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Defensible Space Project Environmental Assessment

Angeles National Forest

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Chapter 1 – Introduction

The Angeles National Forest has prepared the Defensible Space Project Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal, state, and local laws, regulations, and ordinances. The information in this EA will help determine if there are potential significant impacts that would require the preparation of an environmental impact statement. The EA will also help the responsible official in making the decision on whether or not to proceed with the proposed action for the project. The EA is organized into four chapters:

- Chapter 1, Introduction - The chapter includes information on the history of why the project is being proposed, the purpose of and need for the project, and a summary of our proposal for achieving this purpose and need. This section also details how we informed the public of the proposal and how the public responded.
- Chapter 2, Alternatives - This chapter provides a more detailed description of the agency's proposed action, including design features to reduce impacts. This chapter also addresses other alternatives considered. These alternatives were developed based on issues raised by the interdisciplinary team and public, including other agencies. Finally, this section provides a comparison table of each alternative considered in detail including how each alternative responds to the purposes and need for the project and environmental impacts based on the key issues raised during scoping.
- Chapter 3, Affected Environment and Environmental Consequences - This chapter addresses: how each alternative analyzed in detail meets or does not meet the purpose and need for the project; key environmental issues brought up during scoping; and, the context and intensity factors used to define significance (40 CFR part 1500-1508).
- Chapter 4, Agencies and Persons Consulted - This section provides a list of preparers and agencies consulted during the development of the EA.

Background

Nationally, the highest losses in property and life caused by wildfire occur in southern California, while at the same time people continue to build homes adjacent to fire-prone landscapes such as the Angeles National Forest (Forest). The Forest has a history of frequent fires, the majority of which are human-caused. Two sources of risk from a wildfire are the flaming front and embers (or firebrands) that travel far beyond the flaming front of a wildfire and pose a risk of ignition to a structure and adjacent vegetation.

In response to requirements of the Federal Land Assistance, Management, and Enhancement (FLAME) Act of 2009, the Wildland Fire Leadership Council (WFLC) directed the development of the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy). The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, as well as the public, to seek national, all-lands solutions to wildland fire management issues.

Communities across the West need to take action to reduce fuels in and around the community to reduce the wildfire risk within and around their communities. Homeowners are encouraged to reduce the structural ignitability of their homes by reducing fuels and using fire-resistant building materials. Goal 2 of the Cohesive Strategy is that human populations and infrastructure can withstand a wildfire without loss of life and property.

Preventing or minimizing the loss of life and property due to wildfire requires a combination of thorough pre-fire planning and action, followed by prudent and immediate response during a wildfire event. Post-fire activities can also speed community recovery efforts and help limit the long-term effects and costs of wildfire. Community Wildfire Protection Plans (CWPPs) should identify high-risk areas and actions residents can take to reduce their risk. Fuels treatments in and near communities can provide buffer zones to protect structures, important community values and evacuation routes. Collaboration, self-sufficiency, acceptance of the risks and consequences of actions (or non-action), assisting those who need assistance (such as the elderly), and encouraging cultural and behavioral changes regarding fire and fire protection are important concepts. Attention will be paid to values to be protected in the middle ground (lands between the community and the forest) including: watersheds, viewsheds, utility and transportation corridors, and cultural and historic values (Cohesive Strategy, Phase III Western Regional Action Plan, 2013).

There are two recent examples where these principles contributed to reducing structure losses from wildfire. The Spring Fire in the Santa Monica Mountains National Recreation Area in 2013 burned during a period of warm weather with offshore Santa Ana winds gusting at 30-40 mph. The topography was very steep and the point of origin was at the base of a 70% slope. Effective defensible space and newer building construction in the threatened communities was essential for firefighters as they provided structure protection for approximately 4,500 homes during the incident (Figure 1).¹

The Painted Cave community was threatened during the Lookout Fire in Santa Barbara County in 2012. Captain David Sadecki, of Santa Barbara County Fire, explained that the fire was “slope-driven, and it stalled when confronted with rocky outcroppings and also the defensible space work done by homeowners in the area.”²

The Angeles National Forest Defensible Space Project is designed for landowners that cannot meet defensible space distances as defined by State of California fire law and Los Angeles or San Bernardino County ordinances without authorization to remove vegetation on National Forest System (NFS) lands. Such authorizations are necessary because portions of the landowners’ defensible space area, as defined in these laws and ordinances, are located on NFS lands. The project area is the Angeles National Forest (Forest), and includes NFS lands that are adjacent to non-NFS (e.g. private) lands, primarily within Los Angeles and to a lesser extent, southwestern San Bernardino Counties. Figure 2 is a map representing the project area with potential treatment areas.

¹ www.nps.gov/fire/wildland-fire/connect/fire-stories/2013-parks/santa-monica-mountains-national-recreation-area.cfm

² www.independent.com/news/2012/oct/17/fire-near-painted-cave/



Figure 1. The Springs fire in the Santa Monica Mountains National Recreation Area burned into defensible space (National Park Service photo).

Existing Laws and Direction

State and County Fire Laws and Ordinances

In 2005, the State of California implemented a defensible space requirement under Public Resources Code (PRC) 4291.³ This state fire law increased minimum clearance (defensible space) from 30 feet to 100 feet. It also provided for state law, or local ordinance, rule or regulation to specify requirements greater than 100 feet. In conjunction with the state fire code, Los Angeles County developed Fire Code 325.2.2, Extra Hazard.⁴ This ordinance states that in cases of extra hazardous situations, property owners must clear all flammable vegetation and combustible growth or reduce the amount of fuel content for a distance greater than 30 feet but not to exceed 200 feet. Guidelines for defensible space are provided in the 'Ready, Set, Go' campaign across California, modified for Los Angeles County (Fig. 3) and describe the landscaping which contributes to defensible space⁵. San Bernardino County developed Fire Code 23.0304, Mountain Area Fire Hazard Abatement.⁶ This ordinance provides specific measures for treatment within 100-foot defensible space for those areas within mountain areas. Additional clearance may be required at the discretion of

³ PRC - www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=04001-05000&file=4291-4299

⁴ Los Angeles County Code - www.library.municode.com/index.aspx?clientId=16274.

⁵ Ready, Set, Go - www.fire.lacounty.gov/index.php/safety-preparedness/ready-set-go-2/#

⁶ San Bernardino County Code -

[www.amlegal.com/nxt/gateway.dll/California/sanbernardinocounty_ca/sanbernardinocountycaliforniacodeofordinances?fn=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanbernardinocounty_ca](http://www.amlegal.com/nxt/gateway.dll/California/sanbernardinocounty_ca/sanbernardinocountycaliforniacodeofordinances?fn=templates$fn=default.htm$3.0$vid=amlegal:sanbernardinocounty_ca)

the County Fire Chief or their designee on buildings that may be used as evacuation centers, medical facilities, places of public gatherings and/or critical infrastructure.

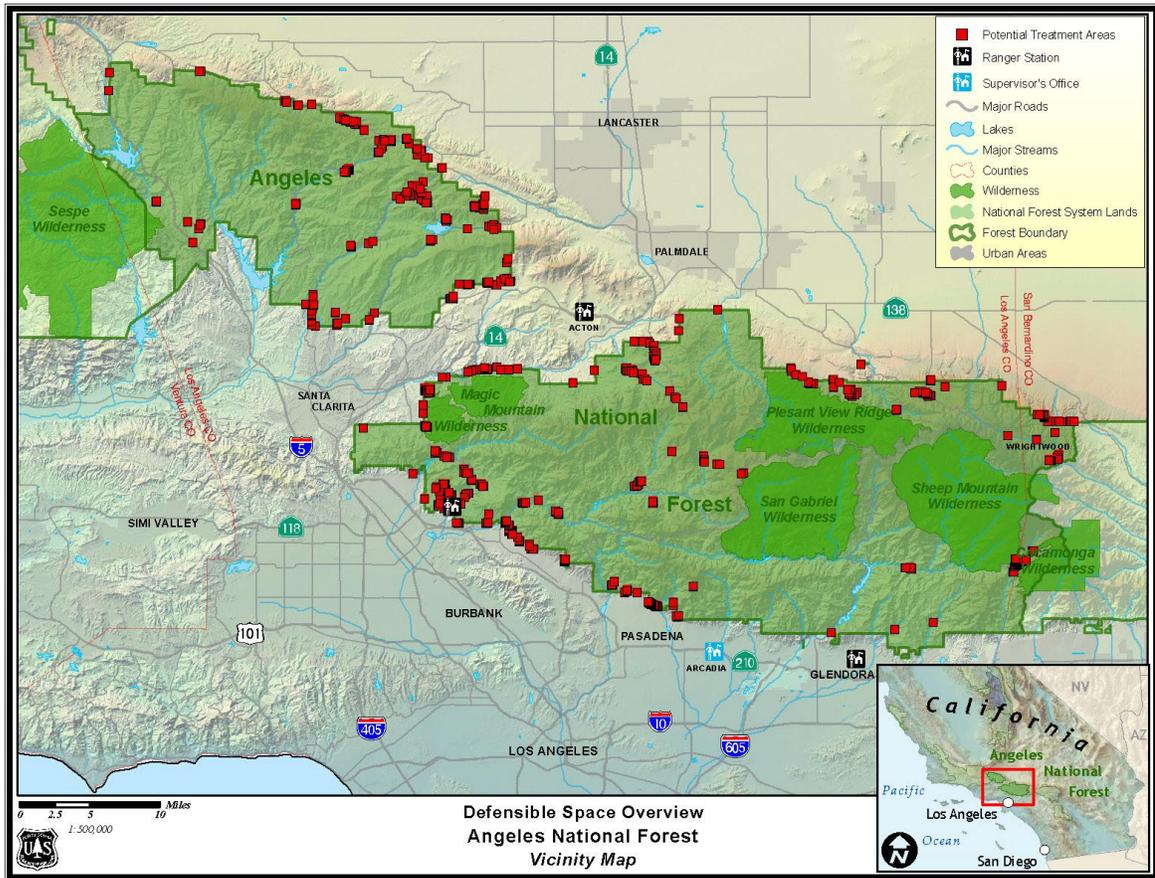


Figure 2. Angeles National Forest Defensible Space Project Area and Potential Treatment Areas. Note: Additional project area maps are in Appendix D of this document.

The law and ordinances do not require clearance beyond the property line. Therefore, the law and ordinances themselves do not give private landowners authorization or obligation to remove vegetation on NFS lands without the consent of the Forest Service as the land managing agency.

What is Defensible Space ?

Defensible space is the area around a structure free of flammable plants and objects that creates a zone in which firefighters can operate safely in order to help protect a home during a wildfire. This space is wide enough to prevent direct flame impingement and reduce the amount of radiant heat reaching the structure. The defensible space for each structure varies, depending on the type of vegetation and topography.

ZONE 1

Extends 30 feet out from buildings, structures, decks, etc.

Remove all flammable vegetation or other combustible growth within 30 feet of any structure or within 50 feet of any structure in areas determined to be high hazard. Single trees, ornamental shrubbery or cultivated ground covers may be permitted provided they are maintained in such a manner that they do not readily transmit fire from native vegetation to the structure.

ZONE 2

Thin out and remove additional vegetation an additional 70 feet from the structure, for a total of 100 feet. The inspecting officer may require an additional 100 feet of thinning or removal, for a total of 200 feet due to high fire hazard.

Note: Special attention should be given to the use and maintenance of ornamental plants known or thought to be high hazard plants when used in close proximity to structures. Examples include Acacia, Cedar, Cypress, Eucalyptus, Juniper, Pine, and Pampas grass. These plantings should be properly maintained and not allowed to be in mass plantings that could transmit fire from the native growth to any structure.

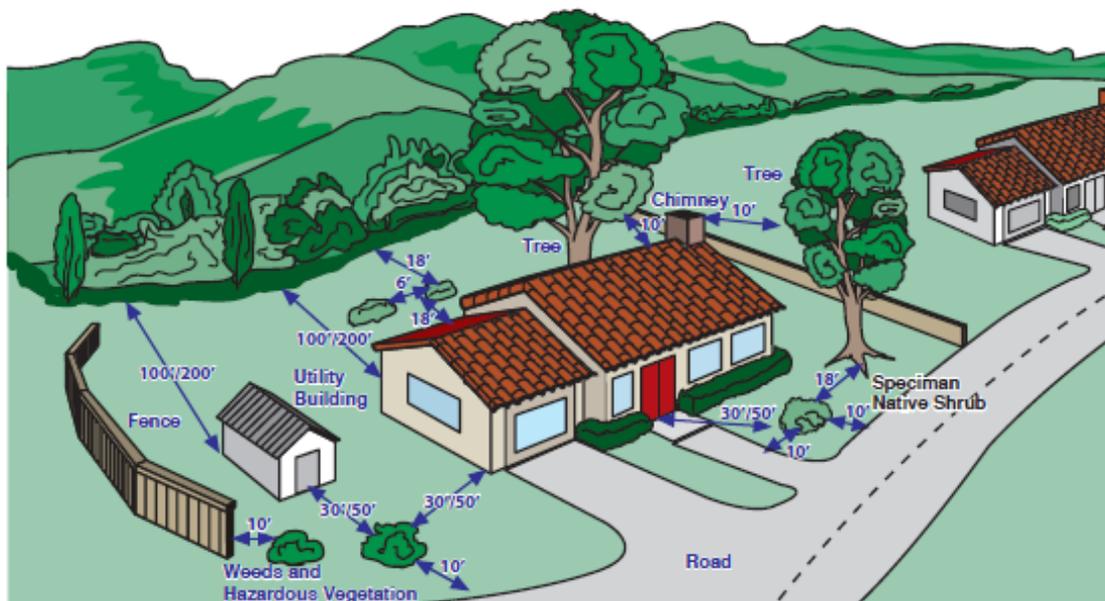


Figure 3. Defensible Space information from the “Ready, Set, Go” program

Forest Service Direction

The Pacific Southwest Region of the Forest Service (California) issued a Forest Service Manual Supplement 5100 in February 2010 addressing State PRC 4291. This supplement directs us to work cooperatively with adjoining landowners and associations, helping them to create and maintain defensible space on NFS lands.

The Angeles National Forest Land Management Plan (LMP) Goal 1.1 is to improve the ability of southern California communities to limit loss of life and property. The desired condition is to have vegetation treated to enhance community protection and reduce the risk of loss of human life, structures, improvements, and natural resources from wildland fire and subsequent floods. Firefighters have improved opportunities for tactical operations and safety near structures, improvements, and high resource values. By providing for defensible space, public and firefighter safety is enhanced (LMP Part 1, p. 19).

According to the ANF's LMP Strategy, fire management priorities include prevention, engineering or 'the abatement of fire hazard along roadways and in high-use areas using fire retardant and removal of flammable vegetation'. Hazardous fuel reduction includes removing brush and vegetation from areas where they pose a significant threat to human life, property, and national forest resources, and where they interfere with the health of natural fire-adapted ecosystems (LMP, ANF Part 2, p33).

