



National Park Service
U.S. Department of the Interior

Sequoia and Kings Canyon National Parks
Regions 8, 9, 10 and 12

FINDING OF NO SIGNIFICANT IMPACT KNP Complex Wildfire Tree Hazard Mitigation

Recommended:

5/16/23

Clayton F. Jordan
Superintendent, Sequoia and Kings Canyon National Parks

Approved:

FRANK LANDS
2023.05.25 12:45:58 -07'00'

Frank Lands
Regional Director, Interior Regions 8, 9, 10 and 12, National Park Service

Introduction

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternative actions and environmental impacts associated with the proposed project to mitigate roadside tree hazards within the 2021 KNP Complex Wildfire (KNP) burn perimeter. The project is needed to minimize the threat to public safety and NPS infrastructure from tree hazards resulting from, or further weakened by, the KNP Complex Wildfire while maintaining, if not restoring, public access to frontcountry areas of the parks where it is currently threatened by the presence of these hazards.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file. To the extent necessary, relevant sections of the EA are incorporated by reference below.

Selected Alternative and Rationale for the Decision

Based on the analysis presented in the EA, the NPS selected Alternative 2—Mitigate Tree Hazards and Treat Woody Debris Within the KNP Burn Perimeter (the NPS' preferred alternative)—with some minor modifications outlined below and incorporated within the attached errata.

As outlined in Elements Common to All Alternatives in the EA (pages 9–18), the NPS will mitigate 12,000-15,000 identified tree hazards over a 6–8-month timeframe starting in 2023. Tree hazard mitigation could extend for two to four years (becoming increasingly intermittent over time) as some trees experience delayed mortality from the fire and become hazardous in the months and years ahead. While fire severity does not precisely correlate with the number of tree hazards present, the NPS expects that the relative number of tree hazards, and thus intensity with which trees will be mitigated, will be greatest within high severity burn areas and of lower intensity as burn severity decreases.

In addition, as outlined in Alternative 2 in the EA (pages 15–17), the NPS will treat (i.e., remove) excess fuels within the developed footprint of other infrastructure to avoid fuels accumulation, break up fuel continuity, and otherwise ensure the NPS can maintain a fire break along roadways during future fires. For this reason, logs and debris resulting from failure or felling of KNP tree hazards landing within up to 80 feet of the road's edge, and not meeting the retention standards outlined in the EA on pages 15–16, will be treated as necessary to achieve site specific goals and project objectives. Authorized methods of treatment will include piling and burning, lopping and scattering, chipping and broadcasting on site, chipping and hauling, and hauling the material from the parks whole to be chipped and burned in a bio-generation facility or milled as lumber. Some logs may also be made available for public use via permit.

As also outlined in Elements Common to All Alternatives (page 14 of the EA), the NPS will maintain existing closures along the Crystal Cave and Redwood Mountain Roads until high priority hazards are identified and mitigated (i.e., assumed to be within several months). Once high priority hazards have been addressed, the NPS may restore weekend access to these areas for the duration of the visitor use season (barring any other safety considerations) but will continue to implement up to days long, midweek closures along these roads to ensure safe and efficient felling and cleanup operations during implementation. During the summer season (Memorial Day through Labor Day), these full closures will be limited to Monday-Friday but could be weeks long during the off season.

Similarly, five day long, weekday closures could be utilized along the following additional sections of road during the summer season in order to ensure safe and efficient felling and cleanup operations: 1) Crescent Meadow, 2) the section of the Generals Highway (Generals) between Wuksachi and the north boundary of Sequoia National Park, and 3) Clover Creek Wastewater Treatment Facility. During the fall, winter, and spring, 7 days long weekly closures could also be implemented in these areas to complete the work as quickly as possible and reduce conflicts with visitor use to the greatest extent practicable.

Access along the Generals Highway between the Foothills Entrance Station and Wuksachi will be subject to weekday delays lasting between one and three hours and up to six hours along Mineral King Road in the summer season. The location and timing of these delays will be staggered such that visitors should not experience multiple delays during a single day, and the road will be temporarily opened after each closure for single lane passthrough prior to the next closure.

Rationale

Alternative 2 was selected because it meets the purpose and need of the project in the most efficient and effective manner while also minimizing the indirect impacts to fire effects from taking such action in the project area. Specifically, this alternative has the same advantages of all action alternatives in that it best maintains, if not restores, public access to frontcountry areas of the parks where it is currently threatened by the presence of large amounts of tree hazards, but it has the additional advantage of doing so in a manner that limits fuels accumulation, breaks up fuel continuity and maintains roadway fire breaks to the maximum extent practicable.

Mitigation Measures

The NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. Therefore, the NPS will implement multiple mitigation practices to protect wildlife, plants, special status species, cultural/historic/ethnographic resources, acoustic environment, wilderness resources, human health and safety, and visitor use and experience. These measures and practices are described in detail in Appendix B of the EA and are hereby incorporated by reference. As stated in the EA, these mitigation measures and best management practices are included as integral parts of the selected alternative. The NPS has the authority to implement the mitigation measures under the Organic Act, the Wilderness Act, the National Historic Preservation Act, NPS Management Policies 2006, park-specific regulations, and other federal and state applicable requirements.

Other Alternatives Considered

In addition to the selected alternative, the EA analyzed two other alternatives and their impacts on the environment: Alternative 1, the No Action Alternative; and Alternative 3, Mitigate Tree Hazards Only (do not treat woody debris).

Alternative 1: No Action—Continue Current Management Direction

The No Action Alternative, described on page 9 of the EA, will not be selected. Under the No Action Alternative, the NPS would not take immediate action to mitigate all identified roadside tree hazards or treat resulting woody debris within the KNP burn perimeter. Rather, the NPS would continue to identify, prioritize, and annually mitigate tree hazards under its existing tree hazard program. For the purposes of analysis, the NPS assumes it would address a small portion of the

existing tree hazards within the KNP burn perimeter every year, potentially up to 500 trees annually, though likely fewer.

Because tree hazards within the action area would be mitigated slowly over time, and natural failure of trees is likely, short-term (e.g., hours long) closures to either abate risk to human health and safety or to enable cleanup of failed trees would be anticipated under this alternative. Similarly, areas currently closed to public use, Crystal Cave Road and Redwood Mountain Road, would remain closed until all high priority hazards had been identified and mitigated. These closures would likely extend several years into the future.

Alternative 3: Mitigate Tree Hazards Only

Alternative 3 will not be selected. Alternative 3 is described on pages 9–15 (Elements Common Alternatives 2 and 3) and page 18 (Alternative 3) of the EA. Like Alternative 2, Alternative 3 would mitigate between 12,000 – 15,000 tree hazards within the KNP burn perimeter over as short a timeframe as practicable. The NPS would also continue to clean up and remove any debris that fell on parking lots, roadways, or other infrastructure or otherwise conflicted with operational needs; however, woody debris outside the road prism would largely be left on site.

Public Involvement and Agency Consultation

Public Scoping and EA Review

The NPS solicited public feedback on the proposed action during a 30-day public scoping period extending from July 22 through August 21, 2022, and during a 30-day public review period on the KNP Tree Hazard Environmental Assessment extending from February 3 through March 4, 2023.

During both the public scoping and public review periods, the NPS posted all materials for public review and comment on the National Park Service's (NPS) Planning, Environment, and Public Comment (PEPC) website: <https://parkplanning.nps.gov/KNPTreeHazards>. The availability of the documents and the public review dates were announced through press releases and social media posts. Public comments were accepted via U.S. mail, email, and the PEPC website.

The public scoping effort resulted in the receipt of 26 pieces of correspondence from members of the public. As well, the NPS received comments from the U.S. Fish and Wildlife Service and the Environmental Protection Agency. These pieces of correspondence were reviewed by park staff and were considered in the decision-making process and in the writing of the EA.

The NPS documented ten individual pieces of correspondence during the public review period for the EA. The NPS' responses to substantive comments and other comments requesting clarification—received during the public review period—are summarized in Appendix B.

Consultation with Tribes

On August 10, 2022, the NPS sent a letter initiating consultation with the 14 federally recognized tribes associated with the parks. The NPS also shared information about the KNP Complex Wildfire Tree Hazard Mitigation EA with an additional 17 tribes recognized by the State of California. An additional 235 tribal individuals or representatives from tribal entities were also informed of the proposed action and were invited to comment on this planning process. The NPS followed up with a second consultation letter to tribes on February 9, 2023, to notify them of the release of the EA

and provide the opportunity to comment and/or meet to discuss the preferred alternative or this planning process more broadly. As of the release of this FONSI in May of 2023, the NPS had not received comments on the planning process from any tribal chair, tribal representative, or interested party concerning this project.

National Historic Preservation Act

In an initiation letter to the California State Historic Preservation Officer (SHPO) dated July 29, 2022, the NPS identified the proposed action as an undertaking with the potential to affect historic properties and identified the Area of Potential Effect (APE) for the project. In a letter dated August 3, 2022, the SHPO concurred with the NPS' determination that the project constituted an undertaking with the potential to affect historic properties and that the APE was sufficient to take direct and indirect effects into account (NPS_2022_0729_001). The SHPO requested that the NPS share any comments and concerns received during consultation including tribal consultation.

The NPS continued consultation with the SHPO on March 3, 2023, requesting SHPO concurrence with the NPS' identification of historic properties and determination that implementation of the preferred alternative would have no adverse effect to historic properties. As of May 16, 2023, SHPO has not responded to the NPS' finding of effect; pursuant to 36 *CFR* 800.5(c)(1) and 36 *CFR* 800.5(d)(1), the NPS will move forward with project implementation as fulfillment of the agency official's responsibilities under section 106 of the National Historic Preservation Act.

Endangered Species Act

On December 14, 2022, the NPS initiated Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) under the Programmatic Biological Opinion on Proposed Activities of the National Park Service that May Affect the Southern Sierra Nevada Distinct Population Segment of Fisher (08ESMF00- 2020-F-2011-1) requesting USFWS concurrence that the project *may affect but is not likely to adversely affect* the Southern Sierra Nevada distinct population segment of the fisher. The USFWS responded to the NPS on January 18, 2023, concurring with the determination that the project *may affect but is not likely to adversely affect* the fisher because (1) fishers are less likely to den within the action area due to its proximity to the road; (2) the proposed project occurs alongside roads, and fishers are likely habituated to moderate levels of noise along these roads; (3) the proposed project is within the KNP Complex Wildfire footprint and is less likely to be used by fisher for denning; (4) research to monitor fisher movement and use in the parks will be ongoing during the proposed project's duration; and (5) the parks will implement additional conservation measures to avoid negative impacts (FWS-2022-0072726). All conservation measures were incorporated into the mitigation measures outlined in Appendix B of the EA and are subsequently incorporated into the selected alternative via this decision.

Finding of No Significant Impact

Implementing the selected alternative will not result in significant adverse impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection laws.

The following summarizes project effects, including beneficial effects, anticipated to result from implementing the selected alternative.

Visitor and Employee Safety

As described on pages 24–25 of the EA, implementing the selected alternative will beneficially affect visitor and employee safety to a greater degree than other alternatives considered in that the alternative mobilizes mitigation actions as quickly as possible to mostly eliminate the threat from identified KNP tree hazards over an implementation period of 6–8 months and by reducing safety concerns associated with maintaining roadways as defensible fire breaks. Notably, some tree hazards may remain for as long as 2–4 years due to delayed mortality.

Fuel Loading and Future Fire Effects

Tree hazard mitigation work, described in the selected alternative on page 9–15 of the EA with minor updates reflected in the errata, will result in the buildup of continuous fuels within 200 feet of either side of park roadways as tree hazards are being felled—adding to already high fuel loading in some areas. However, treatment (through pile burning, chipping, and hauling) of tree hazard related debris within 80 feet on either side of the road, as described on pages 15–17 of the EA, and also updated in the errata, will reduce the quantity of debris remaining within the debris treatment zone such that removed fuels will no longer contribute to potential future fire spread or localized fire effects.

Though untreated boles (logs) remaining within and outside the debris treatment zone and fine fuels outside the debris treatment zone will result in some additional risk of locally adverse fire effects, including the potential for some residual forest loss, given the Affected Environment, the narrow linear nature of the action area, NPS' intentional breakup of fuel continuity, and the maintenance of sufficient fuel breaks, significant adverse fire effects directly related to roadside jackpot fuels are not anticipated when fire returns to the action area (see pages 25–28 of the EA).

Threatened and Endangered Species – Fisher

Felling of tree hazards, as will occur under the selected alternative, can result in direct mortality or injury of a fisher. This risk would be greatest if trees of sufficient den size and having den quality characteristics are felled during the fisher limited operating period (LOP) for tree removal. Machinery used for tree removal activities cause high decibel (dB) sounds (ranging from 80-110 dB) that may also disturb fisher over the 6–8-month time period such machinery is being used, with some disturbance occurring intermittently over the course of up to 4 years. Finally, fisher may be affected by removal of coarse woody debris that may otherwise be used for hunting or escape cover from predators.

Though effects described above may occur as a result of implementing the selected alternative, fisher are unlikely to be present in much of the action area where the most intensive tree hazard felling would occur; at least for the immediate future (see pages 29–32 of the EA). Further, the NPS will mitigate the risk for tree hazard felling to result in mortality or injury to a fisher by avoiding, to the maximum extent practicable, removing tree hazards during the fisher LOP (March 1 through June 30). Under circumstances where work during the LOP must occur, additional mitigations will be implemented such that mortality or injury of fisher would likewise not be anticipated (see Appendix B of EA). Further, the NPS will mitigate disturbance by conducting the most intensive project actions during periods of time when fisher are less sensitive such that, were a fisher to travel through the area, significant negative impacts from noise disturbance are not anticipated (see Appendix B of the EA).

Though implementing the selected alternative will reduce overall cover (both standing and down), the NPS will retain 3-5 large diameter logs per 100-foot stretch of roadside. Retention of this material will provide roughly 10-15 tons/acre of cover for fisher and their prey in the debris treatment area and far exceeds the 3-5 t/a advised for fisher cover recommended by the *Interim Strategy for Southern Sierra Nevada Fisher Conservation* (Strategy) in heavy tree felling areas (Thomson et. al 2020). The project will also retain debris in a manner that, to the maximum extent practicable, breaks up roadside fuel continuity to prevent spread of fire and maintains roadway sightlines for vehicles as also recommended by the Strategy (Thompson et al. 2020). These methods will serve to decrease both the degree of risk for fire spread and vehicle strike over those anticipated under other alternatives considered while still maintaining adequate habitat cover for fisher when traveling through the project area.

