2021 Region 5 Fire Report
Wilderness Dozerlines and the Mounting Impact of Fire Suppression in Wildland Landscapes 2016-2021

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Bucks Lake Wilderness

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Wilderness Dozerlines and the Mounting Impact of Fire Suppression in Wildland Landscapes from 2016 to 2021

Lands either proposed or officially designated as Wilderness Areas are often the most remote, inaccessible and unindustrialized environments remaining on the landscape. Important from both a biological and social perspective, they support high levels of biodiversity, clean water, important fisheries, excellent wildlife habitat, intact plant communities, solitude, unparalleled scenic qualities and unique recreational opportunities. Wilderness Areas are designated by Congress to preserve natural ecological conditions and an enduring wilderness resource for present and future generations.

Wilderness fire suppression and associated impacts have quickly become one of the most pervasive threats to the preservation of wilderness on our public lands in the West. Preserving wilderness as a public resource requires a level of humility and a responsibility to future generations that is increasingly uncommon during wildfire events.

Although the 1964 Wilderness Act does allow for limited “non-conforming” uses during emergency situations, such as wildfires, these uses are strongly discouraged and the
overarching mandate remains the protection and preservation of the wilderness resource. For example, according to Forest Service Manual 2324.23, the agency must:

“Conduct all fire management activities within wilderness in a manner compatible with overall wilderness management objectives. Give preference to using methods and equipment that cause the least:

1. Alteration of the wilderness landscape.
2. Disturbance of the land surface.
3. Disturbance of visitor solitude.
4. Reduction of visibility during periods of visitor use.
5. Adverse effect on the other air quality related values.

Locate fire camps, helispots, and other temporary facilities or improvements outside of the wilderness boundary whenever feasible. Rehabilitate disturbed areas within wilderness to as natural an appearance as possible.”

Historically, impacts such as dozerlines have been mostly avoided and the preservation of wilderness was acknowledged as the dominant management objective in designated wilderness areas. In fact, Minimum Impact Suppression Tactics (MIST) were specifically developed to address the protection of wilderness character during fire suppression or fire management activities. MIST is recommended in all designated Wilderness Areas, National Monuments, National Parks and other sensitive lands. On Forest Service lands MIST is generally required in Wilderness lands to comply with the direction of Forest Service Manual 2324.23.

Unfortunately, in recent years, forest and fire managers have been negligent, and even openly non-compliant with in their responsibilities under the Wilderness Act. During this time, fire suppression impacts in designated Wilderness Areas, National Monuments, Inventoried Roadless Areas, Botanical Areas, and other conservation management areas have dramatically increased. Wilderness bulldozing, heavy handed snagging, and other damaging forms of industrialized fire suppression have become increasingly common in protected areas and designated wilderness areas in southwestern Oregon and throughout California. Since 2016, fire managers have repeatedly bulldozed into protected Wilderness Areas throughout the region. In most of these circumstances, wilderness dozerline construction was not only damaging to the environment, but was also operationally ineffective and failed to contribute to fire containment.

Despite their widespread futility, wilderness dozerlines have left lasting impacts on some of our most cherished landscapes. Recent wilderness bulldozing (2016-2021) has been documented to leave lasting impacts to wilderness character, rare plant species, Native American archeological sites, old-growth forests, mountain meadows, intact plant communities, streams, scenic values, wilderness hiking trails, and the Pacific Crest National Scenic Trail. If allowed to continue, these impacts could threaten the preservation of “an enduring wilderness resource” and degrade the wilderness environment for future generations.
To make matters worse, this activity generally occurs under an emergency declaration with no public input, no review process and no public accountability, even for repeated violations of the Wilderness Act and its intent. Information on fire suppression activities is often difficult to locate and poorly documented, further limiting both public transparency and accountability by agency officials.

The recent incursions into wilderness habitat by forest and fire managers generally started with the 2016 Soberanes Fire. Perched above the Big Sur Coast in the Santa Lucia Range of central California, the 240,026-acre Ventana Wilderness Area on the Los Padres National Forest is truly a national treasure, however, crews bulldozed wilderness hiking trails and intact ridgelines in this iconic portion of the California Coast, creating approximately 60 miles of bulldozed fireline inside the designated Wilderness Area.

Dozers etched both direct containment and indirect contingency lines into the wilderness landscape and in the end, some dozerlines were successfully used for fire containment, while many miles of dozerline were breached or burned over and others were built as contingency lines miles from the final fire perimeter. The majority of wilderness dozerline was either ineffective or never utilized for fire containment. Regardless of their utility, or futility, these dozerlines left lasting impacts and significantly increased suppression costs to U.S. taxpayers. At that time, the Soberanes Fire was the most expensive fire suppression effort ever recorded at $262 million. These costs included an estimated $1 million per day for many weeks, spent on fireline rehabilitation and the repair of wilderness hiking trails after bulldozing occurred.¹

In 2017, approximately three miles of dozerline were built without authorization by renegade fire crews in the Kangaroo Inventoried Roadless Area, near Grayback Mountain at the headwaters of the Illinois River in southern Oregon. Dozerline creation included old-growth snag and tree felling, disturbance to highly erosive decomposed granite soils, soil compaction and vegetation damage.²

On the 2017 Eclipse Fire, the Klamath National Forest bulldozed the Kelsey National Recreation Trail from Elbow Springs two miles through the Siskiyou Inventoried Roadless Area to the Siskiyou Wilderness boundary in northern California. This dozerline proved ineffective as the fire burned over the ridgetop and established in both the Dillion Creek and Clear Creek watersheds.³ That same fire season during the 2017 Salmon August Fire, CalFire crews bulldozed into the Babs Fork Inventoried Roadless Area and the Snoozer 2 Inventoried Roadless Area, both directly
adjacent to the Marble Mountains Wilderness. These dozerlines were built specifically to “protect” private industrial timberland far from homes or communities in northern California’s Scott Valley.⁴

In 2018, more wilderness dozerlines were proposed or approved on federal lands within 50 air miles of Medford, Oregon than in the previous 12 years on all federal lands in Oregon and Washington combined.⁵ This began in July of 2018, when fire managers from the Oregon Department of Forestry (ODF) and the Medford District BLM bulldozed approximately 30 miles across the Soda Mountain Wilderness and Cascade-Siskiyou National Monument on the California/Oregon border during the Klamathon Fire. These dozerlines disturbed wilderness streams, cut through Native American archeological sites, damaged rare plant populations, spread noxious weeds and either bulldozed over or across numerous wilderness trails including the Pacific Crest Trail, Lone Pilot Trail and Boccard’s Point Trail.

Virtually none of these dozerlines were utilized for fire containment, and some were built simply to provide vehicle access into the heart of the Soda Mountain Wilderness for fire suppression and fireline rehabilitation crews, both before and after fire containment. The few wilderness dozerlines that were tested with active fire during the Klamathon Fire promptly failed to hold or aid in fire containment. Ironically, the vast majority of the fire inside the Soda Mountain Wilderness was contained with handlines, not with the damaging but extensive dozerlines created by ODF and the Medford District BLM.⁶

In 2018, the Klamath National Forest also bulldozed 2.5 miles across the Siskiyou Wilderness during the Natchez Fire above Happy Camp, California. Built along the Poker Flat/Twin Valley
Trail, this dozerline impacted high mountain meadows, rocky ridgelines, old forest habitats and spectacular wilderness hiking trails. Unfortunately, this ineffective and irresponsible dozerline failed within hours of its creation and the fire marched downhill past the wilderness dozerline where roads and dozerlines outside the wilderness provided fire containment.\(^7\,8\)

During the 2018 Klondike Fire, the Rogue River-Siskiyou National Forest approved, but never actually implemented a long, brutal series of dozerlines extending deep into the Kalmiopsis Wilderness Area. Proposed on the Illinois River Trail, over Bald Mountain and down South Bend Mountain, this 10-mile dozerline would have impacted some of the most remote, inaccessible and unique wilderness country in the Klamath-Siskiyou Mountains and on the West Coast of the United States. Yet, before crews could begin wilderness dozerline construction, the Klondike Fire outflanked this suppression strategy, making the approved, but not implemented wilderness dozerlines obsolete. Crews also bulldozed an extremely damaging 100’ to 150’ wide dozerline, in the North Kalmiopsis Roadless Area above the Wild and Scenic Illinois River.

