

Finding of No Significant Impact
Middle Fork Lost Man Creek Second-Growth Forest Restoration
Redwood National Park
Humboldt County, California

This Finding of No Significant Impact (FONSI) should be attached to the Middle Fork Lost Man Creek Second-Growth Forest Restoration Environmental Assessment (EA) dated May 2014. This FONSI together with the EA constitutes a complete record of the conservation planning and environmental impact analysis process for this proposal. Also attached pursuant to National Park Service (NPS) Management Policies is the park manager's determination that the selected action will reduce the existing impairment to Redwood National Park forests and no impairment to other park resources will result.

The NPS will implement as its selected action Alternative 2 as presented in the EA, which was also identified as the proposed action. None of the four comments that were received required corrections to the EA or changes to Alternative 2, which describes a project that is well understood and supported by stakeholders in the local area and the region. Two alternatives were identified and analyzed in the EA, the selected action and no action.

Under the selected action, the NPS will use standard silvicultural techniques and practices to thin second-growth forests within a 1,125-acre-perimeter in the Middle Fork of Lost Man Creek watershed to reduce stand density and alter species composition to promote growth of remaining trees and development of understory vegetation and multistoried canopy, and increase the ratio of redwood to Douglas-fir. This action is needed to accelerate development of forest characteristics that are more typical of late seral and old-growth redwood forests in the park.

Redwood National Park was established by Congress in 1968 to "preserve significant examples of the coastal redwood ... forests and the streams and seashores with which they are associated for purposes of public inspiration, enjoyment, and scientific study." (Public Law 90-545) In 1978, Congress expanded the national park to encompass 50,000 acres in the lower one-third of the Redwood Creek watershed that had been privately owned timber lands, in part "to provide a land base sufficient to insure preservation of significant examples of the coastal redwood in accordance with the original intent of Congress, and to establish a more meaningful Redwood National Park for the use and enjoyment of visitors." (Public Law 95-250)

The 1978 expansion area included approximately 38,000 acres that had been logged between 1950 and 1978. The common logging practice in the region at that time was clearcut tractor logging in which almost all old-growth trees and associated vegetation were cleared off a site. The 1978 legislation directed the NPS to develop and implement "a program for the rehabilitation of areas within and upstream from the park" affected by past logging disturbances to protect existing irreplaceable park resources, including redwood forests.

The selected action to actively manage second-growth forest stands is consistent with the direction in the 1999 Redwood National and State Parks *Final General Management Plan/General Plan, Final Environmental Impact Statement/Environmental Impact Report* (RNSP GMP/FEIS) approved through the 2000 *Record of Decision*. The 1999 GMP directs that forest restoration activities in the parks should emphasize use of silvicultural methods in second-growth forests to re-attain old-growth characteristics in the shortest time possible.

It is NPS policy to strive to restore the integrity of park resources that have been damaged or compromised in the past (NPS 2006 1.4.7.2). *Management Policies 2006* allows NPS intervention in natural biological and physical processes to restore natural ecosystem functioning that has been disrupted by past or ongoing human activities (NPS 2006 4.1).

In 2005, the Department of the Interior published a final rule (48 CFR Parts 1437 and 1452) under the authority found in the NPS Organic Act (16 USC 1) outlining procedures to allow service contractors the option to remove woody biomass by-products generated as a result of Department land management activities whenever ecologically appropriate. Ecological benefits of removing woody biomass include reduced threat of wildfire, and improved forest health, wildlife habitat, and watershed protection.

Purpose and Need for Forest Restoration

In comparison to unlogged old-growth forests, the second-growth forests in the project area exhibit excessive tree density, low tree vigor and stability, homogeneous spatial and vertical tree structure, lack of understory vegetation diversity, and an overabundance of Douglas-fir in relation to redwood. These second-growth stands are expected to persist in this condition for many decades or even centuries before they fully recover ecological and structural characteristics resembling those found in the pre-harvest forest of the project area or in adjacent redwood dominated old-growth forests.

The NPS will use standard silvicultural techniques and practices to thin second-growth forests on 1,125 acres in the Middle Fork of Lost Man Creek watershed to reduce stand density and alter species composition to promote growth of remaining trees and understory vegetation, development of multistoried canopy, and increase the ratio of redwood to Douglas-fir. This action is needed to accelerate development of forest characteristics more typical of late seral and old-growth redwood forests in less time than would occur under naturally occurring disturbance regimes.

Selected Action

The selected action is Alternative 2: Thinning which is identified in the EA as the proposed action. There are no changes in actions, mitigations, or other key elements of the selected action as compared to Alternative 2 presented in the EA.

Alternatives Considered in the Environmental Assessment

The May 2014 EA described two alternatives:

- Alternative 1: No Action.
- Alternative 2: Thinning with Biomass Removal Operations in High-Access Areas and Thinning with Lop-&-Scatter Operations in Limited-Access Areas (Proposed Action and Environmentally Preferable Alternative).

Under the no-action alternative (Alternative 1), second-growth forests in the Middle Fork of Lost Man Creek watershed would not be treated or manipulated with silvicultural techniques to reduce stand density or alter species composition. Existing stand conditions and stand development processes would be allowed to progress under naturally occurring stochastic disturbance regimes.