In a letter submitted to the U.S. Fish and Wildlife Service (USFWS) on December 14, 2022, the NPS requested concurrence from the USFWS that the selected alternative *may affect, but is not likely to adversely affect*, the fisher. The NPS also determined that there will be no effect on any other federally listed threatened or endangered species or critical habitat. The USFWS concurred with the parks' determination on January 18, 2023 (see page 43 of the EA; see also page 4 of this document).

Visitor Use and Experience

Under Alternative 2, visitors will continue to experience postfire landscape recovery over the next 1-5 years, though evidence of wildfire attributed to the KNP would be noticeable for the foreseeable future as is currently the case. Increased sound disturbance from project implementation (up to 110 dB) and increased traffic from debris hauling will negatively affect visitor experience during the 6-8 months of project implementation as these sounds and traffic could frustrate some visitors and further disturb their ability to hear natural sounds within the project area beyond existing conditions. More notably, delays/closures during the summer season of up to 3 hours along the Generals between the Foothills and Wuksachi and up to 6 hours along the Mineral King Road will delay visitors' access to key destinations within these road segments such that visitors will likely adjust their trip planning to accommodate the schedules. Full weekday closures along the Crystal Cave, Redwood Mountain, Crescent Meadow, and the section of the Generals between Wuksachi and the northern boundary will divert visitors to other locations in the parks during these days.

Notably, temporary construction closures—such as those proposed in this alternative—are routine in these parks and have had no measurable effect on park visitation that the NPS is aware of¹. In addition, the NPS will mitigate negative effects to visitor experience to the maximum extent practicable by broadly sharing project information with the public, staggering closures such that multiple high visitation areas do not have simultaneous extended closures, implementing longer closures during time periods where fewer visitors will be affected, and sharing closure schedules well in advance of being implemented to assist visitors in planning around closures.

Therefore, despite the modified landscape and temporary impacts attributed to project work, the selected alternative will not result in significant and adverse effects to visitor use and experience. On the contrary, the alternative will benefit visitor use and experience by fully restoring parks wide

¹ Note also that that since the release of the KNP Wildfire Tree Hazard Mitigation EA access to some areas of the parks, including Mineral King has been further diminished or entirely eliminated due to severe road damage. Should tree hazard work be partially accomplished while roads remain closed, impacts to visitor experience from tree hazard work specifically would be further reduced as it relates to this selected action.

visitor access, including access to the Crystal Cave, sometime in 2023 (anticipated). As well, visitor experience and opportunity currently diminished by the presence of tree hazards, marking paint, and roadside debris piles in high-uses scenic driving zones will also be restored to desired conditions. Additional details of these impacts are described on pages 40-41 of the EA.

Wilderness

As described on page 36 of the EA, the selected alternative will temporarily negatively affect the untrammeled and undeveloped qualities of wilderness character by mitigating an estimated 750 trees and running chainsaw in wilderness roughly 125 hours. Opportunities for solitude will also be negatively affected by anticipated noise levels (up to 110 dB) emanating from work occurring within (as described above) and near the wilderness boundary over a period of 6-8 months (and intermittently for up to 2-4 years). However, these increased noise levels will occur within an affected environment that is characterized by near continuous 70-80 dB sounds from the adjacent highway corridor such that the NPS does not expect an increase in the duration of time during which human noise may be heard from within the wilderness portion of the action area. While noise levels may be higher, the amount of time where visitors to this area of wilderness may have opportunities for solitude is not expected to decrease under the selected alternative. Debris removal adjacent to but outside the wilderness boundary will also reduce the visual effects of tree hazard mitigation, mitigating negative visual effects of tree hazard mitigation on opportunities for solitude.

Though there may be some temporary negative impacts to the above qualities of wilderness character during project implementation, the selected alternative will not result in adverse effects in the current overall status and trends in wilderness character in the southern portion of the parks or within the action area specifically and would indirectly benefit natural, untrammeled, and opportunity for solitude or primitive and unconfined qualities in the long-term if, as anticipated, the NPS is better able to maintain defensible roadway corridors for fire management actions. Further, this alternative will not result in impacts to wilderness more broadly given that all impacts would be temporary in nature (lasting intermittently up to 4 years); overall there will be no significant impacts to wilderness character from the selected alternative and wilderness character would be preserved.

Conclusion

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

References

Thompson, C., Spencer, W., Rosmos, H., Sawyer, S. 2020. Southern Sierra Nevada Fisher Conservation Strategy Interim Recommendations. Unpublished report produced by the Conservation Biology Institute.

U.S. Department of Transportation. Federal Highway Administration 2017. [9.0 Construction Equipment Noise Levels and Ranges - Handbook - Construction Noise - Noise - Environment - FHWA \(dot.gov\)](#). Accessed October 2022.

Appendix A: Errata Indicating Text Changes to EA

This Errata contains corrections and minor revisions to the Environmental Assessment. Page numbers and section/sentence locations referenced pertain to the Public Review Draft EA from February 2023. The edits and corrections in this Errata do not result in any substantial modification being incorporated into the Selected Action, and, beyond minor edits to reflect modifications to the action, the revisions do not require additional environmental analysis for resources fully analyzed in the EA. Minor additional analysis was conducted for Air Quality, which was considered but dismissed in the EA. That analysis is incorporated into the Errata.

The Errata, when combined with the EA, comprises the only amendments deemed necessary for the purposes of completing compliance and documentation for the project, including responding to public comments. In each of the sections outlined below, existing text remaining in the Environmental Assessment is found in standard text, additions to the text are underlined, and deleted text is shown in strikeout.

Chapter 1, Pages 3-4 Issues Considered but Dismissed, Air Quality – Including Equipment and Facility Emissions and Pile Burning

EQUIPMENT AND FACILITY EMISSIONS AND FUGITIVE DUST

Under the preferred alternative, use of chainsaws and heavy equipment for tree-felling, bucking, and ~~to~~ potential limited chipping of debris would increase hydrocarbon, nitrogen oxide, and sulfur dioxide vehicle emissions resulting in localized air quality effects for a total of 6-8 months (duration of project) along the 62-mile linear action area. During this time, project related air emissions inside the parks would be transient in nature, lasting 10 hours per day for roughly 1-7 days along individual road segments depending on intensity of the action in each area. It is anticipated that equipment emissions within the parks would generally dissipate at the end of each project workday and would entirely cease upon project completion.

Under the preferred alternative, an estimated maximum of roughly 10,000 – 16,000 total tons of excess material would be hauled offsite; requiring roughly 500 – 700, 22-ton truckloads to haul material. The NPS cannot specify what the contractor would do with the material hauled off site, however, for the purposes of this analysis the NPS assumes that portions of the material would either be chipped at an offsite location or hauled to local sawmills and/or biomass facilities. Given the uncertainty regarding how the material would be handled once removed from the site, the NPS cannot complete a detailed emissions analysis associated with the treatment of the debris. However, the NPS calculated an approximate range of emissions relating to materials transport (see Table A below) and emissions from the potential treatment of the debris once off-site (see Table B below) based on the potential worst-case emission scenarios, which assumes the following:

- The minimum estimate associated with materials transport assumes 500 total truck trips at 100 miles per trip. The maximum estimate assumes 700 total truck trips at 199 miles per trip.
- A range of emissions for truck transport were developed using EMFAC2021 emission factors² for medium heavy duty diesel trucks in San Joaquin County (in grams of pollutant per vehicle mile

² Mobile source emission factor development methods are described in the following document California Air Resources board Mobile Source Analysis Branch Document: https://ww2.arb.ca.gov/sites/default/files/2021-03/emfac2021_volume_3_technical_document.pdf. Specific emission

traveled) in conjunction with the estimated number of truck trips and miles to each facility. The low end of the emissions range assumes 500 truck trips at 100 miles per trip. The high end of the emissions range assumes 700 truck trips at 199 miles per trip.

- Combusting the material in a biomass facility would result in the greatest air emissions associated with the project as compared to offsite chipping or processing at a sawmill.
- Due to the cost of transport, biomass combustion would likely occur at facilities operating within the region. There is one biomass-fired electric generating facility currently operating within the region, Rio Bravo Fresno (approximately 100 miles from the project site). Though the NPS calculated transport emission estimates at a maximum distance of 199 miles, facility emissions are only included for Rio Bravo Fresno which is permitted by the San Joaquin Valley Air Pollution Control District (SJVAPCD).
- The Rio Bravo Fresno facility, which is the closest facility to the project area, consists of a fluidized bed combustor with limestone and ammonia injection for acid gas and nitrogen oxide emissions control and an electrostatic precipitator for particulate emissions control.
- It is not possible to develop precise calculations of biomass combustion emissions associated with the project alone. However, the NPS considered emission controls and limitations included in the facility permit along with recent facility-wide emissions. These do not represent project-related emissions, but they do represent the maximum emissions that can legally be emitted at the facility.

The potential ranges of emissions associated with hauling the material to the biomass facility and up to 199 miles away are reported in Table A below. Emissions of all criteria pollutants are below one ton. CO₂ emissions range from 91 to 253 tons.

Table A. Estimated Minimum and Maximum Emissions Associated with Material Transport

<u>Pollutant</u>	<u>Minimum Emissions (Total Tons)</u>	<u>Maximum Emissions (Total Tons)</u>
<u>ROG</u>	<u>0.006</u>	<u>0.017</u>
<u>NOx</u>	<u>0.128</u>	<u>0.354</u>
<u>CO</u>	<u>0.017</u>	<u>0.046</u>
<u>SOx</u>	<u>0.001</u>	<u>0.002</u>
<u>PM10</u>	<u>0.002</u>	<u>0.005</u>
<u>PM2.5</u>	<u>0.002</u>	<u>0.005</u>
<u>CO2e</u>	<u>91</u>	<u>253</u>

The potential range of emissions associated with combusting the material in a biomass facility could not exceed, and would expectantly be far below, the annual emissions associated with one of the local biomass plants. Both actual and permitted emissions from the Rio Bravo facility are relatively low, with permitted

factors for MHD trucks were pulled from an ENVIRON Emissions Modeling report prepared for a U.S. Coast Guard EIS, available at: <https://www.dco.uscg.mil/Portals/9/Appendix I Air Quality & GHG Assumptions 20220527.pdf>

emissions limited to 43.8 tons per year (TPY) SO₂, 110 NO_x and filterable PM is limited to 25 TPY. Please note, the emissions reporting for this facility does not include CO₂ or CO_{2e} estimates.³

Table B. Facility-wide Emissions (2017-2-21) for the Rio Bravo Fresno Facility

<u>Pollutant</u>	<u>2021 Emissions TPY</u>	<u>2020 Emissions TPY</u>	<u>2019 Emissions TPY</u>	<u>2018 Emissions TPY</u>	<u>2017 Emissions TPY</u>	<u>5 Year Average TPY</u>
<u>Carbon Monoxide</u>	<u>2.6</u>	<u>1.3</u>	<u>2.6</u>	<u>2.1</u>	<u>2.6</u>	<u>2.2</u>
<u>Oxides of Nitrogen</u>	<u>103.0</u>	<u>101.0</u>	<u>97.4</u>	<u>93.6</u>	<u>88.7</u>	<u>96.7</u>
<u>Oxides of sulfur</u>	<u>2.9</u>	<u>3.9</u>	<u>4.3</u>	<u>3.6</u>	<u>26.2</u>	<u>8.2</u>
<u>PM10</u>	<u>49.5</u>	<u>1.0</u>	<u>33.0</u>	<u>14.0</u>	<u>0.0</u>	<u>19.5</u>
<u>Reactive Organic Gas</u>	<u>0.6</u>	<u>0.0</u>	<u>10.3</u>	<u>0.1</u>	<u>2.8</u>	<u>2.8</u>

Project related transport emissions are also relatively low in the context of economic activity occurring throughout the Central Valley, and emissions from the facilities are regulated by the SJVAPCD. The NPS would further minimize its contributions to vehicle emissions and fugitive dust by implementing air quality control measures outlined in Appendix B. In addition, dust control measures would be implemented as necessary to control fugitive dust.

Because of the transient nature of these air quality impacts resulting from equipment and facility emissions, the regulatory measures put in place by the SJVAPCD, and NPS' implementation of mitigations to further reduce anticipated air quality impacts, the NPS has determined there are no potentially significant impacts to air quality. The NPS therefore dismissed this issue ~~was dismissed~~ from further analysis.

PILE BURNING

Under the preferred alternative, felled trees and limbs would be piled and burned after adequate moisture has been received in October and prior to May 1. Smoke production, from burning of the portion of the 10,000-14,000 tons of debris that may be either burned or lopped and scattered, may occur over the course of 5-10 days total, though the quantity of smoke produced during pile burning would be dependent on factors including the total number of piles (which cannot be quantified until piles are constructed) and conditions on the day pile burning is conducted.

Chapter 1, Pages 5-6 Issues Considered but Dismissed, Environmental Justice: While combustion of biomass and transport of materials would result in air emissions in environmental justice communities, the NPS notes that utilizing a permitted facility with air emissions controls would result in lower emissions overall than piling and burning the material on site. Further, were materials to burn in a wildfire, or prevent the roadway corridors from being used as fire control features in the event of catastrophic fire, air quality in environmental justice communities would be impacted to a much greater degree. Facilities are permitted up

³ EPA's Mandatory Reporting of Greenhouse Gases Rule (40 CFR part 98) includes a facility reporting/applicability threshold 25,000 metric tons or more of carbon dioxide (CO₂) equivalent per year. (See: <https://www.epa.gov/ghgreporting> and <https://www.epa.gov/sites/default/files/2015-07/documents/part98factsheet.pdf>.)

to a given annual allowance no matter the source of materials; therefore, NPS contribution would not exceed regulated quantities –which as indicated in the air quality section are relatively low.

~~Because none of the project alternatives would have most project related impacts would occur within park boundaries, direct or indirect effects outside park boundaries-affected communities within the parks would be notified as necessary to ensure they are aware of potential impacts, and none of the project alternatives would have cause potentially significant impacts to and disadvantaged populations would not otherwise be disproportionately affected, environmental justice was dismissed from further analysis in the EA.~~

Chapter 2, Page 9, Alternative 1, end of section: Equipment used for mitigation may include chainsaws, explosives (on rare occasion), hand tools, hydraulic tree jacks, boom trucks, pick-up trucks, come-alongs, and rigging. Heavy equipment would remain on road surfaces.