Finally, that same summer the Mendocino National Forest also bulldozed deep into the Snow Mountain Wilderness during the 2018 Ranch Fire. Federal Risk Management Teams (RMAT) found that these dozerlines had a “low probability of success,” and firelines to the north outside the Snow Mountain Wilderness Area would be more effective; however, despite the recommendations of the RMAT team and a very short window of opportunity, Forest Service and CalFire officials hastily bulldozed into the Snow Mountain Wilderness Area. Leaving little time to prepare adequate firelines, and located on a mid-slope position, this expensive, unsafe and damaging dozerline quickly burned over and was ineffective from an operational standpoint.\(^9\)

Tragically, it also proved highly dangerous when fire crews were entrapped by fire along this dozerline at the edge of the Snow Mountain Wilderness. A sudden wind shift and explosive fire growth cut off fire personnel from their escape routes and burn injuries occurred. In the end, this dozerline did great damage to the environment, threatened the safety of fire crews, cost large sums of tax dollars to create, and failed to provide for fire containment. Ironically, fire officials ultimately pulled back to the more effective and previously recommended firelines north of the Snow Mountain Wilderness and successfully contained the northern fire perimeter of the massive Ranch Fire.\(^9\)

During the 2019 Hendrix Fire on the Rogue River-Siskiyou National Forest, renegade fire crews began construction of an unauthorized dozerline through the Big Red Mountain Botanical Area on the northern slope of the Siskiyou Crest, and at the headwaters of the Little Applegate River in southern Oregon. Although not previously authorized, by the time Forest Service officials realized it was being built, construction was allowed to continue, tying the dozerline into private timber lands to the east and “protecting” recently clear-cut private industrial timber lands from wildfire effects.

Located within a citizen identified Roadless Area and a designated Botanical Area with numerous rare and endemic plant species and uniquely intact plant communities, the dozerline
extended over one mile across the Botanical Area removing native vegetation, introducing and spreading non-native and noxious weed species, as well as damaging previously undisturbed soils. The impacts were long lasting, but the fire never actually burned to this dozerline and was contained on the slopes above with low impact handlines.

In the summer of 2020, the Six Rivers National Forest bulldozed and masticated vegetation for 12 miles across the Trinity Alps Wilderness during the Red Salmon Fire. Dozerline was built from near Red Cap Prairie to North Trinity Mountain and along the Horse Trail Ridge National Recreation Trail. The dozerline did great damage to intact forests, unique prairie habitats, chaparral, and rocky ridgelines in the area, and like many other wilderness dozerlines, this fireline was quickly breached or burned over. Crews then fell back to a much more safe and effective containment line along existing road systems outside the Trinity Alps Wilderness Area, where containment of the northwestern fire perimeter was achieved with little additional impact.  

Despite the significant and lasting impacts of recent wilderness bulldozing, a history of failed wilderness dozerlines, mounting fire suppression costs, and increasing wildfire threats to communities throughout the West, federal and state fire managers are increasingly implementing aggressive and damaging, but often ineffective wilderness fire suppression tactics far from homes or communities. These dozerlines and wilderness suppression impacts are often fiscally irresponsible, unsafe for fire personnel, environmentally damaging, and operationally ineffective. Finally, due to the remote nature of these areas, aggressive wilderness fire suppression is rarely needed to protect rural communities and homesteads. Often resources that could be utilized to prepare homes and communities are instead utilized in remote, wilderness fire suppression efforts with both very little benefit to threatened communities and very low probabilities of success.

In 2021, extensive bulldozing occurred in both roadless areas and Wilderness Areas throughout northern California. This report highlights multiple examples of wilderness bulldozing in the Forest Service’s Region 5 from the Klamath-Siskiyou Mountains, the Sierra Nevada Mountains, and the southern Cascade Mountains.
The Monument Fire began as lightning crashed down on the ridges surrounding Monument Peak in the Trinity River Watershed on July 30, 2021. The fire grew quickly and the limited, local Forest Service resources were almost immediately overwhelmed. By August 1, the fire was 3,114 acres and was backing downhill into Del Loma, a small rural community on the mainstem of the Trinity River.

The next day, the fire doubled in size with significant growth and numerous spot fires becoming established in Panther and Canadian Creek to the west. Now 6,057 acres, the fire had also spotted across the Trinity River to just above Del Loma in the steep and rugged Trinity River canyon. The fire continued expanding rapidly with significant growth to the west and additional spotting north of the Trinity River above Del Loma, Little Swede Creek, Pelletreau Creek, French Creek and above Sandy Bar.

By August 4, the federal California Incident Command Team 5 assumed control of the now 15,000-acre fire. With seven large spot fires burning north of the Trinity River, the still limited fire resources were forced to merge the spot fires surrounding the community of Del Loma and implement structural protection efforts. The quickly expanding fire had also spotted ahead on its southeastern flank, burning in the Price Creek watershed and up to Hayfork Meadows.
By August 7, the fire was burning rapidly up the Trinity River canyon and was 49,068 acres, a little over a week after fire ignition.\textsuperscript{13} Pushed by strong canyon winds, high temperatures and low humidity, two days later, the almost 60,000-acre Monument Fire had surrounded the communities of Big Bar and Del Loma. It was also threatening Big Flat, Burnt Ranch and Helena. During this period structural protection and community protection again became the priority and although fire crews protected many homes, 26 structures were lost.\textsuperscript{13}

On August 11, gusty winds between 15 and 20 MPH pushed the fire over the Hayfork Divide and continued burning south towards Hayfork, California and southwest towards the Pattison Roadless Area and Hyampom, California. On August 15, just over two weeks since ignition, the fire was already almost 100,000 acres and only 10\% contained.\textsuperscript{13}

The fire again made big runs to the south on August 17, surging towards Hayfork Creek and the Hayfork Valley.\textsuperscript{11} The now 128,613-acre Monument Fire had significantly increased in complexity and by the next morning the fire’s management was broken into two separate zones with the southern zone managed by CalFire Team 5 and the northern zone managed by a federal team from Alaska. By the next day on August 18, the Alaska Team crews began building a series of devastating dozerlines on the Shasta-Trinity National Forest throughout the Pattison Roadless Area and the proposed 28,595-acre Pattison Wilderness Area.\textsuperscript{13}

Recently introduced to Congress in Jared Huffman’s \textit{Northwestern California Wilderness, Recreation, and Working Forests Act}, the proposed Pattison Wilderness Area is both well loved by locals in the area, and on the cusp of wilderness designation. Having already passed in the House, the legislation is awaiting a vote in the Senate. Yet, fire managers from CalFire Team 5 and a federal Incident Command Team from Alaska, who have no stake in this land, its long-term management, or its incredible biological resources, proceeded to crisscross the area with approximately 20 miles of damaging ridgetop dozerlines. They bulldozed through intact ridgelines, diverse plant communities, and wilderness trails proposed for protection. Crews also appear to have bulldozed across Little Creek, an important cold-water refuge for anadromous fisheries.\textsuperscript{14} In a preemptive strike against the proposed Pattison Wilderness Area, fire managers made their contempt for wilderness known through these short sighted and devastating suppression impacts.
Crews in the north zone also began developing dozerline on Pattison Ridge, east to west and north to south, along the Pattison Jeep Trail and the Pattison Cutoff Trail, both now utilized as wilderness hiking trails. In fact, on August 19, fire managers had 40 dozers working the fire and would have over 50 dozers for weeks going forward. With so many dozers on the fire they were put to use, often in locations they should not have been authorized.

While this bulldozing was occurring during the Monument Fire, local residents contacted Congressman Huffman asking him to intercede and communicate local concerns to the Department of Agriculture, which oversees the Forest Service. The Secretary of Agriculture, Tom Vilsak, directed fire teams to take a lighter touch in Wilderness Areas and specifically in the proposed Pattison Wilderness Area. Unfortunately, Incident Command teams made little but cosmetic changes to fire suppression operations in the proposed Pattison Wilderness Area and the designated Trinity Alps Wilderness, making statements that support wilderness protection while taking actions that permanently impact wilderness values. Although Inciweb News Updates described the fire as “crawling” across the slopes of the Pattison Roadless Area, both CalFire and Forest Service crews continued utilizing dozers and masticators in the proposed Wilderness Area, damaging wilderness character and its incredible biological values.

Although the fire had been holding west of the North Fork Trinity River for numerous days, crews began scouting dozerline along Backbone Ridge in the Trinity Alps Wilderness Area, on August 23. Fire managers from the Alaska Incident Management Team proposed building 4 miles of dozerline across Backbone Ridge to facilitate backburning and holding operations. In response, local Forest Service personnel familiar with the area advised against this dozerline deeming it impractical, ineffective, and operationally infeasible given the rugged, rocky terrain and knife-like ridgeline. They also expressed concerns about the impact of this particular dozerline to wilderness character and the important cultural values of the area. Unfortunately, fire managers chose to ignore the input of local specialists and Resource Advisors (READS) and proceeded to plan and approve Wilderness dozerline construction on Backbone Ridge.

Ironically, on August 26, while planning more dozerline in the Trinity Alps Wilderness, Inciweb News Updates stated, “Incident objectives were updated yesterday to stress the importance of protecting, as much as possible, the Pattison Wilderness Study Area, in addition to structures in the Hyampom area.” Unfortunately, this policy shift came far too late for the Pattison Roadless
Area and Wilderness Study Area, which had already been excessively scarred with bulldozed firelines. It also fell on deaf ears, as fire crews continued building bulldozed “checklines” to facilitate backburning operations on Pattison Ridge and the widening or “improving” of dozerlines, by adding multiple blade widths.13

On August 28, the Knob Fire, a separate unplanned ignition was lit roughly 1-2 miles south of Willow Creek above the Trinity River. This fire was immediately threatening to the communities of Willow Creek, Trinity Center, Burnt Ranch and other river communities. Crews working on the Monument Fire shifted gears to suppress this new ignition, but could not contain the fire during initial attack. By the next day, the Knob Fire was 350 acres and burning in extremely rugged terrain.

