1st 48 Roadside Fuelbreak Collaborative Project
Draft Decision Notice & Finding of No Significant Impact
Cover photo: Densely growing young trees along Forest Road 2S48. US Forest Service photo by Christy Prescott.

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Draft Decision Notice

Introduction

In 2013, the Trinity County Collaborative (TCC)\(^1\) brought forward a “proof-of-concept” proposal seeking collaboration with leadership on the Six Rivers National Forest (SRNF or forest), to take immediate action to establish a network of linear roadside shaded fuelbreaks on national forest lands to facilitate safe evacuation, firefighter access and landscape fire management. This draft Decision Notice and Finding of No Significant Impact (DN and FONSI) documents my selection to implement Alternative 2, representing the TCC’s proposal, as disclosed in the 1st 48 Roadside Fuelbreak Collaborative Project (1st 48 Project) Final Environmental Assessment (final EA). The 1st 48 Project final EA discloses the environmental effects of Alternative 2 developed in detail to meet the purpose and need and respond to public issues, and Alternative 1 (No Action), as a comparison of what could happen without management (final EA pp. 17-44).

The 1st 48 Project was designed in compliance with the standards and guidelines (S&Gs) per the 1995 Six Rivers Land and Resources Management Plan (LRMP or forest plan), the 1999 Shasta-Trinity National Forest’s Late Successional Reserve Assessment (LSRA), the 2011 Recovery Plan for the Northern Spotted Owl (Recovery Plan), the 2012 Northern Spotted Owl Critical Habitat Rule (Critical Habitat Rule), the 1994 Aquatic Conservation Strategy (ACS), and other federal, state, and local laws and requirements (final EA pp. 7-13).

The project area lies within the Mad River Ranger District (RD) of the SRNF, in Trinity County, California, in T2S, R8E, Sec. 6, 7, 8, 18, 19, 20, 21, 28, 29, 30, 31, 32 and 33; and T2S, R7E, Sec. 11, 12 and 13, Humboldt Baseline and Meridian. The 1st 48 Project is near the community of Ruth, ranging from 2,700 feet in elevation to 5,800 feet at the top of South Fork Mountain (final EA p. 4).

Purpose and Need

The Purpose and Need for the 1st 48 Project is to provide rural communities and residents travel zones that allow for safer evacuation during wildfires; allow greater, faster wildland firefighter response and suppression; and reduce the risk of roadside fire starts traveling into high-value landscape-level forest resources (final EA pp. 5-6).

Decision

Based on my review of the analysis disclosed in the April 2018 1st 48 Project final EA, the project record, best available science and consideration of public comments, I have decided to select Alternative 2 (the Proposed Action), as described in Chapter 2 pp. 17-42 of the final EA. My decision authorizes thin from

\(^{1}\) Trinity County Collaborative Group (TCCG): The collaborative is composed of 55 diverse stakeholders including landowners, business owners, local and regional conservation groups, timber industry representatives, fire safe councils, local non-governmental organizations, federal and county government agencies.
below, hazardous fuels reduction, prescribed jackpot and underburning on approximately 821 acres of National Forest System (NFS) lands over the next 15 years, and decommissioning a segment of Forest Service Road (FSR) 2S54.

The 1st 48 Project will alter live and dead surface, ladder and crown fuels by implementing mechanical treatments (i.e., ground and cable yarding, mastication, grapple pile using dozer or small excavator (equipped with a brush rake)), followed by manual (hand) cutting using chainsaws and piling, pruning, and/or lopping and scattering woody debris, periodic prescribed jackpot burning, and underburning in oak woodlands three (3) to five (5) years apart. Fuelbreak maintenance primarily using mastication will occur to cut back vegetative sprouting, accumulated forest litter, and natural regeneration (i.e., tree seedlings) up to 15 years.

My decision will establish roadside fuelbreak networks (both tree shaded and unshaded where open forest conditions occur) over approximately 821 acres within the wildland-urban interface (WUI)\(^2\). All proposed treatments would occur at varying widths on FSRs open to the public, from a minimum of 25 feet on one side, up to 275 on the other, not exceeding a total 300-foot width. Fuelbreaks will be established along either side of FSRs 01S23 (Route 23), 02S02, 2S47, 2S48, 2S49, 2S50, 2S51, 2S52 and 2S53) and one (1) motorized trail (Jeep Trail 8E20). All treatments will reduce hazardous surface and ladder fuels and breakup intermingled tree crown fuels, while maintaining sufficient tree shade to curb brush response (final EA pp. 2, 18).

The 1st 48 Project will thin suppressed, intermediate and co-dominant trees (see final EA Table 4) using cable- and ground-based mechanical methods (such as tractor and masticator). Hazardous fuels (trees up to 8-inch diameter at breast height (dbh)) will be hand-cut with chainsaws, chipped, pruned and brush masticated, followed by machine (dozer or small excavator equipped with a brush rake) and hand-piling debris, manually lopping and scattering surface and small ladder fuels, prescribed jackpot burning and underburning in oak woodlands to stimulate oak regeneration.

In addition, the Proposed Action would thin trees growing in plantations and oak woodlands bordering roadways, beyond the 275-foot maximum on one side of FSRs. Additionally, along the outer perimeter of the plantations, hazardous fuels reduction (HFR) treatments would be implemented to establish a 150-foot flank or buffer intersecting with the roadway (final EA p. 18).

Specifically, my decision authorizes:

- 461 acres of mechanical thin from below and mechanical, manual and jackpot burning HFR treatments, where overstory tree canopy exceeds 60 percent in mixed conifer stands.
- 108 acres of mechanical, manual and jackpot burning HFR, where overstory tree canopy is below 60 percent, in mixed conifer stands managed historically under even-age forestry practices (i.e., plantations, shelterwood and seed tree prescriptions).

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\(^2\) **Wildland Urban Interface (WUI):** The wildland-urban interface (WUI) zone is an area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into federal, private, and state jurisdictions. The WUI boundaries generally extend approximately 1¼ miles out from the defense zone boundary; however, actual extents of threat zones are based on fire history, local fuel conditions, weather, topography, and natural barriers to fire.
37 acres of mechanical thin from below, manual and phased underburning HFR in oak woodlands. Hand-constructed control lines (typically 18- to 20-inches wide), which includes scraping duff and debris to expose bare mineral soil, will be used to contain prescribed underburning to the oak woodland units.

215 acres of post-fire mechanical, manual and jackpot burning HFR, where there is little or no live tree overstory.

784 acres of mechanical, manual, and jackpot fuelbreak maintenance.

Decommissioning FSR 2S54 (classified Maintenance Level (ML) 2 road open to the public), which includes removing drainage structures, restoring natural drainage patterns and placement of an earth mound barrier at the entrance to prevent motorized use and the promotion of passive restoration of the travelway, and managing in a maintenance-free condition for the long term.

Utilize 33 existing landings to expedite operations and construct up to 20 new landings (up to 0.25 acres each), allowing for an expansion of existing natural openings that exhibit some previous ground disturbance within units or existing roadside turnouts.

Use of up to 13 existing temporary road spurs totaling 1.06 miles. These existing temporary roads will be barricaded post operations, once the thin from below and HFR treatment operations are complete, to prevent motorized-vehicle access. The post-operations treatments will involve activities to achieve hydrologically maintenance-free conditions.

Permits, Licenses and Authorizations Needed to Implement the Decision

In accordance with 40 CFR 1502.25 (b), the EA is to list all federal permits, licenses, or other entitlements that must be obtained in implementing the action alternatives. A waiver application will be filed with the North Coast Regional Water Quality Control Board (NCRWQCB) under Order No. R1-2015-0021, once the decision document is signed. A burn permit from the North Coast Unified Air Quality Management District (NCUAQMD) will be acquired before initiating any prescribed burn (final EA p. 13).

Mitigation and Monitoring

I recognize there may be short-term disturbances to the human environment from the use of machinery, presence of field crews and associated increased traffic, noise and smoke from prescribed burning when operations are underway. My decision requires application of project design features (PDFs) and mitigation measures aimed at reducing, minimizing, or eliminating impacts to various natural and cultural resources, and ensuring the project is in compliance with the resource protection standards and guidelines (S&GS) of the SRNF LRMP; the Record of Decision for amendments to the survey and manage, protection buffer, and other mitigation measure standards and guidelines in Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl (USFS et al. 2001), based on the district court’s remedy order issued on February 18, 2014 (Conservation Northwest v. Bonnie, W.WA No. C08-1067-JCC); US Forest Service Region 5 Soil Management Handbook (FSH
2509.18); *Six Rivers National Forest Best Management Practices (BMP) for Invasive Plant Species and Aquatic Organisms* (2014); and national, regional, and state water quality BMPs.

My decision requires monitoring as described in the final EA (Chapter 2 pp. 34-42). Monitoring is fundamental to inform decision-making that can influence future conditions. The objective of the *1st 48 Project’s* monitoring plan is to 1) gather new information to determine the effectiveness of management decisions, 2) establish a baseline for various measures prior to implementation and mitigations, and 3) verify the accuracy of analysis assumptions and conclusions. Project activities will be monitored during and after implementation of management actions to ensure that mitigation measures are implemented effectively.