Chapter 2, Page 13, Elements Common to Alternatives 2 and 3: Under Alternatives 2 and 3, identified roadside tree hazards remaining within the KNP fire perimeter, estimated at 12,000 – 15,000 trees, would be mitigated over the shortest feasible timeframe (6-8 months, starting in 2023) but could extend for two to four years (becoming increasingly intermittent over time) as some trees experience delayed mortality from the fire and become hazardous in the months and years ahead.

Chapter 2, Page 15, Elements Common to Alternatives 2 and 3: Equipment used for mitigation and debris treatment may include chainsaws, hand tools, explosives (on rare occasion), hydraulic tree jacks, boom trucks, pick-up trucks, come-alongs, and rigging. Heavy equipment would remain on road surfaces.

Chapter 2, Page 15, Alternative 2: For this reason, logs and debris resulting from failure or felling of KNP tree hazards landing within up to 80 feet of the road's edge and not meeting the retention standards outlined below would be treated as necessary to achieve site specific goals and project objectives. Treatment specifications have been designed to prevent debris from being removed from wilderness. Under rare circumstances when these specifications cannot be adhered to due to safety considerations, trees felled towards the road could potentially be removed if the total number exceeded retention standards Authorized methods of treatment include piling and burning, lopping and scattering, chipping the material and spreading it on site to a depth of generally no greater than two inches, chipping and hauling the material from the parks, or hauling the material from the parks whole (see Appendix C) for chipping and burning at a bio-generation facility or milling at a sawmill. Some logs may also be made available for public use via permit.

Chapter 2, Page 15, Alternative 2: To the extent ~~feasible~~ practicable, retain a minimum of three, and no more than roughly five logs, ideally 12 inches in diameter or greater, on each side of the road along each 100-foot road section ~~of road~~. In cases where number of logs onsite already meets or exceeds this standard, all additional felled trees would be removed.

Chapter 2, Page 16, Alternative 2: The NPS estimates that roughly 10,000-14,000 tons of slash would be either burned or lopped and scattered and 10,000-16,000 tons of woody debris >12" in diameter would be chipped on site or hauled from the parks~~40-50-10-15 tons per acre (t/a) (40,000-50,000 total tons) of debris >12" in diameter would be removed.~~ The NPS estimates that debris hauling would require an estimated 500-700 22-ton truck trips. ~~while ±Roughly 10-15 t/a (10,000-16,000 total tons) of debris logs > 12" in diameter would remain on site in the 922-acre (80' from each road edge) debris treatment area. Though the NPS does not have an estimate of debris quantities under 12" in diameter that would be removed, these materials would make up a small fraction of the overall woody debris expected to result from mitigation efforts.~~

Chapter 2, Page 18, Alternatives Considered but Dismissed, Do Not Mitigate Tree Hazards in Wilderness: Due to the height of trees along park roadways, there are a number of identified tree hazards that are located more than 100 feet from the centerline of the parks' roads—the location of the wilderness boundary through much of the parks. For this reason, the NPS conducted a Minimum Requirement Analysis (MRA) to determine whether or not administrative action was the necessity of taking administrative action to mitigate tree hazards in Wilderness and, if so, the minimum tool for achieving mitigation actions. Through the MRA process, the NPS determined that the presence of roadside tree hazards, regardless of their location in relation to the roads in question, threatened the NPS' ability to meet legal obligations, policy, and management guidance to promote the use and enjoyment of national parks while providing a reasonable level of safety to the visiting public, and to provide for safe working conditions for park staff. Therefore, an alternative to not mitigate roadside tree hazards located within the wilderness boundary was dismissed from further analysis.

Use Only Non-Motorized Tools (i.e., Crosscut, Axe, or Explosives) to Mitigate/Fall Tree Hazards in Wilderness

There are generally three types of tools that have historically been used to mitigate tree hazards: crosscut saws, explosives, and chainsaws. When applying the minimum requirement concept to the proposed action in consideration of preserving the wilderness character of the 425 acres of the project area that falls within wilderness, the NPS considered alternatives to primarily, or only, use crosscut saws and/or explosives to mitigate tree hazards in wilderness and dismissed these alternatives from further analysis, as discussed below.

Tree felling is consistently one of the top five most dangerous jobs in America (BLS 2020); when requiring crews to complete this type of work, safety must be of utmost concern. NPS often uses the Severity, Probability, Exposure (SPE) model of risk which, in tree felling work is generally influenced by a combination of a feller's skill, the tool used, the complexity of the tree hazard itself (i.e., diameter at breast height (dbh) of tree, height, lean, etc.), and the complexity of the surrounding environment (i.e., density and height of surrounding vegetation, proximity to development, proximity to other tree hazards, etc.). Specifically:

Severity: Tree falling mishaps are easily fatal; there's only so much risk personal protective equipment (ppe) can mitigate. The choice of tool does not change severity.

Probability: Method of mitigation affects skill needed, with greater probability of mishap when the required skill level is high. Skill can be partially mitigated through training and crew selection. Complexity of the surrounding environment increases the probability of mishap. In this case, complexity is high due to high density and large trees that need to be felled and the presence of other dead and dying trees that won't be mitigated.

Exposure: Exposure is the factor most influenced by the choice of tool or methods.

For these reasons, the NPS cannot minimize the complexity of any individual tree hazard or its surrounding environment; however, the NPS can seek out experienced fellers and can ensure crews have the tools at hand to most safely complete the work.

Felling tree hazards with non-motorized tools is a highly technical skill, particularly when felling hazards within the 100-150 foot size class, as all tree hazards within wilderness are given their distance from road (100 feet) and the fact that they would need to be tall enough to strike the road in order to be considered a hazard. Felling tree hazards of this size is furthermore complicated by the surrounding environment which is characterized by a high density of other standing snags that would, but for the presence of crews, not be considered hazards. Given that felling tree hazards of this size with a crosscut saw would take 2-4 hours to

complete and would require additional staff to complete the cuts, the risk/exposure to crews of falling objects (i.e., “widow-makers”) striking them during this extended period of stationary work would be considerable. In comparison, cutting a single tree hazard with a chainsaw would take an estimated 10 minutes or 4-9% of the time needed to use a crosscut (Ned Aldrich, Personal comms. September 2022.) The NPS considers the risk to employees from requiring the use of crosscut saws to fell an estimated 750 trees unacceptable, the primary or sole use of crosscuts to fell tree hazards in wilderness was therefore dismissed from further consideration given that there are alternatives that reduce the probability of an accident and exposure to hazards by an order of magnitude.

While use of explosives may be considered in rare circumstances when deemed the safest tool for mitigation work, directional blasting would be needed to fell most tree hazards away from roadways or other trees and, in most cases, conducting this type of blasting in dense forest, or in forest where numerous other hazards exist, would be technically challenging and would present a high level of safety and operational risk—as experienced by NPS staff in previous situations within the parks. Specifically, blasting could hang a tree hazard up in another nearby tree, which could present unique blasting and safety challenges, especially if the other tree is also a hazard and needs to be felled (Ned Aldrich, Personal comms. September 2022). The project area has a high density of tree hazards and other snags which increases the likelihood of this elevated hazard becoming a reality. Furthermore, trees felled with explosives can easily catch fire in the process, increasing risk for additional wildfire within the project area. Given these safety concerns, explosives are not often recommended as the safest tool for felling tree hazards particularly in light of the high density of tree hazards and other dead/dying trees in the project area and the susceptibility of the project area to future high severity fire. The primary, much less sole, use of this tool for the mitigation of an estimated 750 tree hazards in wilderness could not be safely accomplished; therefore, it not considered a reasonable alternative and was therefore dismissed from further analysis.

Chapter 2, Page 19, Alternatives Considered but Dismissed, Remove All Dead Trees – Conduct Salvage Logging: While the NPS could authorize the removal of ~~some~~an estimated 3,000-5,500 tons of identified roadside tree hazards as timber, salvage of all trees within the perimeter as timber was furthermore dismissed from further consideration for several reasons....In addition to the desire to realize ecological benefit, ~~the majority of tree hazards roughly 4,500-10,500 tons~~ that might be removed as excess debris are not expected to be viable for use as timber. For these reasons expanding the scope of tree removal to specifically include timber salvage was dismissed from further analysis.

Chapter 3, Page 27, Alternative 2, Direct and Indirect Effects—Fuel Loading and Future Fire Effects: Post tree felling, NPS’ removal (through pile burning, chipping, and hauling) of mitigation related fuels, as described, would immediately reduce fuels within the debris treatment zone (80 feet of the roads edge) by a total of roughly 40-50 to a 20,000-30,000 tons such that these fuels in this area would no longer contribute to potential future fire spread or localized fire effects.

Chapter 3, Page 29, Alternative 3, Direct and Indirect Effects—Fuel Loading and Future Fire Effects Due to the intensity of tree hazard mitigation, this alternative would result in the immediate buildup of continuous fuels within 200 feet of either side of park roadways (i.e., throughout the action area), adding to already high fuel loading in some areas. ~~In locations where high numbers of additional tree hazards would be mitigated, fuel loading would increase by a total of roughly 50,000-60,000-30,000-46,000 tons (50-60 t/a) of debris >12” in diameter within the action area, including adjacent to park roads, within 5-7 months of project implementation.~~

Chapter 3, Page 35, No Action, Direct and Indirect Effects – Wilderness: Action to use chainsaws to mitigate KNP tree hazards within the wilderness boundary would negatively affect the untrammelled, undeveloped, and opportunities for solitude or primitive and unconfined recreation qualities of wilderness character. The mitigation of an estimated 500 tree hazards within the wilderness boundary over the course

of 10-15 years would negatively affect the untrammeled quality of wilderness character until such time that those actions cease. The use of ~~mechanized tools chainsaws~~ operating for roughly 85 -100 hours over this time frame would diminish the undeveloped quality of wilderness character. The sounds from this work would be heard up to 2 miles away, impacting opportunities for solitude during mitigation actions.

...The impacts to wilderness character would be temporary – lasting the duration of the project – and would result in no change in the current overall status and trends in wilderness character in the southern portion of the parks or result in significant impact to wilderness more broadly. Further, these short-term impacts would not diminish the long-term use and enjoyment of these areas as wilderness by the American people, and wilderness character would be preserved in the long term.

Chapter 3, Page 35, No Action, Cumulative Effects – Wilderness: ...If that were to occur, decreased fire suppression would benefit the untrammeled, opportunities for solitude or primitive and unconfined recreation, and undeveloped qualities of wilderness character in the action area; it would also cumulatively benefit natural quality in areas where fire would benefit the landscape—though would result in negative effects to natural quality in cases where severe fire effects occur. Were the NPS to determine fire must be suppressed in or around the action area due to unacceptable risk to resources or communities however, more intensive direct suppression actions in wilderness are likely to result and would offset what would otherwise be considered benefits to the untrammeled and opportunities for solitude or primitive and unconfined recreation qualities of wilderness character. ~~However, Likewise,~~ as noted in the Fire Effects and Future Fuel Loading section, un-naturally severe fire is likely to result in areas of high fuel loading. In these areas, inability to control fire spread due to inadequacy of fire breaks may contribute to the regionally negative long-term trends in natural quality (Tricker et. al. 2014).

Chapter 3, Page 36, Alternative 2, Direct and Indirect Effects – Wilderness: ...Further This alternative would not result in significant impact to wilderness more broadly given that all impacts would be temporary in nature (lasting up to 4 years); Further, these short-term impacts would not diminish the long-term use and enjoyment of these areas as wilderness by the American people, and overall wilderness character would be preserved in the long term.

Chapter 3, Page 37, Alternative 3, Direct and Indirect Effects – Wilderness: ...As previously described, the 425-acres of wilderness within the project area represents a minor proportion of overall wilderness acreage of these parks and would result in no measurable change in the current overall status and trends in wilderness character or result in substantial impact to wilderness more broadly. Further, these short-term impacts would not diminish the long-term use and enjoyment of these areas as wilderness by the American people, and wilderness character would be preserved in the long term.

Chapter 4, Page 44, References: Bureau of Labor Statistics (BLS) 2020. Civilian occupations with high fatal work injury rates, 2020. Website <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/civilian-occupations-with-high-fatal-work-injury-rates.htm> [accessed 28 September 2022].

Appendix B: Response to Public Comments

The NPS documented 16 individual pieces of correspondence during the February 3 to March 4, 2023 Environmental Assessment public review period, some of which were substantive. A substantive comment is defined by NPS Director's Order 12 (DO-12) as one that does one or more of the following:

- question, with reasonable basis, the accuracy of information in the environmental analysis;
- question, with reasonable basis, the adequacy of the environmental analysis;
- present reasonable alternatives other than those presented in the environmental analysis; or
- cause changes or revisions in the proposal.

In other words, substantive comments raise, debate, or question a point of fact or analysis. Comments that merely support or oppose a proposal or that merely agree or disagree with NPS policy are not considered substantive and do not require a formal response. The NPS must consider all comments that are timely received, and the standard NPS practice is to respond to substantive comments that are submitted during the public review period for EAs (46.305(a)(1)).

The following text addresses the substantive comments, and issues otherwise raised during the EA review comment period and is organized into concern and response statements. All page numbers contained herein refer to the KNP Complex Wildfire Tree Hazard Mitigation Environmental Assessment.

1. **Concern Statement:** One commentator raised concern over the potential for air quality impacts to the San Joaquin Valley (valley) and environmental justice communities from both vehicles hauling debris as well as the burning of woody waste in biomass power generation (bio-gen) facilities, should the contractor dispose of the material in this manner. This commentator requested that the NPS provide additional information on the quantity of debris to be hauled and that the NPS further analyze the indirect or cumulative impacts of hauling and debris burning on air quality and environmental justice communities in the central valley. This commentator also requested that the NPS include steps the NPS may take to minimize those impacts.