This new fire start and its proximity to nearby communities did not deter crews from building remote wilderness dozerlines far from communities in need. Neither did the significant opposition posed by local Forest Service personnel and members of the local community. On August 29, with the Knob Fire still threatening communities, CalFire crews bulldozed fireline from Sims Gap to Hyampom Road through the proposed Pattison Wilderness Area. Inciweb Evening News Updates for August 29 also reported that work had commenced on “dozerline along Backbone Ridge in the Trinity Alps Wilderness north of Hobo Gulch Road” and that “a crew is following closely behind the dozer to remove snags.”13 According to eye witness accounts, local input discounted and ignored during the approval process were correct, and dozerlines could not be safely created in the steep, rugged and heavily forested terrain. Only between 300’ and 600’ of the proposed 4-mile dozerline was built, yet the impact to the Wilderness and to the cultural values of the area will be both significant and long lasting.16

Although just days before, fire crews had been directed by the Secretary of Agriculture to minimize their impact on Wilderness Areas and the Pattison Wilderness Study Area, nothing changed on the ground and the damage continued. Between August 31 and September 1 crews continued putting in checkline on Pattison Ridge. In fact, the Incident Action Plan published on August 30 by the Alaska Incident Management Team acting on behalf of the Forest Service, identified the following Management Objective: “Protect values within the Trinity Alps Wilderness, the Trinity Wild and Scenic River corridor, and the Pattison Proposed Wilderness, including habitat for anadromous fish and other endangered and sensitive species.”17 By the next morning, however, when the federal California Team 5 took command of the northern zone, this Management Objective was deleted from subsequent Incident Action Plans. Wilderness was then only mentioned in the “Control Objectives” portion of the Incident Action Plan, which included a reference to keeping the fire “south of the Siskiyou and Trinity County...
line, while preserving wilderness characteristics.”

This reference encourages the protection of Wilderness values in the Trinity Alps Wilderness and omitted any mention of wild and scenic river corridors, the proposed Pattison Wilderness Area and the area’s endangered fish and wildlife populations.

On August 31, the federal California Incident Management Team 5 reassumed control of the fire’s northern zone, including the Trinity Alps Wilderness, the Wild and Scenic Trinity River, and large portions of the proposed Pattison Wilderness Area. Meanwhile, the CalFire Team 5 continued their focus on the southern zone, including the eastern portions of the proposed Pattison Wilderness Area.

Going forward, neither team incorporated the direction of the Secretary of Agriculture to protect wilderness values, anadromous fisheries habitat, or endangered species habitat while implementing fire management strategies. Instead, the heavy-handed suppression actions continued throughout the fire area with little to no regard to surrounding social, cultural or biological values.

On September 3, under the direction of the federal California Incident Management Team 5, and despite the opposition of landowners at Bar 717 Ranch—whose property was being used as access to dozerlines on the Pattison Jeep Trail and as a fire camp—crews began widening dozerlines in the proposed Pattison Wilderness directly above the long-standing wilderness youth camp near Hyampom, California. This included widening the single blade dozerline down the Pattison Cutoff Trail to Miners Creek. At this point, the Pattison Cutoff Trail and the entire Pattison Jeep Trail inside the proposed Wilderness boundaries had been bulldozed and “improved,” creating dozerlines multiple blades wide with huge berms and highly erodible decomposed granite soils cast off the previously natural ridgelines.

By September 4, after numerous days of attempting to address the issue with California Team 5 and receiving no response, residents at Bar 717 Ranch became alarmed by new plans announced in the morning Operations briefing to build additional dozerline inside the Pattison area from Hayfork Bally and down the Bear Creek Jeep Trail to handline above Hayfork Creek. After being repeatedly told that no new dozerline would be created inside the proposed Wilderness Area and after repeated attempts to reach out to fire managers at California Team
5, residents and camp officials at Bar 717 Ranch revoked permission for crews to access the proposed Pattison Wilderness through their property and locked their gates. This protest directed at the unresponsive and seemingly uncaring, California Team 5 was met with the immediate closure of the Bar 717 Ranch fire camp and the camp’s fire camp catering operations. This retaliatory act by fire officials left the landowners with over $4000 worth of food delivered to the site for fire camp operations, it also required a chaotic camp demobilization, a rushed establishment of a new fire camp, and a short-term inability to provide for the basic needs of fire camp and firefighting personnel.

That afternoon a Forest Service Law Enforcement Officer (LEO) and fire managers met with residents at Bar 717 Ranch. At the request of the Forest Service LEO, and due to requirements to allow access along the access road to the ranch, which is under Special Use Permit from the Forest Service, residents unlocked the gates and again allowed entry to firefighting personnel. Fire crews then proceeded to bulldoze additional wilderness dozerlines inside the Pattison area. The message sent was clear: California Team 5 and their Forest Service associates had the power to force compliance and would use the weight of the agency, the threat of legal action and the active coercion of local landowners to assert their authority and dominance, rather than address the issues in the proposed Pattison Wilderness or the concerns of the local community. This and other interactions will have lasting impacts not only on the environment of the Trinity River watershed, but also to the trust and respect of local communities who feel the land had been unnecessarily abused by fire management agencies during the Monument Fire.19

Also on September 4, crews began backburning Pattison Ridge above James Creek and two days later as the fire backed into the canyon, these backburns proceeded to escape containment by spotting across Hayfork Creek in 8 separate locations. One particular spot, just south of Nine-Mile Bridge, ran up hill, quickly burning 80 acres and evading containment. Despite the extensive wilderness and roadless dozerlines, containment across the fire became heavily compromised by burn overs on Pattison Ridge and other dozerlines during backburning operations. Spot fires also became established over containment lines and across Hayfork Creek on September 7. On September 7, the fire, now south of Hayfork Creek, spotted into the Judd Creek watershed, then moved into Rusch Creek, Drinkingwater Creek and West Tule Creek at the edge of the Hayfork Valley and south of Hayfork Creek.13

By approximately midnight on September 9, rain fell across parts of the fire area, significantly reducing fire growth and fire intensity. The change in weather conditions moderated fire behavior and limited fire spread throughout the month and by September 24, the only uncontrolled edge was on the fire’s northern flank, deep in the Trinity Alps Wilderness Area.

By November 1, the Monument Fire was declared 100% contained, with a total of 223,124-acres burned across the Trinity River watershed. At times, the fire raged through the canopies and at other times it crept through the forest duff. In total, the fire burned at 67% low, 29% moderate and 4% high soil burn severity, creating a diverse and productive mixed severity fire mosaic.
**Wilderness Impacts:**

It appears that over 20 miles of dozerline were created either on the proposed wilderness boundary or within the proposed Pattison Wilderness Area. These wilderness dozerlines built by CalFire and federal incident management teams, include many miles of ridgetop dozerline and “checklines” built with bulldozers to slow, but not contain the fire.

These checklines were built between approximately 0.25 and 1.5 miles in length. Built on nearly every spur ridge extending south off Pattison Ridge they displaced huge volumes of highly erosive soil, casting it off ridgelines and carving deep berms into previous intact wilderness ridgelines. They also badly damaged otherwise intact plant communities in the proposed Pattison Wilderness Area, and provided extensive opportunities for the spread of noxious or non-native weeds; however, they did not contribute to fire containment in any way.14

“Checklines” are essentially dozerlines to nowhere, that are not staffed to hold the fire, are not intended for fire containment and do not tie into effective fire containment features. Instead, they are built with great impact and are intended only to slow the fire’s spread and act as speed bumps. Given the removal of vegetation and the deposition of this woody vegetation onto the forest floor, it is unclear if these checklines actually reduce fire severity, spread or intensity.

Reportedly, dozerline was also built across Little Creek near the proposed Wilderness boundary and over wilderness trails such as the Pattison Peak Trail, the Pattison Peak Cutoff Trail, the Bear Creek Trail and the Sims Gap Trail.14 The bulldozing of proposed Wilderness trails will degrade the recreational experience and scenic values of the proposed Pattison Wilderness Area for decades, while impacting the area’s wilderness character.