Under Alternative 2 (the Selected Action), forest stands over 1,125 acres will be thinned using one of eight prescriptions, depending on access, slope, existing tree species composition, proximity to streams, and proximity to contiguous old-growth forest.

Environmentally Preferable Alternative

The Council on Environmental Quality's National Environmental Policy Act (CEQ NEPA) regulations and the National Park Service NEPA guidelines require that "the alternative or alternatives which were considered to be environmentally preferable" be identified (40 CFR 1505.2). The CEQ defines "environmentally preferable" as "the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources." The environmentally preferable alternative is based on an evaluation of the alternative using the criteria identified in Section 101 of NEPA stated below:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
- Achieve a balance between populations and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach maximum attainable recycling of depletable resources.

As documented in the EA, Alternative A selected for implementation was determined to be the environmentally preferable alternative.

Public Involvement

The EA was available for review for a 45-day period from May 28 through July 11, 2014. Seventeen printed or digital copies on CD-ROM of the EA and 107 letters announcing availability for review were sent to federal, tribal, state, and local agencies, elected officials, organizations, businesses, or individuals. Printed copies were available at park offices and five local libraries. A press release was sent to the park media list, which includes local and regional newspapers, radio, and television stations. No additional requests for copies of the document were received. Some entities were notified by more than one method. All letters and the press release provided the Internet address where the EA was posted on the NPS Planning, Environment, and Public Comment (PEPC ID 34857) public site at parkplanning.nps.gov/secondgrowth. There was no media interest in this specific project.

Response to Comments

Seven comments were received on the EA. Two comments were posted to the PEPC public site. Five comment letters were received via US Mail. Four comments supported the selected action as described in the EA.

The North Coast Regional Water Quality Control Board acknowledged minimal potential impacts to water quality and requested further consultation for permitting requirements. The result of consultation is described in the Consultations with Agencies and Tribes.

In a letter received after the close of the public comment period on the EA, the Hoopa Valley Tribe Forestry Division expressed concerns about Sudden Oak Death (SOD), a forest pathogen that kills tan oak. The NPS has monitored for SOD since 2006. A SOD infestation was discovered in the park along Redwood Creek near the mouth of Bridge Creek in late July 2014, after the public comment period on the EA had closed. The selected action will occur in a different subbasin than the SOD infestation, which is downstream from previously known infection sites on private lands upstream of the park boundaries. The NPS initiated management to control the Bridge Creek infestation and will continue to monitor SOD while considering additional management options to protect park forests. No change to the selected action is needed as a result of the discovery of SOD along Redwood Creek in the park.

One commenter questioned effects of the selected action on soils, topography, hydrology, and water quality in comparison to the park watershed restoration program under which abandoned logging roads are removed. Unlike watershed restoration projects in which road are removed to restore original landforms, the acreage for forest restoration represents the perimeter of potential impacts. Impacts occur on a limited area within that perimeter. Watershed restoration projects typically remove all vegetation and excavate thousands of cubic yards of soil from hillslopes and stream channels over the entire perimeter of the project area in order to re-establish the original topography and hydrologic patterns. Watershed restoration projects have the potential for moderate adverse short-term effects on soils, topography, hydrology, water quality, vegetation, and threatened and endangered species. The selected action for second-growth forest

restoration does not require excavation of large volume of soils and does not alter the topography or hydrologic patterns. Minor direct effects on soils from compaction by equipment using existing roads will occur on about 36 of the 337 acres where ground-based biomass removal is planned under the selected action. Effects on hydrology, water quality, and threatened and endangered species will be negligible. No changes to selected action are required as a result of this comment, which is directed at the effects of road removal for watershed restoration rather than the effects of thinning for forest restoration.

Consultations with Agencies and Tribes

The selected action has the potential to affect three species of fish and two species of birds federally listed as threatened. The NPS determined that the selected action may affect but will not adversely affect Southern Oregon/Northern California Coast coho salmon, California Coastal Chinook salmon, and Northern California steelhead trout, and their respective critical habitats and Essential Fisheries Habitats. NOAA Fisheries issued a Letter of Concurrence (LOC), file number 2012/00806, dated July 2, 2012 that concurred with the NPS determination.

The USFWS issued an LOC, file number AFWO-12B0009-11I0011, dated December 9, 2011, that concurred with the NPS determination that the project may affect but is not likely to adversely affect the northern spotted owl and marbled murrelet.

The NPS notified the California state historic preservation officer (SHPO) and Yurok tribal heritage preservation officer (THPO) on February 15, 2013 that an environmental assessment was being prepared, and sought concurrence with the NPS finding that the selected action will have no adverse effects to historic properties. The SHPO concurred with the NPS finding on September 27, 2013 (reference NPS_2013_0227_002). No comments were received from the Yurok THPO. The cultural resources inventory for the project was prepared by the Yurok Tribe under task agreement with Redwood National Park with contributions from the Yurok THPO.