NPS Response: In the EA, the NPS estimated a total of 40,000-50,000 tons of material would be treated under Alternative 2 (see page 16) but did not, as pointed out by this correspondent, estimate the number of truckloads needed to haul this quantity of debris. Since publication of the EA, the NPS has refined the estimated quantity of debris that would be treated under the preferred, and now selected, alternative, estimated the number of truck loads associated with hauling that quantity of debris, and more closely determined, within the range of possible options documented, how debris could be treated once outside park boundaries. Based on this refined information and the worst-case scenario with regards to these issues (air quality and environmental justice communities), the NPS also refined the impact analysis to air quality and environmental justice communities which provides additional and informative details but does not change overall conclusion to dismiss these issues from further consideration in the EA. All of the refinements identified above are reflected in the project Errata (see Appendix A above).

Regarding steps the NPS will take to minimize impacts, Appendix B of the EA provided all project mitigations, including those requested by the EPA, to protect air quality from vehicle emissions (see Appendix B of the EA, page 1). Mitigations for Health and Safety during pile

burning (see Appendix B of the EA, page 4) will serve to protect park visitors or environmental justice communities if impacts from smoke were anticipated within park boundaries. While the NPS does not have jurisdictional authority outside of park boundaries, the NPS does work with regulatory agencies to ensure park actions do not contribute to air quality concerns in the central valley as documented on pages 3-4 of the EA.

2. **Concern Statement:** One commentor suggested that the project should increase the size and number of large, downed logs retained in order to provide sufficient cover for endangered fisher; especially in areas close to known denning sites.

NPS Response: The NPS is committed to protecting listed species and minimizing impacts to species from actions within park boundaries. To this end, the NPS carefully developed retention specifications for the treatment of debris in order to specifically maximize cover for fisher traveling through the project area while minimizing fuels accumulation, breaking up fuel continuity, and maintaining roadway fire breaks to the maximum extent practicable. Notably (as described in the EA and FONSI), the retention standards for material will provide roughly 10-15 tons per acre (t/a) of cover for fisher and their prey in the debris treatment area and far exceeds the 3-5 t/a advised for fisher cover recommended by the *Interim Strategy for Southern Sierra Nevada Fisher Conservation* (Strategy) (Thomson et. al 2020). Because the retention standards exceed those recommended by the Strategy while minimizing the potential for worsened fire effects which are one of the greatest threats to the species, the NPS did not modify the retention standards within the selected alternative. What will be retained is expected to be more than sufficient to provide habitat cover for the endangered Southern Sierra Nevada distinct population segment of the fisher.

3. **Concern Statement:** One commentor requested that the NPS clarify in the EA that debris would not be treated within the wilderness boundary, including that from trees being mitigated beyond the wilderness boundary.

NPS Response: The NPS' intention is to retain (i.e., leave in place) the debris from tree hazards in wilderness once felled. Both action alternatives include felling tree hazards within wilderness perpendicular to and away from the road, and the preferred, now selected, alternative would not remove any fallen tree hazards beyond 80 feet from the roads' edge (which trees hazards within wilderness would largely not fall within given directional falling). Although it is possible that a tree hazard within wilderness may need to be felled in a different direction for safety reasons (such that it would extend into the 80-foot corridor where debris treatment is possible), the portion of debris that is felled within wilderness is intended to be left where it falls. Notably: the equipment used to remove logs cannot reach beyond 60 feet and is not allowed to leave the edge of the road. The 80 feet acknowledges that slash will be treated up to 80 feet from the road's edge and that some logs may be picked up beyond that 60-foot reach. The NPS has further clarified this in the Errata (see Appendix A above).

4. **Concern Statement:** One commentor suggested that the NPS utilize MD-11, an existing 2007 park management directive outlining a process for managing downed wood, to guide the disposal of downed wood resulting from the mitigation of KNP tree hazards.

NPS Response: The NPS considered the hierarchy outlined in MD-11, as well as other considerations, in the development of the scope of the tree hazard removal project, and this consideration is reflected in how debris will be treated. However, the NPS notes that MD-11

was written in 2007, prior to extensive drought driven tree mortality experienced throughout the Sierra and well before the KNP Complex Wildfire. The document was therefore not intended to address the volume of debris expected to result from KNP tree hazard mitigation. In fact, the purpose of analyzing the proposal under an EA is in part tied to the NPS' recognition that existing management guidance and NEPA documentation were insufficient to address the purpose and need for the project and the volume of debris anticipated to result from mitigation efforts. The NPS already considered the hierarchy prescribed in MD-11, and this consideration is reflected in the scope of the proposal.

5. **Concern Statement:** A couple of commentors requested that the NPS clarify what steps they will take to meet NPS' minimum requirement policies for actions in wilderness. Specifically, one commentor indicated that the mitigation of roadside tree hazards, at least in the manner proposed, would violate the Wilderness Act.

NPS Response: The Wilderness Act (Act) directs wilderness management agencies to manage designated wilderness for the preservation of wilderness character. Under Section 4(c) of the Act, certain activities in wilderness are prohibited, except as specifically provided for in the Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of the Act. NPS policy further directs that all management decisions affecting wilderness, including proposed 4(c) prohibited uses, must be consistent with the minimum requirement concept. Managers have flexibility in identifying the method used to determine minimum requirement as long as it clearly weighs the benefits and impacts of the proposal, documents the decision-making process, and is supported by an appropriate environmental compliance document.

Consistent with NPS policy and internal park processes, the NPS applied the minimum requirement concept throughout project development and review, specifically preparing a minimum requirement analysis (MRA) in tandem with the KNP Wildfire tree hazard mitigation proposal. Through the MRA, the NPS determined that action was necessary in wilderness and consistent with the Wilderness Act as well as all other legal mandates for which the NPS is accountable (this is administratively referred to as Step 1 of the MRA). The NPS provided this determination on page 18 of the EA, shared this determination with the public during the public review period of the EA (on February 22, 2023; 11 days prior to the end of the public review period), and the full rationale behind that determination is within the finalized MRA itself (Appendix D, page 7).

During the proposal development and review process, the NPS also evaluated alternatives to meet the minimum requirement for proposed 4(c) prohibited uses and analyzed the impacts of various alternatives on wilderness character through further application of the minimum requirement concept (this is administratively referred to as Step 2 and/or 3 of the MRA). In its analysis, the NPS preliminarily determined that chainsaws were the minimum necessary; dismissing from consideration alternatives to use only cross-cut saws or explosives due to the unacceptable safety and/or fire risks associated with each of these methods, particularly in the context of the purpose and need for and scope of the action. Again, the full rationale behind this determination is within the finalized MRA itself (Appendix D).

Again, Step 1 of the MRA was shared with the public midway through the public review period for the EA in the project's Planning, Environment, and Public Comment Page <https://parkplanning.nps.gov/KNPTreeHazards> along with a cover memo, application of the Minimum Requirement Concept to inform scope of KNP Tree Hazard Mitigation Project, that outlined, at least in part, the steps the NPS took and is taking to meet minimum requirement

policies for actions in the parks wilderness areas. These steps are further clarified above. The full MRA which includes refinements to Step 1 and completed Step 2 is attached as Appendix D.

6. **Concern Statement:** One commentor suggested that, for the same reasons listed in concern statement 5, the NPS had violated NEPA for failing to analyze a full range of reasonable alternatives, including use of non-motorized tools for mitigation of tree hazards in wilderness, and the impacts from a range of reasonable alternatives.

NPS Response: Under NEPA, the regulations implementing NEPA, and NPS policy, the NPS is required to consider reasonable alternatives to recommended courses of action (43 CFR §1501.5(c)(2) and §1502.14). “Reasonable alternatives” are those alternatives that meet the purpose and need for action and are technically and economically feasible (43 CFR §46.420(b)), but when considering the full range of alternatives, the NPS may dismiss an alternative from further consideration for a number of reasons, including if the alternative is unable to resolve the purpose and need for taking action and/or if it is technically infeasible.

The NPS fully considered three alternatives in the EA to meet the purpose and need for addressing the existing public safety threat posed by roadside tree hazards and considered and dismissed an additional five alternatives, including an alternative to not mitigate tree hazards within wilderness because it would not allow the NPS to fully meet this purpose and need (Page 18 and Chapter 2 of the EA). The determination to dismiss this alternative, though summarized within the EA, was evaluated through a minimum requirements analysis (MRA) that was shared with the public during the public review period for the EA, and a completed version of this MRA is attached as Appendix D to the FONSI (see also response to concern statement 5, above). Again, as outlined in the MRA and summarized by the EA, this MRA determined/determines that the presence of roadside tree hazards, regardless of their location in relation to the roads in question (and thereby within or outside wilderness), threaten the NPS’ ability to meet legal obligations, policy, and management guidance to promote the use and enjoyment of national parks while providing a reasonable level of safety to the visiting public, and to provide for safe working conditions for park staff.

Through the MRA, the NPS also evaluated alternatives to meet the minimum requirement for how/with what tool trees would be mitigated within wilderness (this is administratively referred to as Step 2 and/or 3 of the MRA) and preliminarily determined that the use of chainsaws is necessary to meet the purpose and need for action (though other tools, such as explosives, may be used in rare situations when determined by the faller to be the safest tool to complete the work). Again, the full rationale behind this determination is within the finalized MRA itself (Appendix D). This determination in Step 2 of the MRA, which was drafted prior to the release of the EA, informed the analysis of impacts which assumed chainsaw use under all alternatives. The Errata clarifies the use of this tool in all alternatives as well as the consideration and dismissal of sole use of other tools through the MRA process. In keeping with this preliminary determination from a minimum requirement analysis, the NPS analyzed impacts to wilderness character in the EA from use of chainsaws during tree hazard felling operations. The NPS provided analyses of impacts to wilderness is on pages 34–37 of the EA, with several clarifications made through the Errata on wilderness impacts and potential tool use.

Given the above, the NPS believes the agency has met NEPA requirements to consider a reasonable range of alternatives for achieving the purpose and need for action.

7. **Concern Statement:** One commentor indicated that the NPS should follow the limited operating period for California Spotted Owl (February/March-August/September) and limit action during this time. This commentor also stated that the NPS should consult with U.S. Fish

and Wildlife Service (FWS) on impacts to this species which is proposed for federal listing as threatened.

NPS Response: Mitigations to avoid impacts to California Spotted Owl (CSO) were included in Appendix B of the EA and include avoidance of spotted owl territories and nests during the limited operating period (LOP). The NPS is aware of the proposed listing of the species and obligations under Section 7 of the Endangered Species Act, though the final listing is not anticipated until February 2024. The NPS consults FWS as necessary on projects that *may affect* listed species. If NPS determines that actions occurring in 2024 and beyond *may affect* the CSO, the NPS will initiate Section 7 consultation in accordance with the Endangered Species Act.

8. **Concern Statement:** One correspondent requested additional rationale for why the NPS believes cultural resources would not be adversely impacted by the project given that the State Historic Preservation Officer (SHPO) had not yet concurred with this assessment.

NPS Response: As the managing agency responsible for the preservation of cultural resources within park boundaries, and in accordance with both the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA), the NPS has the responsibility to identify and assess the effects of agency actions on historic properties. The NPS is responsible for seeking concurrence with the State Historic Preservation Officer (SHPO) on the determination of effect pursuant to the *Programmatic Agreement Among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act* when an agency, such as the NPS, determines a finding of effect to historic properties (36 CFR §800.5). Section 36 CFR §800.5(c) states “If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.” Section 36 CFR §800.5(c)(1) states “the agency official may proceed after the close of the 30-day review period if the SHPO/THPO has agreed with the finding or has not provided a response, and no consulting party has objected”.

Prior to the release of the EA, and in accordance with 36 CFR §§800.3-5—the regulations implementing NHPA, the NPS 1) determined that the proposed action constitutes an undertaking (SHPO concurrence received), 2) identified the area of potential effect (APE) to historic properties (SHPO concurrence received), 3) identified historic properties within the APE, and 4) made the determination that, based on the nature and scope of the project in relation to historic properties as well as the mitigations to reduce the potential for impacts, there would be no adverse effect to historic properties from the undertaking.

Furthermore, in accordance with 36 CFR §800.2, the NPS sought tribal, agency, and public input throughout the planning process, both through public scoping and more recently, public review of the EA which included the rationale for the NPS’ determination of assessment of effect (page 5 of EA) and outlined mitigations to further reduce the potential for impacts (page 3 of Appendix B of the EA). These review processes provide the NPS the opportunity to learn additional information concerning historic properties and refine the NPS’ assessment of effect to such resources. The NPS has not received any information through these consultations or public review periods that raise new concerns about impacts to cultural resources beyond those discussed in the EA and included within project records. Though notably, if the NPS had received objections to the determined assessment of effect or new information provided during consultation or public review of the EA, the NPS would have had the opportunity to further

avoid or mitigate effects and/or modify the assessment of effect prior to a decision. Given these considerations, it is in keeping with both NEPA and NHPA to complete consultation with the SHPO during or following the public review period of an EA to ensure all information has been gathered and evaluated prior to a decision.

Consultation with SHPO is now completed and a summary of that conclusion is provided on page 4 of the FONSI. Further, the NPS provides its non-impairment determination for Cultural Resources in Appendix C. This determination is based, in part, on conclusion of the NHPA consultation process.

Appendix C: Non-Impairment Determination

The Prohibition on Impairment of Park Resources and Values

NPS Management Policies 2006, §1.4.4, explains the prohibition on impairment of park resources and values: “While Congress has given the Service management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the 1916 Organic Act, establishes the primary responsibility of the National Park Service. It ensures 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 Service unless directly and specifically provided for by the 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.”

What is Impairment?

NPS Management Policies 2006, §1.4.5, What Constitutes Impairment of Park Resources and Values, and §1.4.6, What Constitutes Park Resources and Values, provide an explanation of impairment. “Impairment is an impact that, in the professional judgment of the responsible NPS manager, will harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values.” Section 1.4.5 of Management Policies 2006 states:

“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 as a goal 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 an 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 NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.”

Per §1.4.6 of Management Policies 2006, park resources and values at risk for being impaired include:

- “the park’s scenery, natural and historic objects, and wildlife, and the processes and condition 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; 11 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.”