Part 3, Appendix K in the LMP acknowledges the various fire ordinances in southern California that are applicable to private lands. It states *"Where existing developments cannot meet modern day ordinances, the Forest Service will consider the use of NFS lands to meet the ordinance. For new developments, we will not allow the use of National Forest System lands for the ordinance to be met. Developers must implement appropriate setbacks. The guidelines for NFS lands were developed by a panel of fire management personnel including two fully qualified fire behavior analysts under the principle of best science as the basis for management of NFS lands."*

The Los Angeles County Fire Department commented that applying this LMP guideline as criteria to exclude from the project structures built after the LMP went into effect (April 2006) would be inconsistent with Forest Service policy. The Proposed Action in this EA has been changed to remove this restriction. All homes that otherwise qualify will be allowed to seek authorization to establish defensible space on NFS lands. The project remains consistent with the LMP, since the LMP language above is considered a guideline. Managers have the flexibility to adjust LMP guidelines without amending the plan, to fit local, site specific conditions (LMP, Part 3, pg. 2).

This project occurs in Wildland Urban Interface (WUI) Defense Zones, meets the criteria for Standards 7 and 8 in the LMP and is consistent with all other applicable elements of the LMP. Standard 7 provides definitions and standard distances of WUI Defense Zones, which the project has incorporated. Standard 8 states, "Community protection needs within the WUI Defense Zone take precedence over the requirements of other forest plan direction, including other standards identified in Part 3 of the forest plan..."

Purpose of and Need for Action

The need for this project is to provide a mechanism for landowners to create and maintain defensible space (as defined by state [i.e., California PRC 4291] and Los Angeles County [i.e., Fire Code 325.2.2] or San Bernardino County [i.e., Fire Code 23.0304]) around residences or critical infrastructures on National Forest System (NFS) lands. While meeting this need, the purposes of this project are to:

- Reduce the risk of loss from wildfire to private residences and critical infrastructures (measurement indicator: flame length at the hottest and driest part of the fire season, formally referred to as “90th percentile fire weather conditions”⁷).
- Enhance firefighter and public safety by creating additional defensible space in the wildland urban interface (WUI) areas on NFS lands adjacent to private residences or critical infrastructure (measurement indicator: flame length at 90th percentile fire weather conditions).
- Develop a process to respond to requests from landowners to create defensible space, and ensure adequate mitigation for impacts to natural resources.

Summary of Proposed Action

The Forest proposes to authorize applicable landowners to remove brush and other hazardous vegetation from NFS lands. Authorizations would allow treatment of vegetation on NFS lands to the extent necessary to meet applicable state, and Los Angeles and San Bernardino County fire ordinances for defensible space. The US Forest Service is not imposing any legal obligation on private property owners.

The analysis in this EA assumes that the maximum distance of the project area is 300 feet from homes and critical infrastructure. This is a greater distance than either state or county fire codes define. This assumption is made for purposes of analysis due to the uncertainty of the exact location of land line boundaries in the field, and because it is also more consistent with the distances for WUI Defense Zones defined in the LMP. A majority of structures will not actually treat up to 300 feet, but this assumption forms the maximum potential project area. Using this assumption, the project area covers 1,212 structures and 767 acres of NFS lands. Using a 200 foot assumption, the maximum treatment area is approximately 774 structures and 300 acres of NFS lands. A detailed description of the proposed action can be found in Chapter 2 of this EA under Alternative 2, Proposed Action.

Authorizations would be issued to landowners who request them, after Forest or Forest approved personnel visit the property to establish treatment boundaries, survey for special status species⁸ and select applicable measures to limit environmental impacts as prescribed in this alternative. Each individual authorization would be for a period of one to three years, depending on the need to perform treatment annually or less frequently. Once initial authorizations expire, they may be re-issued as necessary to maintain defensible space. Reissuance of authorizations would occur only after additional environmental analysis is conducted and a decision is made to continue. Additional analysis would tier to the information in this EA, to the extent there are no changed circumstances or new information.

The program of providing authorizations to private landowners would operate for a period of ten years from the date a decision is made. This is considered the overall project duration. After the seventh year of the project duration, the maximum duration of each authorization would be adjusted so as not to exceed the ten-year date from the project decision. In other words, authorizations issued during the last three years of the project duration would be issued for less than three years.

The sufficiency of the environmental analysis in this document would be reviewed at some point during the 10-year implementation period for the proposed action. Such a review would evaluate whether conditions have changed to the extent that the analysis of environmental effects as detailed in this document needs to be supplemented or revised. This kind of review is explained in the Forest

⁷ 90th percentile fire weather conditions are widely used for fuels management planning purposes and it represents when very high fire danger conditions would occur during the hottest and driest 10 percent of the standard fire season.

⁸ Special status species include threatened, endangered, and Forest Service sensitive species.

Service Handbook: “If new information or changed circumstances relating to the environmental impacts of a proposed action come to the attention of the responsible official after a decision has been made and prior to completion of the approved program or project, the responsible official must review the information carefully to determine its importance. If, after an interdisciplinary review and consideration of new information within the context of the overall program or project, the responsible official determines that a correction, supplement, or revision to an environmental document is not necessary, implementation should continue...” (FSH1909.15(18.1))

Decision Framework

The responsible official for this project is the Angeles National Forest Supervisor. He will determine whether to implement the proposed action as described, modify the proposed action, or take no action at this time. Factors relevant to the decision include how well the alternative meets the purpose and need, the potential environment effects, and public comments received throughout the planning process.

Public Involvement

On March 2, 2011, approximately 813 letters were mailed to potentially interested parties (i.e., individuals, organizations, Tribal representatives, federal, state, and local agencies) requesting public comment for this project. The letter described how to receive additional information on the project, outlined the comment period, and included a map of the proposed project area. Based on requests from several individuals and organizations, we sent a follow-up mailer on April 8, 2011 extending the public comment period to April 29, 2011.

A legal notice requesting public scoping comments for this project was published in the *Los Angeles Times* on March 12, 2011. We also included this project in the Schedule of Proposed Actions (SOPA) on the Forest website starting in April 2011, with periodic updates throughout the process.

We received comments from 20 individuals, Tribal representatives, organizations, and state and county agencies. Many comments were requesting additional information and/or were supportive of the project. Several were calling to determine whether they met the criteria to participate in the project and others were concerned with the cost to implement the project. Two letters were concerned about potential adverse effects to natural resources (i.e., native plants, special status species, soil erosion after treatment). Many of the comments and concerns were incorporated into the proposed action.

The original list of contacts from 2011 was revised in April 2014, to include a total of 1,102 individuals, Tribal and Native American interests, organizations, and government agencies. Letters were distributed to this list via mail and e-mail on May 7, 2014, notifying recipients of the availability of the EA and the opportunity to comment. On May 9, 2014, a legal notice of opportunity to comment was published in the *Los Angeles Times*. The Forest Service accepted comments on this proposal for 30 days following publication of the legal notice. Instructions on how to comment were in the legal notice and posted to the project website:

http://www.fs.fed.us/nepa/nepa_project_exp.php?project=35149.

During the 30-day comment period on the Draft EA, we received comments from 16 individuals, Tribal representatives, organizations and state and county agencies. Forest staff also responded to requests for additional information and clarification, including several e-mail exchanges and telephone calls. Some of those who commented asked whether they met the criteria to participate in the project. Others were concerned that the project would require them to treat fuels on NFS lands, and questioned the associated costs and legal instruments required to accomplish removal of

hazardous fuels on NFS lands. Appendix A provides a table with responses to each comment, from both the scoping and EA comment periods.

The following changes were made to the proposed action in response to public or agency comment:

- One comment noted that the maps appeared to exclude several homes in the Mt. Baldy area. The project data was reviewed, and 15 structures which were within 300 feet of the NFS boundary were added to the treatment area maps. This resulted in an increase of 7 acres to the estimate of treatment area, for a revised total of 767 acres.
- Several commenters assumed the project was imposing new or expanded requirements for hazardous fuel clearance. The Proposed Action has been updated to stress that the program is voluntary, and will only involve owners who choose to request authorization from the Forest Service.
- The Los Angeles County Fire Department commented that not allowing structures built after the LMP went into effect (April 2006) was inconsistent with Forest Service policies for creating defensible space. The date when a structure was built has been removed as criteria for eligibility in the project. The County Fire Department also commented that a limitation on considering outbuildings or storage sheds as eligible for defensible space was inconsistent with state and local code language that uses the term “any” building or structure. This limitation has also been removed from the proposed action.

Before the final decision on the project, there will be an objection period pursuant to 36 CFR 218, Subparts A and B. This process allows those who have submitted formal comments on the project to request a review of the Forest Supervisor’s proposed decision at the Regional level. Planning for this project began under prior regulations (36 CFR 215) which have been replaced with 36 CFR 218. Only those who submit timely project-specific written comments during either public comment period are eligible to file an objection. Issues raised in an objection must be based on prior comments, unless they concern new information not available during comment periods. Individuals or representatives of an entity submitting comments must sign the comments or verify identity upon request.

Issues

Comments provided during scoping were used to formulate issues concerning the proposed action, or to determine that comments did not identify a specific issue. Issues were defined as those directly or indirectly caused by implementing the proposed action. Non-issues were identified as: (1) does not meet the purpose of and need for action and/or is outside the scope of the analysis; (2) already decided by law, regulations, LMP or other higher level decision; (3) irrelevant to the decision to be made; (4) conjecture and not supported by scientific or factual evidence; (5) already addressed in the proposed action description; (6) has been addressed with other prior environmental review; or (7) comment of support. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...” A list of issues and reasons why they were found to be issues or not may be found in appendix A in this document.

We identified the following key issues during scoping that will be addressed in chapter 3 of this EA. None of these key issues were used to develop a new alternative considered in detail:

- How would this project affect special status species and their habitat?
- How would non-native grasses affect native plant communities?

- What are the indirect effects to water and native vegetation due to the loss of native vegetation?

Chapter 2 - Alternatives

This chapter describes and compares the alternatives considered for the Defensible Space Project. It describes two alternatives considered in detail and those considered but eliminated from detailed study. The end of this chapter presents the alternatives we considered in detail in a table format (table 2) so that the alternatives can be readily compared.

Alternatives Considered in Detail

Alternative 1, No Action

Under the no action alternative, no hazardous fuel treatments would occur in the designated defensible space areas on NFS lands. Current on-going hazardous fuels treatments on non-NFS lands would continue. Any requests from landowners to complete this work would be responded to individually, including the required site specific environmental analysis.

Alternative 2, Proposed Action

Applications from landowners that have residences or critical infrastructures within state and county designated defensible space areas located on NFS lands would be accepted throughout the year and processed under existing Forest Service agreement programs. Private landowners, or groups representing the landowners such as Fire Safe Councils, would contact their local District Office to request an agreement. District Staff would obtain basic information from the cooperator seeking authorization. The appropriate resource protection measures would be included as an attachment to the agreement. Assuming 300-foot clearances as the maximum for defensible space, an estimated 1,212 structures, and 767 acres of NFS lands would be included in the Proposed Action. If a 200 foot distance is assumed, an estimated 774 structures meet this criterion and would involve approximately 300 acres of NFS lands. These numbers represent a range, or minimum and maximum, for the Proposed Action. Note: For the purpose of brevity in this analysis, the approved application and authorization to treat fuels on NFS lands are collectively referred to as an “agreement” for the remainder of this document.

The program would be voluntary, and does not impose any additional legal requirements on property owners. Applicants that meet the criteria within Los Angeles and San Bernardino Counties would be issued an authorization for a period of one to three years from the date of issuance, depending on the need to perform treatment annually or less frequently. The duration of the authorization would be determined in consultation with county fire department representatives and the landowner.

Once initial authorizations expire, they may be re-issued as necessary to maintain defensible space. Reissuance of authorizations would occur only after additional environmental analysis is conducted to determine if there is new information or changed circumstances. Additional analysis would tie to the information in this EA, and would address any changed circumstances or new information.

The program of providing authorizations to private landowners would operate for a period of ten years from the date a decision is made. This is considered the overall project duration. After the seventh year of the program, the maximum duration of each authorization would be adjusted so as not to exceed the ten-year date from the project decision. As an example, landowners applying in

year eight would only be eligible for a two-year authorization; those applying in year nine would only receive a one year authorization.

The number of authorizations issued in any given year is dependent on the number of landowners who choose to participate in the program, and cannot be predicted. It is unlikely that in any given year all of the eligible landowners would seek authorizations.

The spatial extent of this project is limited to ~767 acres with 300' defense zones, distributed with different fuel types. Fire behavior, e.g., flame length and residency time are influenced by the fuel load provided by the vegetation density or spatial distribution and the structural characteristics of the vegetation, including height from ground, fuel moisture, flammability and ignitability of the vegetation. Low fuel moisture and structurally fine vegetation, e.g., dried grasses, are easily ignited but do not have enough fuel to sustain a flame for long. Whereas, downed logs are not easily ignited but once burning, provide enough fuel to sustain flames for a long residence time. Certain trees are more likely to ignite and torch than other species, e.g., eucalyptus and sycamores with their fine peels of bark are more likely to ignite with flames on the bark and leaves.

Table 1. Vegetation types on the ANF which are growing within the 300' distance from structures near the ANF boundary. (GIS corporate database, scale is to 30-m)

Vegetation Type in Defense Zones in Project Area	Acres
Conifer forest/woodland	23.6
Hardwood forest/woodland	82.0
Herbaceous	28.0
Mixed conifer and hardwood forest/woodland	17.0
Non and Sparsely Vegetated - Urban, Agriculture or Aquatic	62.2
Shrub	550.7
Eucalyptus	0.4
Non-Native/Ornamental Conifer	2.2
Non-Native/Ornamental Grass	0.3
Non-Native/Ornamental Hardwood	0.1
Non-Native/Ornamental Shrub	0.3
Pastures and Crop Agriculture	0.2
SUM	767.0

Forest Service authorizations would allow for the following treatment specifications:

- Initial cutting or thinning and maintenance of vegetation on NFS lands at a minimum 100 feet from residences or critical infrastructures. Under Los Angeles County fire code, some areas would meet criteria that would allow cutting or thinning vegetation at a maximum of 200 feet from residences or critical infrastructure. Under San Bernardino County fire code, additional clearance beyond the 100 feet would be authorized if the

County Fire Chief, Fire Warden, or their designee determines additional clearance is needed for buildings that may be used as evacuation centers, medical facilities, places of public gatherings or other critical infrastructures. In some cases treatment areas would extend up to 300 feet from the structure, and this is assumed to be the maximum treatment area for purposes of analysis.