Monitoring is also required to evaluate the effectiveness of planned activities, including standard practices and mitigation measures, to ensure desired project outcomes (final EA pp. 42-43). Lessons learned from monitoring and evaluation will be incorporated into future project planning efforts. A full spectrum of techniques and methods may be used including:

- Formal joint management and collaborative field reviews
- Site-specific observations by on-site resource specialists
- Field assistance trips by other technical specialists
- On-going accomplishment reporting processes
- Discussions with other agencies and various public users
- Interdisciplinary team reviews of monitoring results.

Implementation and effectiveness monitoring for cumulative watershed effects will be accomplished through the BMP Effectiveness Evaluation Process. The objective is for BMP implementation to be at 100 percent. Results for any BMP below 85 percent trigger a review of the activity area before implementation of further projects. Implementation monitoring is achieved by selecting a representative number of treatment units each year from a sample pool of completed stands or project areas. A complete listing of BMPs is included in Appendix C of the final EA.

Wildlife monitoring will occur by conducting northern spotted owl (NSO) surveys in compliance with the most current, US Fish and Wildlife Service- (USFWS) approved protocol throughout the project area. Updated surveys will be maintained throughout the life of the project (final EA p. 41).

The successful control of yellow star thistle will necessitate periodic monitoring and evaluation of treatment efficacy. If plants are present after the initial treatment, individuals will be manually pulled in late spring (before fruiting/seeding), ensuring removal of the roots as much as possible, and then handpiled and burned. My decision will implement monitoring each year to determine if retreatments are necessary to eradicate populations (final EA pp. 38-39).

### Reasons for the Decision

In reaching my decision, I have considered the Purpose and Need for action, tribal and interagency consultation, public comments, resource reports, the No Action Alternative (Alternative 1) and the potential effects and outcomes (final EA pp. 17-18). My decision to implement Alternative 2 signifies a
step toward aiding the protection of dispersed private properties, residents and the at-risk community of Ruth. It also provides an opportunity to demonstrate TCC’s “proof-of-concept” in alignment with the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) and the Six Rivers LRMP, as disclosed in the 1st 48 Project final EA.

I believe Alternative 2 will effectively capitalize on the benefits that roads and trails provide in rapidly deploying firefighters, making the most of suppression tactics. By establishing crown separation in the forest canopy and lowering fuel concentrations, firefighters will have defensible space from which the flame front can be contained. My highest priority is to serve local residents living in and around the town of Ruth, by establishing safe evacuation routes so they can get to safety during a wildfire.

My decision will address high tree densities and associated intertwined tree crowns, which promote a route for active crown fire, particularly during wind-driven events. Thinning from below will act to increase the spacing between individual trees and their crowns, while retaining shade to minimize growth response of understory brush species. I believe that retaining adequate tree shade will minimize the loss of surface fuel/soil moisture from solar heating, which can dry out down woody material and logs increasing flammability and residence time (final EA pp. 56-57).

My review of historic records indicates there have been several wildfires in and around the 1st 48 Project area. In 2011, the Ruth Fire burned 1,460 acres of NFS lands in the Upper Mad River Watershed. There are 88 acres of 1st 48 Project units within the burned area of the Ruth Fire. Fire effects are variable according to onsite conditions at the time of burning (final EA p. 7).

With the onset of effective fire suppression in the planning area between 1930 and 1945, fire frequency has declined and changes to the vegetative structure have led to a denser, more homogeneous forest (Sugihara et al. 2006). The dramatic reduction in wildfire burn acreages over the last 80 years appears to have resulted in unnatural fuel profiles that are more continuous, both horizontally and vertically. Given this increased conifer density, future wildfires could become larger and more destructive than in the past. In the prolonged absence of fire, aggravated by other disturbance factors, these fire-adapted forests and grasslands have undergone dramatic changes in species composition and structure. Intermediate canopy layers and higher ground fuel loadings have developed, which allow ground fires to reach the crown more easily, making fires more difficult to control (final EA pp. 49-55).

Young plantations now occupy most of the harvested old-growth sites within the project area. Early- and mid-seral stages of Douglas-fir are more susceptible to mortality by wildfire than older late-seral stands, as low-lying limbs, thin bark and intertwined crowns result in torching and high heat intensity whereby crowns become fully engulfed in flames. While thick, corky bark on the lower bole and roots of older trees protects the cambium from heat damage, and tall trees have their foliage concentrated on the upper bole, which makes it difficult for fire to reach the crown, trees are typically not free of lower branches until they are more than 100 years old (Hermann et al. 1990).

3 The Town of Ruth, population 195 (US Census 2010) is located in southern Trinity County. The state of California in 2001 in accordance with the 2001 Federal Register (Fed. Reg. 66:3) designation of “communities at risk” adjacent to federal lands that are at high-risk from wildfire, identified Ruth as a community at risk. In 2010, the Trinity County Community Wildfire Protection Plan (CWPP) was updated. Federal, state and local organizations convened information to refine the spatial designation of the WUI.
For example, the existing basal area within the Douglas-fir series in the project area ranges from 71 square feet per acre to 545 square feet per acre, with an average of 229 square feet per acre. Typical average post-thinning target basal areas aimed at promoting healthy conditions for early-mature Douglas-fir stands ranges from 120 square feet per acre to 160 square feet per acre. Currently, approximately 85 percent of Douglas-fir-dominated stands feature basal areas greater than 160 square feet per acre. My concerns are these tree densities will promote tree mortality contributing to fuel concentrations, likely to fuel high intensity fire behavior and severity at a large scale, similar to the Ruth Fire (final EA p. 51). I have concluded Alternative 2 offers an important advantage over not taking action, by establishing fuelbreak networks and lowering hazardous fuels to lessen the impacts of wildfires on communities and the environment.

One of the most threatened species is the California black oak (*Quercus Kelloggii*), which is vulnerable to being overtopped and crowded out by Douglas-fir. One of the biggest deficits on the landscape is the old upland oak woodland (final EA p. 50). Therefore, my decision will implement thinning around these remnant oak trees being over topped and shaded out by faster growing Douglas-fir, which will enable them to receive more sunlight to promote the growth of fuller crowns, increasing their health and resistance to disturbance.

**Relevant Issues**

I considered the following relevant issues associated with implementing the *1st 48 Project*. I made my decision with the greatest good in mind.

**Wildlife Habitat Quality**

I understand the reduction of forest ladder and select crown fuels may lower habitat quality for the NSO (*Strix occidentalis caurina*). I considered the analysis of predicted changes under Alternative 2 on nesting, roosting, foraging, and dispersal habitats within NSO core and home ranges. The changes in NSO habitat were analyzed and compared to the suggested levels of habitat as described by the USFWS (USDI Fish and Wildlife Service 2009), published research, and professional judgement. Based on my review, I find Alternative 2 contributes to fulfilling the goals and objectives of the USFWS’s Recovery Plan (final EA pp. 61-85).

The California Coast Range (Klamath West) is considered a “fire-prone” area because of its frequent fire return intervals and existing vegetation condition that likely elevates the potential of fire. Within fire-prone areas, resource agencies planning vegetation management in critical habitat for the NSO are encouraged to ameliorate current threats of on-going habitat loss from uncharacteristic fires and vegetation change that are largely related to past fire exclusion (USDI Fish and Wildlife Service 2012; final EA pp. 59-60).

The *Record of Decision on Management of Habitat for Late-Successional and Old-growth Forest Related Species within the Range of the Northern Spotted Owl* (1994) established a network of late-successional reserves (LSRs), including 100-acre core areas located around NSO activity centers (ACs) known to exist in 1994, and larger, landscape-level managed late-successional areas. The network of reserves is intended to provide old-growth forest habitat, provide for populations of species associated with late-successional forests, and help ensure that late-successional species diversity will be conserved.
In 1999, the Shasta-Trinity National Forest (STNF) completed a forest-wide LSR assessment (August 26, 1999) to determine their sustainability and provide information to decision makers for managing LSRs to meet forest plan goals and objectives. The South Fork LSR encompasses 80,451 acres, with the majority located on the STNF. Of that, 1,057 acres are situated and administered by the SRNF. The 1st 48 Project will manage 73 acres (49 acres of thin from below) within the South Fork LSR, as it was identified as a landscape where existing features and conditions give firefighters a good chance of keeping exterior wildfire from entering, or conversely, interior wildfire from exiting the area (final EA pp. 12-13).

In 2009, the STNF received a letter of clarification from the US Forest Service Pacific Southwest Regional Ecosystem Office (REO) related to hazard reduction thinning activities proposed in LSRs to reduce the risk of large-scale disturbance. The REO reviewed the LRSA for the STNF and concluded that fuel treatments in LSRs that thin suppressed, intermediate and some co-dominant trees are consistent with Northwest Forest Plan (NWFP) S&Gs (USDA REO letter, October 18, 2009). I find my decision is consistent with LSRA and LRMP direction, as it will implement fuels reduction treatments aimed at reducing risk (potential loss due to wildfire) in younger white fir stands adjacent to FSR 2S23, and along the ridgetop within the South Fork LSR (final EA pp. 55-58).