Impairment Determination for the Selected Alternative

Based on the evaluation of potential impacts identified in the EA, the topics evaluated for impairment include the following:

Cultural Resources – As documented in the NPS’ Assessment of Effect, the need to fell all tree hazards within 200 ft of the roadways will result in tree hazards being felled within archeological sites. However, as these trees will fall eventually, falling them away from critical features and artifact loci may actually be more protective of the sites than doing nothing. Features and artifact loci within the sites will be flagged for avoidance, and the tree felling crew will make every effort to fell trees away from these areas. Felled trees within 60 to 80 ft of the roadways will be removed with heavy machinery and will not be dragged through sites. Heavy machinery will remain on the roadways. The remaining felled trees will be left in situ. A staff archeologist will meet with the tree felling and tree removal crews prior to the felling to discuss the areas of avoidance and expectations. If a tree accidentally is felled into an area of avoidance, the Cultural Resources Branch will be notified, and an archeologist will record any changes to the site. With these measures in place, the description of work for this project is unlikely to adversely affect historic properties, much less result in impairment to these resources.

Fisher – As documented in the EA, and further documented in Section 7 consultation documents, short-term effects on fisher will be minimized by implementing the mitigation measures. No long term negative effects have been identified and implementation of the selected alternative is expected to benefit fisher over the no action alternative, in several ways, including: 1) Tree hazard mitigation actions will occur prior to forest recovery when fisher are less likely to be present and therefore less likely to be disturbed or killed, 2) Maintenance of a fire break will increase the likelihood of successful control of wildfire (which is notably one of the greatest threats to the species) should it threaten residual green forest and, 3) The intentional retention of woody debris provides recommended cover for fisher and their prey while reducing the risk of vehicle strike. In summary, the overall impacts on fisher in the selected alternative will not cause impairment of fisher.

Vegetation: Fire Effects – As documented in the EA on pages 25–27, the felling of tree hazards will contribute to the potential for severe localized fire effects, especially in areas where trees are felled, but debris is not treated—e.g., in the area outside the 80 feet of the roadside treatment area yet

within the average tree height of 150 feet. This issue is present throughout the fire areas and may serve to increase the likelihood of vegetation type conversion in both high severity areas and also areas of moderate fire severity impacts that still retain green trees. However, given that 1) the action area is a narrow linear feature within the KNP burn perimeter (see Table 1 on page 13 of EA) that is within close proximity to, and is therefore impacted by, roads and other development under existing conditions, 2) fuels will continue to build naturally over the next 10-15 years due to failure of hundreds of thousands of trees outside the action area with or without NPS action, 3) the vegetation that will dominate in the most severely affected areas will be shrub communities adapted to fire, and 4) the selected alternative mitigates the potential for fire spread by maintaining a defensible roadway corridor, the overall impacts on vegetation from the selected alternative will not cause impairment of vegetation.

Visitor Use and Experience – Though temporary impacts to visitor use and experience attributed to project work are expected, such impacts are within the scope, scale, and intensity of previously completed fuels treatments or construction work within the parks and will be further mitigated to the maximum extent practicable by implementing mitigations listed in Appendix B of the EA. These impacts include temporary sound disturbance, increased traffic, and temporary delays/closures, all of which will be entirely mitigated at project completion (if not earlier) by fully restoring parks wide visitor access, including access to the Crystal Cave. Further, the selected alternative will restore visitor experience and opportunity currently diminished by the presence of tree hazards, marking paint, and roadside debris piles in high-uses scenic driving zones (see page 40 of the EA). In summary, implementation of the selected alternative will not cause impairment of visitor use and experience.

Wilderness – As documented in the EA on pages 34 – 37, the selected alternative will result in temporary negative effects to wilderness character within the action area. However, the selected alternative directly incorporates several measures specifically designed to minimize impacts to wilderness, and mitigations to protect opportunities for solitude and undeveloped qualities have been built directly into the project or other visitor experience mitigations such that these impacts have been mitigated to the maximum extent practicable given purpose and need. Further, the proposed action would not result in impairment to wilderness as the action area within wilderness (in which impacts are temporary) is far less than 1% of the Sequoia-Kings Canyon Wilderness and wilderness character would be preserved in the long term. In summary, implementation of the selected alternative will not cause impairment of wilderness resources.

Summary

As described above, adverse effects and environmental impacts anticipated as a result of implementing the selected alternative 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, general management plan, or other relevant NPS planning documents, will not rise to levels that will constitute impairment of park values and resources in Sequoia and Kings Canyon National Parks.

In conclusion, as guided by this analysis, available science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, the Superintendent has determined that there will be no impairment of park resources and values from implementation of the Selected Alternative.

Appendix D: Minimum Requirement Analysis

General Information

Project Title: KNP Tree Hazard Mitigation

Project Duration: Total scope of work would occur over 6-8 months over the course of 1-3 years; a small portion of project scope is proposed within 425 acres of the Sequoia-Kings Wilderness (i.e., approximately 5% of tree hazards are within wilderness)

STEP 1: Determine if Administrative Action is Necessary.

Description of Situation: What is the situation that may prompt administrative action? What is the reason that you are proposing an action (or actions) in wilderness?

The KNP Complex Wildfire (KNP) burned over 88,000 acres of Sequoia and Kings Canyon National Parks (parks) and other lands during the fall of 2021, resulting in high levels of tree-mortality across the landscape and adding to the already significant levels of conifer mortality due to drought and subsequent beetle outbreaks previously documented within the parks and throughout the Sierra. Where dead or otherwise defective trees overlap with developed areas, some are considered tree hazards – meaning they pose a direct risk to human safety and property due to the likelihood of their failure and potential to hit a human or man-made target.

Following the KNP, the NPS identified 12,000-15,000 tree hazards along 60 linear miles of park roadways that, but for the presence of tree hazards (and more recent damage from atmospheric floods), provide access for visitors to several fundamental resources and values of Sequoia and Kings Canyon National Parks (see Sequoia and Kings Canyon National Parks Foundation Document 2016), namely:

- ***Sequoia Trees:*** The Generals Highway provides the only vehicular access to the Giant Forest (one of the largest groves in the parks) and the General Sherman Tree (the largest tree on earth), as but a few of the examples of how these roads provide access to this fundamental resource.
- ***Caves and Karst Systems:*** Crystal Cave Road (accessible via the segment of the Generals Highway which is also in the project area) provides the only vehicular access to the only cave within Sequoia and Kings Canyon National Parks that is open to the visiting public and is a key visitor destination not unlike the General Sherman Tree.
- ***Ecological Diversity:*** The Mineral King Road and Generals Highway both climb from the foothills to sequoia groves, but the Mineral King Road travels to the highest area in the parks accessible by vehicle and provides driving access to subalpine meadows.
- ***Scenic Landscapes:*** The pull-outs along and the winding nature and exposure of the Generals Highway and Mineral King Road provide “outstanding views from rocky river corridors rimmed by picturesque oak woodlands—to a forested pallet of greens contrasted by the red and black of fire-scarred sequoia bark—to wildflower-studded meadows merging into...rugged granite peaks” which are in accessible to many visitors without the existing driving experience along these roadways.

Given the threat of these hazards to human safety along these roads and thereby visitor access to associated fundamental resources, the NPS has determined that the presence of these thousands of roadside tree hazards is detrimental to the use of Sequoia and Kings Canyon National Parks (parks). For example, some areas of the parks have been closed since the fire due in large part to the high quantity of tree hazards that have yet to be mitigated. In addition, the presence of these hazards, and potential associated piles of roadside debris, threatens both the visual and physical characteristics of several historic districts, namely the Mineral King Road Historic District and the Generals Highway Historic District, as well as other numerable cultural and natural resources (discussed further in accompanying Environmental Assessment (EA)).

Given NPS' obligations to "provide for the enjoyment of the scenery, natural and historic objects, and wildlife" within Sequoia and Kings Canyon National Parks (see NPS Organic Act and U.S.C. 54 below), the fact that the roadways in question are the primary means for accessing and thereby enjoying such resources, and the increased risk to public and employee safety posed by the volume of tree hazards along park road corridors, the NPS is proposing to mitigate 12,000-15,000 roadside tree hazards occurring over 60 linear miles within the KNP burn perimeter. An estimated 0.5% of the total KNP tree hazards—roughly 750—are located within wilderness due to their height and potential to reach a target (i.e., human or facility) outside of wilderness; of the 2,100 acres where entire action is proposed, roughly 425 acres are within wilderness.

The purpose and need of the proposed action is to restore public access to all areas of the parks while mitigating the threat to public safety and NPS infrastructure (which includes historic properties such as the Generals Highway Historic District and Mineral King Road Historic District and their contributing elements) from tree hazards killed or otherwise damaged by the KNP Complex Wildfire.

A. Options Outside of Wilderness: Can actions taken outside of wilderness adequately address the situation and meet project goals?

No. Except in locations where other development or private land is located adjacent to these road corridors, the wilderness boundary is located 100 feet from the centerline of parks' roads. Due to the height of the trees occurring in these areas of the parks and the wilderness boundary's proximity to the road corridor and other developments, roughly 5-6% of identified roadside tree hazards are located within the wilderness boundary. These hazards (those tree hazards both within and outside of wilderness) pose an ongoing threat to infrastructure (intentional, directional felling can help avoid the target) and employees or other partners (SCE, PGE, Sequoia Parks Conservancy, Federal Highway Administration, contractors (including those who would complete the tree hazard mitigation work), etc.) who are traveling through or working within these areas so long as they remain standing. Along roadways that are key for residential and public access (i.e., the Generals Highway and Mineral King Road), and thereby remain open to the public but for weather events, these hazards within wilderness also pose a direct threat to residents and visitors who notably stop frequently along these highways in the parks due to visitor congestion and temporary delays for construction work. Tree mitigation work solely outside of wilderness does not abate the risk posed by the estimated 750 trees along these road corridors.

B. Valid Existing Rights or Special Provisions of Wilderness Legislation: Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws)?

No. However, the only vehicular access to private land within the Mineral King area is via the Mineral King Road, which is not in wilderness but is included in the purpose and need for action.

As well, section 4(a) of the wilderness act establishes that the supplemental purposes of wilderness shall not lower the standards evolved for use and preservation of national park unit system units:

“Nothing in this Act shall modify the statutory authority under which units of the national park system are created. Further, the designation of any area of any park, monument, or other unit of the national park system as a wilderness area pursuant to this Act shall in no manner lower the standards evolved for the use and preservation of such park, monument, or other unit of the national park system in accordance with the Act of August 25, 1916, the statutory authority under which the area was created, or any other Act of Congress which might pertain to or affect such area...” Pub. Law. 88-577 §4(a)(3)C.

Requirements of Other Legislation: Is action necessary to meet the requirements of other federal laws?

Yes. See laws cited and discussed below.

The National Park Service Organic Act of 1916, as codified

The National Park Service “shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified *by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.*” 54 U.S.C. § 100101(a) [emphasis added].

54 U.S.C. §100101(b)(1) states that “...Congress declares that...these areas derive increased national dignity and recognition of their superb environmental quality through their inclusion jointly with each other in one System *preserved and managed for the benefit and inspiration of all the people of the United States.*” [emphasis added].

54 U.S.C § 100752 states that “The Secretary may provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit.”

54 U.S.C § 1000753 states that “The Secretary, on terms and conditions to be fixed by the Secretary, may sell or dispose of timber in cases where, in the judgment of the Secretary, the cutting of timber is required to control attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any System unit.”

Sequoia National Park Enabling Act of 1890:

Preamble: “...dedicated and set apart as a public park, or pleasure ground for the benefit and enjoyment of the people...”

Kings Canyon National Park Enabling Act of 1940:

“That the National Park Service shall... administer for public recreational purposes the lands withdrawn.”

Federal Tort Claims Act

Under the Federal Tort Claims Act of 1946 (28 U.S.C. §§2671-80 and §1346 (b)), the Service is responsible to reasonably protect visitors as invitees to park lands. The landowning agency can be held liable for any loss of property, personal injury or death which was caused by the negligence with respect to visitor protection.

The Federal Tort Claims Act requires landowning agencies to have superior knowledge of dangers which would not be obvious to the visitor if such dangers are discoverable in the exercise of due care. The agency is then responsible to take reasonable care to avert harm to visitors from such dangers.

Occupational Safety and Health Act

The Occupational Safety and Health Act places a similar burden on federal agencies in their role as employers. Section 5(a)(1) of the act (a.k.a. the General Duty Clause) requires an employer to furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees. OSHA standard 29 CFR 1960.8(a) explicitly establishes this as a basic responsibility of each federal agency. If a hazard exists, citations may be issued under this standard when the following criteria are met:

- The employer fails to keep the workplace free of a serious hazard.
- The hazard is or should have been recognized by the employer.
- There is a feasible and useful method to correct the hazard.

D. Wilderness Character: Is action necessary to preserve one or more qualities of wilderness character?

No.

E. Public Purposes: Is action necessary to achieve one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act): “recreational, scenic, scientific, educational, conservation, and historical use”?

Yes. Recreation is a public purpose of the Wilderness Act, and actions taken to provide for safe recreational access may further a public purpose of the Act if they otherwise comply with its provisions. In excluding these road corridors from wilderness designation (i.e., creating a 200 foot-wide “cherry stem” around these roadways through designated wilderness), Congress protected visitor access and associated use of the designated wilderness beyond the road corridor. In particular, the Generals Highway and Mineral King Road (the primary corridors where action would occur) provide access to acres of wilderness and miles upon miles of trails for wilderness recreation, without which access would be severely hampered. Should these roads be closed to abate hazards, wilderness recreation users (or other users, like researchers) would likely need to hike at least an additional 10 miles (one way) to access trailheads otherwise accessible via non-wilderness roads. For many, this barrier would add days to a wilderness trip and would likely cut off access for many users to more remote locations.

Congress excluded the road corridors at issue from Wilderness at the time of designation, thus providing for the continued use of these road corridors for public and administrative access to the

park. In doing so, Congress clearly intended that the NPS would continue to be able to take necessary actions to ensure that access along these corridors is reasonably safe for visitors.

F. Other Guidance: Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state and local governments or other federal agencies?

Yes. See policy and planning guidance cited and discussed below.

Occupational Safety and Health Program (DO-50B)

Under this director's order, parks must identify recognizable threats to employee safety and health and to the protection of property. Where practicable and not detrimental to the Service mandates to preserve park resources, known hazards must be reduced or removed. The superintendent is charged with identifying, evaluating, and controlling occupational health hazards. In the event that an imminent danger condition is found, corrective/protective action will be immediately initiated.