Specific direction within the agreement involving defensible space on NFS lands would include:

- Vegetation would be cut using hand tools (e.g., chainsaws, loppers, brush hooks, weed whips). Chippers could be used on existing roads and turnouts. Chips should be scattered to generally three to five inches deep and continuous over 25 percent of the treated area. Heavy equipment (e.g., tractors, masticators, bulldozers) would not be authorized due to the potential ground disturbance heavy equipment could cause.
- As a preventive measure, to reduce the risk of a root fungus (*Heterobasidion annosum*) infecting nearby conifers, Sporax,[®] or similar fungicide, would be applied to freshly cut conifer stumps by a certified pesticide applicator. (LMP, Pt 3, Standard 5)
- All dead or downed vegetation would be removed, except where retention is required in California Red-legged Frog habitat pursuant to Design Feature WILD-6. All cut and dead vegetation, unless chipped, would be removed to locations off NFS lands for disposal.
- Consistent with Los Angeles and San Bernardino counties defensible space regulations and guidelines, areas within the first 100 feet from residences or critical infrastructures could retain:
 - A light cover of herbaceous vegetation, no taller than 4 to 6 inches in height.
 - Individual shrub or trees if there is a minimum cleared area between plants of at least one and one half times the height of the plant. Trees retained must be cut (pruned) to a height of six feet above the ground for mature trees or up to one third of the height of young trees to remove ladder fuels, or according to the specifications of a fire marshal or Forest Service fire personnel.
- Areas 100 to 300 feet from residences or critical infrastructures and based on state or county fire code or special circumstances should retain:
 - No more than 50 percent of the vegetation taller than 18 inches in height.
 - Individual shrub or tree specimens if there is a minimum cleared area between specimen plants of at least the height of the specimen plant. Specimen trees retained must have limbs cut (pruned) to a height of six feet above the ground for mature trees or up to one third of the height of young trees to remove ladder fuels.
- Specific restrictions within the agreement involving defensible space on NFS lands would include:
 - No planting or seeding of native or non-native vegetation.
 - No digging or scraping of the topsoil, except for purposes of removing invasive species according to project design features. Root crowns would remain intact.
 - No road or other infrastructure construction.
 - Pesticide use (other than sporax) may be allowed only where it is approved by separate Forest Service decision documents.
 - No prescribed burning on NFS lands.

- Vegetation less than 18 inches in height in areas beyond 100’ from residences or critical infrastructure would be retained in order to stabilize the soil and prevent erosion, with the exception of high priority invasive species removed in accordance with project design features.

State, and Los Angeles and San Bernardino County fire codes could change during this implementation period (ten years). There may also be site specific needs for additional treatment beyond 200 feet based on terrain and vegetation. The standards for WUI Defense Zones in the LMP (Part 3, pg. 5) include a minimum of 300 feet width in forested areas. This is also the maximum width the LMP prescribes for chaparral areas.

The effects analysis includes NFS lands within 300 feet of residences and critical infrastructure. Using these criteria, the acreage would increase from 300 acres to a maximum of 767 acres. There is also uncertainty over precise locations of boundaries on the ground. Analyzing for 300 feet of potential defensible space will ensure that the footprint of the environmental analysis does not preclude any adjacent structures that may need to treat NFS lands to meet county codes. It is also consistent with the defined widths of WUI Defense Zones in the LMP.

Table 3 displays the estimated number of structures potentially involved and approximate acres by ranger district, and the total, assuming 200-foot and 300-foot defensible space distances involving NFS lands.

Table 2. Summary table of potential structures and acres of NFS lands involved assuming 200-foot or 300-foot defensible space distances.

District/Forest	Potential Number of Structures Involved		National Forest System Lands (acres)	
	200-foot	300-foot	200-foot	300-foot
Santa Clara/Mojave Rivers Ranger District	429	646	199	518
Los Angeles River Ranger District	197	336	69	179
San Gabriel River Ranger District	148	230	32	70
Forest (total)	774	1,212	300	767

Design Features and Monitoring

The following design features were developed for the proposed action to reduce or eliminate potential effects to the resources.

Aquatic

- AQUA-1 Treatments would not occur in wet meadows or within 100 feet from any perennial or intermittent streams within occupied, designated critical, or unsurveyed suitable habitat for any threatened or endangered species. Within the 100-foot stream buffer area, but outside of occupied, designated critical, or unsurveyed suitable habitat for any threatened or endangered species, treatment within the buffer would be permitted, and would meet design feature AQUA-2. (BMP 1.8, Forest Service Region 5 Water Quality Handbook)
- AQUA-2 When treatments are permitted to occur within 100 feet from the bankfull edge of any perennial or intermittent streams the following measures would apply:
 - Retain live riparian tree species.

- Retain trees and shrubs contributing to stream channel stability, or providing shade to the stream. (BMP 1.8, Forest Service Region 5 Water Quality Handbook)

AQUA-3 Fueling or maintenance of handheld equipment, such as chainsaws, would occur off NFS lands. Fueling of stationary equipment, such as a chipper, can occur on NFS lands as long as it is within an existing road or turnout and is not within 100 feet of any water body or an intermittent or perennial stream. (BMP 2.11, Forest Service Region 5 Water Quality Handbook)

Wildlife- Threatened and Endangered Wildlife Species

- WILD-1 Prior to issuing the agreement for fuel treatment, a record search and/or surveys would be conducted to determine whether any threatened or endangered wildlife species or their habitat are present in the treatment area.
- WILD-2 For all treatments planned within threatened or endangered species proposed/designated critical, occupied or unsurveyed suitable habitat, a Forest or Forest approved biologist must review the agreement application and determine if site-specific avoidance and minimization measures are needed. Site specific avoidance and minimization measures may include, but are not limited to: presence of a biological monitor; flagging; and, season of treatment.
- WILD-3 In occupied arroyo toad (*Anaxyrus californicus*) habitat, treatment of riparian associated areas (outside the 100-foot stream buffer) must occur outside the season when toads are active. Currently no mapped defense zones overlap with occupied arroyo toad habitat and 25 acres of Designated Critical Habitat overlap with defense zones. This season may vary depending on weather conditions, but is typically March 1 through October 1. A Forest or Forest approved biologist would determine the width of the area to be included in this seasonal restriction and would consider factors such as topography, vegetation type and soil type.
- WILD-4 In occupied arroyo toad habitat (currently, none known), treatment activities that are planned in upland habitats away from riparian associated areas are allowed during the season when toads are most likely to be active. These treatments are limited to the following daylight hours: commencement of activities can start no sooner than two hours after sunrise and must be completed no later than two hours before sunset. This restriction would apply to upland areas if they are within the 80 foot elevation break or within 4,900 feet of the occupied stream stretch (whichever comes first). Site specific conditions or information may be used by Forest or Forest approved biologist to make adjustments to these parameters.
- WILD-5 California red-legged frog (*Rana draytonii*) occurrences have been documented in San Francisquito and Aliso Canyons. Adjacent upland areas with potential to provide habitat would require surveys prior to treatment. Unless site specific conditions warrant a deviation, areas within 330 feet of the occupied stream would be included in this requirement. These surveys would focus on detection of features that might provide the moist microsite conditions preferred by red-legged frogs. If located, these features would be surveyed to determine if California red-legged frogs are present. If red-legged frogs are located, a Forest or Forest approved biologist would make a recommendation regarding what protection measures would be required to avoid or minimize impacts to individuals present in the area (e.g., treatment buffers, biological monitors).
- WILD-6 In occupied California red-legged frog habitat, currently known in San Francisquito and Aliso Canyons, retain large down wood.

- WILD-7 In occupied California red-legged frog habitat, currently known in San Francisquito and Aliso Canyons, avoid treatments during the rainy season when ground conditions are moist and frogs are most likely to be utilizing areas away from the stream corridor (typically October through April).
- WILD-8 Treatment activities in unsurveyed suitable mountain yellow-legged frog (*Rana muscosa*) habitat would be limited to the non-breeding season (July to February). Suitable habitat for mountain yellow-legged frog occurs in high-elevation riparian corridors in the San Gabriel Mountain Ranges. A Forest or Forest approved biologist would make the determination regarding habitat suitability. This determination can be made based on a literature search, records search, habitat evaluation, presence of invasive species, etc.
- WILD-9 If suitable coastal sage scrub habitat (>1 acre patch size) within the range of the coastal California gnatcatcher (*Polioptila californica*) is located in a treatment area, it would be excluded from treatment activities unless US Fish and Wildlife Service (USFWS) protocol surveys have been conducted that year with negative results. If protocol surveys result in no gnatcatcher detections, vegetation treatments can be implemented without any restrictions for gnatcatchers. If coastal California gnatcatchers are confirmed within a treatment area, no treatment would occur within the occupied habitat.
- WILD-10 If treatment areas include riparian habitat, a Forest or Forest approved biologist would evaluate suitability of the site for southwestern willow flycatchers (*Empidonax traillii extimus*) or least Bell's vireos (*Vireo bellii pusillus*). The USFS/USFWS criteria for identifying suitable habitat will be utilized to determine areas of suitable southwestern willow flycatcher or least Bell's vireo habitat. If suitable southwestern willow flycatcher or least Bell's vireo habitat is located in a treatment area, it would be excluded from treatment activities unless USFWS protocol surveys have been conducted that year with negative results. If protocol surveys result in no southwestern willow flycatcher or least Bell's vireo detections, vegetation treatments can be implemented without any restrictions for these species. If either of these species is confirmed within a treatment area, no treatment would occur while occupied.

Wildlife - California Spotted Owls

- WILD-11 Implement fuel reduction treatments in compliance with the June 2004 Conservation Strategy for the California Spotted Owl (*Strix occidentalis occidentalis*) on the National Forests of Southern California. Maintain a limited operating period (LOP) prohibiting activities within approximately 0.25 miles of a California spotted owl nest site, or activity center where a nest site is unknown, during the breeding season (February 1 through August 15), unless surveys confirm that the owls are not nesting (S19 and S20 LMP). On the ANF, California spotted owls can occur in riparian/hardwood forest, live oak/bigcone Douglas-fir forest, mixed conifer forest.

Wildlife - Migratory Birds

- WILD-12 To avoid adverse impacts to nesting birds, treatment activities would be implemented outside the bird breeding season (March 15 to September 15) whenever feasible. If work is performed during the breeding season, pre-treatment surveys are recommended (based on line officer discretion) to identify nests in the treatment area. If active nests are located, appropriate exclusionary buffers of a minimum of 50 feet are

recommended. If pre-treatment surveys are not possible, active nests located during treatment activities should receive the same exclusionary buffer.

General Wildlife

- WILD-13 Sites used for staging crews and their equipment would not be established in 100-foot buffered riparian areas or threatened/endangered species habitat. To avoid attracting opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks and raccoons, all food and trash must be appropriately stored in closed containers and removed from the project site at the end of each day.
- WILD-14 In areas adjacent to riparian habitat where special status amphibian species are present and are most likely to be active at night, vehicles and equipment on NFS lands would be parked or removed from the habitat before sunset.
- WILD-15 Wildlife encountered during the course of project implementation should be given the opportunity to evacuate the site. Individuals implementing project activities would be reminded that harassment or removal of wildlife from the site is not permitted.
- WILD-16 Provide informational materials or links to relevant internet sites to aid agreement holders and workers in recognizing and avoiding special status species (wildlife or plant) that may occur in the treatment area.

Botany- Threatened and Endangered Plant Species

- BOT-1 Within suitable, unsurveyed habitats for Braunton's milkvetch (*Astragalus brauntonii*), slender-horned spineflower (*Dodecahema leptoceras*), and thread-leaved brodiaea (*Brodiaea filifolia*), applicants would be encouraged to submit their applications by March 1 (annually) so that botanical surveys may be conducted by a Forest or Forest approved botanist during the blooming period, ensuring detection of all threatened or endangered plant species in the proposed treatment area. Braunton's milkvetch is endemic to the Santa Ana and San Gabriel foothills. The brodiaea is limited to vernal pools in grasslands or in the open grassy areas within woodlands and shrublands. If applicants within these habitat areas submit their application after March 1, treatment may be allowed only within areas determined to be unsuitable for all four threatened and endangered plant species by the Forest or Forest approved botanist, after a detailed site inspection. Other areas of suitable habitat may be treated the following year only if protocol surveys, during the appropriate blooming period, do not detect the species.
- BOT-2 Prior to issuing the agreement for fuel treatment, a record search and/or surveys would be conducted to determine whether any threatened or endangered plant species or their habitat are present in the treatment area.
- BOT-3 Threatened or endangered plants occurrences would be avoided during treatment. Occurrences of threatened and endangered plant species would be flagged by a Forest or Forest approved botanist and avoided through use of a buffer. The Forest or Forest approved botanist would determine the appropriate buffer size. No project work or foot traffic would be allowed within the buffer zone to prevent indirect impacts, such as soil movement into the occurrences.

Botany- Forest Service Sensitive (FSS) Plant Species

- BOT-4 Within suitable, unsurveyed habitats for California satintail (*Imperata brevifolia*), Ross's pitcher sage (*Lepechinia rossii*), Mason's neststraw (*Stylocline masonii*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*) and rigid fringed pod

(*Thysanocarpus rigidus*) applicants will be encouraged to submit their applications by March 1 (annually) so that botanical surveys may be conducted by a Forest or Forest approved botanist during the blooming period, ensuring detection of these Forest Service sensitive (FSS) plant species in the proposed treatment area. If applicants within these habitat areas submit their application after March 1, treatment may be allowed only within areas determined to be unsuitable for these plant species by the Forest or Forest approved botanist, after a habitat review or site inspection. Other areas of suitable habitat may be treated the following year only if protocol surveys, during the appropriate blooming period, do not detect the species. Mason's neststraw is found in Kern county and Los Angeles county in shadscale scrub (alkaline desert habitat) or pinyon-juniper woodland. There are no museum records for rigid fringepod in Los Angeles nor San Bernardino Counties (Calflora Plant Distribution website). The Forest or Forest approved botanist may make a recommendation to salvage or avoid occurrences of Forest Service sensitive (FSS) plant species. These recommendations would be implemented where feasible with the exception of California satintail, Ross's pitcher sage, Mason's neststraw and rigid fringepod. For these four species, implementation of the Forest or Forest approved botanist recommended buffer size and avoidance measures would be required.

General Botany

- BOT-5 Maintain all existing, live native conifers, oaks and other hardwoods with a greater than 8-inch diameter breast height (dbh).
- BOT-6 When feasible, deciduous hardwoods, conifer, and juniper tree species (i.e., bigleaf maple, white alder, ash, Southern California black walnut, western sycamore, red willow, black willow, blue elderberry, Engelmann oak, California juniper, Coulter pine, Jeffrey pine, pinyon pine, and big cone Douglas-fir) would be pruned during their dormancy periods of the winter months (approximately November to March).
- BOT-7 When feasible, evergreen oak species (i.e., coast live oak, California scrub oak, San Gabriel oak, canyon live oak, Tucker oak, and interior live oak) would be pruned late summer to early fall (approximately July to October).
- BOT-8 California bay laurels, holly-leaved cherry, and toyons can be pruned year-round, but when feasible, it is preferable to prune these species in the late spring to summer months (May to September).
- BOT-9 For the above mentioned tree species, avoid removing more than 25 percent of the foliage during an annual growing season. Exceeding this percentage can lead to stress and an increased risk of disease or mortality for the tree. As mentioned above retained trees must have limbs cut (pruned) to a height of six feet above the ground for mature trees or up to one third of the height of young trees to remove ladder fuels.