My decision to implement the 1st 48 Project will expedite conservation and restoration of spotted owl sites and high-value spotted owl habitat using fuels techniques to enhance structural complexity and biological diversity, as recommended by the Recovery Plan and Critical Habitat Rule. Alternative 2 will apply thinning from below to accelerate diameter and height growth, while retaining a minimum 60 percent forest canopy closure in all suitable habitat for the NSO. No pre-dominant or dominant trees will be cut, and large snags and downed logs will be maintained. Stands selected for treatment in the project area are predominantly 80 years old or less (final EA p. 61).

My review of the wildlife analysis indicates four (4) of the ACs in the 1st 48 Project area overlap the Kelsey Peak Project planning area. The cumulative effects analysis considered habitat effects of these four (4) NSO ACs within their entire home ranges. The maximum acres treated within an AC for these two (2) projects combined is 19 percent of nesting/roosting and 36 percent of foraging habitat. Current habitat function has been or will be maintained in all treated areas. The wildlife analysis indicates approximately 98 percent of the available nesting/roosting and 90 percent foraging habitat within the Upper Mad River Watershed will be left untreated and available as alternative habitat for the use by NSOs.

As I understand it, all treatment areas in the action areas will remain suitable immediately post project, as treatments were designed to maintain and restore habitat function in low- to moderate-quality habitat in all project units. Post-treatment monitoring was conducted by the US Forest Service (Forest Service or USFS) in coordination with the USFWS on the Kelsey Peak Project, as well as on projects elsewhere on the forest (final EA pp. 91-94). These previously implemented projects applied treatments similar to the 1st 48 Project. Monitoring indicates canopy closure requirements were exceeded for all the units and pre-dominant trees, snags, and downed logs were retained, as specified (final EA p. 93). Therefore, I conclude the 1st 48 Project, even in light of cumulative effects, will have beneficial effects on future habitat conditions and create more alternative habitats for owls to use across the landscape.
**Soil Erosion**

I recognize tree removal and associated operations (i.e., skidding, temporary road use and expansion of existing landings), coupled with phased initial and maintenance prescribed burning, may increase soil erosion and elevate sedimentation/siltation and turbidity contributing to cumulative effects for the Ruth Lake-Mad River (180101020203) and Barry Creek-Mad River (180101020202) watersheds (EPA-listed: Clean Water Act §303(d) impaired 1992) (final EA pp. 95, 101-102). However, even so, my concern is for events such as the Ruth Fire in 2011, which consumed forest vegetation leaving soils barren and vulnerable to erosion and displacement resulting in substantial disruptions to the watershed conditions and hydrological function.

The 1st 48 Project will not alter thermal regulation, nutrient filtering, rates of surface or bank erosion, channel migration, or large woody debris recruitment in riparian reserves, as equipment exclusion buffers along streams and low-intensity thinning from below and HFR are spatially limited to 130 acres, or 16 percent of the project area units. I am authorizing jackpot burning and underburning, but it is limited to low to moderate intensity to retain sufficient surface duff and litter cover (final EA pp 40-41, 102).

My review of the soils analysis, which was based on the Region 5 Soil Erosion Hazard Rating (EHR) System (USDA Forest Service 1990) as a method to rate the risk of soil erosion for all soil types in the project area, indicates none of the soils in the project area have a high EHR, with 50 to 70 percent soil cover on their respective average slope gradients. Most of the soils do not even have a high EHR when bare, due to the surface loams being very porous (>2 in/hr. infiltration rate), which is typical of loamy and most fine-loamy forest soils. It is expected there will be areas of bare soils after ground-based operations are complete (existing temporary roads and landings), typically less than 10 percent of the unit area. My decision requires that in any areas rendered bare on greater than one-fifth of an acre will be monitored for vegetation recovery, and will be actively mulched and/or seeded if any evidence of substantial erosion is discovered and/or if natural revegetation is not timely.

I find my decision to implement the 1st 48 Project will maintain at least 50 percent cover of duff and fine litter for soil productivity (with perhaps more needed for erosion prevention as determined for the project), in compliance with SRNF LRMP S&Gs. Furthermore, treatment intensity is much less than historic clearcut practices. A living forest canopy that continually adds litterfall to the forest floor will compensate in the short-term to cover small areas that may burn hot or otherwise where more cover is inadvertently removed than desired. A healthy productive forest is the best case for self-maintaining favorable nutrient cycling, particularly on the more developed soils (e.g., Ultisols and Alfisols). The portion of the Ruth Fire burn scar area that burned at high fire severity lacks a productive overstory, so surface organic matter levels are still recovering, particularly the duff layer thickness. Shrub regrowth has been aggressive, so current cover levels are adequate in extent (>50%) (final EA pp. 113-122).

The 1st 48 Project will lower erosion rates associated with FSR 2S54, an ML 2 road that is 1.95-miles long, by decommissioning it from where it intersects with FSR 2S02. Activities will include barricading the entrance to prevent motorized travel to promote passive restoration of the travelway and removing drainage structures to re-establish natural drainage patterns to establish maintenance-free conditions for the long term. The combination of barricading and water dispersion treatments are designed to stop water from concentrating on the travelway surface, reduce the potential for stream diversions (i.e., prevent water
from flowing down the road or trail), and reduce the potential for erosion and associated off-site sediment delivery to water resources (final EA pp. 31-32, 100). Alternative 2 will contribute to the protection of soil resources, as roadside fuelbreak treatments are designed to aid wildfire containment and control to decrease the probability for large-scale, high-intensity fire behavior to protect soils, down woody debris and nutrient cycling in the long term (final EA p. 120).

**Best Available Science**
My conclusions are based on a review of the project record that demonstrates a thorough review of relevant best available science was considered. The resource sections in Chapter 3 of the final EA disclose the effects analysis methodologies and reference scientific sources, which informed the analysis as well as the assumptions underpinning the basis for the findings.

**Public Involvement**

**Collaboration**
Since 2012, the TCC, spurred by the encouragement of USDA Secretary Tom Vilsack, helped to develop the strategy and landscape-scale (742,000 acres) *Trinity Community Protection and Landscape Restoration Project*, spanning the STNF and SRNF along with interspersed private timberlands, ranches, and six (6) isolated rural communities. This project set the stage for using prescribed fire as a primary tool to help protect communities, watersheds and habitats in the near future, fulfilling the goals of the Cohesive Strategy, the USFS Region 5 Ecological Restoration Intent, the *Trinity County Community Wildfire Protection Plan* (CWPP), and the all-lands principles represented by the Joint Chiefs’ Landscape Restoration Partnership (Joint Chiefs).

In 2013, the TCC working group approached SRNF leadership, submitting a proposal as a “proof of concept” to begin to incrementally achieve the goals of the larger landscape TCC project. In 2016, the Forest Service and TCC working group met in the field to discuss the bounds of the project area and potential treatment methodology within mutual zones of agreement. The TCC working group participated in interdisciplinary team (IDT) meetings and discussions beginning in 2017. On-going informal communications (emails and telephone calls) and small group meetings involved interactive conversations about refining the proposal and progress updates (final EA p. 13).

**Tribal Consultation**
On April 11, 2017, the forest initiated formal tribal consultation pursuant to §106 of the National Historic Preservation Act (NHPA; 36 CFR 800.2(c)(2)) with the Bear River Band of Rohnerville Rancheria, Round Valley Indian Tribes: A Sovereign Nation of Confederated Tribes, the Wiyot Tribe, the Lassic Band of Wylacki-Wintoon Family Group Inc., and the Eel River Nation of Sovereign Wailaki. The forest understands that the local tribes continue to play an important role in this and other undertakings on the forest. Tribal knowledge of the area and potential concerns about natural and cultural resources management
within their ancestral territory is an important part of the project design and analysis. A comment submitted stated, “We hope that the proposed 1st 48 Project and the joint participants be allocated the revenue and resources to achieve the goals of this project, a healthy, clean area of forest, managed to prevent high severity fires, waterways that are healthy and able to sustain our local wildlife” (final EA pp. 13-14).

Scoping

On April 1, 2017, the project was listed in the SRNF Schedule of Proposed Actions (SOPA) newsletter. On April 14 until May 5, 2017, the Forest Service initiated the 30-day scoping period with the distribution of a scoping letter and Proposed Action map to 120 recipients. The scoping letter was sent to Humboldt Bay Municipal Watershed District, the USFWS, US Congressional Representative Jared Huffman, County Board of Supervisors for Humboldt and Trinity counties, American Forest Resource Council, Environmental Protection Information Center (EPIC), Conservation Congress and Journey’s End, to name a few.

On April 25, 2017, the Forest Service and TCC hosted a public meeting at the Ruth Lake Community Center in the Town of Mad River, to invite the public to participate in the development of the project, solicit public comment, and present the project area and proposed treatment methods. Ten (10) community members attended the public meeting (final EA pp. 14-15). The public interests and comments submitted during the scoping period influenced the design of the Proposed Action and the mitigation measures incorporated as disclosed in Appendix A of the final EA.

Alternative Considered in Detail, but not Selected

In addition to the Selected Alternative (Alternative 2), I considered the No Action Alternative (Alternative 1) to provide a baseline for comparison with Alternative 2 (final EA pp. 17-18). The environmental analysis and disclosure of the No Action Alternative provides an indication of what could happen if Alternative 2 is not implemented. Although under Alternative 1, unavoidable short-term impacts from implementing thinning from below and HFR will not occur at this time, and the lack of action could result in discrete, indirect consequences, as described in Chapter 3 of the final EA.