Risk management program elements that are fundamental to an effective safety and occupational health program and for the achievement of Service-wide GPRA goals addressing safety, health, and workers' compensation case management include:

- Identification of existing or potential hazards in the workplace.
- Regular work site inspections with written documentation as required.
- Mitigation of identified hazardous conditions and unsafe work practices.
- Documentation of all identified hazards until controlled or eliminated.
- Visitor protection from all identified hazards which park operations create or should reasonably control.

Public Risk Management Program (DO-50C)

This director's order confirms that the saving of human life takes precedence over all other management actions. The Service will strive to protect human life and provide for an injury-free visit, doing so within the constraints of the 1916 Organic Act and available resources.

The Service (specifically the park superintendent) will strive to minimize the number and severity of visitor incidents. Through risk assessments, park areas will develop appropriate mitigation strategies, which may include elements of communication, education, facility design, and facility maintenance.

The Service will strive to locate, design, build, operate and maintain facilities so as to minimize hazards. All visitor facilities will be inspected on a regular basis to identify and mitigate unsafe conditions. If it is not possible to correct an unsafe condition, the park will take reasonable action to protect the public from that condition.

Natural Resource Protection (DO-77)

These guidelines confirm that the Service is responsible to reasonably protect visitors as invitees to parklands. The Service must seek to reasonably protect visitors from unnecessary risks resulting from tree hazards. The program should be directed toward the public welfare. A tree hazard reduction program provides a systematic method for mitigating tree hazards to avert damage to people and property.

NPS-77 identifies the need for park tree hazard management plans: “Even though any tree or portion of a tree may present some degree of risk or hazard to visitors, employees and property simply by its proximity, in most cases only such trees that are determined to possess a structural flaw or structural defect may be deemed hazardous ... The need for these plans arises from the responsibility of the NPS to reasonably protect visitors as invitees to parklands. Failure to do so could make the NPS liable ... A deliberate effort by the NPS to manage for tree hazards will reduce the risks and liability by avoiding vulnerability to claims of negligence or breach of duty.”

NPS-77 specifies that each park containing trees should prepare a tree hazard management plan. Tree hazard plans are action plans and are part of the park’s natural and cultural resources management plan.

Management of Tree Hazards Directive (PW-062)

This directive establishes guidelines for a common approach to tree hazard management throughout the Pacific West Region. It prescribes a rating system that provides a logical basis of judging relative degrees of hazards and assigns priorities for management actions.

Regular inspection of developed areas is required. Once a hazardous condition is detected, it must be monitored for the duration of potential exposure to the hazardous condition. If for reasons of insufficient work force, inadequate funding, or some other management constraint, these scheduled surveillance and examination schedules cannot be achieved, the superintendent will ensure public notification about the risk of exposure to known hazardous conditions. Where seven-ratable hazards (e.g., high defect, predisposing lean, and overnight target) potentially may be involved, prompt closure of such areas to public entry must be undertaken.

Once a hazardous condition is detected and rated, exposure should be reduced either through abatement or mitigation. Known hazards should generally be isolated from public use by closing the facility, relocating it, or restricting its use. Otherwise, the hazardous condition should be directly mitigated.

Sequoia and Kings Canyon National Parks General Management Plan

The parks’ General Management Plan (GMP) was finalized in 2006 and the Record of Decision became final in 2008. One of the parkwide desired conditions established by the GMP was: “When practicable and not detrimental to NPS mandates to preserve park resources, known hazards will be reduced or removed. When providing for persons’ safety and health is inconsistent with congressionally designated purposes and mandates, or impracticable, efforts will be made to provide for such safety and health through other controls, including closures, guarding, signing, or other forms of education.”

The GMP goes on to state that: “Tree crews assess the condition of trees in developed areas, and those that pose a public safety hazard are removed on a priority basis. Storms, wind, insects, and disease all cause tree maintenance work. Because sequoia trees have shallow root systems, they have been known to topple without warning, and leaning sequoias are closely monitored.”

Vegetation Management Plan for Sequoia and Kings Canyon National Parks

The 1997 Tree Hazard Management Addendum to the 1987 Vegetation Management Plan provides specific and detailed guidance for management of the tree hazard program. The addendum recognizes that not all risks can be removed; a certain level of risk must be accepted.

It recognizes that nearly all trees possess some probability of failure. Tree hazard management becomes a compromise between control cost, aesthetic value, and expected accident losses. The addendum establishes a desired future condition of providing a relatively safe environment for human use and enjoyment. Management action is required whenever there is an identified high priority tree hazard.

Step 1 Determination

Is administrative action is necessary in wilderness?

Yes. Due to the proximity of the wilderness boundary to park roadways, combined with the height of trees found adjacent to developed areas of the parks, some tree hazards are located within the wilderness boundary, and taking action outside of wilderness is not possible to fully address the purpose and need for action which is in keeping with both the Organic Act and section 4(a) of the Wilderness Act. The presence of these hazards are detrimental to the use of Sequoia and Kings Canyon National Parks in that they threaten the NPS' ability to meet legal obligations, policy, and management guidance to promote the use and enjoyment of national parks while providing a reasonable level of safety to the visiting public and to provide for safe working conditions for park staff (54 U.S.C §100752). Additionally, the cutting of such hazards is required to conserve historic properties, including the Generals Highway Historic District and the Mineral King Historic District, among others (54 U.S.C §1000753).

Given the above and as further described in sections B, C, and E, action is needed to align with requirements of other legislation and to protect the public purposes of wilderness (i.e., recreation) by protecting access to wilderness areas within the parks provided by roadways specifically excluded from wilderness designation presumably to allow roadway access long-term.

In addition to the considerations identified in the Description of the Situation and response to questions A-F above, the NPS considered the following when determining action in wilderness is necessary:

- Some tree hazards could naturally fail tomorrow, for example, in which case action would no longer be necessary and no action would occur within wilderness specific to that individual hazard. Natural failure, though desirable from a wilderness management perspective, does not meet the purpose and need for action as the tree hazard may hit and damage a target (which could result in severe injury or fatality); hence its identification as a hazard. Intentional, directional felling mitigates this risk.
- The risk of failure of tree hazards increases over time as the wood decays further. The longer action is delayed, the more likely it is that natural failures will occur, increasing the risk posed to humans and infrastructure (described below).
- Tree hazards may fail anytime, or they could take years to fail naturally. The NPS estimates that without action, these hazards within wilderness could remain a threat for 10-15 years; any abatement would likely need to extend for that long should mitigation not occur within wilderness.
- So long as these tree hazards stand, they pose an increasing threat to infrastructure and more importantly visitors and employees. Administrative/employee access on all road segments is critical for NPS operations (e.g., to ensure further loss of infrastructure such as protecting propane tanks and maintain wastewater treatment plants), and residential access along Mineral King Road is critical for honoring existing rights of private property owners. A number of NPS employees also reside within the middle of the action area, in Lodgepole (along the Generals Highway). Visitor access along the Generals Highway, Mineral King

Road, and Crystal Cave Road also provides key access to enable public enjoyment of park fundamental resources and values, including access to trailheads for wilderness recreationists and other users. For these reasons, long term closures of these roadways are not considered to be viable alternatives to abating risk from known tree hazards.

- Although roadways are considered thoroughfares from a tree hazard identification standard (i.e., they are not locations where people are expected to remain for long periods of time so they are often not rated for immediate removal despite the anticipated immediacy of tree failure), the NPS has struggled for at least a decade to maintain a continuous flow of traffic and prevent parking along park roads, particularly the Generals Highway and Mineral King Road where roadside parking, informal pedestrian access, and roadway congestion are frequent occurrences, throughout the high visitation season (i.e., these situations occur throughout the day at least every weekend during the summer and every holiday weekend in the winter). This is particularly true when linear construction projects, such as road pavement preservation and anticipated tree mitigation work in non-wilderness areas, create temporary closures along the road and lead to long back-ups of vehicles which remain onsite for extended periods. For these reasons, other options for abating risk such as warnings, signage, increased communications, etc. are not understood to be valid alternatives for mitigating the threat of the approximately 750 tree hazards located within wilderness along critical access roads within the parks.

STEP 2: Determine the Minimum Requirement

Alternative 1: Mitigate Tree Hazards as Staff is Able Over a Period of 10-15 Years.

An estimated 12,000-15,000 identified tree hazards throughout the wilderness and non-wilderness action area would be mitigated as soon as staff capacity allowed, over roughly 10-15 years, or as they weaken to the point that they became high priority and require more imminent mitigation. If tree hazards could not be mitigated immediately due to capacity, they would be abated (e.g., signage posted to recommend traffic continue moving, or road or lane closures as necessary). For this reason, existing closures along the Crystal Cave and Redwood Mountain Roads would remain in place until tree hazards could be assessed, and high priority tree hazards mitigated. Mitigation or abatement actions would occur routinely, but given limited capacity to address roadside trees, a given road stretch would be subject to a limited duration of mitigation action annually (< 1 hour total). Such actions would be expected to be most intensive in areas of moderate to high KNP burn severity (see maps in EA).

To the maximum extent practicable given safety considerations, tree hazards, when mitigated, would be directionally felled—primarily with a chainsaw—perpendicular away from the road to reduce visibility of cut ends from wilderness and to reduce buildup of roadside woody debris. Explosives may be used if deemed the safest tool available; however, this is expected to rarely, if ever, be the case given the surrounding tree hazards in the project area and the potential for explosives igniting a fire within the project area which could potentially spread to the surrounding forest. Stumps from tree hazards felled with chainsaws would be flush cut to the extent practicable to reduce their visibility and would be treated with borax to prevent anossus root rot. Woody debris falling outside the road prism would be left in place. Tree felling crews and equipment would be stationed on the roadway roughly 100-150 feet from planned work, and crews would travel on foot to reach each hazard.

See further detail on actions that would occur near and within the wilderness boundary below.

Actions Occurring Adjacent to but Outside of Wilderness: Actions along the 60 linear-mile, 1,675-acre project area outside of wilderness would include felling and some limbing of roughly 500 tree hazards annually using chainsaws. There may be occasion to use explosives if a tree cannot be safely mitigated using a combination of rigging and chainsaw. This would be expected to be rare.

Most tree hazards prioritized for mitigation would be those identified as high priority under the seven-point rating system described in PW-062 (See Appendix A of EA), though lower priority tree hazards would be mitigated if staff capacity allowed. Abatement of roadside tree hazards through closures or signage would occur frequently, and public access would be limited along roadways as a result.

Although the NPS would clean up and remove any debris that falls on parking lots, roadways, or other infrastructure, woody debris outside the road prism, whether from natural failure or resulting from mitigation actions, would be left on site (see Appendix D of EA). Project actions taken under this alternative would occur over roughly 1,000–1,500-hour timeframe over the course of 10-15 years.

Actions Occurring Within Wilderness: Roughly 425 acres of wilderness within the proposed 60 linear mile total action area would be subject to tree hazard mitigation or abatement. Roughly 5% of the total tree hazards within the KNP burn perimeter—roughly 750—are estimated to be located beyond the wilderness boundary. The actual acreage where implementation would occur is expected to be far less than 425 acres given that tree hazards—of the height where they are tall enough to strike a target—are likely to be concentrated in mixed conifer forests that burned in high severity fire and are not likely spread evenly across 60 linear miles along the wilderness boundary.

Over a period of 10-15 years, a number of these tree hazards would be expected to fail naturally depending on severity of burn, rate of decay, and weather conditions such as large windstorms. Given this variability, it is difficult to quantify the number that would ultimately require active mitigation. However, for the sake of analysis, NPS estimates a total of roughly 500 tree hazards would eventually require NPS mitigation (30-50 annually) while 250 would fail naturally over time. Many of these trees would also require abatement (as previously described) until they could be mitigated or failed naturally.

Felling a total of roughly 500 trees in wilderness would require roughly 80-100 hours (roughly 10 min per tree) of chainsaw run-time total over the course of 10-15 years. There may be occasion to use explosives if determined the safest tool to mitigate a given hazard. This would be expected to be rare.

Impacts to Wilderness Character:

Untrammelled: Mitigation of roughly 500 trees that would otherwise remain standing until failure, hastens the natural decay processes. Trammeling actions related to KNP tree hazard mitigation would occur within the action area over the next 10-15 years, resulting in a direct negative effect to this quality of wilderness character over current conditions. Once KNP tree hazards had been mitigated, trammeling actions related to felling these specific tree hazards would cease.

In addition, as described in the EA (see Chapter 3, Visitor and Employee Safety), the NPS may not be able to maintain roadways as firebreaks under this alternative, which could result in reduced fire suppression activities outside of wilderness and thereby less trammeling to surrounding wilderness should fire spread across park roadways under future wildfire scenarios. This could help preserve the untrammelled quality of wilderness character in the future.

Overall, this alternative would not result in adverse effects in the current overall status and trends in the untrammeled quality of wilderness character in the southern portion of the parks or within the action area specifically and would not result in diminished untrammeled quality more broadly given that adverse impacts would be temporary and intermittent in nature (intermittently implemented over the course of 10-15 years) and would comprise a very small percentage of the overall acreage within the combined Sequoia-Kings Canyon Wilderness and John Krebs Wilderness (less than 425 acres within 807,962 acres of wilderness). The overall untrammeled quality of wilderness character within these wilderness areas would be preserved.

Undeveloped: Motorized tools used to mitigate tree hazards would negatively affect the undeveloped quality for the roughly 80-100 hours over which time the action would occur across up to 425 acres of the Sequoia-Kings Canyon and John Krebs Wildernesses. Because mitigation actions are anticipated to occur very intermittently over the course of the next 10-15 years, these impacts to the undeveloped quality would occur at an equivalent extent and duration, ceasing immediately upon completion of every mitigation action.

This alternative would not result in adverse effects in the current overall status and trends in the undeveloped quality of wilderness character in the southern portion of the parks or within the action area specifically, and would not result in diminished undeveloped quality more broadly given that impacts would be temporary in nature (lasting intermittently up to 10-15 years) and occur across a very small percentage (.06%) of the overall acreage within the combined Sequoia-Kings Canyon Wilderness and John Krebs Wilderness (425 acres out of 807,962 acres). The overall undeveloped quality of wilderness character would be preserved.

Natural: Mitigation of 500 tree hazards that would otherwise remain standing for some duration (which could range from days to many years) shortens the natural decay process and modifies the ecological role these trees would otherwise play until such a time that they fail. Given that hundreds of thousands of standing snags within the burn perimeter and in close proximity to these mitigated tree hazards (specifically within wilderness) would remain to fulfill the natural ecological role of such trees, and that the boles and debris would remain on site to contribute to nutrient cycling, the degree of impact to this quality of wilderness character would be minor.