The impacts to the proposed Pattison Wilderness Area were extensive, extreme and largely unnecessary. Numerous hastily built dozerlines also failed when tested by active fire. Aggressive spotting and highly receptive fuels allowed embers to spread spot fires readily across containment lines during backburning operations and holding operations. In fact, it is estimated that approximately 60% of the 20 miles of dozerline built either on the proposed

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**Figure:** Federal teams built a high-density system of dozerlines and “checklines” (shown in black “x” lines) near Pattison Peak in the proposed Pattison Wilderness Area. The dark black and red line depicts the ultimate fire perimeter demonstrating that numerous lines were not utilized for fire containment.
wilderness boundary or within the proposed wilderness area failed to facilitate containment, were burned over and are now located entirely within the fire perimeter.¹⁴

These dozerlines badly damaged wilderness character within the proposed Pattison Wilderness Area and led to specific direction from the Secretary of Agriculture Tom Vilsak, who recommended a lighter touch in Wilderness Areas and proposed Wilderness Areas in the Monument Fire area. These recommendations were promptly ignored by Incident Command Teams and forest managers as they continued their push to implement wilderness dozerlines in both the Trinity Aps Wilderness Area and the proposed Pattison Wilderness Area. Many dozerlines were originally bulldozed as single blade dozerlines, but later in the fire period, many of these lines were “improved,” making them multiple dozer blades wide and compounding the already severe soil impacts. Dozerlines up to 200’ wide were created in the proposed Pattison Wilderness Area, leaving scars that will take decades or even centuries to heal. This particular dozerline was built at the boundary of Bar 717 Ranch, a youth wilderness retreat located in Trinity County since 1930 that is heavily dependent on the protection of wilderness values in the proposed Pattison Wilderness Area.¹⁹

Three days after the specific direction from the Secretary of Agriculture was provided to fire teams on the Monument Fire, crews began construction of a 4-mile dozerline on Backbone Ridge in the Trinity Alps Wilderness Area.¹³ Built over the objection of local Forest Service specialists and Resource Advisors (READS) only between 300-600’ of dozerline was actually constructed due to the steep, rugged terrain and safety concerns surrounding continued dozerline construction.¹⁶

![Dozerline on steep mountain slopes in the proposed Pattison Wilderness Area.](image-url)
Although significant damage was done along Backbone Ridge and the Backbone Ridge Trail, fall rains extinguished the fire before it reached this controversial wilderness dozerline, making it not only offensive to wilderness users, degrading to wilderness values, and damaging to the area’s important cultural values, but also entirely unnecessary. During fall conditions, the fire natural extinguished itself before reaching the dozerline and like so many others, the Backbone Ridge dozerline was both immensely damaging and operationally ineffective.

In the Monument Fire, was saw a direct refusal on behalf of the CalFire and federal fire management teams to follow direction from the Secretary of Agriculture and to address significant local resource concerns, or the concerns of the local community. It also appears that proper protocol and authorization for Wilderness bulldozing may not have occurred. This failure in leadership and inability to make responsible decisions during wildfire events has left lasting fire suppression related impacts across the Monument Fire area and will leaving a lasting impact on the public’s trust in fire management officials and agencies. Conducted in backcountry areas, these wilderness dozerlines did not contribute to fire containment or additional community safety during the Monument Fire. Instead, in many cases, fire suppression actions implemented during the Monument Fire were far more damaging to the environment than the wildfire itself.
Unprecedented rates of spread and fire intensity, strong winds, low humidity, persistent drought, record low fuel moisture and excessive long-range spotting combined to fuel the massive 963,309-acre Dixie Fire. The Dixie Fire burned throughout Lassen Volcanic National Park and the Southern Cascade Mountains, the Diamond Mountains south of Susanville and the northern Sierra Nevada Mountains in the Feather River canyon. By October 26, when the fire was declared 100% contained, the Dixie Fire was the second largest fire recorded in the history of California.

In many circumstances, efforts to contain the Dixie Fire were futile and the fire spread wherever the wind or a giant pyrocumulus plume pushed it. When burning at high severity, the Dixie Fire’s resistance to control and the ineffectiveness of dozerlines, retardant drops, aerial firefighting resources and even hand crews, was undeniable. Large dozerlines, built at great expense to both the taxpayer and the land, were repeatedly burned over or breached by spot fires, forcing crews to pull back and in many cases build still more environmentally damaging and operationally ineffective dozerlines. It is estimated that over 2,000 miles of dozerline were constructed during the Dixie Fire.
Fire managers demonstrated a stubborn refusal to change or adapt, and spent months chasing the Dixie Fire, building ineffective fire containment lines and failing to hold those firelines during active fire weather. Yet, at other times and in other places, smoke inversions settled in, the fire moved more slowly and burned in a more mixed severity fire mosaic. In total, the fire burned at 39% low severity, 57% moderate severity and 3% high soil burn severity.

The fire began on July 13, 2021 when a tree fell on high voltage powerlines near Cresta Dam. At 6:48 that morning, PG&E was notified that part of the power grid along Highway 70 near the border of Butte and Plumas counties had gone dark; however, PG&E failed to notify officials who could shut off the powerlines and avoid fire ignition. A company worker confirmed at 9:00 AM that the service station near Cresta Dam had lost power, and at 12:30 that afternoon, a maintenance worker attempted to access the problem area, but was blocked by Butte County road maintenance crews. The worker returned at 4:30 PM to find a Douglas fir tree leaning against a powerline and a small fire burning in a radius of about 600’.

By 5:30 PM Calfire crews arrived and doused the fire with 7,000 gallons of fire retardant and later that evening when aerial resources retired for the night, the fire was estimated at roughly 1-acre in size. Calfire handcrews continued working to flank and contain the fire into the evening, but with little success and this small ignition grew quickly into the enormous Dixie Fire.

By the next morning fire crews were being significantly outpaced and the Dixie Fire was well established at 1,200 acres. The fire continued to grow quickly and in just one week the Dixie Fire was over 85,000 acres, homes had already burned and nearly 4,000 residents were on evacuation order.

On July 22, the Fly Fire broke out to the east of the Dixie Fire, also reportedly lit by a tree falling on PG&E powerlines. By July 25, less than two weeks after ignition, the 190,000-acre Dixie Fire and the 4,300-acre Fly Fire had merged and combined to burn over both Highway 70 and Highway 89. That afternoon under extreme fire conditions, the massive rotating plume of the Dixie Fire triggered a lightning storm and additional new ignitions in the Dixie Fire area.

On July 25, fire crews also began building dozerline inside the Bucks Lake Wilderness near the Dixie Fire’s southwestern perimeter. Over the course of the next few days, the Pacific Crest Trail between Bucks Summit
and Granite Gap, and the Mill Creek Trail were transformed from spectacular wilderness trails to dusty dozer tracks.\textsuperscript{22} By July 27, Operations maps show the dozerlines completed and by July 28 fire crews are utilizing tactical firing operations to hold the line along the Right-Hand Branch Trail.\textsuperscript{22}

By August 4, strong winds push the fire through the community of Greenville, California tragically destroying roughly three-quarters of the community and over 1,000 homes. Two days later the Dixie Fire was 432,000 acres and the extreme fire weather continued. Pushed by strong winds, the fire surged towards Chester, California on the northern shore of Lake Almanor to a significant concentration of waiting fire suppression resources. After losing most of Greenville, crews were able to herd the fire around the community of Chester with little to no structure loss.\textsuperscript{21,22}

That same day, the fire also ran to the north into Lassen Volcanic National Park burning into the vast mixed conifer forests, lake basins and volcanic features surrounding Mount Lassen. The fire entered the park at its southeastern corner near Juniper Lake and also burned into the adjacent Caribou Wilderness Area. The fire promptly stalled out in Lassen National Park and the Caribou Wilderness, while advancing to the east into industrial timberlands and logged over National Forest lands.\textsuperscript{23}

On August 13 and 14 with thunder cells and unstable air entering the area, the fire responded with increased spread and intensity, moving northwest into the Lassen Volcanic National Park on Warner and King Creeks downstream of Drakesbad. On August 17, under a Red Flag Warning crews initiated backburning operations near the Beardlesy Grade Road and by the next morning the fire had jumped the fireline and progressed southeast towards Kessler Peak.\textsuperscript{22} By August 21, roughly half of the Lassen Volcanic National Park had burned, with heat showing up on IR maps near Highway 89 on the southwestern entrance.

The Dixie Fire continued growing steadily on nearly all fronts, but moved slowly through Lassen National Park in the 2012 Reading Fire footprint and also worked more slowly through the 2017 Moonlight Fire footprint, where the fire stalled out and required strong winds to push it through less receptive, recently burned fuel. Despite strong winds, abundant spotting elsewhere in the fire, and record low fuel moisture levels attributed to extended drought and recent heat domes, the most recent fire footprints refused to burn in the Dixie Fire. Acting as a large, natural barrier or fuel break, even the insatiable Dixie Fire could not penetrate the recent
fire footprints. The 2020 Sheep Fire shielded Susanville, California from direct fire effects, while the Dixie Fire also burned all the way around the 2019 Walker Fire footprint and to the edge of the 2021 Beckwourth Complex which was still smoldering when the Dixie Fire began.  

The Dixie Fire area contains many relatively recent fire footprints and a very active fire history. Since the early 2000s, the region has repeatedly burned and reburned, creating a patchwork of fire effects and staggered levels of vegetative regrowth. This pattern of recent fire influenced the ultimate size and severity of the Dixie Fire by slowing or extinguishing portions of the Dixie Fire as they interacted with recent fire footprints.

Ultimately it was wetting rain and fall weather conditions that extinguished and allowed for the containment of the Dixie Fire. Now that the smoke has cleared, the implications of this fire and its suppression impacts are becoming more clear.