In a comment on the EA, the North Coast Regional Water Quality Control Board acknowledged that potential impacts to beneficial uses of waters of the state are relatively low based on proposed use of hand crews, minimal use of heavy equipment, and proposed mitigation measures and best management practices. As a result of consultation and a site visit on October 23, 2014 with the Water Board, the NPS determined that the selected action meets all the eligibility criteria for a categorical waiver of discharge requirements for discharges related to timber harvest activities outlined in California Regional Water Quality Control Board North Coast Region Order No. R1-2014-0011. In a letter dated November 20, 2014, the NPS requested enrollment under Categorical Waiver F of the Order. Upon receipt of a copy of the approved FONSI, the Water Board will enroll the NPS under Waiver F.

Why This Project Will Not Have a Significant Effect on the Environment

This section summarizes effects on resources in the context of the project area and the parks as a whole, and documents that none of these effects are significant. Further, the

selected action is not part of a larger action and will not establish a precedent for future actions.

The selected action will not directly affect floodplains, old-growth forests, or cultural resources. The EA contains descriptions of mitigation measures to avoid or minimize adverse effects on air quality, topography, soils, hydrology, water quality, riparian wetlands, wildlife, and threatened species. Potential adverse effects to these resources have been determined to be negligible or minor, and will not require extensive mitigation on the part of the NPS to avoid or reduce the effects discussed below. Adverse effects to soils, water quality, and threatened species that were determined to potentially be greater than minor will be mitigated using minimization measures and best management practices (BMPs) described in detail in the EA and the references.

Air Quality—Localized short-term adverse effects on air quality under the selected action will result from emissions from heavy equipment and other vehicles, gasoline-powered tools, and dust from equipment operating on unpaved access roads and restoration sites. Emissions will be minimized by using equipment and vehicles licensed to meet state air quality standards. Adverse effects on air quality from dust produced at log landings and along road corridors will be localized, temporary during operations, and minor. Dust will be mitigated by using water trucks to sprinkle access roads and landings. Air quality will quickly return to very good to excellent when equipment operations are completed.

Cumulative effects on air quality in the parks from prescribed fires conducted in the park and on adjacent private timber lands for hazard fuel reduction could range from negligible to moderate depending on wind and atmospheric conditions. Cumulative adverse effects on air quality from smoke from wildfires could range from negligible to significant, depending on the proximity to the park, wind direction, and size of the fire.

No significant air quality related values will be affected outside the immediate area where equipment is operating. Dust and emissions will be temporary. The overall effects on air quality under the selected action will be adverse, temporary, localized, and minor.

Effects on Greenhouse Gasses and Global Climate Change—There will be a short-term increase in greenhouse gas (GHG) emissions from heavy equipment used in thinning operations and hauling logs out of the park. There will be no long-term effect on GHG emissions from the selected action. Cumulative effects from GHG emissions in the region are expected to increase over the long-term as the population of the region increases.

Effects on Soils and Topography—Topography and soils within the project area are previously disturbed from the original logging and road-building. There will be no new alteration of topography under the selected action. Up to 34 existing landings totaling about 7 acres and about 26 miles of existing roads will be re-occupied under the selected action. No new landings or roads will be constructed.

There will be negligible adverse effects on soils from personnel hiking into sites over about 450 acres where lop-and-scatter operations with no biomass removal will be conducted. All trees and limbs from lop-and-scatter operations will be placed in contact with the ground for mulch to protect underlying soils from erosion until vegetation decomposes and begins the process of soil formation.

Effects to soils under the selected action will be minimized by prohibiting cutting in areas with unstable or potentially unstable soils; conducting operations when soils are dry; using existing access roads, skid trails, and landings; using skyline cable yarding rather than ground-based equipment operations in areas with slopes greater than 35%; rehabilitating disturbed soils following heavy equipment work; and repairing or replacing drainage structures to minimize soil erosion following rain storms. The selected action will have greater localized adverse effects to soils from compaction from heavy equipment needed for biomass removal operations on about 36 acres within a 337-acre-perimeter where ground-based techniques will be used on slopes less than 35%. Biomass removal over an additional 338 acres on slopes greater than 35% will be accomplished using skyline yarding to reduce soil impacts. Landsides and riparian areas will be avoided when lining logs. These BMPs and avoidance of unstable areas will reduce adverse effects on soils in the project area under the selected action to minor or negligible. The adverse effects on soils under the selected action will be minor in comparison with the original significant long-term adverse effects from tractor logging, road construction, and lack of road maintenance.

The selected action will not affect soils in other sub-basins in the Redwood Creek watershed. Topography in the other sub-basins of Redwood Creek will remain altered by former logging roads that have not been maintained or treated to reduce erosion. Landslides related to untreated roads will cause adverse effects to soils and will occasionally alter topography, particularly after major storms. Long-term adverse effects on soils and topography from untreated roads will range from minor to significant, depending on the degree of alteration from the roads and on the magnitude of storms that result in erosion and can cause landsliding.

The selected action will have short-term localized adverse impacts to soils in the project area. Because these soils were previously disturbed by logging and road construction, and because BMPs and rehabilitation measures will be implemented, the adverse effects of the selected action on soils will be minor in the short-term and negligible over the long term. There will be minor benefits to soils in the project over the very long term as the forest recovers and additional roads are removed under the watershed restoration program.