In addition, as discussed in the EA (see Chapter 3, Fuel Loading and Future Fire Effects), high fuel loads in the form of jackpot fuels would continue to build in the action area and there would be continued risk of fire spread and for locally adverse fire effects (i.e., high severity fire) were fire to re-enter the action area. Over a period of 5-10 years, these risks would increase in areas of high severity due to the buildup of a fine understory fuel component necessary to carry fire while at the same time, decreasing the defensibility of the road as a fire break. Should a wildfire burn remaining areas at high severity, it would further contribute to the regional negative long-term trends in natural quality within this portion of wilderness.

Overall, this alternative would not result in direct adverse effects in the current overall status and trends in the natural quality of wilderness character in the southern portion of the parks or within the action area specifically given that direct impacts from this alternative would occur across a small percentage of wilderness (less than 425 acres) and be temporary in nature (lasting intermittently up to 10-15 years). However, as noted in several areas of the EA, un-naturally severe fire is likely to result in areas of high fuel loading. In these areas, inability to control fire spread due to inadequacy of fire breaks may contribute to the regionally negative long-term trends in natural quality.

Opportunities for Solitude or Primitive and Unconfined Recreation: The sights and sounds of mitigation activities—including 105dB sounds from chainsaws and presence of work crews within wilderness—would negatively affect opportunities for solitude for the duration of tree hazard

mitigation activities: roughly 80-100 hours of chainsaw run time plus 250 hours of crew presence within or near wilderness over the course of 10-15 years. High decibel sounds (up to 105dB) outside of wilderness but within 100 feet of the wilderness boundary would also negatively affect solitude for those recreating in wilderness if they should be present near areas where trees are being mitigated (estimated to be 1,000–1,500 hours over the course of 10-15 years). In total, this would represent no more than 2.2% of the time over the course of 10-15 years. During these hours, the sounds of chainsaws and heavy equipment (from outside wilderness) would be heard from 0.25 miles to 2 miles from the location where action is being taken depending on forest cover and terrain. If explosives were used, the sound may travel much further though be of shorter duration, though again use of explosives would be rare.

The action occurs in an area where little wilderness visitation occurs due to steep terrain, lack of trails, and proximity to development. As well, increased noise levels would occur within an affected environment that is characterized by near continuous 70-80dB sounds from the adjacent highway corridor such that the NPS would not expect an increase in the duration of time during which human noise may be heard from within the wilderness portion of the action area. While noise levels may be higher, the amount of time where visitors to this area of wilderness may have opportunities for solitude is not expected to decrease. Due to the affected environment in which the project occurs, and the ample opportunities for solitude existing in other areas of wilderness, the degree of impact to solitude above existing conditions would be minor.

Given the above, this alternative would not result in adverse effects in the current overall status and trends in the opportunities for solitude or primitive and unconfined recreation quality of wilderness character in the southern portion of the parks or within the action area specifically. Further, this alternative would not result in this quality being diminished more broadly given that impacts would be temporary in nature (lasting intermittently up to 10-15 years) and are minor in the context of the affected environment across these 425 acres in wilderness; overall this quality of wilderness character would be preserved in the long term.

Other Features of Value (e.g., Cultural Resources, Scientific): This alternative does not directly affect this quality.

Alternative 2: Mitigate Tree Hazards Over as Short of a Timeframe as Possible, Treat Debris Outside Wilderness.

This alternative would use chainsaws and other tools to mitigate all 12,000-15,000 roadside tree hazards within the KNP burn perimeter in an expedient manner. Although chainsaws would likely be the primary tool used to mitigate tree hazards, explosives may be used if deemed the safest tool available to mitigate a given hazard. However, this is expected to rarely, if ever, be the case given the surrounding tree hazards in the project area and the potential for explosives igniting a fire within the project area which could potentially spread to the surrounding forest. Stumps from tree hazards felled with chainsaws would be flush cut to the extent practicable to reduce their visibility and would be treated with borax to prevent anossus root rot. Tree felling crews and equipment would be stationed on the roadway roughly 100-150 feet from planned work and crews would travel on foot to reach each hazard located in wilderness.

See further detail on actions that would occur near or within the wilderness boundary below.

Actions Occurring Adjacent to but Outside of Wilderness: Under Alternative 2, all identified tree hazards occurring outside of wilderness would be mitigated over a 6–8-month time period. Roughly 1,675 acres of the total 60 linear-mile, 2,100-acre action area is outside of wilderness.

Implementation activities in this area would include mitigation work (tree felling) and debris treatment (limbing, bucking, removing whole logs, and pile burning – See Alternative 2 of the EA).

To the maximum extent practicable given safety considerations, trees being felled outside the wilderness boundary and not slated for debris treatment would be directionally felled—primarily using a chainsaw though other hand or equivalent motorized tools may be used—generally perpendicular and away from the road (toward wilderness) to decrease the visibility of cut log ends from wilderness, to prevent logs from rolling downhill, and limit roadside fuels buildup.

Tree hazards slated for treatment (chipping, pile burning, lopping, or bole removal) within the 80-foot roadway treatment zone would be directionally felled—primarily using a chainsaw though other hand or equivalent motorized tools may be used—perpendicular and towards the road to the maximum extent practicable (given safety considerations) to facilitate debris treatment. Once felled, tree boles would be pulled out whole to the maximum extent practicable with the goal of reducing the number of visible cut ends and creating a more gradual transition between treated and untreated areas, while limiting the potential for incidental action outside the treatment zone. Slash under 8 inches in diameter would be either pile burned (where practicable) or lopped and scattered on site to a depth of no more than 24 inches.

Mitigation and debris treatment actions would be expected to take a total of 10 hours per day for roughly 6-8 months (1,600 hours) between 2023 and 2025, with some work potentially extending into 2026 due to delayed mortality and would be most intensive in areas of moderate to high burn severity. Pile burning would occur during fall and winter 2023 through fall and winter of 2025. Tools used would include chainsaws, axes and other hand tools, loppers, other cutting tools, long-reach excavators, boom trucks, chippers, front-end loaders, trucks, and trailers. All work would be overseen by an NPS representative.

Actions Occurring Within Wilderness: Roughly 425 acres of wilderness occurs within the proposed 60 linear mile, 2,100-acre action area. However, the actual acreage where implementation would occur is expected to be far less than 425 acres given that tree hazards—that are of the height where they are tall enough to strike a target—are likely to be concentrated in mixed conifer forests that burned in high severity fire and are not likely to be spread evenly across 60 linear miles along the wilderness boundary.

5-6% of the total identified tree hazards within the KNP burn perimeter—roughly 750—are estimated to be located beyond the wilderness boundary.

Under Alternative 2, most identified tree hazards would be mitigated (felled) over the 6-8-month project timeframe. Temporary abatement would remain necessary in some locations until trees could be mitigated.

To the maximum extent practicable given safety considerations, trees being mitigated in wilderness would be directionally felled—primarily using a chainsaw though hand tools, explosives, or other equivalent motorized tools may be used—perpendicular to the road deeper into wilderness, to reduce visibility of cut ends from within wilderness and minimize potential to incidentally remove biomass within wilderness (see EA for more information on why debris is proposed for treatment outside of wilderness).

Debris treatment, including bucking and limbing once material is felled, would not occur within wilderness, and the NPS' intention is to retain (i.e., leave in place) the debris from tree hazards in wilderness once felled, particularly as tree hazards within wilderness would be felled perpendicular to and away from the road (as described above), and the NPS would not remove any fallen tree hazards beyond 80 feet from the roads' edge. Although it is possible that a tree hazard within

wilderness may need to be felled in a different direction for safety reasons (such that it would extend into the 80-foot corridor where debris treatment is possible), the portion of debris that is felled within wilderness is intended to be left where it falls. Notably: the equipment used to remove logs cannot reach beyond 60 feet and is not allowed to leave the edge of the road. The 80 feet acknowledges that slash by be treated up to 80 feet from the road's edge and that some logs may be picked up beyond that 60-foot reach. The NPS has further clarified this in the Errata (see Appendix A above).

Felling roughly 750 trees in wilderness would take roughly 125 hours (assumes that removal by chainsaw would take 10 min per tree – though felling would be occurring simultaneously with other trees). Tools used would include hand tools such as axes and loppers and chainsaws.

Impacts to Wilderness Character

Untrammelled: Mitigation of roughly 750 tree hazards that would otherwise remain standing until natural failure, hastens the natural decay processes. Trammeling actions related to KNP tree hazard mitigation within the action area would be of higher degree than Alternative 1 due to the number of trees mitigated but would occur over a much shorter time frame: 6-8 months (though may occur for up to 4 years depending on rate of project implementation) resulting in a negative effect to this quality of wilderness character. Impacts to the untrammelled quality relating to tree hazard mitigation would cease once tree hazards have all been mitigated.

In addition, treating mitigation related debris would allow the NPS to better maintain roadside areas as holding features (See Chapter 3 of EA, Visitor and Employee Safety, for additional details). This could negatively affect the untrammelled quality of wilderness character to the extent that the NPS successfully utilizes these roadside areas to suppress a naturally ignited wildfires from spreading across the roads to other wilderness acres.

Despite the potential for future suppression actions, this alternative would not result in direct adverse effects in the current overall status and trends in the untrammelled quality of wilderness character in the southern portion of the parks or within the action area specifically and would not result in diminished untrammelled quality more broadly given that impacts would be temporary in nature (lasting intermittently up to 4 years) and would comprise a very small percentage of the overall acreage within the combined Sequoia-Kings Canyon Wilderness and John Krebs Wilderness (425 acres out of 807,962 acres). The overall untrammelled quality of wilderness character within these wilderness areas would be preserved.

Undeveloped: Motorized tools used to mitigate tree hazards would negatively affect the undeveloped quality for up to roughly 125 hours of chainsaw use spread out across up to 425 acres of the Sequoia-Kings Canyon and John Krebs Wildernesses which would occur intermittently over the course of the next four years, though to the highest degree and intensity over the course of 6-8 months between 2023 and 2024. Because mitigation actions are anticipated to occur to the highest degree and intensity over the course of 6-8 months between 2023 and 2024 but may extend very intermittently for two years following intensive action, these impacts to the undeveloped quality would occur at an equivalent extent and duration, ceasing immediately upon completion of every mitigation action, anticipated to end within four years total.

This alternative would not result in adverse effects in the current overall status and trends in the undeveloped quality of wilderness character in the southern portion of the parks or within the action area specifically and would not result in diminished undeveloped quality more broadly given that impacts would be temporary in nature (lasting intermittently up to 4 years) and would occur across a very small percentage of the overall acreage within the combined Sequoia-Kings Canyon

Wilderness and John Krebs Wilderness (425 acres out of 807,962 acres). The overall undeveloped quality of wilderness character would be preserved.

Natural: Mitigation of roughly 750 tree hazards that would otherwise remain standing shortens the natural decay process and modifies the ecological role these trees would otherwise play until such a time that they fail. As well, removing some debris that otherwise may have naturally fallen within the wilderness boundary would reduce the overall quantity of debris recycled back into the forest – though the quantity removed would be purposely limited by directional felling. However, given that hundreds of thousands of standing snags within the burn perimeter and in close proximity to these mitigated tree hazards (specifically within wilderness) would remain to fulfill the natural ecological role of such trees, and that the boles and debris would remain within wilderness to contribute to nutrient cycling, the degree of impact to this quality of wilderness character would be minor, representing far less than even 1% of the tree mortality within wilderness post fire.

Though temporary direct impacts to natural quality would occur, removing roadside debris will conversely benefit natural quality by allowing the NPS to better control roadside ignitions where such ignitions emanate from the roadway (human caused) or where un-naturally high fuel loads are otherwise anticipated to result in severe fire effects. In addition, these features further allow NPS to continue to use roadways as holding features to restore natural fire regimes in wilderness (see Chapter 3 of EA, Fuel Loading and Future Fire Effects).

This alternative would not result in direct adverse effects in the current overall status and trends in the natural quality of wilderness character in the southern portion of the parks or within the action area specifically and would not result in diminished natural quality more broadly given that impacts would be temporary in nature (lasting intermittently up to 4 years) and would minimize fuel accumulations near the wilderness boundary such that natural quality within the 425 acres of the project area in wilderness would be maintained. Overall natural quality of wilderness character would be preserved.

Opportunities for Solitude or Primitive and Unconfined Recreation: The sights and sounds of mitigation activities and work crews within wilderness would negatively affect opportunities for solitude for the duration of those activities taking place—roughly 125 hours within wilderness. While outside of wilderness, up to 1,600 hours high decibel (up to 110dB) sounds (and up to 180dB in the rare case explosives would be considered) and crew presence within 100 feet of the wilderness boundary would also negatively affect solitude for those recreating in wilderness near the project area. In total, this would represent potentially up to ~39% of the time over the course of the most intense 6–8-month (4,392-5,880 hours) project implementation period, if all work occurred during that time; sounds generated within wilderness would represent 2.8% of the total hours during project implementation or 7.2% of the project time. During these hours, the sounds of chainsaws and heavy equipment (from outside wilderness) would be heard from 0.25 miles to 2 miles from the location where action is being taken depending on forest cover and terrain.

Although such noises generated both within and outside of wilderness would occur over an extended period, the degree of impact to opportunities for solitude within wilderness is expected to be proportionally small given that:

- 1) Increased noise levels will occur within an affected environment that is characterized by near continuous 70-80dB sounds from the adjacent highway corridor such that the NPS does not expect an increase in the duration of time during which human noise may be heard from within the wilderness portion of the action area. While noise levels may be higher, the amount of time where visitors to this area of wilderness may have opportunities for solitude is not expected to decrease under the selected alternative.

- 2) The action area within wilderness and the surrounding areas which may be impacted by the sounds associated with this alternative currently has very little wilderness visitation due to steep terrain, lack of trails, and proximity to development, and
- 3) There is an abundance of wilderness and associated opportunities for solitude beyond this limited corridor (the action area represents less than 0.06% percent of the combined Sequoia-Kings Canyon and John Krebs Wilderness areas).