Invasive Plant (Weed) Species

- WEED-1 The use of chippers is permitted only on existing roads and turnouts.
- WEED-2 All equipment and tools would be washed or otherwise cleaned free of any soil or vegetative debris prior to entering each treatment area.
- WEED-3 All agreement holders and/or implementers would be provided weed prevention and identification education materials.
- WEED-4 Prior to issuing an agreement and commencing treatment, a Forest or Forest approved botanist would perform surveys to determine locations of high priority invasive species

within the treatment and staging areas. Priority species lists are taken from existing ANF NEPA documents for invasive plant treatment programs in the San Gabriel River riparian corridors, the Santa Clara River Watersheds, or Appendix C.

WEED-5 All high-priority invasive species will be treated according to Appendix C and existing NEPA documents and decisions. All reproductive plant material (*e.g.* flowers or seeds) would be bagged in heavy duty (3 millimeters or thicker), black contractor-quality clean-up bags and disposed of at a permitted facility located off NFS lands. (See Appendix C)

WEED-6 If any new or expanding infestations of the high priority invasive plant species are detected in the treatment area or along the access route by the agreement holder, implementers, or Forest Service staff, they shall be promptly reported to the other parties. Follow-up monitoring and treatment shall occur until the new population is eradicated. (See Appendix C)

Avoidance of Illegal OHV Use

OHV-1 To prevent illegal OHV use in areas where fuel reduction treatments have resulted in the loss of vegetative barriers, measures may be required (*e.g.*, monitoring to document illegal OHV use, establishment of physical barriers to block OHV use, placement of signs).

Alternatives Considered but Eliminated from Detailed Study

Public comments received in response to the proposed action provided suggestions for alternatives. Also the original proposed action was modified based on interdisciplinary team analysis and comments from the public. Alternatives considered, but eliminated from detailed analysis are noted below along with the reasons for removing them from further analysis:

Original Proposed Action

The proposed action that was sent out during scoping was modified after further analysis and public comments. Additional protection measures (design features) were added to reduce or eliminate potential resource impacts. Also criteria for accepting applications based on the 1996 Los Angeles County requirement of a fuel modification plan was removed; instead criteria is based on 2006 when the LMP was approved. Appendix K in Part 3 of the LMP says that for new developments, developers must implement appropriate setbacks, so as not to require treatment on NFS lands.

Retrofit Existing or Add New Facilities

A comment made during scoping suggested retrofitting existing structures (*e.g.*, no exposed wood, non-flammable roof, no eaves), the ground between the structure and NFS lands should have a permeable hardscape (*e.g.*, cobbles, gravel, tiles), and/or an 8- to 10-foot fence should be constructed to disrupt wind and fire flow, and stop embers. This alternative was eliminated from detailed analysis because it is outside the scope of the project, which is to address defensible space based on state and county fire codes and ordinances. The Forest Service provides information to homeowners wishing to retrofit their homes for fire safety, but does not have any authority to require homeowners to participate in these programs, since the homes are on private property, making it infeasible to include such requirements in this project.

Comparison of Alternatives

Table 3 provides a brief comparison of the alternatives considered in detail including how each responds to the purposes and need for the project and environmental impacts based on the key issues analyzed.

Table 3. Comparison of alternatives considered in detail analysis.

Measures of Comparison	Alternative 1	Alternative 2
Maximum number of acres of national forest lands involved	0	767
Maximum number of structures involved	0	1,212
Maximum distance (in feet) from structure	N/A	300
Provide a mechanism to authorize landowners to create defensible space based on state and county fire codes, on NFS lands	No	Yes
Reduce the risk of loss to residences and critical infrastructure measured by predicted flame length (in feet)	No - conditions remain for 0-18' flame length throughout all areas	Yes, predicted flame lengths reduced to 0-4' for 100 feet from homes; 8' flame lengths over 100' from structures
Enhance firefighter and public safety by creating additional defensible space; measured by predicted flame length (in feet)	No - 18' flame lengths do not allow for safe direct attack by firefighters.	Yes - firefighters can directly attack the fire safely within the first 100' from structure, and indirectly between 100 and 300 feet
Affects threatened and endangered plant species	No effect	No effect with design features
Affects Forest Service sensitive plants species	No effect	May affect individuals but would not lead to a trend toward federal listing
Affects threatened and endangered wildlife species	No effect	Will not affect the least Bell's vireo, southwestern willow flycatcher, coastal California

Measures of Comparison	Alternative 1	Alternative 2
		gnatcatcher and Santa Ana sucker or their designated critical habitat. May affect but is not likely to adversely affect the arroyo toad and California red-legged frog or their designated critical habitat.
Affects Forest Service sensitive wildlife species	No effect	May affect individuals but would not lead to a trend toward federal listing
Effects of non-native grasses to native plant communities	Negligible –Not known	Project is designed to minimize non-native grasses expansion into native habitat.
Effects to water due to loss of native vegetation	No effect	Neutral effect due to no ground disturbance, and buffer exclusion of vegetation near streams.

Chapter 3 - Environmental Consequences

This chapter focuses on the affected environment and environmental effects for those resources that had key issues developed based on public comments during scoping, or where the resource condition will be improved by meeting project purposes. At the end of this chapter, a section addresses significance as it relates to the proposed action, based on the definition found in 40 CFR 1508.27. This chapter presents the scientific and analytical basis for comparison of alternatives presented in table 3.

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity, but would occur in the foreseeable future. Cumulative effects result when the incremental effects of actions are added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. Past, present and reasonably foreseeable future actions are assessed along with the effects of the proposed actions to determine whether significant cumulative effects may occur. In most cases, past actions and events were incorporated into the existing condition. This analysis is consistent with the Council on Environmental Quality memo titled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis" dated June 24, 2005, which is incorporated by reference. A list of projects, activities and factors (and their descriptions) that were considered in determining cumulative effects for the resources analyzed in this chapter is noted in appendix B.

To be consistent, analysis for predicted wildland fire was assumed during 90th percentile fire weather conditions.⁹ All analyses also assumed a maximum of 300-foot treatment distances and that all homeowners would apply and be approved to treat NFS lands based on the state and/or county fire codes.

The techniques and methodologies used in the analyses consider the best available science. The analyses include a list of references of credible scientific sources that are relevant to evaluating impacts (chapter 5). The conclusions are based on personal knowledge, previous monitoring of similar types of activities on NFS lands, and a review of relevant scientific literature.

Wildfire and Fuels

The focus of the wildfire and fuels analysis is to address the effectiveness of each alternative in meeting the purposes of this project. The analysis assumes 300-foot treatment zones (adaptive management) on NFS lands with an 80 percent reduction in fuel loading the first 100 feet and 50 percent reduction in fuel loading 100 to 300 feet from residences and critical infrastructure. The analysis also assumes all qualified landowners would apply and be approved for the authorization.

Background and Affected Environment

The Forest represents a true "urban interface" where communities have built up to the very boundary of NFS lands. This characteristic can present serious problems for management of wildfire and the protection of life and property.

⁹90th percentile fire weather conditions are widely used for fuels management planning purposes and it represents when very high fire danger conditions would occur during the hottest and driest 10 percent of the standard fire season.

Ninety-two communities in Los Angeles County are listed as urban wildland interface communities within the vicinity of federal lands that are at high risk from wildfire. An additional 62 communities in San Bernardino County are listed as “at risk”. The original 2001 list of “Communities at Risk” only included communities that were adjacent to federal lands (Federal Register 2001). However, under the management of the California Department of Forestry and Fire Protection, the list extends to all wildland types/ownerships and is currently at 1,264 communities in California (California Fire Alliance 2001).

The overriding considerations concerning fire and fuels revolve around fire risk and fire hazard.

Fire Risk

Ignition sources and fuel hazard generally define the fire risk on the Angeles National Forest. Wildfires occur throughout the year, due to climatic conditions and an abundance of fine flashy fuels. A high potential for damaging wildfires exists given the proximity of the Forest to high-density urban development that provides an abundant source of ignitions. While the forest is successful in suppressing 95- 98% of fire starts each year, conditions related to weather or proximity of suppression resources to the ignition result in some escapes from initial attack. These escapes can result in large and destructive wildfires. The Forest Service, Region 5 Geographic Information Systems (GIS) database identifies a total of 5,204 recorded fires having burned on the Angeles National Forest between 1980 through 2007. Of these fires, 172 evolved into fires that exceeded 100 acres. The forest’s fire history is heavily skewed towards human-caused fires as records indicate that only 25 of the 5,204 origins were lightning caused.

Fire Hazard

Fire hazard can be characterized by how a fire will burn or fire behavior. Fire behavior is the product of the natural environment or the unique combination of topography, weather and fuels (Countryman 1972). Topography and weather are factors on which humans have little effect but fuels can be altered through human intervention or natural processes. Therefore, when assessing fire hazard, the focus is on fuels and the associated fire behavior. Predicted or anticipated flame length was used as the metric to evaluate how the alternatives would meet the purposes of the project. Table 4 compares flame lengths with: fire suppression interpretations for tactics; fire hazard category and fire control difficulty; and, acres in the analysis area under current conditions. This table is a general guideline, which does not take into account many other factors like slope, wind, and fuel moisture, which would affect fire behavior and wildfire suppression capabilities. This table is used to interpret the fire hazard for each alternative.

Table 4. Existing condition flame length interpretations and extents within 300-foot treatment zone.

Flame Length (feet)	Fire Suppression Interpretations (NWCG 2006)	Hazard/Resistance to control	Existing Condition (acres)*
~	Areas estimated to be not burnable, such as bare ground, rock, water, and development.	N/A	73
0-4	Fires can generally be attacked at the head or the flanks by persons using hand tools. Hand-line should hold the fire.	Low	92

Flame Length (feet)	Fire Suppression Interpretations (NWCG 2006)	Hazard/Resistance to control	Existing Condition (acres)*
4-8	Fires are too intense for direct attack on the head by persons using hand tools. Hand-line cannot be relied on to hold fire. Equipment such as dozers, engines, and retardant aircraft can be effective.	Moderate	377
8+	Fires may present serious control problems – torching out, crowning, and spotting. Control efforts at the head of the fire will probably be ineffective.	High to Extreme	225

Climate and Fire Weather

The Mediterranean climate associated with the Forest commonly leads to cool moist winters and warm dry summers and fall. Approximately 80-percent of precipitation falls within the months of November to March. Annual average precipitation at the San Dimas Fire Station (elevation 954 feet) between the years 1961 to 1990 was 18 inches. Measurable rainfall historically ends in May as the Pacific High develops over southern California. The climatic condition leads to extended periods of drying, as many storms are steered north of the Forest.

During May and June of most years, a strong coastal marine flow develops pushing low clouds and fog into the inland valleys. This reduces fire danger in these areas, but generates strong westerly winds in the desert and mountain areas of the Forest. Large high pressure areas often form over the Forest in mid-summer, leading to extended periods of hot temperatures and low humidity.

The project area was subdivided into three weather zones for the purpose of fire behavior analysis. The three weather zones represent multiple Remote Area Weather Stations (RAWS) as noted in table 5. The zones are: Western Front Country, North of Highway 14, and Desert Side.

Twenty years of historical fire weather data (June 1st to October 31st, from 1991 to 2010) was analyzed to calculate 90th percentile fire weather trends using Fire Family Plus (Version 4.0.2; Bradshaw 2008). Ninetieth percentile fire weather is defined as the weather conditions for ten percent of the hottest days during the fire season. Weather calculations include estimated fuel moistures, meaning the quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212° F (NWCG 2011). Table 4 provides a detailed weather and fuel moisture summary for the weather zones (multiple RAWS) that were used to model potential or anticipated fire behavior.

Table 5. 90th percentile fire weather by weather zone.

Data Type	Western Front Country	North of Hwy 14	Desert Side
RAWS used in weather zone	Little Tujunga, Clear Creek, Tanbark	Camp 9, Warm Springs, Acton	Valyermo
Maximum temperature (°F)	96.3	97.7	100.0
Minimum relative humidity (%)	12.3	8.7	6.0
Wind speed (mph)	8.0	12.7	12.0
1 hr fuel moisture (%)	2.9	2.2	1.4

Data Type	Western Front Country	North of Hwy 14	Desert Side
10 hr fuel moisture (%)	3.6	2.8	2.0
100 hr fuel moisture (%)	6.2	5.0	4.1
1000 hr fuel moisture (%)	7.9	6.5	4.7
Live Woody fuel moisture (%)	64.7	60.0	50.0
Live Herbaceous fuel moisture (%)	3.1	2.2	1.4

Models Used to Predict Fire Behavior

Fuel Model

In order to quantify the effects of a wildfire, a fuel model is selected as an input to the fire spread model. A fuel model is defined by a set of fuel bed inputs needed for a particular fire behavior or fire effects model.

This analysis utilized the LANDFIRE 2010 to determine the existing fuel models associated with the project area. Fuels data from potential treatment areas adjacent to private homes were summarized to determine the total acres per fuel model. Table 5 displays the fuel models and approximate acres within the analysis area organized by weather zones.

Table 6. Total acres in each surface fuel model and weather zone for the project area within a 300-foot treatment zone.

Surface Fuel Model *	Front Country: acres	North of Hwy 14: acres	Desert Side: acres
Non-burnable fuels (developed, water, bare ground)	37	19	17
Short, Sparse Grass	23	4	12
Low Load Grass	0	0	103
Moderate Load Grass	63	134	<1
Low Load Grass-Shrub	28	9	9
Moderate Load Grass-Shrub	75	92	65
Low Load Shrub	1	<1	<1
Moderate Load Shrub	5	<1	13
High Load Shrub	<1	<1	<1
Very High Load Shrub	1	7	2
Low Load Timber-Grass-Shrub	<1	<1	<1
Very High Load Timber-Grass-Shrub	2	8	4
Low Load Compact Conifer Litter	<1	<1	<1
Low Load Broadleaf Litter	3	1	1
Moderate Load Conifer Litter	6	5	5
Small Downed Logs	1	<1	<1
Long Needle Litter	<1	3	1
Very High Load Broadleaf Litter	<1	3	<1
Low Load Activity Fuel	0	0	0
Moderate Load Activity Fuel	0	0	0
Total Acres	248	286	233

*Fuel Models as described by Scott and Burgan (2005). Source data: USDI, 2010.