Effects on Hydrology and Water Quality—Water quality will be protected through incorporating multiple mitigation measures and BMPs. The project will be conducted in a manner that meets or exceeds all conditions listed in the North Coast Regional Water Quality Control Board categorical waiver of discharge requirements to protect water

quality from discharge. Discharges include soil, silt, bark, slash, sawdust, or other organic or earthen material associated with timber harvest.

Mitigation measures include conducting operations when soils are dry; prohibiting operations within 500 feet of perennial streams; establishing streamside buffers for intermittent and ephemeral stream channels of varying widths depending on slope steepness and soil stability; and mulching newly exposed soils to reduce erosion during the rainy season following operations. Daily equipment checks and other standard BMPs to prevent fuel and other contaminants from entering water courses will prevent petrochemical or other contaminant spills into soil or water. These BMPs reduce the potential for water quality degradation from toxic chemicals associated with equipment to a negligible level over the short-term.

Short-term adverse effects to hydrology and water quality will be avoided or minimized by working when soils are dry and by varying the thinning prescriptions to account for stream type (wetlands, swale, intermittent, perennial), stream power (channel development, stream order), and geomorphic setting (slope steepness in streamside areas, presence of unstable soils).

The cumulative effects on hydrology and water quality in the park relate primarily to past logging and road building, both within what is now the national park and in the Redwood Creek basin upstream of current park boundaries. Hydrologic patterns have been significantly altered and water quality significantly degraded by roads constructed for logging operations.

The hydrology and water quality of Redwood Creek outside the project area will continue to be adversely affected by erosion of unmaintained logging roads on unstable slopes upstream of the park and abandoned failing roads within other Redwood Creek subwatersheds in the park. Chronic small-scale and episodic large-scale erosion from both human-caused and natural sources will continue to adversely affect water quality in the Redwood Creek sub-watersheds outside the project area.

The selected action will have a negligible benefit to hydrology and water quality in Redwood Creek itself because Lost Man Creek/Prairie Creek enter Redwood Creek downstream of the park. A major storm that causes erosion from untreated logging roads in the Redwood Creek watershed upstream of the Lost Man Creek/Prairie Creek watershed will have significant adverse effects on water quality in Redwood Creek that are proportional to the magnitude and duration of the storm.

The selected action will have negligible short-term adverse effects and negligible long-term benefits on hydrology and water quality in Lost Man Creek and Prairie Creek.

Effects on Floodplains and Wetlands—The selected action will not affect floodplains. The project area is located in the upper reaches of the watershed where narrow high-gradient stream channels inhibit the development of floodplains.

Under the selected action, direct adverse effects on riparian wetlands will be avoided by using only hand tools to conduct thinning operations within 200 feet of the perennial reach of the Middle Fork of Lost Man Creek. The thinning prescription is designed to promote development of large trees more quickly along the perennial stream to increase future recruitment of large wood into the stream. No other riparian wetlands within the project area will be affected.

The selected action will have indirect long-term benefits to riparian areas downstream of the project area as treated forest stands contribute to restoration of watershed function. The long-term benefit from the selected action on floodplains and riparian wetlands in the project area and downstream in Lost Man Creek and Prairie Creek will be negligible.

Effects on Vegetation—Under the selected action, thinning will reduce overall stand densities; stimulate stand growth and development; release dominant trees for faster growth; improve conditions for development of understory vegetation and canopy by increasing the amount of light; improve stand resilience to stressors such as pathogens and climatic events; and increase the numbers of redwood trees relative to Douglas-fir.

Overall there will be a minor to moderate benefit to remaining trees, understory vegetation, and canopy development under the selected action, depending on the prescription. The growth rate for individual trees will be greater under the low thinning and variable-density thinning prescriptions that call for more trees to be cut because larger trees will be retained and the removal of more trees promotes faster growth of retained trees. Development of understory vegetation and canopy will occur faster on areas treated with the low thinning or variable-density thinning prescriptions compared to the crown thinning prescription. Understory and canopy development will occur more slowly under the crown thinning prescription because less light reaches the forest floor and the canopy openings will be smaller. The benefit to stands where crown thinning is conducted will be less than under a low thinning or variable-density thinning prescriptions. The effects on forest structure in the moderately thinned areas will occur within several decades of the thinning; these benefits will be greater than in the areas where a crown thinning prescription is used.

The short-term increase in fire hazard caused by the increase in woody debris left after thinning will be less in areas where biomass removal occurs. The fire hazard will decrease within about 10 years, as the fuels left in contact with the ground decompose. Overall reduction in fire hazard from thinning dense stands where fire can travel easily among trees will be a minor long-term benefit to the forest in the project area and a negligible benefit to forest stands outside the project area.

There will be no short-term adverse effects on old-growth forest or residual old-growth trees under the selected action. Over the long-term, there will be a moderate benefit to old-growth forest community function in the contiguous old-growth stands from thinning adjacent forests. The benefit will not be realized for centuries until the thinned forest re-attains the structure of old-growth forest.

