

**Three Rivers BAER Assessment
May 2021
Smokey Bear Ranger District
Lincoln National Forest
White Paper**

Introduction

The Three Rivers Fire started April 26, 2021, just inside the White Mountain Wilderness, above the Three Rivers Campground. It quickly spread into the White Mountains Wilderness and up into the western escarpment on the Smokey Bear Ranger District located on the Lincoln National Forest (LNF), over the mountain ridges into the Little Bear burn scar on the east. Fuel types were within initially pinon juniper, moved into ponderosa and to the top of the mountains into the high elevation mixed conifer and alpine grassland vegetative types. The fire burned from 1925 meters elevation to 3420 meters elevation at the hill northwest of Lookout Mountain.

The west side of the White Mountains form part of the western escarpment dropping into the Tularosa Basin. This western escarpment is composed of steep cliffs and vertical rises. and mountain range composed of an igneous and limestone mix. The higher elevation has mixed conifer, with the mid and lower slopes of the mountains composed of Ponderosa pine forests, grading into pinon juniper woodlands. The mountains terminate abruptly into pinon juniper, and once out of the hills, gives way to desert scrub. The mountain slopes are steep, with talus slopes and boulder fields prominent. The high elevation slopes hold some water, especially on the east side, but on the western escarpment surface flow from rain cascades off the steep slopes and directly into the heads of the drainages. There are several springs at the foot of the White Mountains that produce a small but steady amount of water. Three Rivers is a perennial stream, as it flows 9 months out of the year. The stream retains deep pockets and pools of water that, although seemingly unconnected on the surface, do not dry up, and allow survival of aquatic biota.

The Three Rivers burned area is 98% located within the White Mountain Wilderness. Much of the White Mountains is designated wilderness, and only accessible by foot traffic. The terrain has been described as rocky and challenging, with rolling hills at the foot of the mountains and steep cliffs and talus slopes in the upper reaches of the mountains. Elevations range from 5,400 to 10,083. Annual precipitation for the White Mountains is about 19 inches, and the precipitation pattern is bi-modal with 70 percent of the precipitation coming during the summer months and the remaining 30 percent coming as snow during the winter months. Those areas within the burn that experienced moderate to high severity burn pose the potential for accelerated erosion and loss of water control. This is especially true of the western escarpment that burned during the fire

BAER Critical Values

The Three Rivers fire burned with 647 acres of high severity burn, 2317 acres of moderate severity burn, and 2885 acres as low and unburned severity. The fire burned up the western escarpment and into the high elevations of the 2012 Little Bear burn scar, impacting areas that had started to recover from that landscape-scale stand-replacement fire. Little to no vegetative ground cover remains in the high severity burn areas of mixed conifer, alpine and sub-alpine grassland and ponderosa habitats. Dropped needles and vegetative sprouting was noted in the moderate burn severity sites. Grass root collars remain intact within a majority of the moderate and low burn severity areas of the grassland and pinon-juniper vegetation type, and these areas have already started resprouting. The burned area will experience higher than normal erosion and overland water flow due to loss of vegetative cover, especially in the upper elevations with the steep terrain, until vegetative cover becomes re-established.

Post-fire conditions will impact the values at risk listed below. It has been determined from the BAER assessment and modeling that there are risks to public safety, property, infrastructure and natural resources. The following are values at risk, which includes a public safety risk.

Table: BAER 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):

Threats to life and safety exist along riparian areas and drainages in and below high and moderate severity burn as well as in and below reburn of the Little Bear burn scar. Road users, private landowners and recreational hikers will be exposed to increased risk of water flow, debris and snags. Due to loss of vegetative ground cover in the high severity burn, there is a likelihood of increased overland flow and sedimentation. Monsoon storms are often severe, with heavy rainfall, and can easily rain over one inch per hour. This can cause flooding, sediment and debris flows. High winds can result in snags falling across the burned area, on trails and across roads. Closures and caution/hazard signs are recommended for trailheads and roads that intersect the burned area. These are for the Forest Service employees and for visitors to be warned and aware of the hazards in accessing this area via the trailheads and roads as access points into the area. Threats to human life and safety along the trails inside and

below the burned area, have a probability of Likely with Major consequences for a Very High risk.

2. Property (P):

The Three Rivers Campground lies directly below the Three Rivers burned area. This was reviewed and identified as being at a Very High risk for human life and safety and infrastructure integrity loss. This campground has a BAER treatment recommendation of closure with hazard/caution signs and removal of potentially floatable materials. The campground information is listed below:

Three Rivers Campground: This campground has a total capacity of 162.0 with 15 units, development scale of 3 and recreation opportunity spectrum (ROS) class rural. The campground contains multiple toilets, a steel equestrian corral, garbage bins, picnic tables, pedestal grills, and sun/wind shelters and pavilions. There is also a solar powered well and water tank within the campground. Access to this road is obtained via NFSR 00579 and is the only way in and out. The potential for entrapment during a heavy rain event, resulting in flooding and sedimentation, is possible. The campground was assessed of having a Likely probability of damage or loss, with a Major magnitude of consequences, leading to a Very High-Risk assessment.