I did not choose the No Action Alternative because it does not meet the Purpose and Need to implement the Six Rivers LRMP or the “proof-of-concept” proposal submitted by the TCC. The No Action Alternative will not meet the Purpose and Need to establish strategically placed, roadside fuelbreaks or reduce potential flame lengths adjacent to private lands and around the community of Ruth, at risk to wildfire. Without active forest management, the vigor and growth rates of trees growing in overstocked forest stands and oak woodlands will continue to stagnate or decline, as oaks become overtopped by conifers and water availability becomes more limited from inter-tree competition. Alternative 1 will tend to maintain forest conditions prone to high-intensity fire behavior; challenging for fire suppression crews to manage safely (final EA pp. 49-56). Under the No Action Alternative, point source erosion on FSR 2S54 will continue, as this segment will not be decommissioned (final EA p. 95). For these reasons, I choose not to select Alternative 1.
Finding of No Significant Impact

Based on the site-specific analysis summarized in the 1st 48 Roadside Fuelbreak Collaborative Project Final Environmental Assessment (1st 48 Project final EA) and the associated project file, I have determined that the Selected Alternative (Proposed Action) is not a major federal action and will not significantly affect the quality of the human environment; therefore, an environmental impact statement (EIS) is not required. Under the 1978 regulations written by the Council on Environmental Quality (CEQ; 40 CFR 1500-1508), significance is evaluated for both context and intensity. I considered the following evaluation of 1st 48 Project’s context and intensity summarized below.

Context

The significance of an action must be analyzed in several contexts, such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting. In the case of a site-specific action, significance usually depends upon the effects in the locale, rather than in the world as a whole. Both short- and long-term effects are relevant.

The 1st 48 Project’s context is limited to 821 acres around the community of Ruth within the wildland-urban interface (WUI), two 6th-field watersheds, and the South Fork Late-Successional Reserve (LSR) encompassing 80,451 acres, of which 73 acres lie within the project area on the Six Rivers National Forest (SRNF or forest). Any adverse effects will be limited and short-term, while benefits will be long lasting.

Even in a local context, the 1st 48 Project will not pose significant short- or long-term effects. My decision requires resource protection measures to minimize and avoid adverse impacts to the extent that all impacts are within accepted levels, and are consistent with all standards and guidelines in the SRNF’s land and resource management plan (LRMP or forest plan).

Intensity

Intensity refers to the severity of impact, which is evaluated based on ten factors. The following summarizes the findings of intensity relative to those factors:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect would be beneficial.

Fire, Fuels and Vegetation.
I find there will be positive response to thinning from below from implementing the 1st 48 Project, since suppressed, intermediate and select co-dominant trees will be removed to allow upper canopy trees (healthy dominant and pre-dominant) to expand into the additional growing space to
achieve desired shaded-fuelbreak conditions. Thinning from below acts to increase the residual size of trees left in a stand (Agee and Skinner 2005, Smith et al. 1997; final EA pp. 56-57).

I believe reducing stand density at this time will also allow these forested stands to quickly develop more resilience to disturbances, such as wind, heavy snow and ice, bark beetle infestations and fire processes. Thinning, whether from below or throughout the diameter classes (with the exception of pre-dominant and dominant trees), increases spacing and reduces stand densities, resulting in less inter-tree competition, which increases individual tree vigor, resulting in stands that are more resilient to insects, disease, wildland fire, and drought (Agee and Skinner 2005, Fettig et al. 2007, Hessburg et al. 2016, van Mantgem et al. 2009, Vernon 2017; final EA p. 57).

As the 1st 48 Project will reduce ladder fuels, canopy base heights will be increased, meaning there will be less low-lying tree limbs to carry fire on the ground up into their crowns. Canopy densities will be decreased through thinning activities; and to a potentially noticeable extent, a reduction in fuel ladders will also occur. As a result, the 1st 48 Project will help to reduce flame lengths, resistance to control, and the potential for a ground fire to transition into a crown fire (final EA pp. 54-57).

One of the most threatened species is the California black oak (Quercus kelloggii), which is vulnerable to being overtopped and crowded out by Douglas-fir. One of the biggest deficits on the landscape is the old upland oak woodland (CR). Thinning around these remnant oak trees being over topped and shaded out by faster growing Douglas-fir, would enable them to receive more sunlight promoting the growth of fuller crowns, which would increase their health and resistance to disturbance (final EA pp. 50-51, 58).

**Invasive Plant Species.**

The policies from Forest Service Manual (FSM) 2900 (Invasive Species Management) that guide management of invasive species on National Forest System (NFS) lands require that land management activities not foster the introduction and spread of invasive species, apply to the 1st 48 Project. Project design features (PDFs) and mitigation measures described in Chapter 2 of the final EA will reduce the risk of introduction and spread of invasive non-native plant species from high to low. Isolated populations will also be eradicated (final EA pp. 138-142; Botany Weed Risk Assessment).

**Soil Resources.**

The 1st 48 Project is consistent with the SRNF land and resource management plan (LRMP or forest plan) and associated standards and guidelines (S&G), including soil quality standards (SQS) for maintaining soil productivity in compliance with the National Forest Management Act (NFMA). Implementing project-specific mitigation measures will minimize effects to help ensure compliance with the LRMP provisions to maintain long-term soil productivity within this project area.

My review of the soils analysis indicates current existing detrimental effects of past actions are minimal in spatial extent. The 1st 48 Project by itself will not produce significant amounts of adverse direct or indirect soil impacts, using 15 percent of the area in detrimental soil conditions.
collectively as the threshold used to determine if soil impacts are significant, per current management direction. There are no reasonably foreseeable future actions, which will produce significant impairment of soil quality or productivity. Thus, there are no additive significant effects of past, present, and foreseeable future actions expected; and therefore, no significant cumulative effects for soil resources (final EA pp. 106-122; Soils Report.).

2. **The degree to which the Proposed Action affects public health or safety.**

**Clean Air Act of 1970.**

The Clean Air Act of 1970 and its amendments provide for the protection and enhancement of the nation’s air resources. My decision to implement the *1st 48 Project* will not exceed the federal and state ambient air quality standards to protect public health. Jackpot burning and underburning in the oak woodlands will be implemented seasonally. As each entry may be implemented over several seasons and will be small in size, and handpiles will be covered with Kraft waxed paper to minimize smoke production during burning, I am confident the project design and mitigation measures will effectively address public health and safety concerns. In addition, a burn plan will be developed that identifies specific tactics to reduce smoke emissions, including identifying sensitive smoke receptors and when favorable wind directions will promote smoke dispersal prior to scheduling burn ignition (final EA p. 45).

**Clean Water Act.**

The protection of water quality and quantity is an important part of the mission of the US Forest Service (USFS or Forest Service; USDA Forest Service 2015). Management activities on NFS lands must be planned and implemented to protect the hydrologic functions of forest watersheds, including the volume, timing, and quality of streamflow. The *1st 48 Project* is designed to be in compliance with the Clean Water Act; Porter-Cologne Water Quality Control Act; applicable water quality control plans, including the North Coast Regional Water Quality Control Board (NCRWQCB) Basin Plan; and the NCRWQCB waiver of waste discharge requirements. A waiver application will be filed after the Decision Notice is signed (final EA pp. 13, 98).

The NCRWQCB Basin Plan contains water quality objectives, implementation plans for meeting those objectives, and other policies of the State Water Quality Control Board and the federal government, which are applicable to timber and fuel treatment projects. The water quality standards in the Basin Plan for sediment most closely apply to the *1st 48 Project*. The standard for sediment states that sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses (final EA p. 98).

The *1st 48 Project* lies within the Upper Mad subarea (comparable to the Upper Mad River 5th-field watershed), which produces only six percent of the sediment within the larger Mad River Watershed. For the Upper Mad River Watershed, the total sediment is estimated at 234 tons per square mile per year with an average of 38 percent being from management related sources. The total maximum daily load (TMDL) target for sediment in the Upper Mad subarea was set at 173
Finding of No Significant Impact

tons, a reduction of 26 percent for the Upper Mad watershed. The Environmental Protection Agency (EPA) specified that in order to meet a 26 percent reduction in total sediment within the Upper Mad watershed, management-related sediment must be reduced by 68 percent over time. The 1st 48 Project will minimize, and in some areas, reduce management-related sediment and move towards meeting the EPA sediment load allocation (final EA pp. 95-98, 101).

There are 3.7 miles of intermittent streams and one mile of perennial streams within the project units. Due to limited project activities in riparian reserves and 60-plus percent canopy retention, stream temperature will not be affected. The 1st 48 Project will not construct new permanent (system) roads or temporary roads. For the project as a whole, there are 141 acres of riparian reserves deemed equipment exclusion zones. The streams coming off South Fork Mountain are high gradient, steeply incised, with mostly stable banks and little true riparian vegetation (final EA pp. 95-96, 101-102).