Fire Behavior Modeling

Modeling fuel treatments show the expected changes in predicted fire behavior between the no action and the proposed action alternatives within an assumed 300-foot treatment zone. The outputs are not absolutes and are bound by the assumptions and limitations of data collection methods and individual models.

NEXUS 2.0 (Scott and Reinhardt 2004) was used as the fire behavior analysis model to determine flame lengths based on a wildfire burning under 90th percentile fire weather conditions. NEXUS outputs compare the flames lengths associated with the existing condition and post treatment condition to evaluate how each alternative met the purposes of the project specific to fire and fuels.

For fire behavior modeling purposes, defensible space for the first 100 feet was defined as an 80 percent reduction in fuel loading. The area 100 to 300 foot from residences and critical infrastructures was defined as a 50 percent reduction in fuel loading. Baseline fuel model information used in the analysis was obtained from the LANDFIRE (USDI, 2010) California landscape. A constant slope of 10-percent was used for each modeling run.

Cumulative Effects Boundary

The cumulative impacts spatial boundary considered in this analysis is the wildland urban interface defense zone for the Forest. This zone is chosen because the resources all have one thing in common: the high degree of human influence, and the priority in management of protecting communities. Projects considered in the cumulative effects analysis are those that are currently being implemented or have been implemented within the past five years as well as projects that are currently in the planning stages. The temporal boundary is seven to ten years based on individual treatment effectiveness.

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Flame lengths

Tables 7 through 9 compare the two alternatives modeled flame lengths based on surface fuel models for each of the three weather zones within the project area. The proposed action (alternative 2) is broken into two treatment zones (0 to 100 feet and 100 to 300 feet).

Table 7. Desert-side (Weather Zone) modeled flame lengths.

Surface Fuel Model	Acres	No Action: flame length (feet)	Proposed Action flame length (feet)	
			0-100 feet	100-300 feet
Non-burnable fuels	1	~	~	~
Short, Sparse Grass	12	3	<1	2
Low Load Grass	10	7	2	4
Moderate Load Grass	<1	13	3	6
Low Load Grass-Shrub	9	5	2	3
Moderate Load Grass-Shrub	65	7	2	4
Low Load Shrub	<1	4	<1	2
Moderate Load Shrub	13	6	1	3
High Load Shrub	<1	18	4	8
Very High Load Shrub	2	17	4	8
Low Load Timber-Grass-Shrub	<1	3	<1	1

Surface Fuel Model	Acres	No Action: flame length (feet)	Proposed Action flame length (feet)	
			0-100 feet	100-300 feet
Very High Load Timber-Shrub	4	10	2	5
Low Load Compact Conifer Litter	<1	<1	<1	<1
Low Load Broadleaf Litter	1	1	<1	<1
Moderate Load Conifer Litter	5	1	<1	<1
Small Downed Logs	<1	2	<1	1
Long Needle Litter	1	4	<1	2
Very High Load Broadleaf Litter	<1	6	1	3
Grand Total	233	~	~	~

Table 8. Western Front Country (Weather Zone) modeled flame lengths. CHRIS – ASSUMING ALL THE ACRES ADDED ARE IN THIS WEATHER ZONE SO NO NEED TO UPDATE OTHER 2 TABLES

Surface Fuel Model	Acres	No Action: flame length (feet)	Proposed Action flame length (feet)	
			0-100 feet	100-300 feet
Non-burnable fuels	37	~	~	~
Short, Sparse Grass	23	2	<1	1
Moderate Load Grass	63	8	2	4
Low Load Grass-Shrub	28	3	<1	2
Moderate Load Grass-Shrub	75	4	1	2
Low Load Shrub	1	2	1	1
Moderate Load Shrub	5	4	1	2
High Load Shrub	<1	12	3	6
Very High Load Shrub	1	12	3	6
Very High Load Timber-Shrub	2	7	2	4
Low Load Compact Conifer Litter	<1	1	<1	<1
Low Load Broadleaf Litter	3	1	<1	<1
Moderate Load Conifer Litter	6	1	<1	<1
Small Downed Logs	1	1	<1	<1
Long Needle Litter	<1	3	1	1
Very High Load Broadleaf Litter	0	4	1	2
Low Load Activity Fuel	0	3	1	2
Moderate Load Activity Fuel	0	5	1	3
Total Acres	248	~	~	~

Table 9. North of Highway 14 (Weather Zone) modeled flame lengths.

Surface Fuel Model	Acres	No Action: flame length (feet)	Proposed Action flame length (feet)	
			0-100 feet	100-300 feet
Non-burnable fuels	19	~	~	~
Short, Sparse Grass	4	3	<1	2
Moderate Load Grass	134	11	3	5
Low Load Grass-Shrub	9	4	1	2
Moderate Load Grass-Shrub	92	6	2	3
Low Load Shrub	<1	4	<1	4
Moderate Load Shrub	<1	5	2	3
High Load Shrub	<1	16	4	8
Very High Load Shrub	7	16	4	8
Low Load Timber-Grass-Shrub	<1	2	1	1
Very High Load Timber-Shrub	8	9	2	4
Low Load Compact Conifer Litter	<1	<1	<1	<1
Low Load Broadleaf Litter	<1	1	<1	<1
Moderate Load Conifer Litter	5	1	<1	<1
Small Downed Logs	<1	2	<1	<1
Long Needle Litter	3	4	<1	<1

Surface Fuel Model	Acres	No Action: flame length (feet)	Proposed Action flame length (feet)	
			0-100 feet	100-300 feet
Very High Load Broadleaf Litter	3	6	2	3
Total Acres	286	~	~	~

Fire Behavior, Risk to Private Residences and Critical Infrastructure

Under the no action alternative, where no additional defensible space is created, potential structure ignitability associated with radiant heat from wildfires remains static or increases slightly over time as fuel accumulates. Based on table 4, approximately 225 acres or 29 percent of the project area has a predicted flame length greater than eight feet: these flame lengths may present serious control problems with torching out, crowning and spotting. Approximately 337 acres or 49 percent of the project area has predicted flame lengths of four to eight feet: these flame lengths would be too intense for direct attack on the head of the fire by persons using hand tools and hand-line cannot be relied on to hold the fire.

Figure 4 is a graphic representation of the fireline interpretation chart (table 4) for very high load, dry climate shrub (or dense chaparral). This fuel type is the most hazardous within the project area. The figure shows under the no action alternative, the rate of spread and heat per unit area in this fuel type would produce flames greater than 15 feet and would have high fire intensities causing a higher risk of loss to structures and improvements.

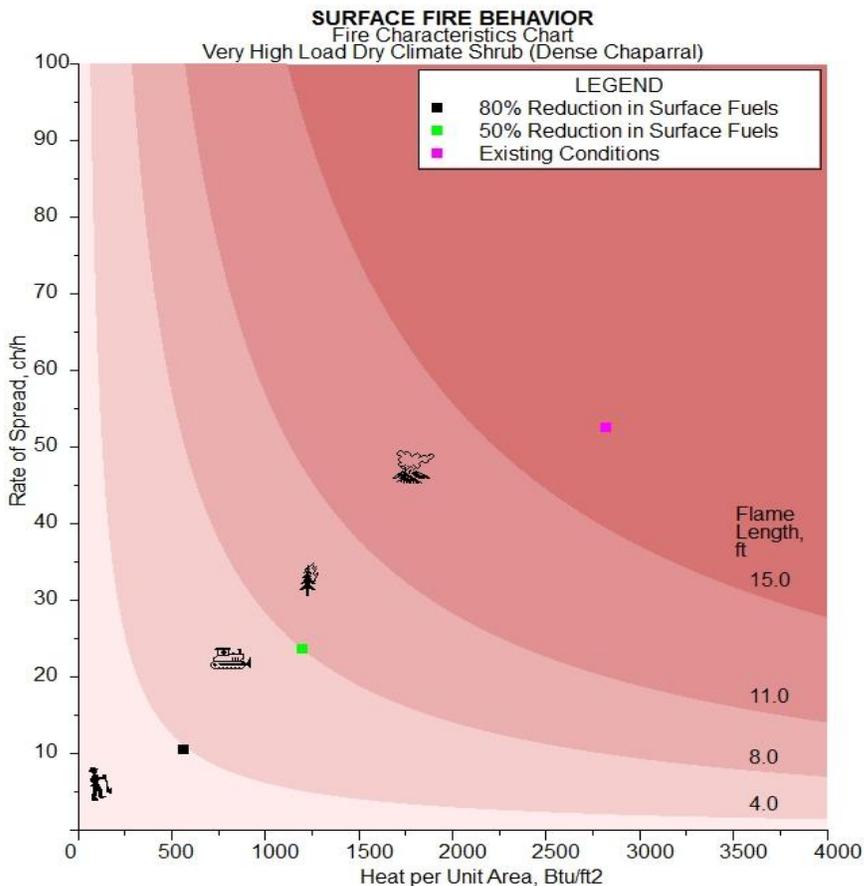


Figure 4. Fireline interpretations chart for dense chaparral.

Firefighter and Public Safety

Based on the modeling (and represented in tables 4, 7, 8, 9), 225 acres or 29 percent of the project area would have flame lengths greater than eight feet and those areas in dense chaparral (Figure 4) would exhibit flame lengths greater than 15 feet. These areas would not allow direct attack on the head of the fire and may present serious control problems, torching out, crowning, and spotting (table 4). Under these conditions, the fire would be a risk to firefighters and public safety.

Under Alternative 1, No Action, approximately 29 percent of the project area had predicted flame lengths in excess of eight feet under 90th percentile fire weather conditions. This fire behavior could present serious control problems, torching out, crowning and spotting. This level of fire intensity would make it difficult to fight fire aggressively and could provide conditions where there are risks for loss of structures and concerns for firefighter and public safety. This alternative would not meet the purposes of the project.

Cumulative Effects

Because this alternative takes no action, this alternative would have no cumulative effects. The beneficial effects of vegetation treatment and county building regulations to reduce flammability of structures on private property would continue to be limited by a lack of treatment on adjacent NFS lands. No adverse cumulative impacts would occur.

Alternative 2, Proposed Action*Direct and Indirect Effects**Flame lengths*

Tables 7 through 9 show the predicted flame lengths for the proposed action, in each weather zone and in the two types of treatment areas (0 to 100 feet and 100 to 300 feet) on NFS lands. For those areas of NFS lands within 100 feet from residences and critical infrastructure, the flame lengths are predicted at less than four feet and for those areas between 100 to 300 feet, the flame lengths are predicted at less than eight feet.

Fire Behavior, Risk to Private Residences and Critical Infrastructure

The change in flame length based on the reduced fuel loading after implementation of the proposed action alternative would have a direct effect on potential wildfire behavior. The areas with the dense chaparral are those areas with the highest flame lengths that after treatment are predicted to have four-foot flame lengths in the first 100 feet and eight-foot flame lengths in the treatment areas between 100 and 300 feet from residences and critical infrastructure. Table 4 shows flame lengths less than four feet generally allows firefighters using hand tools to attack the head of the fire or the flanks and that the hand-line should hold the fire. Firefighters with mechanical equipment, such as fire engines and dozers, can be successful at suppressing the head of a wildfire under environmental conditions that produce up to eight-foot flame lengths.

These predicted flame lengths would lower the potential for homes to ignite from radiant heat from the wildfire and would provide a greater likelihood that firefighters could take a defensive position to protect structures given the enhanced safe operational space provided by this alternative. The proposed action would improve fire suppression abilities, when compared to no action, which would reduce the risk to the residences and critical infrastructure.

An added indirect effect is the reduced potential of a structure fire spreading from the residence onto NFS lands as fuel continuity is interrupted within the 300-foot treatment zone.

Firefighter and Public Safety

As noted, in those areas treated, the reduced flame lengths (and fire behavior) would allow direct fire suppression tactics (table 4) and lower the potential for homes to ignite from radiant heat. The fire behavior predicted under this alternative would enhance firefighter and public safety with the added defensible space for residences and critical infrastructure.

Cumulative Effects

This alternative would combine with the beneficial effects of treatment and County fire safety programs on private land. There would be a beneficial cumulative effect of reducing the risk of loss to structures and would enhance firefighter and public safety in the Forest's WUI Defense Zones.

Alternative 2, Proposed Action reduces flame lengths on NFS lands within 100 feet of residences and infrastructures to less than four feet and for those areas 100 to 300 feet, reduces flame lengths to less than eight feet. This fire behavior would provide a greater likelihood that firefighters could take a defensive position to protect structures given the enhanced safe operational space provided by this alternative and could lower the potential for homes to ignite from radiant heat. This alternative meets the purposes of the project.

Botany

The focus of the botany analysis in this document is to address two of the key issues noted in chapter 1: how would this project affect special status species and their habitat and how would non-native grasses affect native plant communities. A more detailed analysis of specific plant species is in a Biological Evaluation within the project record, and is available by request.

Although much of the project is located along the edges of the Forest boundary at lower elevations, potential treatment areas occur at all elevations and within all habitat types. The elevation of the project area ranges from 1,400 to almost 9,000 feet near the highest point in the San Gabriel Mountains: Mount San Antonio. The project area has a Mediterranean climate which is marked by hot dry summers and cool wet winters. Other natural processes that have and will continue to influence the physical and biological landscape are fire and flooding, though the natural flooding regime has been greatly modified through the construction of dams. In addition, the vegetation along private property is often highly modified by effects from urbanization including fire, non-native plants, and changes in vegetation composition.

Varied vegetation types exist within the project area, as would be expected with the range of elevations. Lower montane mixed chaparral (211 acres), California sagebrush (63 acres), and developed urban (49 acres) are the top three types. Other more limited types include conifer, Oak, mixed woodland, riparian, and annual grassland.

Cumulative Effects Boundary

The cumulative effects spatial boundary considered for botany analysis is the WUI defense zone as defined in the LMP. This is the same as for the other resources because it is an area where

there is common management which includes active vegetation manipulation, and similar influences of human development. The temporal boundary is ten years, the life of the project.

Special Status Plant Species - Threatened and Endangered Plant Species

Affected Environment

Using pre-field examination for species that had ranges overlapping the project area and/or consideration of habitats found there, the potential exists for three federally endangered (Braunton's milk-vetch [*Astragalus brauntonii*], Nevin's barberry [*Berberis nevinii*], slender-horned spineflower [*Dodecahema leptoceras*]), and one federally threatened (thread-leaved brodiaea [*Brodiaea filifolia*]) plant species to be found in the project area. Table 10 provides a summary of each species status and general information related to the species within southern California and the project area.

Table 10. Summary of federally listed plant species considered in this analysis.