**Wilderness Impacts:**

According to estimates by wildfire analyst and blogger Zeke Lunder, from the “The Lookout” blog between 1500 and 2000 miles of dozerline were created during suppression activities on the Dixie Fire.  Many of these dozerlines were highly damaging to the environment, ineffective as containment features, were either burned or spotted over, and played absolutely no role in fire containment. In fact, it is estimated that as many as 600 miles of dozerline were burned over in the Dixie Fire. Other dozerlines created lasting environmental impacts, but were effective at suppressing portions of the Dixie Fire. Significant and important analysis could be made into the environmental impacts and operational effectiveness of these firelines.
Our analysis of dozerline impacts will focus on a smaller subset of wilderness dozerlines built in the Bucks Lake Wilderness Area. Small, but beautiful, the Bucks Lake Wilderness Area was riddled with dozerlines during the Dixie Fire, including over 11 miles inside the designated Wilderness Area, 5.6 miles directly on top of and adjacent to the Pacific Crest Trail and almost half a mile in the Mt. Pleasant Research Natural Area. Despite the extreme impacts to wilderness character and biological values, these dozerlines were largely ineffective as containment features. In fact, preliminary analysis by Friends of Plumas Wilderness demonstrates that only 14% of the dozerlines built in the Bucks Lake Wilderness Area were effective at facilitating containment. At the same time, well-placed handlines built with far less impact to the Bucks Lake Wilderness Area were 71% effective.

On July 21, Plumas National Forest Supervisor, Chris Carlton requested authorization for the use of dozers in the Bucks Lake Wilderness Area. Prior to making the decision, both the Plumas National Forest Fire Management Officer and Fuels Management Officer recommended against using bulldozers in the Wilderness, stating that dozers would cause unnecessary damage and handline would be more effective. Unfortunately, their recommendations, that proved to be quite accurate, were ignored, and staff at the Mt. Hough Ranger District informed the President of Friends of Plumas Wilderness, Darrel Jury, that a request for the use of dozers in the Bucks Lake Wilderness Area had been made. Jury requested to speak with Supervisor Carlton, who formally made the request, and it was recommended that Jury contact the Dixie Fire East Zone Lead Resource Advisor (READ), as Supervisor Carlton was not directly involved in firefighting operations.

Dozerline construction inside the Bucks Lake Wilderness Area began just days later, on July 25 at Bucks Summit. Within two days, Operations maps show completed dozerline extending along the Pacific Crest Trail from Bucks Summit to Granite Gap, and along the Mill Creek Trail. On July 26, The Dixie Fire East Zone Lead READ, Dave Hayes, contacted Friends of Plumas Wilderness President Darrel Jury, who inquired about the location, length and effectiveness of dozerlines in the Bucks Lake Wilderness Area. On July 27, Hayes responded, “The Fire has not pushed up against the entirety of the lines, so they have not been tested. There was a spot across a line, but crews are working to contain the spot.” In the end portions of these lines held, other did not, while still others were never tested.
On August 8, Jury contacted the new Dixie Fire East Zone READ, Jason Williams. Williams stated that additional dozerline had been constructed from Chuck’s Rock to the Pacific Crest Trail. This dozerline did not hold, but the nearby handline did. Williams reported 9.5 miles of new Wilderness dozerline had been constructed with 2.5 miles on the old fire lookout road, parallel to the PCT. He also reported sling sites were cut and big red fir trees had been felled.26

Along both the PCT and the Mill Creek Trail old-growth and mature forests, high mountain meadows, riparian areas, and highly scenic ridgelines were bulldozed, dramatically impacting the areas scenic values and wilderness character. On September 14, Dixie Fire East Zone Lead READ, Tom DeMeo stated, “Red fir were cut down unnecessarily. These stumps will be cut to the ground and buried.” When Jury asked if “sport falling” was to blame, DeMeo stated, “yes.”26 According to the Bucks Lake Wilderness Suppression Repair Plan thirty-six large trees were felled along the PCT, including nine trees between 45” and 60” diameter, ten between 40” and 45” diameter, and seventeen between 20” and 30” diameter. These stumps were later blasted with dynamite to obscure the visual impacts and reduce the signs of large tree felling.27

DeMeo also stated that the use of dozers in the Bucks Lake Wilderness “...never should have happened in the first place. No dozers are used for fire suppression in Washington Wilderness Areas. They hand it out like candy here in California.”

Friends of Plumas Wilderness requested a tour to view wilderness dozerline impacts and DeMeo worked to organize a tour on the PCT within the Bucks Lake Wilderness Area. Unfortunately, on September 21, this tour was canceled by fire Operations officials who
did not want the public to document these egregious Wilderness fire suppression impacts. That same day, Friends of the Plumas Wilderness board members and staff visited a portion of the Plumas National Forest recently opened to the public and began monitoring dozerline on the Mill Creek Trail, south of Chuck’s Rock. Forest Service staff later became aware that members of the Friends of Plumas Wilderness were monitoring impacts in the area and proceeded to escort them out of the Wilderness, again attempting to conceal the impacts.

In addition to the use of bulldozers in the Bucks Lake Wilderness Area, drones were used to drop incendiary devices; fixed-wing aircraft were used for at least a dozen retardant drops; motor vehicles traveled dozerlines; chainsaws were used to fell trees, and mini excavators were used in fire suppression repair efforts. These impacts and the 11 miles of new dozerline built during the Dixie Fire, amplify the impact of extensive large tree felling (over 250 mature trees) and fireline construction during the 2020 North Complex on the Mill Creek Trail. Although the 2020 North Complex never reached the Bucks Lake Wilderness, the impacts associated with fireline and helipad construction left lasting impacts to the area’s wilderness character and to one of the area’s most iconic wilderness trails. Just one year later that wound was reopened and the impacts were spread across the broader wilderness landscape.

In many instances fire suppression repairs further degraded the character of the wilderness by further impacting vegetation, disturbing soils, etc. The Bucks Lake Wilderness Suppression Repair Plan emphasizes returning natural grades to disturbed and bulldozed slopes, yet, this was not done in many places.

Ultimately, the worst impacts are associated with dozerline construction which transformed wilderness hiking trails, including the Pacific Crest Trail, into dusty dozerlines. Soils were compacted, disturbed and displaced, vegetation was damaged, large trees were removed, and the potential for noxious or non-native weed introduction and spread was greatly increased. The impact to wilderness character, scenic qualities, and biological values is severe and long lasting, leading to permanent, irreparable impacts to the Bucks Lake Wilderness Area.
The River Complex began as a series of lightning strikes spread across the Salmon River watershed on July 29, 2021. In total, the area had 37 natural ignitions burning in remote locations and in extremely steep, rugged terrain. Most of these fires were extinguished during initial attack, except the most stubborn and difficult to access.29

By August 2, three fires appeared poised to “go big” including the 600-acre Haypress Fire burning on both I-Am-Up Ridge and near Haypress Meadows, the 75-acre Summer Fire burning in the Trinity Alps Wilderness Area near the popular China Gulch Trail, where hikers had to be evacuated via helicopter hoist, and the 165-acre Cronan Fire on Yellowjacket Ridge near the boundary of the Marble Mountains Wilderness.30

Two days later on August 4, the Haypress Fire was 8,488 acres, the Summer Fire was 2,721 acres and the Cronan Fire burning in a 2013 and 1987 fire footprint was only 433 acres. During the next few days, the fires really picked up, throwing up pyrocumulus smoke plumes and burning over 20,000 acres. Most of the growth was in the Summer and Haypress Fires, both of which were burning in remote and inaccessible wilderness terrain.31
By August 8, the Haypress Fire spotted over the ridge into Coffee Creek and into the Trinity River watershed, dramatically increasing the complexity of the incident and threatening the community of homes in the Coffee Creek canyon. On August 15, the Haypress Fire jumped Coffee Creek near the confluence of Adams Creek, then moved quickly to the south east. Three days later, on August 18, strong north winds again pushed the fire across Coffee Creek and into even more remote portions of the Trinity Alps Wilderness Area. From August 19 to August 20, the fire surged to the south and southeast making 3-4 mile runs each day in the upper South Fork Salmon River Watershed, burning from Big Flat to Josephine Lake, in upper Coffee Creek, and up Union Creek near Battle Mountain to the south. During this extreme fire behavior, the fire also spotted over the ridge from Coffee Creek into Parker Creek at the headwaters of Swift Creek, still deeper into the eastern Trinity Alps Wilderness Area.32

This spot fire, in turn, triggered development of an aggressive wilderness handline built by the Stanislaus Hotshot crew. This handline extends 8 miles up the popular Swift Creek Trail and up portions of the Parker Creek Trail. Crews reportedly worked for weeks in the area, including an aggressive tree felling module who felled hundreds of old-growth snags and trees adjacent to these backcountry trails. The resulting impacts badly damaged the scenery and habitat conditions within the trail corridor, but the Parker Spot was ultimately contained almost entirely independent of the main fire perimeter and the majority of the Swift Creek Trail, which was heavily impacted by felling crews, but was never reached by the River Complex Fire or utilized for fire containment.32

By August 21, 2021 fire managers announced at a community information meeting that dozerline was proposed for construction in the Trinity Alps Wilderness Area. Operations Maps the next day showed proposed dozerline extending from Carter Meadows Summit at the headwaters of the Scott River to Mavis Lake in the Trinity Alps Wilderness Area. This dozerline was proposed to include a stream crossing in headwater portions of the Scott River, significant mid-slope dozerline, and an extremely steep climb north of Nolan Gulch before entering the wilderness and the Mavis Lake basin. Proposed for construction directly adjacent to the 2020 Fox Fire footprint, the dozerline was completely unnecessary and the 2020 Fox Fire created a
between ¼ and 1 ¾ mile wide natural barrier of the highest quality, negating the need for dozerline creation in the Trinity Alps Wilderness Area.  