Short-term adverse effects on park forests from cutting trees will be negligible because the trees occur in unnaturally high stand densities, and are not representative of original forest species composition. The effect of thinning will be a negligible short-term adverse effect and a moderate long-term benefit in the project area. The cumulative benefit to park forests under the selected action will be minor because the treated area is less than 1% of the second-growth forests in the park.

The 48,300 acres of previously clearcut second-growth forests in the park that are not treated will remain in a degraded condition. Logged areas of the parks will continue to recover although some dense second-growth stands that are not thinned will require centuries to reattain characteristics and functions associated with old-growth forest. This is a significant adverse effect on old-growth redwood forest communities that will persist for centuries.

The selected action will have negligible short-term adverse effects with a moderate long-term benefit to forest structure and the associated vegetation community within the project area.

Effects on Non-Sensitive Fish and Wildlife—Under the selected action, removal of trees will cause direct disturbance to individuals of small relatively sedentary species of wildlife in the project area. This will be a significant adverse effect on those individual animals that are displaced or killed. There will be negligible effects on larger more mobile species of wildlife that inhabit the project area and are able to move away from areas of disturbance. The overall adverse effect on non-sensitive amphibians and wildlife will be negligible because the dense forest stands are poor quality habitat; the wildlife species that do occur in these stands are common in the park; some displaced individuals will find refuge in the undisturbed areas adjacent to the project area; and other individuals will reoccupy the project area after operations are completed. Timing restrictions on thinning operations to protect threatened bird species will avoid adverse effects to nesting birds protected under the Migratory Bird Species Act.

Thinning will improve wildlife habitat immediately by creating openings in the canopy and reducing stand density to allow larger wildlife to move within the forest. Woody debris left on the ground provides habitat for insects, amphibians, and small mammals, as well as seedlings, fungi, and microorganisms that are eaten by animals. Habitat will continue to improve as understory vegetation increases over two to three years, canopy layers develop, and the trees grow larger.

Protecting deformed trees, large hardwoods, and redwood stump sprouts by directionally felling trees away from such trees will have minor to moderate indirect benefits to wildlife that use such trees for shelter and nesting.

Short-term effects on wildlife during project operations will be negligible to minor, depending on the species tolerance to disturbance and ability to move out of the project area. Adverse effects on individual animals will be significant for those individuals that are killed during project operations but direct effects on any population in the project area will be negligible because there is similar second-growth habitat throughout the parks and the second-growth habitat that will be affected by project work is of poor quality.

Benefits to wildlife will be minor over two to three years after thinning and will increase to moderate over the long term as forest understory and canopy layers develop. Long-term benefits to wildlife will be greatest in the moderately-thinned areas and in the old-growth buffers.

The selected action will benefit forest-dwelling wildlife as understory and canopy vegetation recovers and remaining trees grow larger. The benefit will be minor to moderate over the long-term depending on the degree of thinning. The benefit to park wildlife outside the project area will be negligible because 48,300 acres of untreated second-growth forest will remain poor quality wildlife habitat.

Effects on Rare, Sensitive, Threatened, and Endangered Species—The NPS determined that this project may affect but is not likely to adversely affect listed fish species or their respective critical habitats, based on the design and timing of the selected action. The project will have limited effects to designated critical habitat from ground disturbing activities causing an increase in stream turbidity; riparian thinning causing a potential increase in stream temperatures; and the possibility of decreased water quality from petroleum products entering the stream network. The likelihood of sediment entering the stream network is low, the amount of sediment will be small, and the likelihood of small amounts of petroleum products entering the stream network is low, based on the mitigation measures and the BMPs. Areas proposed for riparian thinning along streams with water present during the summer are very limited in size and extent, and sufficient riparian canopy will be retained so that any increase in stream temperatures would be minor and localized. Potential adverse effects to Essential Fish Habitat from ground disturbing activities causing a small and temporary increase in stream turbidity, from the risk of petroleum products entering the stream network, and from minor and localized increases in stream temperature are negligible. The overall potential for adverse effects to listed fish and their habitat is negligible.

The NPS determined, and the USFWS concurred, that the proposed action may affect but is not likely to adversely affect northern spotted owls or marbled murrelets. There will be no adverse effects to northern spotted owls because no nesting habitat will be removed; forest stands that remain after treatment will have 60% canopy cover of trees greater than 11 inches dbh and a basal area greater than 100 ft² per acre of trees greater than 11 inches

dbh; there will be no noise disturbance during nesting season; and barred owls are likely to be present in the only activity center formerly occupied by spotted owls.

Long-term benefits to northern spotted owls will occur more quickly than long-term benefits to marbled murrelets because owls are able to occupy advanced second-growth forest for nesting and foraging but marbled murrelets require old-growth habitat for nesting that will take centuries to develop. The long-term survival of spotted owls in the project area is uncertain due to the expansion of barred owls into the activity center formerly occupied by spotted owls. Reducing the height differential between the second-growth and old-growth forests will reduce edge effects such as increased predation threat and microclimate changes. Potential effects on the Pacific fisher, proposed for listing as threatened, will be similar to the effects on northern spotted owls because the fisher occupies forest habitat that is also occupied by northern spotted owls.