Common Name (Scientific Name)	Status	General Habitat Description for S. California area	Presence of Suitable Habitat Within the Project Area	Potentially Affected by Proposed Action?	Viability Threat from Proposed Action?	Comments Regarding the Project Area
Braunton's Milk-Vetch (<i>Astragalus brauntonii</i>)	FE ¹⁰	Coastal scrub and chaparral. Recent burns or disturbed areas. Los Angeles, Orange, and Ventura Counties. Below (<) 2,300 feet elevation.	Yes	No	No	Suitable habitat is present but project is outside known range of species. The nearest known population is >10 miles from project area.
Nevin's Barberry (<i>Berberis nevinii</i>)	FE	Sandy to gravelly soils. Washes, chaparral, cismontane woodland, and coastal scrub. Generally found in lowlands or drainages. <2,200 feet elevation.	Yes	No	No	Suitable habitat is present. Only two occurrences are known on the Forest and neither are within potential treatment areas.
Slender-Horned Spineflower (<i>Dodecahema leptoceras</i>)	FE	Sandy alluvial fans, benches, and terraces in coastal scrub, chaparral and cismontane woodland areas. 700-2,500 feet elevation.	Yes	No	No	Suitable habitat is present. Species is not known to occur on Forest.
Thread-Leaved Brodiaea (<i>Brodiaea filifolia</i>)	FT ¹¹	Grasslands and vernal pools, grassy openings in chaparral or coastal sage scrub, playas. Often found in clay. Southern base of San Gabriel Mtns. at Glendora and San Dimas & San Bernardino at	Yes	No	No	Suitable habitat is present but project is outside known range of species. The nearest known population is >10 miles from project area.

¹⁰ FE is Federally endangered species under the Endangered Species Act.

¹¹ FT is Federally threatened species under the Endangered Species Act.

		Arrowhead Springs. 100-2,900 feet elevation.				
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Environmental Consequences

Alternative 1, No Action

Threatened and Endangered Plant Species

Alternative 1, No Action would not result in any direct effects to federally listed plants because there are no direct actions taken. The potential for wildfire to damage federally listed plant species and habitats by spreading from private lands into the Forest would not be reduced.

Cumulative impacts would continue primarily from development and a high degree of human influence, but are minor due to the statutory protections for species. The No Action alternative would not contribute to these impacts

Alternative 2, Proposed Action

Threatened and Endangered Plant Species

Direct and Indirect Effects

There is a low probability that the four species in Table 10 would occur within the project area, and therefore a low likelihood of direct or indirect effects. Implementing design feature BOT-3 would further minimize any potential for direct and indirect adverse effects to Braunton’s milk-vetch, Nevin’s barberry, thread-leaved brodiaea, and slender-horned spineflower. If occurrences are found in treatment areas, they would be flagged and avoided through use of a buffer.

Implementing design feature BOT-3 also reduces potential indirect adverse effects through the use of a buffer around occurrences of threatened and endangered plant species. A Forest or Forest approved botanist would determine the appropriate buffer size. No project work or foot traffic would be allowed within the buffer zone to prevent indirect impacts, such as soil movement into the occurrences. The proposed action does not allow the use of large mechanized machinery, digging or scraping of topsoil, and root crowns would remain intact. This would also reduce the potential for indirect impacts to their habitat.

Colonization of non-native vegetation and the subsequent decline in native vegetation populations is another potential indirect effect to habitat for Braunton’s milk-vetch, Nevin’s barberry, thread-leaved brodiaea, and slender-horned spineflower. Biological invasions are the second largest cause of biodiversity loss, with habitat destruction the largest cause (Vitousek 1997). The introduction of a non-native species can affect fire regimes and disrupt food chains and pollinator activity.

Disturbance resulting from project activities may cause a positive response from invasive plant species, such as cheatgrass (*Bromus tectorum*) and yellow star thistle (*Centaurea solstitialis*). These species are known to rapidly colonize and aggressively spread in disturbed areas. An increased presence of cheatgrass may alter the natural fire frequency, as it has the ability to carry fire into areas that previously would not ordinarily burn. Cheatgrass usually dries up in early summer, leaving the forest floor covered with a dry flashy (flammable) fuel that carries fire quickly.

In the years immediately following treatment, it is expected the grass and forb component may increase in dominance relative to their pre-treatment presence due to the thinning of woody vegetation, including cutting down shrubs and tree pruning. Encroaching cheatgrass can change

the character of the forest floor, covering it with a relatively dense growth of grass where none would have otherwise been present. This can also alter the soil components and productivity. The first 100 feet adjacent to residences and critical infrastructures has the greatest risk of this occurring where vegetation treatment is the most aggressive. The scope of this project includes small areas covering a maximum of 767 acres across the Forest (figure 1), though actual treatment would likely be far less. In addition, design feature BOT-3 provides an appropriate buffer around threatened and endangered species occurrences. This buffer of no treatment could minimize the invasion of weed species into federally listed plant species habitat.

In addition to removing native vegetation, fuel reductions also have the potential to remove non-native vegetation. Removal can be beneficial if the cut materials are properly disposed. However, if the cut materials are not disposed of properly they may promote the spread of non-natives into previously uncontaminated areas.

Six design features (WEED-1 to WEED-6) are part of the proposed action (alternative 2) to reduce these potential impacts. The design features state: chippers are only proposed on existing roads and turnouts that are free of target invasive species; all equipment and tools would be washed prior to entering the treatment area; educational material would be provided to the implementers and/or agreement holders; a pre-agreement survey would be performed to determine locations of weed species within the treatment area; and, if new infestations of invasive plant species are detected, notification would be made to applicable parties.

The proposed action would provide an indirect beneficial impact by reducing the risk of losing threatened and endangered plant habitat to large, intense wildfires. By reducing fire behavior potential and allowing firefighters to make a direct attack, it is less likely that homes themselves would become fuel for the fire, a factor that has been found to increase fire spread and intensity (Spyratos *et al.* 2007)

Though the project area has suitable habitat, none of the potential treatment areas have known occurrences and many of the species are not known to occur in the Forest or outside the known range of the species. The potential of these species occurring in the project area are low; therefore, risks are low. This alternative is not a viability threat to any of the threatened and endangered plant species or their habitat.

Cumulative Effects

All of the projects, activities, and factors listed in appendix B could have impacts to threatened and endangered plants and their habitat. The proposed action (alternative 2) could have added cumulative effects to habitat. The proposed action (alternative 2) would potentially increase invasive plant distribution and would modify vegetation composition in treated areas. The scope of project-generated cumulative impacts would be minimized or eliminated by the design features included as part of the project (BOT-1 through BOT-3; WEED-1 through WEED-6) and as noted earlier, the potential of finding these plant species in the project area are low. The added cumulative effects to threatened and endangered plant species and their habitat from this project would be negligible.

Forest Service Sensitive Plant Species

Affected Environment

Thirty-two Forest Service sensitive plant species have the potential of being found within the project. One of them, the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)

is both a sensitive plant and candidate species for federal listing. It is included here in the analysis of sensitive species since candidate species are afforded no legal protection under the Endangered Species Act.

- Abram's flowery puncturebract (*Acanthosyphus parishii* var. *ambramsii*)
- San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel manzanita (*Arctostaphylos glandulosa* ssp. *gabrielensis*)
- Interior manzanita (*Arctostaphylos parrayana* ssp. *tumescens*)
- San Antonio milk-vetch (*Astragalus lentiginosus* var. *antoniuss*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Pygmy Poppy (*Canbya candida*)
- Mt. Gleason paintbrush (*Castilleja gleasonii*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's spring beauty (*Claytonia lanceolata* var. *peirsonii*)
- Many stemmed dudleya (*Dudleya multicaulis*)
- Forest Camp sandwort (*Eremegone macradenia* var. *arcuifolia*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains sunflower (*Hulsea vestita* ssp. *gabrielensis*)
- California Satintail (*Imperata brevifolia*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Ross's pitcher sage (*Lepechinia rossii*)
- San Gabriel linanthus (*Linanthus concinnus*)
- Orcutt's linanthus (*Linanthus orcuttii*)
- Peirson's lupine (*Lupinus peirsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Robbins' nemacladus (*Nemacladus secundiflorus* var. *robbinsii*)
- Short-joint Beavertail (*Opuntia basilaris* var. *brachyclada*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Fringed grass-of-parnassus (*Parnassia cirrata* var. *cirrata*)
- Chickweed starry puncturebract (*Sidothea caryophylloides*)
- Southern jewelflower (*Streptanthus campestris*)
- Mason's neststraw (*Stylocline masonii*)
- Rigid fringe-pod (*Thysanocarpus rigidus*)

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Vegetation removal and fuel modification would not occur within the project area under the no action alternative; therefore, there would be no potential for direct adverse effects to sensitive plant species. Compared to the proposed action when fully implemented, there is an increased potential for wildfire to spread from private lands into the Forest under the no action alternative, due to the predicted flame lengths and fuel continuity within the project area. If this were to

occur, habitat for sensitive plants or individual plants could be negatively affected as a result of the fire or damaged from fire suppression activities.

Cumulative Effects

Cumulative impacts will be the same as those noted earlier under the threatened and endangered plant species, under alternative 1. All of the projects, activities, and factors listed in appendix B could also have impacts to sensitive plants and their habitat if they exist in those areas. Projects proposed by the Forest would likely have negligible to minor cumulative effects due to protection measures typically included in the project design. The cumulative effects will be the result of changes to vegetation and the disturbance resulting from these factors. The No Action alternative would not add to these cumulative effects.

Alternative 2, Proposed Action

Direct and Indirect Effects

Direct mortality to sensitive plant species could occur from cutting and thinning of vegetation or from trampling of vegetation by people walking over the site. Trampling or crushing of sensitive plant populations may result from equipment, tools, and foot traffic within the proposed project area.

The Forest or Forest approved botanist may make a recommendation to salvage or avoid occurrences of sensitive plant species (design feature BOT-4). These recommendations would be implemented where feasible with the exception of California satintail (*Imperata brevifolia*), Ross's pitcher sage (*Lepechinia rossii*), Mason's neststraw (*Stylocline masonii*), San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandino*), and rigid fringepod (*Thysanocarpus rigidus*). For these species, implementation of surveys and the Forest or Forest approved botanist recommended buffer size and avoidance measures would be required, as without these protective measures these species could be in a trend toward federal listing. With the design features incorporated into the project, potential adverse impacts to California satintail, Ross's pitcher sage, Mason's neststraw and rigid fringepod would be negligible or minor, localized and short-term.

For the other twenty seven sensitive plant species no surveys or avoidance buffers are proposed in the project. However, design features to protect other resources, especially aquatic resources, would reduce the potential for direct and indirect effects to riparian sensitive plants and their habitats. The short duration of project activities and the generally small areas that may be treated would minimize the scope of adverse impacts. Potential adverse impacts would be negligible or minor, localized and short-term.

While not all sensitive plant species identified in the project area would be subject to project related disturbance, there remains the potential for the loss or mortality of some individual sensitive plants, especially those not detected during surveys for required species. If sensitive plant species are present at a site, they are more likely to be more adversely impacted if the proposed treatment occurs while the species is in a flowering or reproductive stage.

This alternative would not allow the use of: heavy equipment; digging or scraping of the topsoil (must retain root crowns); or, prescribed fire. No grasses or other vegetation less than 18 inches in height would be cut beyond 100 feet from residences and no road or other infrastructure construction would be authorized. These measures would minimize the risk of soil compaction, erosion, and sedimentation, which could be indirect impacts to sensitive plant species habitat.

Project activities that would occur during the implementation of this alternative may result in the indirect effect of the proliferation and spread of non-native invasive plants to new areas (Kayes et al. 2011). It would be required that, prior to issuing an agreement and commencing treatment, surveys would be conducted to determine the locations of weed species within the treatment area. To minimize the spread of invasive vegetation propagules (reproductive parts or dispersal agents), all treated target weeds would be bagged and removed off-Forest for disposal (design feature WEED-6). If not out-competed by invasive plants, sensitive annual or colonizing species may benefit from the reduction in competing vegetation.

As with threatened or endangered plant species, the proposed action would provide an indirect beneficial impact by reducing the risk of losing sensitive plant habitat to large, intense wildfires. By reducing fire behavior potential and allowing firefighters to make a direct attack, it is less likely that homes themselves would become fuel for the fire, a factor that has been found to increase fire spread and intensity (Spyratos *et al.* 2007).

Potential adverse effects to the 32 sensitive plant species by this alternative would not lead to a trend toward listing as threatened or endangered.

Cumulative Effects

Potential cumulative effects would be similar to those noted for threatened and endangered species. This alternative would potentially increase invasive plant distribution and would modify vegetation composition in treated areas. The scope of project-generated cumulative impacts to sensitive plants would be minimal due to the small size of proposed treatment areas (a maximum of 767 acres across the Forest) and by the design features included as part of the project (BOT-4; WEED-1 through WEED-6). If fully implemented, the proposed action may reduce the risk of a wildfire starting on private land spreading on to adjacent NFS lands due to the decrease in surface and ladder fuels, and predicted flame lengths.

Conclusions

The focus of this section of the analysis is to address one of the key issues noted in chapter 1: how would this project affect special status species and their habitat? Alternative 1, No Action would have no direct effect to special status plant species but could have a greater indirect effect (when compared to the proposed action alternative) should a wildfire spread from private lands into the Forest. Alternative 2, Proposed Action has no effect (threatened and endangered plant species) and minor potential adverse effects (sensitive plant species) to individual special status plant species and their habitat. Adverse effects are eliminated or reduced with the implementation of the design features (BOT-1 through BOT-4). The greatest risk to special status plant species habitat is the colonization of non-native, invasive plant species in areas where they presently do not exist or if their density increases. Implementation of design features WEED-1 through WEED-6 would reduce this risk. The scope of this impact is also minimized by the relatively small areas that may be treated across the Forest (maximum of 760 acres).

Invasive Plant Species

Under Executive Order 13112, the U.S. Department of Agriculture defines an invasive plant species as a plant that 1) non-native (or alien) to the ecosystem and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

The introduction of invasive species is a special concern for native plant communities and is recognized by the USFS as a threat to native vegetation communities and wildlife (USDA FS 2011). Invasive weeds pose a threat to the natural processes of plant community succession, fire frequency, biological diversity and species composition. Invasive weeds can affect the persistence of some populations of special-status species by replacing the foraging base, altering habitat structure, or excluding a species by vegetative growth.

The focus of this analysis is related to the effects of non-native grasses and forbs on native plant communities, since they are the most likely contributors to invasive vegetation type conversion. Non-native shrub and tree species are also discussed even though they will likely be removed during the fuel reduction process and per design feature WEED-6 and are therefore, unlikely to rapidly colonize the project area. The Angeles National Forest Defensible Space Project Invasive Species List is included as Appendix C of this report.

Affected Environment

Even though site specific surveys have not been completed for this proposed project, nearby surveys and data searches have located several invasive plant species within or near the project. Several other invasive species are thought to likely occur in the project area as urban interfaces are frequently influenced by a wide variety of housing development disturbances that are conducive to invasive plant establishment.