Wildland-Urban Interface.
The reduction in fire hazards will enhance public safety for those living within the wildland-urban interface (WUI), as the 1st 48 Project is designed to promote efficient wildfire containment and control. Between 2006 and 2011, about 600 assessments were completed by the Forest Service on wildfires that burned into areas where hazardous fuels reduction treatments had previously been conducted (Stein et al. 2013). These assessments evaluated the effects of prescribed fire, as well as mechanical and chemical treatments, on fire behavior and fire suppression actions. The data indicate that 90 percent of treatments have helped reduce wildfire intensity, allowing better control by firefighters. In most of these cases, as fires moved from untreated locations to areas treated by thinning, mowing, or prescribed burning, the fire behavior changed from active crown fires (i.e., burning an entire upper story of the forest) to passive crown fires (i.e., where only a single tree or small group of trees burned), or from passive crown fires to surface fires (i.e., burning only dry grass, shrubs, pine needles, and other flammable materials on the ground) (DellaSala et al. 2004, Stein et al. 2013; final EA pp. 5, 52-55).

3. **Unique characteristics of the geographic area such as the proximity to historical or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.**

Caves.
The Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 USC 4301 et seq.) provides that federal lands be managed to protect and maintain, to the extent practical, significant caves. There are no known caves within the project area. Therefore, there will be no effect to this resource from implementing the 1st 48 Project (final EA pp. 102-104; Geology Report).
Wetlands and Floodplains.
No floodplains associated with Executive Order 11988 or wetlands per Executive Order 11990 exist within the project area. Therefore, there will be no effect to these resources from implementing the 1st 48 Project (final EA p. 146).

Parklands and Prime Farmlands.
There are no parklands or prime farmlands within or immediately adjacent to the project area. Therefore, there would be no effect to these resources from implementing the 1st 48 Project (final EA p. 146).

Research Natural Areas.
Research natural areas (RNA) are areas allocated for research, education and to protect biodiversity on NFS lands. There are no RNAs within the project area. Therefore, there will be no effect to these resources from implementing the 1st 48 Project (final EA p. 146).

Wilderness Areas.
Wilderness areas are managed according to the Wilderness Act of 1964, the California Wilderness Act of 1984. There are no wilderness area designated within the project area. Therefore, there will be no effect to these resources from implementing the 1st 48 Project (final EA p. 146).

Wild and Scenic Rivers.
There are no designated and/or recommended national wild and scenic rivers, per the National Wild and Scenic Rivers Act of 1968, designated by the Secretary of the Interior, on January 19, 1981, within the project area. Therefore, there will be no effect to these resources from implementing the 1st 48 Project (final EA p. 146).

Northern Spotted Owl Critical Habitat.
On December 4, 2012, the final 2012 Northern Spotted Owl Critical Habitat Rule (Critical Habitat Rule) was published. Critical habitat consists of those areas that have physical or biological features essential to the conservation of the species. The Critical Habitat Rule states “we encourage land managers to consider implementation of forest management practices recommended in the Revised Recovery Plan to restore natural ecological processes where they have been disrupted or suppressed (e.g., natural fire regimes), and application of ecological forestry management practices ….”. In the Critical Habitat Rule, the US Fish and Wildlife Service (USFWS) acknowledged that “Compared to other zones (in the Klamath and Northern California Interior Coast Ranges), additional foraging habitat for this zone showed greater divergence from nesting habitat, with much lower canopy cover and tree size.”

Approximately 28,413 acres of the 36,267-acre action area occur within Unit 11, Interior California Coast Subunits 1 and 2 of the Critical Habitat Rule. There are 12 units to be treated for hazardous fuel reduction (HFR; 152 acres), four (4) units to be oak woodland restoration (37 acres), eight (8) units of plantation thins (108 acres) and 61 units (461 acres) of fuelbreak construction that would occur in NSO critical habitat units (CHU). A total of 784 acres of NSO
nests/roosting/foraging/dispersal habitat and 37 acres of non-habitat would be treated between the two subunits of CHU (final EA pp. 59, 62-64).

Post-treatment monitoring was conducted by the Forest Service in coordination with the USFWS Level 1 Team on the Kelsey Peak Project, as well as on similar projects elsewhere on the forest. All the units exceeded canopy-closure requirements, and protected pre-dominant trees, snags, and downed logs. The units are still functional habitat and should respond well to the treatments. The Level 1 Team agreed these types of treatments will have a beneficial effect on the future habitat conditions of the area and create more alternative habitats for owls to use as additional treatments occur on the landscape (final biological assessment (BA)).

**Late Successional Reserves.**

A very small portion of the 1st 48 Project is located within the South Fork Late-Successional Reserve (LSR; RC-330). The entire South Fork LSR is 80,451 acres, with the majority located on the Shasta-Trinity National Forest (STNF). Of that, only 1,057 acres are on the SRNF, with the 1st 48 Project affecting 73 acres on the westernmost boundary of the entire LSR. The South Fork LSR is a land allocation established in the Northwest Forest Plan (NWFP), incorporated into both the SRNF and STNF LRMPs, managed to protect and enhance late-successional forest ecosystems through prescribed understory fire and thinning. General management direction for LSR lands is found on pages IV-34 to IV-39 of the SRNF LRMP (USDA Forest Service 1995). The STNF included the South Fork LSR in the 1999 Forest-Wide Late-Successional Reserve Assessment (LRSA; USDA Forest Service 1999), which identifies general current conditions, general desired conditions, and management recommendations that would move the LSRs, including the South Fork LSR, toward desired conditions. One of the desired conditions is the reduction of risk to large-scale disturbance.

In 2009, the STNF received a letter of clarification from the US Forest Service Pacific Southwest Regional Ecosystem Office (REO) related to hazard reduction thinning activities proposed in LSRs to reduce the risk of large-scale disturbance. The REO had reviewed the LRSA for the STNF and concluded that fuel treatments proposed in the LSRs that thin suppressed, intermediate and some co-dominant trees are consistent with the S&Gs under the NWFP (USDA REO letter, October 18, 2009).

The 1st 48 Project area was identified as a landscape where existing features and conditions give firefighters a good chance of keeping exterior wildfire from entering, or conversely, interior wildfire from exiting the area. Under the LSRA and LRMP direction, proposed fuels treatments are aimed at reducing risk (i.e., potential loss due to wildfire) in 59 acres of younger white fir stands adjacent to FSR 2S23 and along the ridgetop within the South Fork LSR. The trees targeted for removal in the early mature white fir stands have a diameter range of 14 to 24 inches, and are less than 120- to 150-years old. Some trees in this age class are larger than 24-inch dbh (diameter at breast height) and may be removed to meet crown spacing objectives.

Additionally, there are approximately 14 acres of Douglas-fir or ponderosa pine-dominated stands within the LSR that are early- and mid-mature or late-mature stands, which have had
previous entries of individual tree harvest. The trees targeted for removal in these stands are similar to the white fir stands in terms of age and diameter range. In the patches of mid-mature and remnant late-mature seral forest, trees range from 70 to 120 years in age, with diameters ranging from 12- to 32-inch dbh. However, the *1st 48 Project* targets removal of trees with underdeveloped crowns, which are typically suppressed and/or intermediate trees less than 150 years old, while retaining trees with the fullest crowns characteristic of co-dominant, dominant and pre-dominant trees with late-seral characteristics (final EA pp. 57-58, 203-206).

**SRNF LRMP Retention and Partial Retention Management Areas – Visual Quality Objectives.** There are 275 acres within the project area that fall within the visual quality objective (VQO) Retention management area and 234 acres within Partial Retention management area, while the remainder of the project area occurs within the Modification VQO classification. The majority of the project area has experienced substantial alterations in visual quality from road and log landing construction and even-age timber harvest management. The *1st 48 Project* will retain variable forest canopy closure at or over 60 percent, limit new landing construction to existing flat openings, and involve no new road construction. The removal of boundary flagging and placing stump marks away from viewpoints will minimize visual impacts in compliance with LRMP S&Gs. Thin from below treatments will blend well with adjacent untreated forest lands to conserve the scenic quality, while reducing hazardous fuels to promote scenic integrity, at risk from wildfire (final EA p. 46).

Jeep Trail 8E20 (aka Wiregrass) is a special vehicle designation trail (i.e., four-wheel-drive non-highway legal vehicle wider than 50 inches/all-wheeled vehicles 50-inches wide or less) that is 1.29 miles long, located in T2S R8E. The Forest Service’s national resource management (NRM) database indicates the trail was added to the NFST (NFS trails) by the *Lower Trinity/Mad River Motorized Travel Management Record of Decision* in April 2010. This trail is displayed on the revised motor vehicle use map (MVUM) for that area.

My decision to implement the *1st 48 Project* will allow the existing footprint of Jeep Trail 8E20 to be graded and temporarily closed to public use during logging operations to ensure public safety. Other than the short-term disruption in public use, grading and constructing waterbars will be visually evident in the short-term, likely only one season. Although these impacts are unavoidable, in the long term, this action will contribute to protecting scenic quality for the long term (final EA pp. 45-46).

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.**

The project area lies within the Upper Mad River watershed, encompassing 120 square miles (24% of the basin) from the headwaters of the Mad River to Robert Matthews Dam. The dam, built in 1961 by the Humboldt Bay Municipal Water District (HBMWD), impounds runoff from the upper watershed in the Ruth Lake Reservoir, which is the only existing impoundment on the Mad River. The reservoir has a storage capacity of about 48,030 acre-feet and was designed to
provide a safe yield of 75 million gallons per day (mgd; 230 acre-feet/day), approximately 8 percent of the total annual runoff for the watershed.