Dozens of miles of contingency lines were also proposed on multiple ridges north of the South Fork Salmon River, which was acting as an effective natural barrier to the fires northern spread. One dozerline was proposed to extend from Grouse Point to near the mouth of Butcher Gulch, crossing approximately 12 streams as it dropped into the South Fork Salmon River. Additional dozerline was proposed from Murphy Point into the Mathews Creek drainage, across large portions of Blue Ridge, and in a mid-slope position at the headwaters of Jones Gulch, a tributary of North Fork Salmon River miles from either the Summer or Cronan Fires in the River Complex. This proposed dozerline would enter uncut forests and include a stream crossing on Jones Gulch.

Klamath Forest Alliance wrote a letter to forest and fire managers in response to these proposals, identifying concerns surrounding the environmental impact of dozerline construction in sensitive landscapes and encouraging the agency to implement both more effective and less damaging containment and community fire protection measures. The letter requested the agency abandon the proposed Wilderness dozerline to Mavis Lake and the extensive and damaging contingency lines north of South Fork Salmon River. We also asked that crews implement Minimum Impact Suppression Tactics (MIST) in appropriate areas and allow fire crews to focus on more immediate community protection needs and preparations on Coffee Creek, near Trinity Center, in the town of Callahan and for residents of Cecilville.

The Klamath National Forest received a request for dozerline authorization to Mavis Lake in the Trinity Alps Wilderness and announced they had denied that request on August 29, 2021. The contingency lines north of the South Fork Salmon River were also largely not implemented, except on Mathews Creek and in a few other locations.

The River Complex Fire was now 80,336 acres, only 20% contained and increasingly difficult to manage due to the sprawling fire footprint extending into numerous inaccessible wilderness watersheds. After an extended period of inversion and relatively moderate fire spread, the fire summited Thompson Peak on September 1, becoming the highest elevation fire ever recorded in the Klamath River Basin.

On September 6, things picked up across the fire area, especially at higher elevations where strong winds pushed the active fire east into the headwaters of the Scott River. Some very large runs, with spotting between 1 and 2 miles ahead of the fire extended into the South Fork Scott River, Fox Creek and West Boulder Creek watersheds. The fire also surged into Saloon Creek, Granite Creek and into Sugar Pine Creek in the Coffee Creek area. The fires movement into Sugar Pine Creek also triggered a management action point, initiating some relatively rushed backburning operations along a damaging dozerline leading from Boulder Creek to the Boulder Lake Trail. Portions of the Boulder Creek Trail outside the Trinity Alps Wilderness were bulldozed during creation of this fireline, while handline was built inside the wilderness where
crews felled mature snags and trees, widened the trail with hand crews and plumbed the line with hoselays.\textsuperscript{37,38}

The next day, on September 7, the natural fire and the recently lit backburns merged and were pushed rapidly downstream from Sugar Pine Creek, burning under extreme fire weather and influenced by plume driven runs. The fire then crossed back over Coffee Creek and was funneled by strong canyon winds into the homes and communities on lower Coffee Creek. It also jumped both the dozerline and handline leading up the ridge east of Boulder Creek to Boulder Lake. After jumping the Boulder Creek fireline, the River Complex continued east towards Sierra Pacific Industries timber land and towards residential communities on lower Coffee Creek and above Trinity Reservoir.\textsuperscript{32}

This roughly 6-mile run burned 16,000 acres under extreme conditions on Coffee Creek and fifteen structures were destroyed. During the firestorm, all residents remaining after an Evacuation Order was issued 18 days earlier, were suddenly evacuated by fire crews in an attempt to protect lives from the coming fire storm. Both fire crews and residents had to quickly out of the way, as the fire and the recently lit backburns raced down from Sugar Pine Creek into the Coffee Creek drainage. The fire then ran to the northeast in a dramatic, high severity run extending over Billy Mountain.\textsuperscript{32,39}

Crews also reported spotting and significant fire growth over the Cecilville/Callahan Road in numerous locations near Carter Meadow Summit on the northeastern fire perimeter. Previously acting as a primary containment line, the fire broke through these northeastern lines
on the paved Cecilville/Callahan Road and burned approximately 9,000 acres in the upper South Fork Scott River watershed.\textsuperscript{32,40}

At the same time that the fire was exploding under pre-frontal winds in upper South Fork Scott River and in the Coffee Creek Canyon, the northern flank of the fire and tactical firing operations merged with the 2020 Red Salmon Fire footprint. Sheltered from the winds and boxed in by the previous year’s fire, this portion of the fire burned safely and slowly down to South Fork Salmon River adjacent to Cecilville, California.\textsuperscript{32,39} These backburns had favorable fire effects and significantly aided containment, while backburns and natural fire perimeters exploded on Coffee Creek and in the upper South Fork Scott River.

As the fire moved to the east, towards the communities of Callahan and Trinity Center, weather conditions moderated significantly and wetting rain fell on the evening of September 9.\textsuperscript{32} This rain stopped the big wind-and plume-driven run that occurred in both the Coffee Creek and South Fork Scott River watersheds, drastically reducing the immediate threat to nearby communities.

As the fire cooled, the threat to communities was reduced and the fire crept slowly through the rain moistened forests of the Trinity Alps. Taking advantage of the changing weather, crews went to work building both direct and indirect firelines, pinching off the fire’s forward movement and limiting the number of acres burned under moderate weather conditions; unfortunately, this included dozerlines carved into the Trinity Alps Wilderness Area and the surrounding areas under conditions that could have easily allowed for containment using hand line and MIST tactics.

Ultimately, the Cronan Fire was contained at 5,940 acres, but the Summer and the Haypress Fire burned in remote, wilderness country until fall rains fell. Although significant acreage burned in the River Complex, the fire sustained relatively characteristic fire effects, with 66% low severity, 29% moderate and 5% high soil burn severity.

During the extended fire period, the River Complex burned under a wide variety of weather conditions, encountered a wide variety of habitats with different levels of flammability and

\textsuperscript{28}
sustained a wide diversity of fire behavior and fire effects. At times, the fire raged on the East Fork of the South Fork Salmon River, and later ran down Coffee Creek, leading to the loss of homes and structures at the margin of the Trinity Alps Wilderness. Meanwhile, other portions of the fire burned relatively slow and cool with little affect on overstory canopy conditions. Overall, the River Complex appears to have burned in a relatively beneficial mosaic of mixed severity fire and restored fire to almost 200,000 acres in some of Northern California’s most remote wilderness landscapes.

Despite massive efforts, lasting environmental impacts, the construction of damaging dozerlines, miles of heavily impacted wilderness trail and significant public expenditures, the River Complex continued burning in remote, rugged country until fall rains extinguished the blaze and ended the 2021 fire season in northwestern California. By season’s end, the River Complex had burned 199,343 acres from the canyon bottoms on South Fork Salmon River and Coffee Creek to the summit of Thompson Peak, the highest peak in the Trinity Alps.

**Wilderness Impacts:**

In many cases, fire managers flagrantly degraded wilderness values, ignored mandates to implement MIST and prioritized private timber assets above public land and wilderness values during suppression of the River Complex Fire. Significant activities that were implemented inside the designated Wilderness Area will have lasting impacts on the area’s scenic beauty, Wilderness character, and the outstanding biological values of the area, and at the same time played little to no role in fire containment.