Effects on Cultural Resources—The California SHPO concurred with the NPS determination that no historic properties will be affected by the selected action. The Yurok Tribe prepared the cultural resources inventory with input from the Yurok THPO.

The cultural sensitivity of the project area is very low because the area has been logged, which very likely damaged or destroyed any cultural resources originally present. Although cultural resources that may occur in the vicinity of the project area may be important cultural resources, no known significant cultural resources were found in the project area.

The selected action will not change the treatment and/or management of archeological resources in Redwood National Park. No significant adverse effects to cultural resources are anticipated from any reasonably foreseeable park actions.

Effects on Visitor Experience and Visual Quality—Visitor experience will be adversely affected by short-term closures of the Holter Ridge Bike Trail while heavy equipment is operating. The overall benefit to visual quality in the park immediately adjacent to the project area will be negligible to minor over the long term as the forests regrow.

Effects on Adjacent Communities—The selected action will have minor economic benefit to the community of Orick to the extent that contractors and their employees purchase food, supplies, and fuel in the community.

Conclusions—As summarized above, the effects of the selected action have been considered and determined to be less than significant. These effects have also been considered under the criteria for significance listed in the Council on Environmental Quality regulations (40 CFR 1508.27) and found to be less than significant. Actions for which mitigation can be prescribed, the prescribed mitigation, and the responsible party are summarized in the following table. An NPS forester will provide project oversight and supervision of project activities.

**Summary of Adverse Effects on Resources and Mitigations
Middle Fork Lost Man Creek Second-Growth Forest Restoration**

Resource	Effect	Mitigation/Responsible Party
Air Quality	Negligible temporary localized dust and vehicle emissions	Water sprinkling to reduce dust; vehicles and equipment meet state emissions standards (contractor).
Soils	Minor compaction from equipment operations within 675 acres in biomass removal areas	Multiple minimization measures and BMPs to reduce erosion and compaction include prescriptions to avoid unstable soils and steep slopes (NPS forester); and equipment access only on existing roads, skid trails, and landings; no heavy equipment operations on slopes greater than 35%; equipment operations only during dry periods; mulching disturbed soils; winterization of work sites if rain is predicted; compacted soils rehabilitated and mulched (contractor).
Hydrology & Water Quality	Negligible likelihood of water quality impacts from increased turbidity and temperature	Spill prevention plan prepared (NPS Forester) and implemented (contractor). Multiple minimization measures and BMPs to reduce soil erosion also protect water quality (NPS Forester, contractor). Other BMPs include streamside buffers established, perennial streams avoided, and prescriptions varied by stream type, stream power, and geomorphic setting (NPS forester); and daily equipment checks for contaminants, immediate repair of leaks, and off-site fueling; drainage structures repaired or replaced (contractor).
Wetlands	Riparian wetlands and swales avoided	Prescriptions avoid sensitive wetlands and swales (NPS forester); no equipment used within 200 feet of perennial stream reach; and drainage structures repaired or replaced (contractor).
Vegetation	Trees thinned within 1,125-acre perimeter	Old-growth buffered by prescription; specimen trees marked for avoidance (NPS forester).
Wildlife	Some individual small sedentary animals killed	Loss of individual small sedentary animals unavoidable; specimen trees used by wildlife marked for protection (NPS forester); and food scraps and trash removed daily to avoid attracting scavengers and habituating wildlife to people and human food sources (contractor).
Threatened Species	May affect but not likely to adversely affect listed fish or birds in short-term; moderate benefits to spotted owls as forest regrows; very long-term benefits to owls and murrelets as forest recovers old-growth characteristics.	Old growth avoided by prescription (NPS forester); work timing restrictions to protect birds and fish established (NPS forester) and implemented (contractor); erosion control BMPs to protect fish established (NPS forester) and implemented (contractor).

Basis for Decision

Based on the environmental assessment, analyses of issues and alternatives, together with consideration of minimal public interest expressed; the relation between public interest and laws, statutes, and regulations for managing National Park Service units; and the ability of the mitigation measures to reduce or eliminate adverse impacts, the NPS will implement as its selected action the project described as Alternative 2 in the Middle Fork Lost Man Creek Second-Growth Forest Restoration Environmental Assessment dated May 2014.

It is the determination of the National Park Service that the selected action to conduct forest thinning operations in the Middle Fork of Lost Man Creek does not constitute a major federal action significantly affecting the quality of the human environment, nor is this project without precedent or similar to ones that normally require an environmental impact statement. The selected action will further the goals for forest restoration described in the 1999 GMP/FEIS and 2000 *Record of Decision*. Therefore, in compliance with the National Environmental Policy Act, the National Park Service will not prepare an environmental impact statement, and will proceed with implementation of the project as soon as practicable.

Recommended: 

DEC 22 2014



Stephen Prokop
Superintendent
Redwood National Park

Date

Approved: 

12-24-14

Christine Lehnertz
Regional Director
Pacific West Region

Date

Attachment 1
DETERMINATION OF NON-IMPAIRMENT

MIDDLE FORK OF LOST MAN CREEK
SECOND-GROWTH FOREST RESTORATION

While Congress has given the National Park Service (NPS) management discretion to allow impacts within parks, that discretion is limited by the statutory requirement, generally enforceable by the federal courts, that the NPS must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This cornerstone of the Organic Act establishes the primary responsibility of the NPS: to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The impairment of park resources and values may not be allowed by the NPS unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.