There are no roads within the Three Rivers burned area, but there are roads below the burn scar. These roads will be impacted by the predicted increased post-fire water flows at higher flow rates than the pre-fire flows. These roads are expected to be impacted by sedimentation, flooding and possibly headcutting. The engineering field reconnaissance identified three roads that could be compromised, and also provide access points for entering the burn scar. Post fire effects could compromise the integrity of the roads, posing a safety hazard. Two of these roads suffered post-fire effects from the Little Bear fire, and with the current post-fire effects, a few of these problems have the potential to resurface. BAER treatments recommend closures and/or hazard/caution signs to be installed. Post fire conditions could lead to further erosion and deterioration of the roads. In one case, a temporary closure of the road is warranted for human health and safety concerns. The following roads were identified as having a high risk for human life and safety or infrastructure integrity loss:

FSR 579: This is a 3.4100-mile-long operational maintenance level 3 road made of improved native material. It is the only access to three rivers campground and trailhead. Beginning termini is Three Rivers Ranch House and ending termini is NFSR 579 (loop). This road was assessed with a Possible probability of damage or loss, with a Moderate magnitude of consequences, leading to a risk assessment of Intermediate for the structure. Human life and safety was assessed with a Likely probability of an event occurring, with Major consequences, giving a safety risk rating of Very High.

FSR 107 A: This is a 2.2100-mile-long operational maintenance level 2 road made of native material. Beginning termini is NFSR 107 and ending termini is dead end. The road is under

private jurisdiction from milepost (MP) 0.3000 to MP 0.4200 and is gated at MP 0.3000. The road under forest service jurisdiction remains open from NFSR 107 to the gate and from MP 0.4200 to MP 2.2100. This road was assessed with a Possible probability of damage or loss, with a Moderate magnitude of consequences, leading to a risk assessment of Intermediate.

There are several trails within the Three Rivers burned area. The fire burned primarily in the White Mountain Wilderness. It made a significant run within the large drainages on the west of the mountain range and slopped and spotted into the east side of the range within the perimeter of the Little Bear Fire scar from 2012. Seven trails with a combined 24 miles are directly within and below the burn scar, and will be impacted by post-fire effects. This includes the Three Rivers Trailhead, located directly beneath the Three Rivers side of the burned area. These are all recommended for closure. The trails were assessed with a Possible probability of damage with Moderate magnitude of consequences, leading to a risk assessment of Intermediate. However the human health and safety risk was assessed with a Likely probability of an event to occur, with Major magnitude of consequences, leading to a risk assessment of Very High.

3. Natural Resources (NR):

Non-Native Invasive Species Early Detection and Rapid Response: After the Little Bear fire in 2012, the area was documented to have several acres of non-native invasive plant species (NNIS). This is still the case, and the Three Rivers fire is expected to result in post-fire spreads of these NNIS. Multiple vectors for invasive plant spread will be evident in the post-fire environment and will include increased water flows, wind, animals, vehicles and sediment movement. Early detection of NNIS is the most economical means of NNIS management. This effort is focusing on the early detection for NNIS. This risk was ranked at a probability of Likely, with a magnitude of Moderate, making this rank as a High risk for NNIS spread, especially in post-fire bare soil conditions.

Emergency Treatment Objectives

Land Treatments: The objective of non-native invasive plant species (NNIS) early detection survey and rapid response (EDRR) treatment is to prevent the establishment or expansion of populations in the recently burned area.

Road and Trail Treatments: The objective of road stabilization is to lower the risk of damage to Forest Service infrastructure (system roads) by lowering the erosion of the road surface in and below high to moderate burn severity areas and to provide for human safety. Campground closure, removal of all items not in concrete or bolted down, pulling the pump to the well and capping the well is all part of ensuring human health and safety. Storm inspection and response objectives during the monsoon season are to ensure the integrity of the BAER road treatments and provide a rapid response with repairs to alleviate any breach in road stabilization.

Protection/Safety Treatments: The primary objective of the Burned Area Emergency Response (BAER) Team is to recommend prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to human life and property and prevent unacceptable degradation of natural resources. The highest priority of the BAER team is rapid implementation of any treatment regarding human life and safety. The objective of the temporary road, trail and campground closures is to reduce risk to human life and safety. Closure and warning/hazard signs at the entrances of the roads and trails that intersect the burned area are placed to reduce the risk to human life and safety. These warn of a closure and that the user is entering a burned area and warn against the increased potential for falling rock and debris, snags, and increased water flow. The objective of the temporary closure of the Three Rivers burned area through two years is to reduce the risk to human life and safety, and to allow natural recovery of the area by preventing further disturbance across the landscape.

An important objective of the BAER team is to share findings of the assessment and a final burn severity map to NOAA Weather Service, with the anticipated post wildfire watershed effects and associated threats to human safety. The information is utilized in the development of spot weather forecasts for the burned area. An additional objective is to work with partners for non-forest values at risk, including but not limited to: Natural Resources Conservation Service (NRCS), the Corps of Engineers, Otero County, New Mexico State Forestry Department, City of Alamogordo, Mescalero Tribe, Bureau of Indian Affairs, Otero County Electric Coop, and the New Mexico Department of Transportation.