Broad approval was also provided to allow motor vehicle use, including “side by side” vehicles inside the Trinity Alps Wilderness Area. Reportedly, local Resource Advisors and fire/forest officials opposed these authorizations due to the damage motorized vehicles would create and the ineffectiveness of motor vehicle use on rugged wilderness trails. Yet, like many other decisions authorized during the River Complex Fire, local officials were ignored and high-level decision makers authorized damaging, ineffective, and unnecessary wilderness suppression activities.41

Additionally, extensive private timber holdings owned largely by Sierra Pacific industries (SPI) are located between the Trinity Alps Wilderness Area’s eastern boundary and the Trinity Reservoir. These private timber lands significantly influenced management decisions as fire managers attempted to keep the fire in the Wilderness Area, “at all costs.” These “costs” included Wilderness dozerline near Craggy Peak on the Little Mill Trail, dozerline and handline on the Boulder Lake Trail, and dozerline crisscrossing the Pacific Crest Trail. These costs also included extensive wilderness tree and snag felling, as well as poorly executed backburns on the Swift Creek Trail at the heart of the Trinity Alps Wilderness Area.16,38

On September 15, the Boulder Lake dozerline was built on the popular Boulder Lake Trail, despite objections from local Resource Advisors (READS). This dozerline extends from Coffee Creek to the ridgeline east of Sugar Pine Creek where it merges with the Boulder Lake Trail.
Dozerline was built along the Boulder Lake Trail from the trailhead to the Wilderness boundary. Beyond the wilderness boundary, crews widened the trail as handline and felling crews removed vegetation, including mature trees and snags. This activity extended roughly one mile from the trailhead to the cirque basin at popular Boulder Lake, damaging wilderness and scenic values on this popular, highly accessible wilderness trail. Ultimately, this poorly constructed mid-slope, mixed construction fireline built on top of the Boulder Lake Trail failed to hold and the fire moved east towards Trinity Lake.\textsuperscript{16,38}

The only portion of this fireline that actually held was a section of handline on the rocky ridgeline above the Boulder Lake Trail, making the impacts adjacent to the trail completely unnecessary. This section of fireline was recommended by local fire officials, but the trail was prioritized and heavily impacted as a fire containment line. Clearly the ineffective mid-slope dozerline and handline along the Boulder Creek Trail could have been avoided if fire managers had listened to local resources.\textsuperscript{16,33,38}

The Little Mill Trail in the Trinity Alps Wilderness was also partially converted into dozerline, despite cool, moist conditions, recent rain, and very minimal fire spread at the time of its construction. Regardless of conditions, crews appear to have bulldozed into the eastern margin of the Trinity Alps Wilderness on September 16.\textsuperscript{16} The fire, however, never reached large portions of this fireline and it was held on the slope above.\textsuperscript{33} Given the conditions at the time of its construction, this damaging fire line was unnecessary. Both the moderate fire conditions and recent wetting rain, would have allowed MIST tactics, handline and the preparation of the existing trail as fireline to sufficiently and effectively provide for fire containment without the use of dozers in the Trinity Alps Wilderness Area.

![Extensive snag felling took place along over 8 miles of the Swift Creek Trail and on portions of the Parker Creek Trail. This included the felling of hundreds if not thousands of trees and snags including mature and old-growth specimens. The activity took place along the wilderness trail, adjacent to riparian areas, at the margin of spectacular mountain meadows and crossed numerous tributary streams. Photo: Amanda Barragar](image)

The Swift Creek Trail was also prepared as fireline and heavily impacted by felling crews during the handline preparation process. Reportedly hundreds, if not thousands, of mature and old-growth snags and trees were felled along 8 miles of the Swift Creek Trail. Located in the Trinity Alps Wilderness Area and Preacher Meadow Research Natural Area, the Swift Creek Trail is a popular access into the dramatic eastern Trinity Alps Wilderness Area, but was treated poorly
by the Stanislaus Hotshot crew. The impacts to wilderness character were reportedly significant and degrading to the area’s exceptional scenic quality. Despite the extensive impacts of fireline construction, the fire never reached the majority of the Swift Creek Trail and very little trail prepared as fireline was actually utilized for fire containment.\textsuperscript{15,16,38}

This damaging handline, along with the heavy tree and snag removal associated with its construction, was often located in the riparian corridor of Swift Creek, compounding the impacts of fireline construction. In some locations, such as the 3 ½ miles of the Swift Creek Trail from the Bear Basin Trail intersection to the meadows near Horseshoe Lake, felling operations occurred in a wide swath up to 100’ from the trail. Cut stumps were left up to three feet high and little wilderness rehabilitation occurred.\textsuperscript{15,16,38} Local Resource Advisors (READS) felt that the approach was heavy handed and as damaging as you can get without utilizing a bulldozer in the Wilderness. Miles of the beautiful Swift Creek Trail are now lined in 3’ high stumps, slash piles, cut rounds, felled trees and cut material stacked on the trailside. Currently, Forest Service officials have no plan or funding to clean up these unsightly materials and the massive fuel risk they now pose on the Swift Creek Trail.\textsuperscript{15,16,38}

At the same time, those portions of the Swift Creek Trail that did burn were backburned by the same Stanislaus Hotshot Crew. Unfortunately, the results of their backburning operations were equally heavy-handed, poorly coordinated and ineffective. These backburns led to the development of over 100 spot fires across existing firelines and significant swaths of high severity, stand replacing fire in the area around the Landers Lake Trail. According to the Happy Camp Hotshot crew that participated in the firing operations that evening, the Stanislaus Hotshots were lighting too quickly, building too much heat and burning without effective coordination, leading to a poorly executed backburning operations and a frantic night of firefighting by crews in the Swift Creek area. By the next morning, crews had worked overnight to hold the fire along the Swift Creek Trail or along Swift Creek itself, but fire effects were much hotter than expected or desired.\textsuperscript{38}
On and around September 9, fire crews also built dozerline on, across or parallel to approximately 2.5 miles of the Pacific Crest Trail near Scott Mountain Summit. Scott Mountain Summit has been designated as a Botanical Area due to the area’s intact plant communities, incredible botanical diversity and the rare plant species found in the area. In this section, the Pacific Crest Trail runs through the Botanical Area and then adjacent to heavily logged private industrial timberland before crossing the Trinity Alps Wilderness Area boundary.

Fire crews bulldozed over the Pacific Crest Trail in several locations above Scott Mountain Summit and the Trinity Alps Wilderness boundary. This included dozerline built on a ridgeline adjacent to the trail. This dozerline cuts straight up the ridgeline, bulldozing through a series of well-designed switchbacks on the Pacific Crest Trail. During creation of this dozerline, dozer operators disturbed this intact ridgeline corridor and bulldozed over the Pacific Crest Trail in approximately 9 locations. The bulldozing of slopes in this area will have lasting impacts to the Scott Mountain Botanical Area, as well as to the scenery and experience for future generations on the Pacific Crest Trail as it enters the Trinity Alps Wilderness.

Like the other wilderness firelines, this specific fireline was built to “protect” recently logged private industrial forest land from wildfire effects. In doing so, federal forest and fire managers prioritized private timber resources over nearby public land resources, such as designated Wilderness and the scenic values of the Pacific Crest Trail. The presence of Sierra Pacific Industries land east of the Trinity Alps Wilderness boundary significantly and inappropriately influenced fire management strategies, activities and authorizations on the River Complex Fire, leading to significant impacts in the Trinity Alps Wilderness Area, to the Pacific Crest Trail and the Scott Mountain Summit Botanical Area. These impacts were largely unnecessary due to the changing weather conditions and wetting rain of September 9, 2021. They were also almost uniformly opposed by local Resource Advisors and forest/fire officials who reported having little influence on the authorization of ill-advised firelines or unnecessary and damaging firefighting activities.
The 2021 Lava Fire

The 2021 Lava Fire burned 26,316 acres on the northern and western face of Mt. Shasta in the southern Cascade Mountains. The Lava Fire burned from roughly 3,500’ in the Shasta Valley to over 8,000’ on the slopes of Mt. Shasta. Throughout this broad elevational gradient, the fire burned through a wide variety of habitats types from sagebrush and juniper steppe to subalpine forests and montane chaparral. In total, the fire burned at 52% low, 45% moderate and only 3% high severity fire effects.

Beginning as a natural lightening ignition on June 24, 2021, roughly three miles east of Weed, California, the fire was first reported at 8:24 AM on June 25. Burning in vegetation that had colonized a large lava field just east of the Union Pacific Railroad line, the area was not particularly steep, but the rocky, rugged terrain and difficult access presented immediate challenges for fire managers. Forest Service initial attack crews responded by dumping over 7,000 gallons of water on the fire throughout the day and cold trailed the entire fire area.

After finding no heat, Forest Service fire managers declared the fire contained at ¼ acre. Crews left the site at roughly 4:00 PM and monitored the fire from a distance. Crews had intended to
patrol and monitor the fire area early the next morning, but within one hour strong winds rekindled the Lava Fire, which quickly burned outside the existing containment features.42

By the morning of June 26, the fire was still only 2 acres and 50% contained, yet erratic afternoon winds and low relative humidity facilitated rapid fire spread to 80 acres, and the first evacuation warnings went out to nearby residents around 5:00 PM. By nightfall the fire had begun spreading southeast and was up to 220 acres. By the next day, on June 27, the fire had reached 550 acres and continued steadily growing.42

On June 28, the fire picked up and shifted to the north, setting the stage for the fires only major run. At this time, the fire was 1,446 acres and 20% contained. On June 29, low relative humidity, combined with 35 MPH winds and 103-degree heat created extreme fire behavior. Pushed by strong winds, the Lava Fire quickly burned over the Lake Shastina Fuel Treatment Project, a CalFire fuel break built in 2019 along Highway 97.43

The Shastina Fuel Treatment Project was one of CalFire and California Governor Gavin Newsom’s 35 “priority projects” designed by CalFire to protect the states “most vulnerable communities.” The project consisted of nearly 500 acres of manual thinning and a fuel break up to 100 feet wide on each side of the highway. Intended to provide “for the safe evacuation of approximately 2,500 residents.”