Prior to construction of Matthews Dam, late summer and early fall flows in the Mad River above Pilot Creek were intermittent. At the former US Geological Survey (USGS) gage near Forest Glen (No. 11480500, located approximately 9 miles downstream of Matthews Dam), mean daily flow for the month of August from 1953 to 1961 ranged from 2 to 8 cubic feet per second (cfs), with an average of 4 cfs.

Currently, the HBMWD manages the release of water from Ruth Reservoir to meet domestic and industrial water needs, as well as instream flow requirements for the protection of listed fish species (HBMWD 2004; final EA p. 101).

My review of the analysis for watershed resources indicates the extent, duration and intensity of treatment activities under Alternative 2 are not sufficient to adversely affect in-stream flows. Evapotranspiration rates will not be further altered, nor will sufficient ground compaction occur to alter rates of surface runoff. This indicates to me the 1st 48 Project will not result in changes to spatial and temporal hydrology, due to the limited magnitude of the treatments and the very small and localized spatial extent of the treatments. Therefore, the timing, magnitude, and duration of flows will not be altered by treatment activities. I find instream flows and fluvial processes will continue to occur at the rates under which the stream system evolved and aquatic habitat diversity, channel stability, and water quality will continue to be moderate to high (final EA pp. 95-102).

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Asbestos Airborne Toxic Control Measure for Surface Application.
The Asbestos Airborne Toxic Control Measure (ATCM) rule was adopted by the California Air Resource Board (CARB) in 1990 and amended in 2000. The amendment lowered the asbestos content to 0.25 percent for asbestos-bearing ultramafic rock materials used for surfacing applications subject to vehicular, pedestrian or non-pedestrian use, such as cycling and horseback riding. In remote areas, the naturally occurring asbestos (NOA) content can be as high as 1 percent without concern. No ultramafic bedrock or naturally occurring asbestos exists within the project area. The SRNF has samples and tests for presence of Naturally Occurring Asbestos as close as 10 miles from the project area. Two of the 42 samples within a 20-mile radius from the project area contained asbestos at 0.5 percent in small serpentenite outcrops. The project area contains no similar outcrops. No ultramafic bedrock and therefore, no naturally occurring asbestos occur in the project area. No groundwater resources will be developed or are existing within the project area. The 1st 48 Project applies low-intensity mechanical, manual and prescribed burning treatment methods. The treatment prescriptions and mitigation measures incorporated have been applied on numerous projects across the SRNF with predictable effects and outcomes (final EA pp. 104-105; Geology Report).
Executive Order 12898, Environmental Justice.
Executive Order 12898 (Environmental Justice) requires an assessment of whether there would be disproportionate effects to minority or low-income populations. Although there are minorities and low-income populations living in the North Coast California area, they would benefit from the proposal.

Environmental justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner, by government programs and activities affecting human health or the environment. There would be no discernable differences between the Proposed Action and No Action Alternatives regarding effects on minorities or the civil rights of any American citizen.

The 1st 48 Project will not cause a disproportionately high or adverse effects to human health, high or adverse environmental effects, substantial environmental hazard, or affects to differential patterns of consumption of natural resources. Extensive scoping did not reveal any issues or concerns associated with the principles of environmental justice. No mitigation measures to offset or ameliorate adverse effects to these populations were identified (final EA pp. 14-15).

Relationships between local, short-term uses of the human environment and maintenance or enhancement of long-term productivity.
Short-term uses are expected to change the human environment during mechanical, manual, prescribed burning and logging/hauling operations. Long-term effects should not appreciably change the human environment after final maintenance of fuelbreaks have concluded, as treatment prescriptions will be low intensity and will be implemented as phased entries to minimize disturbance to nearby neighbors and natural resources.

The availability of natural resources contributes to the quality of life for many county residents. Families can experience benefits from healthy forest environments associated with food gathering, firewood for heating, forest-management job opportunities and supply of natural resources from forest ecosystems. The 1st 48 Project will provide jobs, firewood, poles, enhance oak-dominated stands (aiding acorn production, native herbs and forbs) and produce commercial timber products (final EA pp. 35-39).

6. The degree to which the action may establish precedent for future actions with significant effects or represents a decision in principle about a future consideration.

Irreversible or Irretrievable Commitments of Resources.
My review of the 1st 48 Project final EA and project record indicates there will be no irreversible commitment of resources resulting from implementation. Irretrievable commitment applies to losses that are temporary, such as use of renewable natural resources. The production lost will be irretrievable, but the action will not be irreversible. Vegetation removed as commodity byproducts is considered an irretrievable impact. Forest conditions will return, as tree growth over one or more decades will feature increased canopy closure and development of healthy,
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sustainable stand densities resilient to natural processes serving Endangered Species Act (ESA) wildlife habitat and soil resources (final EA pp. 56-57, 92, 113-122).

**Vegetation.**

Tree removal authorized by my decision is considered an irretrievable impact, as it will “extract” timber, an outcome of thinning commercially valuable trees. However, forested conditions will return as tree growth accelerates over one or more decades, with increased diameter and canopy growth associated with higher commercial value. In the long term, my decision will also promote the development of healthy, sustainable stand densities, more resilient to natural processes that can revert mature forest stands to early seral stage conditions (final EA pp. 56-58).

**Soils.**

Current existing detrimental effects of past actions are minimal in spatial area. The 1st 48 Project will not produce significant amounts of adverse direct or indirect soil impacts, as 15 percent of the area in detrimental soil conditions collectively will not exceed the threshold for significance, per current management direction. There are no reasonably foreseeable future actions, which could contribute to significant impairment of soil quality or productivity. I find since there are no additive significant effects of past, present, and foreseeable future actions expected, there will be no significant cumulative effects to soil resources.

The 1st 48 Project design is consistent with the SRNF forest plan and SQS for soil productivity in compliance with NFMA. Standards and guidelines and SQS indicators were used as the context to describe and analyze the extent and magnitude of expected soil impacts, spatially and temporally. I believe my requirement to implement project-specific design features and mitigation measures, along with monitoring, will ensure compliance with these LRMP provisions to long-term soil productivity (final EA pp. 117-120).

**Adverse Environmental Effects that cannot be Avoided.**

**Soil Resources.**

I recognize the 1st 48 Project will involve adverse environmental effects to soil resources that cannot be wholly avoided or mitigated. While no new temporary roads will be constructed the expansion and grading of new landings associated with ground-based (tractor) operations will be the most impactful due to severe compaction, causing reduced infiltration and soil runoff. However, my decision requires drainage features be constructed to control runoff and avoid adverse impacts, in compliance with best management practices (BMPs). Additionally, my decision applies PDFs and mitigation measures stipulating rehabilitation of these sites via de-compaction by “ripping” (i.e., furrowing using conventional rock-rippers common on logging equipment) or “dibbling” (i.e., working the ground with an excavator bucket, also called “potato patch”). This will be followed by re-contouring to the approximate original terrain in cases where the feature was “constructed” by blading topsoil to create a favorable grade or bench (constructed using cut and fill).
The new landings are mostly roadside on gentle grade, so little blading should be necessary to make them usable, and thus little to no recontouring is expected; however, some form of decompaction will be necessary. These areas will also be rendered bare, so some form of soil cover may be required to prevent erosion, either organic mulch, slash, and/or seeding to establish vegetation. In most cases, old access roads and landings are in favorable locations to be re-utilized, which will minimize new disturbance and cumulative effects. Even with rehabilitation measures, new and re-utilized temporary roads and landings will still have long-term effects left to slowly recover naturally over time.

Skid trails will be created as necessary to operate the mechanical ground-based units. These will also have compaction, but not as severe as temporary roads and landings. These may or may not have “detrimental” levels of compaction, depending on traffic intensity. A few passes with a tracked grapple-skidder will generally not produce a detrimental degree of compaction if soils are dry. Most soils have a moderate compaction risk (final EA Table 17), but some have a high compaction risk, namely Kistirn (SMU 260), Hugo (SMU 265-266) and Hecker (SMU 250-256), which intersect with many of the ground-based units. Thus, it is conservatively assumed that skid-trail compaction will be detrimental. My decision requires these equipment trails, in combination with temporary roads and landings, be limited to less than 15 percent of the unit area. If equipment trails are deeply rutted, they may be decompacted by ripping, if necessary to promote natural revegetation (final EA pp. 114-115; Soils Report).

Energy Requirements of Alternatives.
Under the Proposed Action, various amounts of fossil fuels and human labor will be expended. Fossil fuel energy will not be retrievable. None of them are in short supply and their use will not have an adverse effect upon continued availability of these resources.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Vegetation.
I find the 1st 48 Project differs from past actions, in that historic timber harvest (pre-1990s) consisted of clearcut or shelterwood logging, broadcast burning, and planting with Douglas-fir seedlings. The actions I am authorizing will not detract or stall these stands in structure development to mid-mature/late-mature, and understory re-initiation and will not alter the current distribution of seral or development stages (also called structural stages) within the analysis area.