Given the above, this alternative would not result in adverse effects in the current overall status and trends in the opportunities for solitude or primitive and unconfined recreation quality of wilderness character in the southern portion of the parks or within the action area specifically. Further, this alternative would not result in this quality being diminished more broadly given that impacts would be temporary in nature (lasting intermittently up to 4 years) and are minor in the context of the affected environment across these 425 acres in wilderness; overall this quality of wilderness character would be preserved in the long term.

Other Features of Value (e.g., Cultural Resources, Scientific): This alternative does not directly affect this quality.

Alternative 3: Mitigate Tree Hazards Over as Short of a Timeframe as Possible. Do Not Treat Debris Outside Wilderness.

Under Alternative 3, the NPS would implement all tree hazard mitigation treatments, both within and outside wilderness as described under Alternative 2. However, the NPS would not treat woody debris outside of wilderness (see EA Alternative 3 for more information). For this reason, the most intensive component of project implementation would occur over the course of 5-7 months.

Impacts to Wilderness Character:

Untrammeled: Direct impacts from tree felling would be the same as Alternative 2 but would occur over an even slightly shorter time frame: 5-7 months. Indirect impacts (long term preservation of the untrammeled quality) from not maintaining a fire break along park roads would be the same as Alternative 1 but would occur more imminently due to the almost immediate buildup of downed, sound woody debris along the road corridor.

Undeveloped: Impacts would be the same as Alternative 2 but would occur over a slightly shorter time frame: 5-7 months.

Natural: Direct impacts would be similar to Alternative 2, with the exception that debris from felled tree hazards within wilderness could not be incidentally removed (as no debris removal would occur). These impacts would also occur over a slightly shorter time frame than Alternative 2: 5-7 months. This alternative, however, would result in unnaturally high fuel levels within the action area and reduced capacity to restore natural fire regimes within the project area which could in turn negatively impact the natural quality of wilderness character as un-naturally high fuel loads are anticipated to result in severe fire effects when fire returns to the area (see Chapter 3 of EA, Fuel Loading and Future Fire Effects, for additional information).

Opportunities for Solitude or Primitive and Unconfined Recreation: Impacts would be the same as Alternative 2, except noise disturbance from activities occurring outside of wilderness would be less than in Alternative 2 given that crews would not use equipment to remove and haul debris from the treatment area outside of wilderness (estimated at 1,400 hours). In total, noise disturbance and crew presence would represent potentially up to ~42% of the time over the course of the most

intense 5–7-month (3,672-5,160 hours) project implementation period, if all work occurred during that time; sounds generated within wilderness would represent up to 3.4% of the total hours during project implementation or 8.2% of the project time. During these hours, the sounds of chainsaws and heavy equipment (from outside wilderness) would be heard from 0.25 miles to 2 miles from the location where action is being taken depending on forest cover and terrain.

Although such noises generated both within and outside of wilderness would occur over an extended period, the degree of impact to opportunities for solitude within wilderness is expected to be proportionally small given that:

- 1) Increased noise levels will occur within an affected environment that is characterized by near continuous 70-80dB sounds from the adjacent highway corridor such that the NPS does not expect an increase in the duration of time during which human noise may be heard from within the wilderness portion of the action area under existing conditions. While noise levels may be higher, the amount of time where visitors to this area of wilderness may have opportunities for solitude is not expected to decrease under the selected alternative.
- 2) The action area within wilderness and the surrounding areas which may be impacted by the sounds associated with this alternative currently has very little wilderness visitation due to steep terrain, lack of trails, and proximity to development; and
- 3) There is an abundance of wilderness and associated opportunities for solitude beyond this limited corridor (the action area represents less than 0.06% percent of the combined Sequoia-Kings Canyon and John Krebs Wilderness areas).

Given the above, this alternative would not result in adverse effects in the current overall status and trends in the opportunities for solitude or primitive and unconfined recreation quality of wilderness character in the southern portion of the parks or within the action area specifically. Further, this alternative would not result in this quality being diminished more broadly given that impacts would be temporary in nature (lasting intermittently up to 4 years) and are minor in the context of the affected environment across these 425 acres in wilderness; overall this quality of wilderness character would be preserved in the long term.

Other Features of Value (e.g., Cultural Resources, Scientific): This alternative does not directly affect this quality.

Additional Alternatives Considered but Dismissed

No Action to Address Roadside Tree Hazards in Wilderness

Roadside tree hazards present a direct and ongoing threat to the safety of park visitors and staff – no matter their location within or outside of wilderness, and wholesale abatement is not possible without severely restricting public access (which is contrary to the Organic Act and purposes of Sequoia and Kings Canyon National Parks, among others, as described in Step 1) or rerouting the road (which is not possible given Wilderness boundary and would not at all address the purpose and need for action as tree hazards would also threaten any re-rerouted road). Not taking action to mitigate such hazards would not achieve the purpose and need for acting as documented in Step 1.

Use Only Non-Motorized Tools (i.e., Crosscut or Axe) or Explosives to Mitigate/Fall Tree Hazards in Wilderness

Tree felling is consistently one of the top five most dangerous jobs in America (BLS 2020); when requiring crews to complete this type of work, safety must be of utmost concern. Safety is generally influenced by a combination of a feller's skill, the tool used, the complexity of the tree hazard itself (i.e., diameter at breast height (dbh) of tree, height, lean, etc.), and the complexity of the surrounding environment (i.e., density and height of surrounding vegetation, proximity to development, proximity to other tree hazards, etc.). Notably, the nature of the purpose and need for this action is driven by the high density of tree hazards and other dead/dying trees in the project area that would be considered hazards if a target, like a tree faller, is present, and tree hazards in wilderness are over 100 feet tall and generally have a high dbh. For these reasons, the NPS cannot minimize the complexity of any individual tree hazard or its surrounding environment; however, the NPS can seek out experienced fellers and can ensure crews have the tools at hand to most safely complete the work.

There are generally three types of tools that have historically been used to mitigate tree hazards: crosscut saws, explosives, and chainsaws. When applying the minimum requirement concept to the proposed action in consideration of preserving the wilderness character of the 425 acres of the project area that falls within wilderness, the NPS considered alternatives to primarily or only use crosscut saws and/or explosives to mitigate tree hazards in wilderness and dismissed these alternatives from further analysis, as discussed below.

Felling tree hazards with non-motorized tools is a highly technical skill, particularly when felling hazards within the 100–150-foot size class, as all tree hazards within wilderness are given their distance from road (100 feet) and the fact that they would need to be tall enough to strike the road in order to be considered a hazard. Felling tree hazards of this size is furthermore complicated in this scenario by the surrounding environment which is also characterized by a high density of other standing snags that would, but for the presence of crews, not be considered hazards. Given that felling tree hazards of this size with a crosscut saw would take 2-4 hours to complete and would require additional staff to complete the cuts, the risk/exposure to crews of falling objects (i.e., “widow-makers”) striking them during this extended period of stationary work would be considerable. In comparison, cutting a single tree hazard with a chainsaw would take an estimated 10 minutes or 4-9% of the time needed to use a crosscut (Ned Aldrich, Personal comms, September 2022). The NPS cannot therefore assume that the estimated 750 tree hazards within wilderness could be safely felled with a crosscut saw and cannot impose this requirement on staff or contractors when the work could be completed more safely (via substantially less exposure to surrounding hazards) with a chainsaw. The primary or sole use of crosscuts to fell tree hazards in wilderness was therefore dismissed from further consideration as it is not recommended as a reasonable alternative from a safety standpoint.

While use of explosives may be considered in rare circumstances when deemed the safest tool for mitigation work, directional blasting would be needed to fell most tree hazards away from roadways or other trees and, in most cases, conducting this type of blasting in dense forest, or in forest where numerous other hazards exist, would be technically challenging and would present a high level of safety and operational risk—as experienced by NPS staff in previous situations within the parks (Ned Aldrich, Personal comms, September 2022). Specifically, blasting could hang a tree hazard up in another nearby tree, which could present unique blasting and safety challenges, especially if the other tree is also a hazard and needs to be felled. (Again, the project area has a high density of tree hazards and other snags which increases the likelihood of this elevated hazard

becoming a reality.) Furthermore, trees felled with explosives can easily catch fire in the process, increasing risk for additional wildfire within the project area. Given these safety concerns, explosives are not often recommended as the safest tool for felling tree hazards particularly in light of the high density of tree hazards and other dead/dying trees in the project area and the susceptibility of the project area to future high severity fire. The primary, much less sole, use of this tool for the mitigation of an estimated 750 tree hazards in wilderness is therefore not considered a reasonable alternative and was therefore dismissed from further analysis.

Cumulative Effects

Describe any other projects in the vicinity of your project location(s) (past, present, or future) that have the potential to impact wilderness character.

Please see the Environmental Assessment for [KNP Complex Wildfire Tree Hazard Mitigation in Sequoia and Kings Canyon National Parks \(110272\)](#) for a summary of wilderness character influences in the project area.

Step 2 Determination

What is the minimum activity?

Alternative 2: Mitigate Tree Hazards Over as Short of a Timeframe as Possible, Treat Debris Outside Wilderness.

In its determination of the minimum activity, summarized below, the NPS considered the requirements and provisions of the Wilderness Act in context of all federal law and policy, the nature and context of the action and potential impacts of proposed action on wilderness character—including the ability to preserve wilderness character in the long term—and professional opinion concerning tool options for tree hazard mitigation and risks associated with each. These components are discussed further below.

The NPS determined in Step 1 of the MRA that action was necessary in wilderness to achieve one of the fundamental purposes of these national park units: to provide for public enjoyment, benefit, and inspiration of all people of the United States, a purpose which is not currently being fully achieved due to the presence of tree hazards—including those roadside hazards located in wilderness. See further discussion and explanation in Step 1 on page 7 of this MRA.

Given the considerations outlined in Step 1, the purpose and need for this action and the action itself are consistent with the Wilderness Act, as outlined in sections A-F under Step 1.

Under Step 2, the NPS also finds that abating (not removing) all tree hazards in wilderness would not fully achieve the purpose and need for the project and that the primary, much less, sole use of non-motorized tools or explosives is not considered a reasonable alternative to safely mitigate an estimated 750 tree hazards within wilderness, particularly given the complexity of the tree hazards present (tall and large dbh) and complexity of the surrounding project area (which has a high number and density of standing dead and dying trees and other hazards given recent fire). The use of chainsaws is therefore considered to be the minimum necessary to mitigate tree hazards unless non-motorized tools, such as explosives, are determined by the faller to be the safest tool to mitigate a given tree hazard.

For additional detail considering the minimum tool, the NPS further analyzed impacts to wilderness character specifically from implementing a no action alternative and two action alternatives that that could potentially meet the purpose and need for action.

Under Alternative 1, direct threats to public and employee safety would not be immediately addressed within the KNP footprint, and the risk of an identified tree hazard failure resulting in a strike to a human target or to result in a motor vehicle accident would remain and increase over time as standing, dead trees and limbs continue to weaken. These impacts would extend for 10-15 years into the future until eventually all identified KNP tree hazards are mitigated or fall. This alternative therefore does not adequately address the purpose and need for action as determined under Step 1.

Under Alternatives 2 and 3, direct threats from identified tree hazards within the KNP footprint would be mostly addressed within the action area over a minimum period of 6-8 months or 5-7 months respectively, though some may remain for as long as 2 years or more due to delayed mortality. During that time, the risks posed by identified tree hazards resulting from the KNP would be greatly reduced for all intents and purposes, achieving the purpose and need for action.

Though Alternative 2 would also have higher impacts to opportunities for solitude from outside wilderness in comparison to Alternative 3 (an additional 200 hours of human generated noise within the 80-foot debris treatment zone, which is outside of wilderness), the degree of impact to opportunities for solitude within wilderness from this component of the project is expected to be proportionally small given the reasons described under Alternative 2 (see Impacts to Wilderness Character), and this component of the project is necessary to meet the NPS' broader goals of achieving tree hazard mitigation in a manner that does not increase safety and fire risk, described below.

Though the temporary impacts to wilderness character are greater under Alternative 2 than other alternatives considered, the differences in degree of impact from tree hazard mitigation actions within wilderness between the Alternatives 1 and 2 and 3 are relatively minor – roughly 250 trees and 40 – 50 hours additional chainsaw runtime in Alternatives 2 and 3 in comparison to Alternative 1. Further, in contrast to Alternatives 1 and 3, Alternative 2 would minimize the accumulation of fuels (i.e., jackpots) along the roadways and immediately adjacent to wilderness, which minimizes the likelihood of high severity fire returning to the area (see Chapter 3, Fuel Loading and Future Fire Effects, of the EA). This reduction in fuels loading would allow the NPS to restore natural quality to areas where it has otherwise been diminished by unnaturally high fuel loads and modified stand and vegetation structures. It would also allow NPS the ability to protect currently unnaturally dense forest stands from severe fire effects (by reducing fire spread) in areas where severe fire effects would be expected.

In conclusion, neither tree hazard mitigation or debris treatment would directly or adversely impact wilderness character in the long-term. Rather, debris treatment under Alternative 2 may indirectly benefit the natural quality of wilderness character in the long term should it ultimately serve to limit future adverse fire effects and/or allow the NPS to restore fire to the landscape. All temporary direct impacts to wilderness character (as described above) would be localized to within 150 feet, and occasionally up to 200 feet, of the roadway corridor and the NPS has determined them to be acceptable given NPS' obligations to both provide for the enjoyment of these parks and wilderness areas and to maintain a reasonable level of public and employee safety in public areas.

Therefore, consistent with the Wilderness Act and the NPS Organic Act, the NPS finds that using chainsaws and other tools to mitigate roughly 750 roadside tree hazards occurring along park roadways within the wilderness boundary, consistent with Alternative 2 described above, is the minimum activity to best meet the purpose and need for action and—although temporary impacts cannot be avoided—the qualities of wilderness character will be preserved in the long term.

Provide details on any Wilderness Act Section 4(c) uses proposed in this alternative:

4(c) Prohibition	Frequency and/or Quantity	Duration
mechanical transport	0	0
motorized equipment	3-4 chainsaws	Roughly 125 hours total
motor vehicles	0	0
Motorboats	0	0
landing of aircraft	0	0
structure(s)/installation(s)	0	0
temporary road	0	0

References:

Bureau of Labor Statistics (BLS) 2020. Civilian occupations with high fatal work injury rates, 2020. Website <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/civilian-occupations-with-high-fatal-work-injury-rates.htm> [accessed 28 September 2022].