Despite neither providing an anchor for containment or a safe evacuation along Highway 97, CalFire boasted on a July 16, 2021 tweet that “The Lake Shastina Fuel Treatment Project slowed the fire, aided in evacuations and provided a place for firefighters to engage the fire in a safe manner.” Unfortunately, none of these statements have proven to be accurate.

Instead, the fire burned quickly over the fuel break and Highway 97, consuming 14 homes. Fire crews could not use the previous fuel treatment to safely engage the fire, and many residents
were unable to utilize Highway 97 for evacuation. In fact, the evacuation of communities within the fire perimeters was extremely chaotic and dangerous despite CalFire’s glowing praise of itself and its ineffective fuel break. Just as it had months earlier when CalFire and the Governor inflated the number of acres treated by 690%, CalFire was again misrepresenting the effectiveness of its work and undermining its credibility as an agency.

That evening the Lava Fire spread north into the community of Shasta Vista, racing down off the mountain and into the dry pine savanna, juniper woodland and sagebrush steppe on its northern flank in the Shasta Valley. As the fire raged into the Shasta Vista area and escape routes burned over, a chaotic evacuation ensued. During this evacuation, one resident from the nearby community was unfortunately shot and killed by the police near his home in Shasta Vista.

The fire remained active all night, as strong winds pushed the fire approximately 8 miles north in a long, narrow, wind-driven run. As the fire grew to 13,000 acres, the wind died down and fire spread to the north was largely mitigated. For the next three days, between June 30 and July 2, the fire burned laterally high on the flanks of Mt. Shasta, reaching around the mountain to its western face near Diller Canyon and northeast into the Bolam Creek area. By the morning of July 3, the fire was 26% contained and 24,460 acres. Over these four days, 22,327 acres had burned accounting for 85% of the total fire area.

With the fire now burning slowly, high on the rocky slopes of Mt. Shasta and into the rocky, blown out canyons draining the mountain, fire growth was dramatically reduced and containment began to climb. By July 8, the fire had burned less than 400 acres over the previous six days and had virtually come to a halt in the previous three days, burning a total of 3 acres. Containment was now 70% and most of the heat had diminished across the fire area, including in Diller Canyon.

Unfortunately, with approval from the Regional Forester and Shasta-Trinity National Forest Supervisor, fire crews bulldozed into the Mt. Shasta Wilderness Area on the southern flank of Diller Canyon. The dozerline was built to contain a flank of the fire that had not moved in over 6 days, contained very little heat according to IR maps, and was already naturally holding in the long, rocky chasm known as Diller Canyon.
By September 1, the Lava Fire was declared 100% contained and had created relatively natural mixed severity fire effects. The Lava Fire restored fire to 26,316 acres on and around Mt. Shasta, providing long-term benefits to plant communities, forests and habitats throughout the area.

**Wilderness Impacts**

Diller Canyon is a deep, rocky chasm containing a small stream. Blown out repeatedly by avalanche, flood, and seasonal high water from melting snow, the drainage is deeply downcut, extremely Rocky and very sparsely vegetated. Its upper reaches extend into the alpine zone of Mt. Shasta and are unburnable. The middle reaches contain very sparse and rocky subalpine forest of white bark pine and Shasta red fir, while at the stream’s lower reach, the watershed contains mixed conifer forests of fir and pine with large patches of green leaf manzanita.

In this lower, more vegetated portion of Diller Canyon, the Lava Fire burned along approximately a half mile of stream. The remaining portions of Diller Canyon in the Lava Fire area acted as a natural barrier and effective natural containment features. Yet, the fire spread across the canyon, burning a large manzanita field and a pine plantation south of the drainage in its lower reach. This portion of the fire, outside the Mt. Shasta Wilderness, was contained with a combination of dozerline and road as fireline. Other portions of this southern perimeter in the Diller Canyon area were tied back into the rocky drainage with handline at the wilderness boundary.

Unfortunately, fire crews also continued bulldozing approximately one mile into the Mt. Shasta Wilderness Area disturbing the area’s wilderness character, beautiful mountain scenery and subalpine forests. This damaging wilderness dozerline provided no real benefit to fire containment, as the fire had already stalled out on the sparse, volcanic slopes and in the deep, rocky chasm of Diller Canyon. During the Lava Fire, Diller Canyon acted as a highly effective natural barrier, proving itself to be impermeable to fire.
In fact, IR maps show only scattered heat in Diller Canyon after July 2, and by July 7, when fire crews began bulldozing high on the slopes of the Mt. Shasta Wilderness Area, the fire had largely self-extinguished near treeline. None of this wilderness dozerline was used or was necessary for fire containment, as the Lava Fire had already stopped its forward advance on the northern side of Diller Canyon.

The Diller Canyon wilderness dozerline consists of a 10-12’ wide dozer scar in sparse volcanic soils, and in some places multiple dozerlines were created. Most of the dozerline extends through subalpine forest of red fir for roughly one mile into the Mt. Shasta Wilderness Area to a scenic ridge overlooking Diller Canyon.

This Operations Map shows the Mt. Shasta Wilderness Area boundary in green, tree line is shown in yellow, and dozerlines are shown with black hash marks. You can see the dozerline extending approximately one mile inside the Wilderness boundary to treeline. The red polygon shows the active fire perimeter using infrared imagery on July 8, 2021. The areas with red dots contain only scattered heat and the fire inside the wilderness naturally held north of Diller Canyon, making the dozerline obsolete and unnecessary.
When we monitored the area for impacts in September 2021 off-road vehicle riders had already entered the wilderness by driving the dozerline and no effective closure was created to discourage or exclude motorized use in the Wilderness Area.

Given the lack of concentrated heat north of Diller Canyon, the lack of movement south for multiple days and the abundance of natural barriers, the wilderness portions of this dozerline proved totally unnecessary. In fact, the fire never reached the wilderness portions of this dozerline. Loose herding the fire and pushing active fire into the stark volcanic slopes, rock faces, boulder fields, glacier cover and snowfields proved an effective containment strategy and did not require wilderness dozerline. The natural features high on Mt. Shasta create the most naturally fire impermeable slopes in all of northern California. Natural features and handline using MIST tactics could have and should have been utilized to safely and effectively hold the fire in the Mt. Shasta Wilderness near Diller Canyon.

Crews also opened an old jeep road inside the Mt. Shasta Wilderness near Bolam Creek and utilized the road for access, driving four-wheel drive vehicles into the Wilderness Area to facilitate fire suppression activities. It is unclear if this 4X4 route was adequately closed. We could not visit the site before snow fell in the fall of 2021 and the impacts of this route remain unclear.
Conclusion & Recommendations

Fire suppression impacts on sensitive federal lands are becoming more pronounced each year in the West, and in particular, on both Region 5 Forest Service lands and adjoining parts of southwestern Oregon in Region 6. These impacts include extensive dozerline creation in Wilderness Areas, National Monuments, Botanical Areas and other important conservation areas. These same impacts are also affecting National Recreation Trails, National Scenic Trails, like the Pacific Crest Trail, and many other nationally and regionally important recreational trails or areas. The combined effect is the degradation of intact biological communities and cultural resources, a loss of scenic values, and impacts to recreational opportunities throughout public lands in the West.

We believe that federal land managers already have the tools and policy mandates necessary to both maintain public safety and appropriately manage wildfire events, while also protecting biologically and culturally important landscapes. Unfortunately, these mandates and policies are not being adequately utilized.

We recommend that the Region 5 Forest Service recommit to the protection of wildland habitats, biodiversity and cultural resources during fire management operations by more effectively implementing current protocols for resource protection. This should include:

1) A commitment to implement Minimum Impact Suppression Tactics (MIST) whenever possible in sensitive environments, including Wilderness Areas, Inventoried Roadless Areas, Botanical Areas, designated Backcountry Areas, Research Natural Areas and other conservation areas intended to protect habitat values, biodiversity or natural conditions.
2) The development of fire management plans in the upcoming National Forest plan revisions. These plans should identify specific MIST strategies and tactics appropriate in sensitive environments and land use designations.
3) The utilization of managed wildfire for resource benefit in Wilderness Areas, Inventoried Roadless Area and other backcountry habitats, while at the same time protecting communities, infrastructure and habitat values.
4) Increased consultation between local resources knowledgeable about a specific region, Resource Advisors (READS), and Incident Command Teams.
5) An annual after-action review and investigation conducted at a Regional scale, addressing all wilderness dozerlines and “non-compliant” activities approved during each fire season. These reviews should make recommendations to limit future impacts through adaptive management and effective regulation of fire suppression activities in Wilderness Areas, Inventoried Roadless Areas and other sensitive habitats.
6) After-action reviews should include tribes, members of the public, environmental organizations, Regional Forest Service officials, local National Forest officials and fire managers. Reviews and their findings should be made public with an annual report tracking fire suppression impacts in sensitive environments and land use allocations.
References:


18. USDA. 2021. Incident Action Plan August 31-September 1, Monument Fire North Zone.


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For more information on fire suppression impacts and to view previous fire reports:
https://klamathsiskiyoufirereports.org/

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