The 1st 48 Project will employ thinning from below (Tappeiner et al. 2007) in early and early/mid-mature Douglas-fir/black oak stands ranging in age from 70 to 80 years, early mature white fir stands, and young Douglas-fir or ponderosa pine plantations. These stands are generally single-layered and consist of even-aged patches of varying age. As I understand it, a positive
response to thinning from below is expected, since subordinate trees (i.e., suppressed, intermediate and select co-dominant trees) will be removed to allow trees of the upper canopy (which have more fully developed crowns) to utilize the additional growing space and increase in size (Agee and Skinner 2005, Smith et al. 1997).

My decision will retain all dominant trees and pre-dominant trees, including those with defects. Most co-dominant trees will also be retained. The codominant conifers that will be cut are those without sufficient growing space in the canopy for further crown development, and those adjacent to dominant and predominant conifers and hardwoods or pockets of smaller diameter hardwoods to increase their ability to survive.

The thinning from below prescription will not alter existing seral stage condition, and will in fact, increase growth on the remaining trees to accelerate development of trees into late-seral size classes. This will promote an increase in the acres of late-seral stands as an incremental step toward achieving the minimum Douglas-fir Recommended Management Range (RMR) threshold.

Similar thinning projects are being carried out within this watershed, including the 2009 Beaverslide and the 2013 Kelsey Peak Timber Sale and Fuelbreak Project. Other foreseeable actions within the analysis area are additional HFR projects and shaded-fuelbreak construction and maintenance. In terms of past, proposed, ongoing, and foreseeable actions, the 1st 48 Project will have no cumulative effects to the vegetation structural stages within the south zone of the forest, which is the entire Mad River Ranger District. The current distribution has been molded by past activities, which removed older forest types and from past wildfires. This project will improve the distribution of structural stages over the long term for species needing older forest habitats for part or all of their life cycle (final EA pp. 56-58, 184-185, 206-207).

Fire and Fuels.
The absence of recent mixed-severity fire has been a likely factor in the rather uniform, even-aged, single-layer structure of Douglas-fir stands, as well as the continued loss of black oak through competition from Douglas-fir. Fire suppression since the early 1900s means that these sites have likely missed several fire events that would have created more horizontal and structural diversity in the early- and mid-mature stands (Weisberg 2004, Taylor and Skinner 2003).

In the northern part of the planning area, ponderosa pine and ponderosa pine/black oak stands are prevalent. Fire-scar evidence indicates that these stands were historically maintained at low densities by frequent fire regimes. Many of these stands contain large, old specimens of both of these species. Stand densities and ladder fuels have increased to the point that there is a risk of losing them to a stand-replacing fire. My decision will lower stand densities aiding in forest protection of this natural resource (final EA pp. 56-57).

Watershed Resources.
The 1st 48 Project area is not within a key watershed under the NWFP. Barry Creek-Mad River is designated a Priority Watershed under watershed condition framework (WCF). The project is small in acreage and widely dispersed across the landscape along open roads in narrow 300-foot-
Finding of No Significant Impact

strips, existing roadside plantations and oak woodland stands. I find thinning to establish shaded fuelbreaks will retain forest overstory canopies at 60-plus percent, functioning to provide sufficient shade from solar radiation to prevent increases in water temperature.

My decision restricts tree thinning (ladder and crown fuels) prescriptions to the outer portion of the riparian reserves to retain tree root systems that hold soil and stream channels in place, acting to minimize soil erosion and the potential for increased sedimentation to protect water quality. Alternative 2 incorporates design features and mitigation measures that will retain large woody debris, limiting thinning of trees to 6-inch dbh using only manual methods within inner riparian reserve buffers to maintain suitable stream habitat conditions and mitigate introduction and spread of invasive and non-native weeds due to open range and other operational vectors (final EA pp. 97-98).

**Soil Resources.**

Current existing detrimental effects of past actions are minimal in extent area. The Proposed Action alternative by itself would not produce significant amounts of adverse direct or indirect soil impacts, using 15 percent of the area in detrimental soil conditions collectively as the threshold used to determine if soil impacts are significant, per current management direction. There are no reasonably foreseeable future actions, which would produce significant impairment of soil quality or productivity. Thus there are no additive significant effects of past, present, and foreseeable future actions expected, and therefore by definition no significant cumulative effects for soil resources.

The Proposed Action is design consistent with the regulatory framework outlined above. Forest Plan S&Gs and SQS are intended to comply with NFMA, maintaining soil productivity. Standards and guidelines and SQS indicators were used as the context to describe and analyze the extent and magnitude of expected soil impacts, spatially and temporally. Implementing project-specific PDFs are intended to help ensure compliance with these LRMP provisions, and it is thus deduced that long-term soil productivity is maintained within this project area (final EA p. 122).

**Geologic Resources.**

Surveys identified eight (8) active landslides within the project area. There are no Forest Service or private land activities occurring within these sites. Cumulative effects are minimal to none for risk of increased rate of landslide activity. Landslide activity has been shown to increase about 10 years after all vegetation has been removed by fire or harvest due to loss of root strength. My decision will not remove all vegetation, thereby preserving root strength in the long term to avoid an increase in landslide activity. Concentrated flow from skid trails will not occur due to application of skid trial remediation. I considered if S&Gs, BMPs, PDFs and mitigation measures are applied, the negative effects to slope stability should be minimal or absent, as compared to the likelihood that extensive landslide reactivation could be triggered by a hot, large scale wildfire (final EA pp. 104-105).

**Invasive Plant Species.**

Management of the direct and indirect effects to invasive plant species via the PDFs and mitigation measures required under Alternative 2 will reduce the risk of introduction and spread,
and remove sources of infestation, leading to beneficial cumulative effects (final EA pp. 138-142; Botany Weed Risk Assessment).

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

To comply with the regulatory framework protecting cultural resources, pre-field research was conducted consisting of examination of previous archaeological surveys in the planning area, site records, maps, and GIS data. The data indicated that seven (7) of the surveys, conducted between 1978 and 2012, included the Area of Potential Effect (APE), defined as the project’s treatment units. The surveys resulted in the identification of 10 archaeological sites, none located within the APE. Two (2) archaeological sites were identified during surveys conducted within the project’s APE between October 2016 and August 2017. These surveys were recorded in a cultural resources inventory report (CRIR) on file in the Heritage Department of the SRNF Supervisor’s Office.

Standard resource protection measures, as defined in the *Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region (R5 PA)*, would be applied to fully protect archaeological sites within the APE (final EA pp. 122-124).

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973 (ESA).*

The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.) requires any action authorized by a federal agency to not jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of the critical habitat of such species. Section 7 of the ESA, as amended, requires the responsible federal agency to consult with the USFWS and the National Marine Fisheries Service (NMFS) concerning endangered and threatened species under their jurisdiction as follows:

**Threatened and Endangered Wildlife Resources.**

The 2011 *Recovery Plan for the Northern Spotted Owl* (Recovery Plan) recognizes the importance of maintaining and restoring habitat for the recovery and long-term survival of the spotted owl. The Recovery Plan relies on federal lands to provide the major contribution for recovery (USDI Fish and Wildlife Service 2011). The *1st 48 Project* was designed to meet the objectives of this Recovery Plan.

The SRNF definition of suitable nesting/roosting NSO habitat includes mid-mature (starting at 21-inch dbh), late-mature and old-growth seral stages. The definition of NSO nesting/roosting habitat used for this project was based on the definition found in the SRNF LRMP and field verified by wildlife biologists with extensive experience with the species. The LRMP definition was based on extensive published literature and represents the best available science for SRNF
habitat types. All potential habitat was considered during project evaluation, and all high-quality habitat (no matter what seral stage) was dropped from treatment. Low-quality habitats were evaluated for habitat improvement measures.

Because the SRNF strives towards recovery of the spotted owl, all activity centers (ACs) receive the same level of protection and are not prioritized, with some ACs getting less protection as allowed by the Recovery Plan. This exceeds the requirement of Recovery Action 10 in the Recovery Plan. In addition, the USFWS requires a 70-acre nest grove protection zone.

As part of the wildlife analysis, in 2017 and 2018, NSO protocol surveys were conducted in all suitable habitats in the 1st 48 Project area in accordance with the Critical Habitat Rule protocol. In addition, NSO surveys were conducted within the planning area in the early and mid-1990s. There are three 100-acre LSRs located in association with ACs 290, 239 and 236; however, the LSR coincides with the actual nest grove (which is based on the owl’s location) for the AC. Therefore, no treatment would occur within these 100-acre LSRs.

My review of the wildlife analysis indicates the 1st 48 Project will restore and accelerate development of important habitat characteristic for the spotted owl by treating plantations and overstocked stands that, if treated, will increase the available habitats and help reduce interspecies competition between the barred owl and the spotted owl. The 1st 48 Project was designed to ensure no adverse impacts to listed species will occur. Informal consultation with the USFWS was initiated through the interagency Level 1 process. The Level 1 team determined that the project will not likely to adversely affect the NSO or designated NSO Critical Habitat. The USFWS concurred with this determination (final EA pp. 61-85; final BA).

**Threatened and Endangered Botanical Resources.**
No federally listed plant species are known to occur, nor does suitable habitat exist in the project area (final EA pp. 46, 124; biological assessment/biological evaluation (BA/BE)).