Due to regional differences in climate, elevation and dominant vegetation types, different weed species are more apt to colonize certain areas of the project area than others. These species are clearly well suited to establish and spread within the zone(s) in which they are found most frequently, and they can be expected to produce a large potential seed bank and infestation risk within a given zone. For purposes of describing general invasive species trends across the project area five zones are described below.

South Zone: Along the southern escarpment of the San Gabriel Mountains in the foothills north of Highway 210 from Interstate 5 to the San Bernardino County line, coastal sage scrub areas are most commonly infested by such species as castor bean, shortpod mustard, annual *Bromus* grasses, smilo grass and tocalote. Areas disturbed by project activities within this zone are expected to have a high risk of establishment of new populations of these species.

Interstate 5 Corridor Zone: Project areas along the Interstate 5 corridor chaparral habitats are most commonly infested by such species as shortpod mustard, filaree, annual *Bromus* grasses, Spanish broom, and tocalote. This corridor is also a vector for newly expanding infestations of yellow star thistle and perennial pepperweed. Areas disturbed by project activities within this zone are expected to have a high risk of establishment of new populations of these species.

North Zone: Along the northern escarpment of the Liebre and San Gabriel Mountains and in the Sierra Pelona Mountains desert transition habitats are most commonly infested by tumble mustard and annual *Bromus* grasses. Areas disturbed by project activities within this zone are expected to have a high risk of establishment of new populations of these species.

Montane Zone: In higher elevation areas (above 5,000 feet) of the project invasive species colonization tends to be somewhat less pervasive than in other zones, especially as the elevation rises. However, roadsides in these areas are frequently infested with Spanish broom, annual *Bromus*

grasses, and tumble mustard. Areas disturbed by project activities areas within this zone are expected to have a relatively high risk of establishment of new populations of this species.

Riparian Zone: Riparian areas with plant species overstory composition ranging from coast live oak to willow scrub to sycamore/alder woodland are scattered throughout the project area. Riparian areas are most commonly invaded by such species as tamarisk, arundo, tree of heaven, rabbitfoot grass, and sweet clover. The banks of perennial and intermittent streams are not to be impacted by this project, however many ephemeral waterways support the above listed riparian invasives. Therefore, ephemeral waterways that are disturbed by project activities are expected to have a high risk of establishment of new populations of these species.

Fire History of Zones

Portions of all of the project zones listed above have experienced recent wildfires. A query was done on the number of fires that have burned the 767 acres of the proposed project area from 1970 to 2012. The results were that 255 acres (33%) of the project area have no recorded fire since 1970, 319 acres (42%) have been burned once, 166 acres (22%) burned twice and 26 acres (3%) have been burned three times since the 1970's. Historic fire return intervals vary widely depending on vegetation type, aspect, and elevation. However, most chaparral vegetation (which is the most prominent vegetation type in the project area) has an average historic fire return interval of 30-50 years, with some intervals being closer to 100 years (Keeley *et al.* 2012). Using the range of 30-50 years, 575 acres or 75% of the project area would be within or above the historic fire return interval and the remaining 192 acres or 25% of the project area would be burning at a much more frequent rate. Most (97%) of this more frequent burning is occurring on the Santa Clara Mojave and Los Angeles River Ranger Districts, with the remaining 5% being on acreage in the San Gabriel River Ranger District.

All of the invasive species known or suspected to occur in the project area are strongly fire-adapted and preferentially colonize burned areas, most especially annual *Bromus* grasses and mustards (DiTomasio 2007). The open, burned landscapes present more opportunities for weeds to establish and for vegetation type conversion to occur, as removal of canopy vegetation and high light conditions may release weed seeds present in the seed bank from dormancy and allow them to germinate and establish. This type conversion to non-natives is greatly exacerbated when historic fire return intervals are shortened (Syphard *et al.* 2006). Based on the data queries discussed above for fire return intervals in the project area, it stands to reason that at least 25% of the project area is already at risk of or is experiencing non-native type conversion pressures or is already type converted. While the remaining 75% of the project area appears to be within the historic fire return, some of the areas may actually have a historic return interval that is closer to the 50-100 year range and/or may be subject to other kinds of disturbance associated with being in the urban interface (e.g. OHV use, increased foot/equestrian traffic, dust and chemical pollution). Any of these factors may also make project areas more prone to experiencing non-native type conversion pressure.

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Vegetation removal and fuel modification would not occur within the project area; therefore, there would be no potential for direct adverse effects from the expansion of invasive plants due to this alternative. As noted earlier, the project area is within the urban interface and is more vulnerable to invasive plants being introduced into the Forest. When compared to a fully implemented proposed action, there is an increased potential for wildfire to spread from private lands into the Forest due to the predicted flame lengths and fuel continuity within the project area. If this were to occur, invasive plants could invade or increase in density in the area due to the fire or fire suppression activities.

Cumulative Effects

The project area is located adjacent to developed areas. In general, these areas may have experienced some level of modification as a result of previous wildfires, developments and activities. Occupancy and maintenance of the residences around the project area have created baseline levels of disturbance affecting both the private and adjacent NFS lands.

All the projects, activities, and factors listed in the appendix B in this document could also cause cumulative effects from invasive plant species. Factors that are not planned and difficult to control (e.g., wildfire, dispersed recreation use, climate change) would likely have the greatest cumulative impact to the expansion of invasive plants. The No Action alternative would not add to this impact unless a wildfire spreads from private lands into the Forest, or a fire increases in size or intensity through the burning of structures.

Alternative 2, Proposed Action

Direct and Indirect Effects

There are three major ways that project-related activities and impacts could contribute to an increase in invasive plants within the Forest: (1) the creation of conditions that favor establishment of invasive plant (weed) species, such as soil disturbance, removal of native vegetation, breakup of cryptogamic crusts;¹² (2) the subsequent release of pre-existing weed seed banks from dormancy or quick build-up of new weed seed banks on disturbed soils at the impact sites; and, (3) spread of new and pre-existing weed infestations into newly disturbed areas via project tools, equipment, and personnel.

Even if all design criteria are successful and no weed seed is transported onto impact sites with project equipment and personnel, most if not all sites, even those in remote native communities, may be expected to contain an existing weed seed bank. Seed banks are known to regularly contain a different suite of species than is represented by the standing vegetation due to succession, low reproduction by seed of some perennials, and other factors (Thompson 2000). While in most cases it is rare to find species in the seed bank that are not represented to any degree in the aboveground vegetation, the exception to this is seeds from invasive, aggressive, disturbance-adapted, early colonizing weeds (Thompson 2000). For example, large cheatgrass seed banks are commonly found throughout semi-deserts of western North America, often regardless of such factors as remoteness of the site, grazing history, or fire history. However, in intact semi-desert communities these seeds are typically held in the aboveground vegetation or in crevices on cryptogamic crusts, so germination is prevented until disturbance allows the cheatgrass seeds to come into contact with broken soil surfaces (Boudell et al. 2002). Following

¹² Cryptogamic crusts are biological soil crust composed of living cyanobacteria, green algae, brown algae, fungi, lichens, and/or mosses.

establishment, new populations of weeds are often extremely difficult to eradicate. It may take several years or decades to re-establish the native soil structure and biota.

The risk of creating new or expanding populations throughout the project area differs depending on a variety of factors, regardless of the risks associated with spreading existing weed populations through travel routes or on project equipment. These risks are affected by factors including the following:

- Species-specific dispersal traits of weeds. Weed species with seeds dispersed by wind (tree-of-heaven), by tumbleweed (Russian thistle), water (tamarisk), or by animals (Brazilian peppertree) can potentially spread weed propagules miles from their original sources. Most seeds are not moved far from the parent plant, but a small proportion of seeds can be found large distances away. Even propagules with low innate dispersal abilities, such as stem fragments of giant reed or castor bean seeds that fall close to the plant, can be carried far after initial dispersal by streams or surface runoff. However, species without wind, water, or animal-mediated dispersal are less likely to disperse propagules far from the original source.
- Habitat being disturbed. While many weed species are generalists that can potentially colonize a fairly wide range of vegetation types, it is true that some habitats, particularly those with ample nutrients and soil moisture or those that have been recently disturbed, are more susceptible to invasion. Additionally, the suite of weed species that one would expect to colonize a site is dependent to some degree on the habitat where the disturbance occurred.
- Regional patterns in weed occurrence and propagule pressure. The ANF occurs in a transitional area with regards to climate, elevation, and vegetation communities. The south zone has lower elevations and supports large areas of coastal sage scrub. The I-5 corridor zone supports several types of chaparral. The montane zone contains the highest elevations and supports many types of forested communities. The northern zone supports several types of Mojave scrub and woodland vegetation at moderate elevations. The most commonly observed weeds differed within these 3 regions, possibly due to species-specific habitat preferences.
- Type of ground disturbance. The type of disturbance creates conditions favoring release and establishment of different weed species. For example, removal of trees is expected to favor establishment of weed species that do best in full sun, such as black locust; burning is expected to favor establishment of fire-adapted weed species such as fountaingrass; and soil disturbance is expected to favor establishment of early-colonizing weed species, such as black mustard or tocalote, that respond favorably to disturbed, denuded soils.

These factors above were used to consider the risks associated with the establishment of new weed infestations due to project activities. In addition to these four factors, the results of this risk assessment were focused on risks associated with 1) release of pre-existing but currently dormant weed seed banks at disturbed sites, 2) rapid build-up of transient weed seed banks at disturbed sites, and/or 3) the creation of conditions favoring weed establishment at disturbed sites. The risks were defined as high, moderate and low and were defined as follows:

High: Chances of weed species infesting new areas range between 76-100% , or very likely.

Moderate: Chances of weed species infesting new areas range between 31-75%, or somewhat likely.

Low: Chances of weed species infesting new areas range between 1-30%, or unlikely.

As stated under the “Affected Environment” section above, each of the five zones (South, I-5 Corridor, North, Montane, and Riparian) are expected in general to be in the high risk category (76-100% chance, or very likely) for the potential establishment of new populations of the species listed as being the most common in the particular zone. As described above the proposed project activities are such that the associated disturbances will keep these risk rankings high for all the zones. This high risk ranking was chosen after careful consideration of the four factors and the three major risks listed in the paragraph above. In other words, for each of the three major risks 1) release of seed bank, 2) build-up of weed seed, and 3) creation of conditions the ranking was given a high category for each of the project area sites in the five zones. Some individual project sites may have a less high risk, but given that no project surveys have been completed, the more severe ranking was chosen. Those portions of the zones that have burned more frequently than or are on the fringe of the historic fire return interval are expected to have an even higher risk (still in high risk category) of experiencing type conversion in the project areas.

The primary factor limiting the risk of spreading non-native grasses and other type converting vegetation is the lack of ground disturbance. Only boots and the dragging of vegetation would disturb the soil surface. Project design features such as no digging or scraping of the topsoil; no road or other infrastructure construction; no prescribed burning; allowance of the use of herbicides in approved locations; native vegetation less than 18 inches in height in areas beyond 100 feet from residences would be retained; and measures WEED-1 through WEED-6 will help reduce the high risk ranking for the establishment of high priority, less common invasive species (*e.g.* yellow star thistle, Spanish broom, pampas grass, tree of heaven) to a moderate ranking (31-75% chance, or a somewhat likely chance, of new infestation). However, these design features will more than likely not reduce the high risk ranking for the spread of common invasives such as annual *Bromus* species and mustards, which are the biggest contributors to vegetation type conversion and habitat degradation. The project design features will not alleviate the risk for these invasives because they are not required to be controlled or removed.

Cumulative Effects

As noted earlier, factors that are not planned and difficult to control (*e.g.*, wildfire, dispersed recreation use, climate change) would likely have the greatest cumulative impact to native plant communities from the expansion of invasive plants in the Forest. Fully implementing alternative 2 would add to this cumulative effect. Proposed treatment areas are scattered across the Forest totaling a maximum of 767 acres. Though this project would likely have a cumulative effect to the expansion of invasive weeds, the scope of this project is small in comparison to other factors.

Conclusions

The focus of this section of the analysis is to address one of the key issues noted in chapter 1: how would non-native grasses affect native plant communities? Alternative 1 would have no direct impact of increasing the invasive non-native grasses in the project area, but because the project area is adjacent to residences and infrastructure it is indirectly vulnerable to invasive plants. Implementing alternative 2 would have a high risk of expanding non-native plants throughout the project area, especially in the first 100 feet of NFS lands from residences and critical infrastructure. Design features WEED-1 through WEED-6 are designed to reduce the risk of invasive plants spreading into the treatment areas by project activities, including conducting

pre-treatment weed surveys. However, these design features only apply to high priority, less common invasive species, not non-native grasses and mustards, which are the biggest contributors to vegetation type conversion. Therefore, the risk of new and expanding non-native grasses and mustards remains high, while the design features, if applied, lower the invasion risk for high priority, less common non-natives.

Wildlife

The focus of the wildlife analysis in this document is to address one of the key issues noted in Chapter 1: how would this project affect special status species and their habitat? A complete analysis can be found in the Biological Assessment, and Biological Evaluation within the project planning record located at the Forest Headquarters.

Cumulative Effects Boundary

The cumulative effects spatial boundary considered in the wildlife section of this analysis includes lands adjacent to and within the Congressional boundary of the Forest. The temporal boundary is ten years, the life of the project. Though impacts are likely to extend beyond this period of time, more than ten years is beyond the scope of what can be meaningfully analyzed, with the exception of general discussion on impacts of climate change, population growth and pollution. Projects, activities, and factors considered in the cumulative effects for this section are listed in appendix B.

Special Status Wildlife Species

Threatened and Endangered Wildlife Species

Affected Environment

Using pre-field examination for species that had ranges overlapping the project area and/or consideration of habitats found there, the potential exists for four federally endangered and three federally threatened wildlife species could be found in the project area. Threatened or endangered species included for analysis in the Biological Assessment include the following: Santa Ana sucker (*Catostomus santaanae*), Coastal California Gnatcatcher (*Poliophtila californica californica*), Least Bell’s vireo (*Vireo bellii pusillus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), Arroyo toad (*Anaxyrus californicus*), California red-legged frog (*Rana draytonii*). Table 11 provides a summary of each species’ status and general information related to the species within southern California and the project area.

Table 11. Summary of federally listed or proposed wildlife species considered in this analysis.