National Park Service's *Management Policies 2006* requires analysis of potential effects to determine whether or not actions would impair park resources. The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Redwood National Park was established by Congress in 1968 to "preserve significant examples of the coastal redwood ... forests and the streams ... with which they are associated for purposes of public inspiration, enjoyment, and scientific study." [Public Law 90-245]. Congress expanded Redwood National Park in 1978 and authorized the NPS to develop and implement "a program for the rehabilitation of areas within ... the park" affected by past logging disturbances. [Public Law 95-250, Section 101(a) (6)]

The 1999 Redwood National and State Parks *Final General Management Plan/General Plan, Final Environmental Impact Statement/Environmental Impact Report* (RNSP GMP/FEIS) approved through the 2000 *Record of Decision* directs that forest restoration activities in the parks should emphasize use of silvicultural methods in second-growth forests to re-attain old-growth characteristics in the shortest time possible.

The following topics from the EA were considered as measures of the condition of the second-growth forests throughout park watersheds and are applicable to evaluation of the selected action for potential impairment: air quality; soils and topography; hydrology and water quality; floodplains and riparian wetlands; vegetation; fish and wildlife species that are not listed as threatened or endangered; threatened and endangered species; and cultural resources.

Non-resource topics such as visitor use, socioeconomic of gateway communities, or public health and safety are not subject to impairment determinations.

The selected action will not reduce the impairment of soils, topography, hydrology, water quality, floodplains, riparian wetlands, and second-growth forest stands in the Redwood Creek watershed outside of the Middle Fork Lost Man Creek project area. The impairment to these

resources from logging of old growth redwood forests and road building was the primary reason for expanding Redwood National Park in 1978. The “Redwood amendment” to the General Authorities Act reiterated the non-impairment provision of the Organic Act that applies to all national park units (*Management Policies 2006* 1.4.1 and 1.4.2).

Air Quality— Heavy equipment including combination loader/yarders and log trucks used during ground-based biomass removal operations, trucks, and gasoline-powered chain saws will produce pollutants in their exhaust that could impact air quality at the project site and closely adjacent areas. Vehicles and equipment will generate dust on access roads, as well as on landings and skid roads during ground-based biomass removal operations.

The selected action will result in adverse impacts to air quality primarily through the generation of dust. This impact will be localized within the immediate area of operations and will be mitigated by sprinkling from water trucks to reduce the dust during equipment operations. Emissions from vehicles and equipment will be confined to the project site and mitigated through current licensing to meet state air quality standards. Dust will be a temporary localized minor adverse effect; emissions will be negligible. As a result, there will be no impairment to air quality from implementing the selected action.

Soils and Topography— The selected action will not create new alterations to topography. The selected action has the potential to cause impacts to soils from compaction from re-use of existing access roads, landings, and skid roads within a 675-acre-perimeter where biomass removal operations will occur. The selected action will have greater localized adverse effects to soils from compaction from heavy equipment needed for biomass removal operations about 36 acres within the 337-acre-perimeter where ground-based techniques will be used on slopes less than 35%. Biomass removal over an additional 338 acres on slopes greater than 35% will be accomplished using skyline yarding to reduce soil impacts.

Short-term effects on soils from erosion will be minor or negligible because of the BMPs and multiple minimization measures that will be implemented. Long-term effects from compaction will be reduced to negligible through rehabilitation of access roads, landings, and skid roads at the completion of the project.

There will be no new long-term effects on soils or topography, which were impaired through the original clear-cut tractor-based logging and road construction. The existing impairment to soils and topography from logging and road construction in the park outside the project area will not be reduced by implementing the selected action.

There will be no impairment to soils or topography from implementing the selected action. Potential minor short-term adverse impacts from erosion will be mitigated through erosion control methods and BMPs. Long-term impacts to soils from compaction of soils from use of heavy equipment on existing roads, landings, and skid trails will be negligible. The minor short-term and negligible long-term adverse effects on soils are acceptable because the impacts result from an action needed to achieve objectives for restoration outlined in the 1999 GMP.

Hydrology and Water Quality—Short-term adverse effects to hydrology and water quality will be avoided or minimized by working when soils are dry and by varying the thinning prescriptions to account for stream type, stream power, and geomorphic setting.

The short-term adverse effects on water quality from erosion associated with re-use of access roads, landings, and skid roads will be negligible because of the multiple mitigation measures and BMPs that will be implemented. These negligible adverse effects are unavoidable because they are necessary to achieve the restoration objectives.

The short-term adverse effects on water quality from erosion of small amounts of sediment from re-use of access roads, landings, and skid roads are negligible and necessary to achieve restoration objectives, and therefore acceptable.

