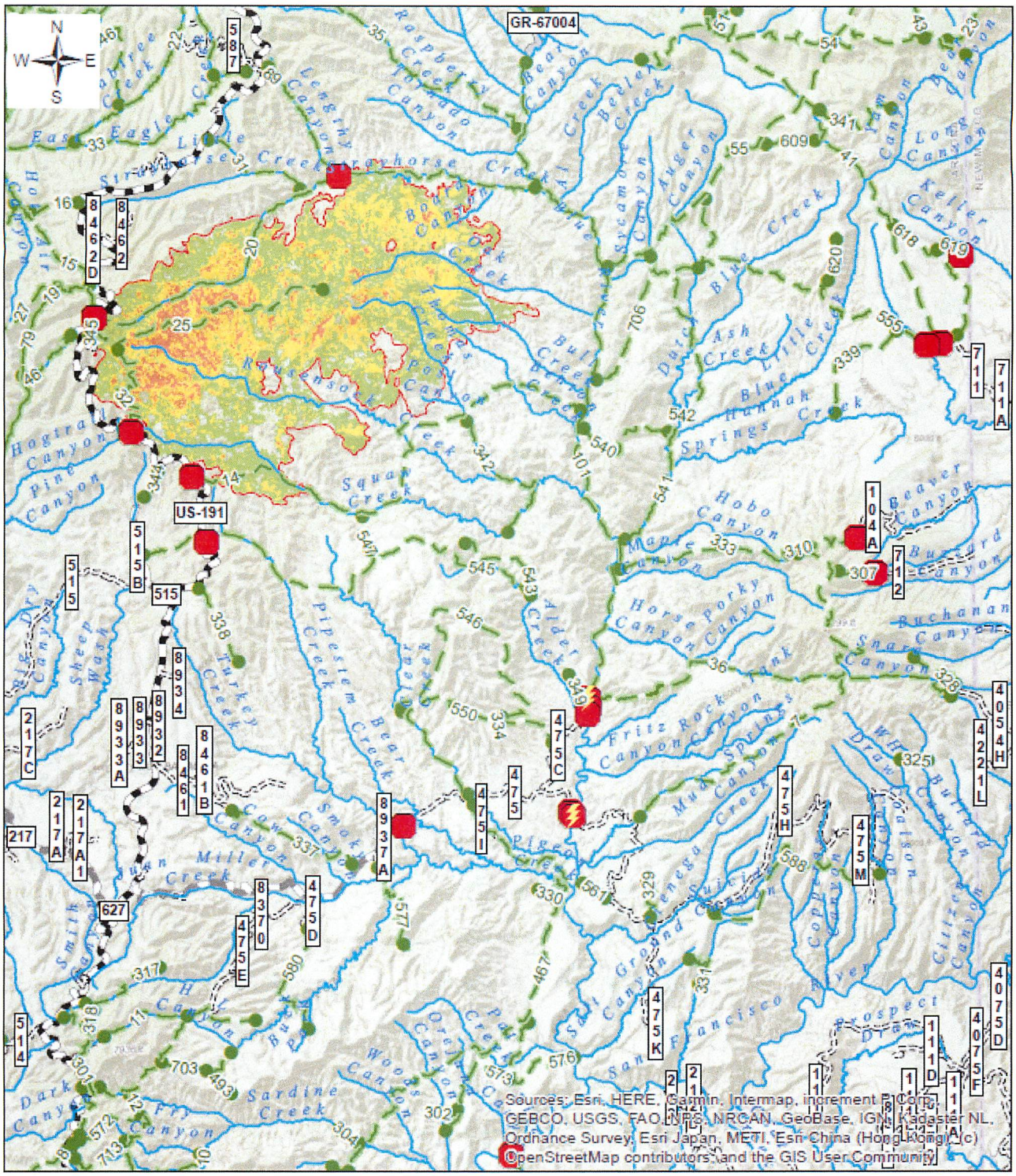
- High
- Low
- Moderate
- Unburned/Very Low

## Bringham Fire Final Soil Burn Severity Map

Clifton Ranger District
Apache-Sitgreaves National Forests

2 1 0 2 Miles

1:100,000




The USDA Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification.

Map Created By: Paul Brown
On: July 11th, 2020

FIGURE 2

**Legend**

- StormInspRes
- BringhamSigns

**Terra Trail**

**Trail Purpose**

- Non-Motorized
- Motorized (OHV)

# Bringham Fire Response Action Map

## Clifton Ranger District
## Apache-Sitgreaves National Forests

4 2 0 4 Miles

1:200,000