**Threatened and Endangered Aquatic Species.**
Three (3) species of threatened and endangered (TE) salmonids are found in the Mad River watershed. Northern California steelhead trout (*Oncorhynchus mykiss*) are found in the mainstem Mad River up to Matthews Dam with Critical Habitat being designated up to County Line Creek. Chinook (California Coastal ESU; *O. tshawytscha*) and coho (Southern Oregon/Northern California ESU, *O. kisutch*) are found in the in mainstem Mad River up to “Bug Creek Falls,” approximately 27 miles downstream from Matthews Dam. As the roadside treatment areas are located upstream of the Ruth Lake Dam, threatened, endangered and Forest Service Sensitive (TES) anadromous fish species cannot reach the project area. Therefore, my decision will have no effect on anadromous TE species and their habitats (final EA pp. 46-47).
Finding of No Significant Impact

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

Aquatic Conservation Strategy.
The 1st 48 Project was developed in alignment with the Aquatic Conservation Strategy (ACS) reflected in the Record of Decision (ROD) and S&Gs of the NWFP (USDA and USDI 1994) as incorporated into the SRNF (USDA Forest Service 1995) and KNF (USDA Forest Service 2010) LRMPs. The project will fulfill specific objectives regarding the forest goals in the management of aquatic and riparian resources (USDA Forest Service 1995 p. IV-107), and to be consistent with the nine (9) ACS objectives and the May 22, 2007 ACS guidance memorandum.

Implementation of the Proposed Action will not retard or prevent attainment of ACS objectives at the hydrologic unit code (HUC) 6th and larger scales in the short term. Rather, it will promote attainment of ACS objectives in the long term. Cumulative watershed effects (CWE) will remain below the threshold for adverse watershed effects (final EA pp. 98-102).

Forest Service Sensitive Wildlife Species.
All Forest Service Sensitive wildlife species known or thought to occur in the project area, based on habitat and range, were evaluated for this project. It was determined that the project will not impact certain Forest Service Sensitive species, based on the lack of habitat, lack of detections during surveys, or the fact that habitat will not be impacted. Species that will not be affected by this project include the bald eagle (Haliaeetus leucocephalus), Townsend’s big-eared bat (Corynorhinus townsendii), fringed myotis (Myotis thysanodes), California wolverine (Gulo gulo luteus), Humboldt marten (Martes caurina), pallid bat (Antrozous pallidus), western bumblebee (Bombus occidentalis), western pond turtle (Clemmys marmorata), foothill yellow-legged frog (Rana boylii) southern torrent salamander (Rhyacotriton variegatus), and northern red-legged frog (Rana aurora aurora) (final EA pp. 86-89).

Pacific Fisher (Martes pennanti pacifica, also a Federal Candidate Species).
In northern California, fishers occupy mid-elevation, multi-storied mature and old-growth conifer, mixed conifer, and mixed-conifer hardwood forests with contiguous canopy cover. Fishers typically select closed canopies (>50%), but would use areas of low- to moderate-canopy cover (25 to 40%), if there is sufficient understory (Lofroth et al. 2010). They do not occur in high-elevation alpine or subalpine habitats.

My decision will maintain characteristics for denning, so habitats will continue to provide denning habitat immediately post-project. All riparian reserves will be buffered on both sides of stream channels and canopy closure will be maintained at 60 percent or greater. Little to no true riparian habitat exists within the units given the lack of riparian-vegetation-associated ephemeral and intermittent stream courses within the project area. However, in the long term, project implementation has the potential to improve riparian habitat conditions through the release of conifer and hardwoods/shrubs from thinning, generating a secondary canopy.
Of the 13,686 acres of fisher denning habitat within the action area, approximately 290 acres of low- and moderate-quality denning habitat will be treated. However, no high-quality habitat will be treated. Approximately 2 percent of the denning habitat within the action area will be treated (98% of the denning habitat in the action area will not receive any treatment).

In 2016, surveys were conducted in the 1st 48 Project area using camera stations. Fisher were detected in three (3) areas. Although no den sites have been located, limited operating periods (LOPs) will be imposed for all noise- and smoke-generating activities within 0.25 miles of fisher suitable habitat around the detection sites (final EA pp 84-86).

*Northern Goshawk (Accipiter gentilis).*

Goshawks are known to use mature forest habitats for nesting and foraging. Nesting stands are typically in dense pockets of large trees, often on north-facing, bench slopes near water. Foraging habitats are often more open to allow for the aerial ambush foraging strategy of the goshawk. Goshawks occupy similar habitat to that of the NSO. There are approximately 13,686 acres of suitable goshawk habitat in the 1st 48 Project area. Surveys were conducted in the 1st 48 Project area in 2017. No goshawks were detected.

Suitable habitat for the goshawk occurs in the planning area. No pre-dominant trees (potential nest trees) or dominant trees will be removed. Current canopy closure will be maintained. Removal of understory vegetation may improve foraging conditions for the goshawk. If nesting goshawks were subsequently found within 0.25 miles of any treatment units, LOPs will be imposed. The project may impact individual northern goshawk, but will not cause a trend towards listing (final EA pp. 88-94).

*Foothill yellow-legged frog (Rana boylii).*

The foothill yellow-legged frog is found in or near rocky streams or rivers in a variety of habitats. In California, breeding and egg laying usually wait until the end of spring flooding, and may commence anytime from mid-March to mid-June, depending on the occurrence of spring rains. These frogs are diurnal with adults often basking on exposed rock surfaces near streams. When disturbed, they dive into the water and take refuge under submerged rocks or sediments.

There is suitable habitat for foothill yellow-legged frogs in the planning area. In August 2017, tadpoles and adult frogs were observed in Littlefield Creek at the low-water crossing at milepost 0.4 on 2S53 (K. Kenfield personal observation). If water is not present during operations, commercial log hauling may proceed. If water is present, a temporary low-water crossing will be constructed. Currently non-commercial vehicles drive through the low-water ford. Installation of the temporary vented ford (two or more 36-inch pipes laid over geotextile cloth on the streambed with fill on top) will cause disturbance to an approximate 30 foot by 10 foot reach of stream. My decision will install a vented ford to eliminate vehicles entering the water during operations. The project may impact individuals, but will not cause a trend towards listing (final EA pp. 88-94).
Management Indicator Species and Migratory Bird Species.

Under NFMA, the Forest Service is directed to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives” (PL 94-588 §6 (g)(3)(B)). The 1982 regulations implementing NFMA require that “Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area” (36 CFR 219.19). Management indicator species (MIS) is a concept used by the agency to serve as a barometer for species viability at the forest level. Population changes of MIS are believed to indicate the effects of management activities.

The SRNF LRMP uses MIS to assess potential effects of project activities on the various habitats and habitat assemblages with which these species are associated. Forty-one (41) fish and wildlife species have been selected as MIS or assemblages for a variety of habitats that are potentially affected by resource management activities on the Forest (USDA Forest Service 1995 p. IV-97).

Due to the scope, size, and intent of this project, there are no concerns of negative cumulative effects for MIS, migratory bird species (MBS), or other wildlife species. Direct, indirect and cumulative effects to MIS and MBS were addressed based on their potential to occur within the project area based on habitat suitability, survey results, or incidental sighting records.

The 1st 48 Project will not adversely impact MIS. Although shaded-fuelbreak construction will degrade habitat for species, such as the Pacific wren and ruffed grouse, through the removal of brush and understory trees, the majority of the project will improve/restore habitat conditions for all MIS by thinning young, homogeneous stands, accelerating the development of multi-storied conditions and other late-successional habitat characteristics. In addition, development of strategic fuelbreaks will help protect existing habitat from stand-replacing fire.

The crossing of Littlefield Creek by Forest Service road (FSR) 2S02 is thought to be perennial due to increased flow from the Ruth Fire (from reduced transpiration due to canopy removal). Resident rainbow trout and foothill yellow legged frog were found in the stream at the crossing. If the stream is flowing at the time needed for commercial haul, a temporary pipe array will be installed consisting of two (2) or more culverts, geotextile fabric, and clean gravel (i.e., no fine sediments). Installation of the temporary vented ford (two or more 36-inch pipes laid over geotextile cloth on the streambed with fill on top) will cause disturbance to an approximate 30-foot by 10-foot reach of stream (final EA pp. 88-94).

Survey and Manage Wildlife Species.

No wildlife survey and manage (S&M) species occur within the 1st 48 Project; therefore, no pre-project surveys were conducted. The 1st 48 Project will be in compliance with the Record of Decision for amendments to the survey and manage, protection buffer, and other mitigation measure standards and guidelines in Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl (USDA and USDI 2001), the April 25, 2013 9th Circuit Court Order in Conservation Northwest (and others) v. Sherman (No. 11-35729), and the
February 18, 2014 District Court Order in Conservation Northwest (and others) v. Robert Bonnie (and others) (W. WA No. C08-1067-JCC) (final EA pp. 91-94).

**Implementation Date**

Implementation of this project is expected to take place from 2018 to 2033. Fuelbreak corridors will be maintained up to 15 years, as needed to maintain desired fuelbreak conditions.

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MERV GEORGE JR.               Date
Forest Supervisor
Six Rivers National Forest