Therefore, the selected action will not impair hydrology or water quality in the Middle Fork of Lost Man Creek. The selected action will have a negligible effect on reducing the impairment to hydrology and water quality outside of the project area in the Redwood Creek watershed that results from the presence of numerous abandoned logging roads, the legacy of clear-cut logging on a watershed-wide scale, and the flood control levees that alter the functioning of the Redwood Creek estuary.

Floodplains and Riparian Wetlands—The selected action will not affect floodplains. The selected action will have a negligible benefit to the floodplain of the Redwood Creek and its estuary that resulted from past logging effects and the presence of the flood control levees. The impairment to the Redwood Creek floodplain will not be reduced by the selected action.

Under the selected action, direct adverse effects on riparian wetlands will be avoided by using only hand tools to conduct thinning operations within 200 feet of the perennial reach of the Middle Fork of Lost Man Creek, and no biomass removal. The thinning prescription is designed to promote development of large trees more quickly along the perennial stream to increase recruitment of large wood into the stream over the long term.

Therefore, the selected action will not impair riparian wetland values and functions. The selected action will have a negligible effect on reducing the existing impairment to floodplains and riparian wetlands in the Redwood Creek watershed outside of the project area.

Vegetation Resources—The selected action will have negligible short-term adverse effects and a moderate long-term benefit to forest structure and the associated vegetation community within the project area.

Short-term adverse effects on park forests from cutting trees will be negligible because the trees occur in unnaturally high stand densities, and are not representative of original forest species composition. The effect of thinning will be a negligible short-term adverse effect from removal of individual trees and a moderate long-term benefit to forest community structure in the project area. The cumulative benefit to the forest communities throughout the park under the selected action will be minor because less than 1% of the second-growth forests in the park will be treated.

There will be no short-term adverse effects on old-growth forest or residual old-growth trees under the selected action. Over the long-term, there will be a moderate benefit to old-growth forest community function in the contiguous old-growth stands from thinning adjacent forests. The benefit will not be realized for centuries until the thinned forest re-attains the structure of old-growth forest.

The 48,300 acres of previously clearcut second-growth forests in the park that are not treated will remain in a degraded condition. Logged areas of the parks will continue to recover although some dense second-growth stands that are not thinned will require centuries to reattain characteristics and functions associated with old-growth forest. This is a significant adverse effect on old-growth redwood forest communities that will persist for centuries.

The selected action will have negligible short-term adverse effects with a moderate long-term benefit to forest structure and the associated vegetation community within the project area.

The purpose of the selected action is to reduce the impairment to park forests that resulted from clear-cut logging. The short-term adverse effects from removing trees are acceptable because the impacts result from an action needed to achieve objectives for restoration outlined in the 1999 GMP. The overall impairment to park forests will be slightly reduced. As a result, there will be no impairment to vegetation from the selected action.

Fish and Wildlife Resources—Loss of habitat from vegetation removal and disturbance associated with construction will be a short-term adverse effect on individuals of small sedentary species that cannot move out of work sites. However, the selected action will have negligible adverse effects on any population of wildlife or the long-term persistence of any fish or wildlife species because there is similar second-growth habitat throughout the park and the quality of the habitat that will be affected under the selected action is poor. The selected action will benefit forest-dwelling wildlife as understory and canopy vegetation recovers and remaining trees grow larger. The benefit will be minor to moderate over the long-term depending on the thinning prescription; the benefit will be greater in more heavily thinned areas. The benefit to park wildlife outside the project area will be negligible because 48,300 acres of untreated second-growth forest that are poor quality wildlife habitat will remain.

Therefore, the selected action will not impair wildlife resources.

Threatened and Endangered Species—The selected action may affect but is not likely to adversely affect listed fish species or their respective critical habitats, based on the design and timing of the selected action. Potential adverse effects to listed fish, designated critical habitat, and Essential Fish Habitat from ground disturbing activities causing a small and temporary increase in stream turbidity, from the risk of petroleum products entering the stream network, and from minor and localized increases in stream temperature are negligible. The overall potential for adverse effects to listed fish and their habitat is negligible.

The NPS determined, and the USFWS concurred, that the proposed action may affect but is not likely to adversely affect northern spotted owls or marbled murrelets. Long-term benefits to

northern spotted owls will occur more quickly than long-term benefits to marbled murrelets because owls are able to occupy advanced second-growth forest for nesting and foraging but marbled murrelets require old-growth habitat for nesting that will take centuries to develop. The long-term survival of spotted owls in the project area is uncertain due to the expansion of barred owls into the activity center formerly occupied by spotted owls

The selected action will have negligible adverse effects to northern spotted owls over the long-term, no adverse effects on marbled murrelets, and a long-term benefit to northern spotted owls and marbled murrelets. Therefore, the selected action will not cause impairment to threatened wildlife and fish species.

Non-Impairment of Cultural Resources—There are no significant historic properties or other significant cultural resources that will be affected by the selected action.

The selected action will not result in impairment of cultural resources because there are no known resources present in the project area and monitoring during construction will detect any currently unknown historic sites.

SUMMARY

As described above, adverse effects and environmental impacts anticipated as a result of implementing the selected action on a resource or value whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or identified as significant in the park's general management plan or other relevant NPS planning documents, will not rise to levels that would constitute impairment of park values and resources.