Common Name (<i>Scientific Name</i>)	Status	General Habitat Description for Forest Area	Presence of Suitable Habitat Within the Project Area	Potentially Affected by Proposed Action?	Comments Regarding the Project Area
Coastal California Gnatcatcher	FT	Coastal sage scrub, desert scrub, and Riversidean alluvial scrub.	Potential	No	Suitable habitat is present on the Forest, but has not been mapped. Additional

Common Name (Scientific Name)	Status	General Habitat Description for Forest Area	Presence of Suitable Habitat Within the Project Area	Potentially Affected by Proposed Action?	Comments Regarding the Project Area
<i>(Polioptila californica californica)</i>					surveys are needed to determine if suitable habitat is present in the treatment areas.
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	FE	Riparian woodlands of coastal sage scrub, live oak. Habitat criteria: 1) woody riparian vegetation present, 2) patch size greater than (>) 0.5 ac., 3) vegetation cover meets criteria, and 4) dense clumps of woody vegetation are present.	Potential	No	Suitable habitat exists in riparian areas on the Forest such as Big Tujunga Creek, San Gabriel Canyon and Little Rock Creek. Little Rock Creek Reservoir is the only confirmed nesting location on the Forest. Habitat assessments are needed to determine if suitable habitat exists within the proposed treatment areas.
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	FE	Dense riparian tree/shrub habitat. Habitat criteria: 1) surface water, or presence of obligate and facultative wetland plant species, 2) 20% cover woody riparian on floodplain or adjacent to stream, 3) dense clumps or stands of woody vegetation.	Potential	No	Suitable habitat exists in riparian areas on the Forest such as Big Tujunga Creek and San Gabriel Canyon. There are sightings of willow flycatchers on the Forest, but southwestern willow flycatchers or their nesting activity has not been confirmed on the Forest. Proposed critical habitat is present in Little Tujunga Canyon. There are no treatment areas in the proposed critical habitat. Habitat assessments are needed to determine if suitable habitat exists within the proposed treatment areas.
Santa Ana Sucker (<i>Catostomus santaanae</i>)	FT	Permanent streams with coarse gravel (Piru Creek). Cool, clear, rocky pools and runs.	Potential	No	Treatment areas may be adjacent to critical and occupied habitat located in San Gabriel Canyon and Big Tujunga Canyon.
Unarmored Threespine Stickleback (<i>Gasterosteus aculeatus</i>)	FE	Clear, slow-flowing streams with sand or mud substrate. Water temperature less than (<) 24°C and abundant vegetation. Occurs in deep,	Potential	No	There is unoccupied suitable habitat located in Bouquet Creek.

Common Name (Scientific Name)	Status	General Habitat Description for Forest Area	Presence of Suitable Habitat Within the Project Area	Potentially Affected by Proposed Action?	Comments Regarding the Project Area
<i>williamsoni</i>)		slow pools or behind obstructions. Lack of turbidity is required.			
Arroyo Toad (<i>Anaxyrus californicus</i>)	FE	Shallow, sandy, low gradient streams. Sandy stream terraces with cottonwoods, oaks, and willows, no grasslands. Sandy, small gravel, or bedrock substrate, sediment-free. <4,500 feet elevation.	Yes	Yes	Occupied habitat located in Castaic Creek and Elderberry Forebay, Big Tujunga Creek including Alder Creek and Little Rock Creek. No treatments planned in known occupied habitat. Critical habitat included in treatment areas.
California Red-Legged Frog (<i>Rana draytonii</i>)	FT	Deep pools, low-gradient and slow streams. Highly aquatic, requires extensive riparian and emergent vegetation.	Yes	Yes	Occupied habitat in San Francisquito Canyon and Aliso Creek. Treatment areas include critical and occupied habitat.
Mt. Yellow-Legged Frog (<i>Rana muscosa</i>)	FE	Rocky, shaded, cool streams. Sloping banks with rocks or vegetation to edge. Pacoima River south. 1,200-7,500 feet elevation.	Potential	No	No treatment areas occur in occupied or designated critical habitat for this species. However, there may be unsurveyed suitable habitat within areas proposed for treatment. To avoid potential for impacts, treatment activities in unsurveyed suitable mountain yellow-legged frog habitat would be limited to the non-breeding season (July to February). Other aquatic and T&E design features would be applied and would avoid potential for impact.
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FPT	Dense willow and cottonwood stands in river floodplains.	Yes	No	Not known to occur on ANF. Nearest record is on the Santa Clara River near Santa Clarita. Not expected to occur in treatment areas. Insufficient surveys have been conducted to determine status on ANF.

FE = Federally Endangered
 FT = Federally Threatened
 FPT = Proposed Federally Threatened

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Alternative 1 would not result in any direct effects to threatened and endangered wildlife species or their habitat because there are no actions associated with this alternative. Lack of action could increase the potential of a fire starting on private lands and spreading onto NFS lands (when compared to the proposed action). Alternative 1 would not reduce the risk of fires increasing in size in and around the project area because there would be a smaller zone to provide a tactical advantage for fire suppression activities. Indirect effects as a result of the no action alternative would be the potential increase (compared to alternative 2) for a fire to affect individuals or modify habitat conditions for threatened and endangered wildlife species in and around the project area.

Cumulative Effects

The cumulative effects to threatened and endangered wildlife species and their habitat would be similar to those noted in the botany section. Occupancy and maintenance of the residences around the project area have created baseline levels of disturbance affecting both the private and adjacent NFS lands.

All of the projects, activities, and factors noted in appendix B could have impacts to threatened and endangered wildlife species and their habitat if they exist in those areas. Projects proposed by the Forest would likely have little to no cumulative effects due to protection measures typically included in the project design. The cumulative effects will be the result of changes to vegetation and the disturbance resulting from these projects, activities, and factors. The No Action alternative would not add to these cumulative effects.

Alternative 2, Proposed Action

Direct and Indirect Effects

The maximum amount of NFS lands potentially treated by the proposed project is approximately 767 acres. Vegetation in these areas varies and due to proximity to developed areas, has often experienced some level of modification as a result of frequent fires, previous developments and activities. Project design features, including treatment prescriptions specific to streams and riparian areas (design features AQUA-1 through AQUA-3), would reduce or avoid impacts to individuals and their habitat in many cases. Additionally, the requirement for biological review prior to implementation of treatments (design feature WILD-1) would ensure that specific sites are assessed to determine their potential as occupied or suitable habitat.

Coastal California Gnatcatcher

The coastal California gnatcatcher is not known to occur in the project area. There are 0.05 acres of designated critical habitat in the project area. Surveys have not been conducted to determine if the proposed treatment areas include suitable coastal sage habitat for the coastal California gnatcatcher. Implementation of Design Features WILD 1, WILD 2 and WILD 9 will ensure that the project will not result in any direct or indirect impacts to the coastal California gnatcatcher.

Effects Determination: It is my determination that the proposed project will not affect the coastal California gnatcatcher and its designated critical habitat.

Rationale for Determination: The following Project Design Features will avoid potential direct and indirect effects:

- A biologist must review the agreement application and complete a record search and/or survey the treatment area prior to fuel reduction activities to determine if suitable habitat is present and to determine if additional protective measures are needed (e.g., avoidance, presence of a biological monitor, flagging, season of treatment). Design features WILD-1 and WILD-2.
- If suitable coastal sage scrub (>1 acre patch size) is located in a treatment area, it will be excluded from treatment activities unless USFWS protocol surveys have been conducted that year with negative results. Design feature WILD-9.
- If surveys confirm the site is occupied by the coastal California gnatcatcher, no treatment will occur within the occupied habitat. Design feature WILD-9.
- Based on the low number of coastal California gnatcatcher occurrences in proximity of the ANF, there is limited potential for their occurrence in the treatment areas.
- Many of the potential treatment areas occur at elevations greater than what is preferred by the species.

Least Bell's Vireo and Southwestern Willow Flycatcher

The least Bell's vireo and southwestern willow flycatcher are not known to occur in the project area. The project area does not include any designated critical habitat. Within the treatment areas, suitable nesting habitat for the southwestern willow flycatcher and least Bell's vireo has not been mapped. Areas with potentially suitable habitat include San Gabriel Canyon, Big Tujunga Canyon, Little Tujunga Canyon, Aliso Canyon, San Antonio Canyon, Bouquet Canyon and San Francisquito Canyon. It is possible that during the life of the project, other areas of suitable habitat may be identified within the project boundary.

Implementation of Design Features WILD 1, WILD 2 and WILD 10 will ensure that the project will not result in any direct or indirect impacts to the southwestern willow flycatcher or least Bell's vireo.

Effects to Critical Habitat and Primary Constituent Elements (PCE): There are no treatment areas in proposed/designated critical habitat. Based on this, PCEs for the least Bell's vireo and southwestern willow flycatcher will not be affected by project activities.

Effects Determination: It is my determination that the proposed project will not affect the least Bell's vireo or southwestern willow flycatcher.

Rationale for Determination: The following Project Design Features will avoid potential direct and indirect effects:

- A biologist must review the agreement application and complete a record search and/or survey the treatment area prior to fuel reduction activities to determine if suitable habitat is present and to determine if additional protective measures are needed (e.g., avoidance, presence of a biological monitor, flagging, season of treatment). Design features WILD-1 and WILD-2.

- The USFS/USFWS criteria for identifying suitable habitat will be utilized to determine areas of suitable southwestern willow flycatcher or least Bell's vireo habitat. If suitable southwestern willow flycatcher or least Bell's vireo habitat is located in a treatment area, it will be excluded from treatment activities unless USFWS protocol surveys have been conducted that year with negative results. Design feature WILD-10.
- If either of these species is confirmed within a treatment area, no treatment will occur within the occupied habitat. Design feature WILD-10.
- No live native riparian tree species, or trees and shrubs contributing to stream channel stability or providing shade to the streams will be removed. Design feature AQUA-2.
- Proposed treatments will not occur within 100 ft of the bank full edge of the stream if the area is occupied, designated critical, or unsurveyed suitable habitat for any T&E species. Design feature AQUA-1.
- The short duration needed for project implementation and the small area to be treated will reduce the intensity of potential impacts.
- Based on the low number of southwestern willow flycatcher occurrences in proximity of the ANF, there is very low potential for their occurrence in the treatment areas.
- Based on the low number of least Bell's vireo occurrences in proximity of the ANF and the single nest territory located on the ANF, there is low potential for their occurrence in the treatment areas.

Arroyo Toad

The project area overlaps arroyo toad occupied habitat and includes approximately 25 acres of designated critical habitat in Soledad Canyon and the Upper Big Tujunga Watershed. Arroyo toads utilize upland habitats for foraging and aestivation. While toadlets are most likely to stay closer to the stream channel, juveniles and adults will use the upland habitats. Project generated noise and vibrations may disturb arroyo toads if they are burrowed in areas where treatments are occurring. However, it is not expected that toads would abandon their burrow sites as a result of noise and vibrations occurring in the area. Additionally, juvenile and adult toads are typically burrowed at a depth where they would not be crushed by pedestrians in the area.

Fuel reduction treatments will reduce the amount of vegetation and result in modifications to both vertical structure and ground cover. No treatments are allowed within 100 feet of the bank full edge of the stream. This will minimize effects to habitat closest to the stream corridor where use is concentrated during the breeding season. Treatments in upland habitats will not affect the stream areas essential to breeding adults and toadlets during the reproductive season. However, treatment in upland habitats may modify dispersal, overwintering or foraging habitat. Soil compaction and soil disturbance are not anticipated since heavy equipment will not be allowed in the project area. However, reduced vegetation and canopy closure is expected to result in changed soil conditions including decreased soil moisture and increased temperature. An increase in soil temperature and decrease in soil moisture would adversely affect habitat conditions for the arroyo toad.

Native ants are an important component of the arroyo toad diet. If vegetation treatments create openings that promote native ant populations, this will benefit foraging conditions. Treatments that negatively impact native ant populations or result in the spread of non-native ants would have an adverse effect on foraging habitat. If vegetation treatments result in an increase in invasive plants, this may have an adverse effect on suitable arroyo toad habitat by altering the vegetative structure and the ant populations thereby altering the foraging base for the arroyo toad.

Prior to issuing a agreement and commencing treatment, a Forest or Forest approved botanist will perform surveys to determine locations of weed species within the treatment area. All treated target weeds will be bagged and disposed of properly (design feature WEED-6). The wildlife biologist will also assess the site to determine if additional protective measures are needed to avoid adverse habitat modifications (design feature WILD-2).

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest System lands due to the decrease in surface and ladder fuels.

Implementation of Design Features AQUA 1, AQUA 2, AQUA 3, WILD 1, WILD 2, WILD 3, WILD 4, WILD 13 and WILD 14 will reduce or avoid the potential for impacts to arroyo toads and their designated critical habitat. As a result, project activities are not expected to result in injury, mortality or site abandonment. Any temporary disturbance is expected to be negligible and there are no anticipated measurable or permanent direct effects.

Effects to Critical Habitat and Primary Constituent Elements: Treatment activities will not affect the overall hydrology of streams nor will it affect stream characteristics such as bank or substrate structure, presence of pools, flooding regimes or stream flows. Sandy streamside areas will not be affected and there will be no removal of native riparian vegetation. Design features AQUA-1 through AQUA-3 restrict activities within 100 feet from the bank full edge of perennial or intermittent streams.

There is approximately 25 acres of designated critical habitat for the arroyo toad in the project area. Areas beyond 100' of the bank full edge of perennial/intermittent streams can be treated. Treatments in upland areas may alter vegetation and affect suitability of dispersal, foraging or overwintering habitat.

Effects Determination: It is my determination that the proposed action may affect, but is not likely to adversely affect the arroyo toad or its designated critical habitat.

Rationale for Determination: The short duration needed for project implementation and the small area to be treated will reduce the intensity of potential impacts. Stream areas essential to reproductive activity and toadlets will not be affected by project activities. Modifications to Designated Critical Habitat will be limited to upland areas. These modifications may reduce habitat suitability, but will be limited to small areas. Adjacent untreated areas will provide suitable habitat sufficient to provide for foraging, overwintering and dispersal needs.

Additionally, the following Project Design Features will help avoid or minimize potential direct and indirect effects:

- A biologist must review the agreement application and complete a record search and/or survey the treatment area prior to fuel reduction activities to determine whether any threatened or endangered wildlife species or their habitat are present (design feature WILD-1). For treatments planned within the toad critical, occupied or unsurveyed suitable habitat, a biologist will determine if site-specific avoidance and minimization measures are needed, such as presence of a monitor, flagging, season of treatment (design feature WILD-2).
- Vegetation is not to be uprooted.
- Depending on proximity to occupied stream habitat, a biological monitor might be required for project treatments (design feature WILD-2).

- In occupied arroyo toad habitat, treatments in riparian associated areas (outside the 100' stream buffer) must occur outside the season when toads are active. The period of arroyo toad activity may vary depending on weather conditions, but is typically March 1 through October 1 (design feature WILD-3).
- In occupied arroyo toad habitat, treatment activities that are planned in upland habitat are allowed during the season when toads are most likely to be active must occur during the following daylight hours: the commencement of activities can start no sooner than two hours after sunrise and must be completed no later than two hours before sunset (design feature WILD-4).

California Red-legged Frog

Within the project area, there are confirmed occurrences of California red-legged frogs and approximately 8 acres of California red-legged frog designated critical habitat.

California red-legged frogs are highly aquatic species, but are known to use upland habitats for dispersal, foraging or for cover (leaf litter, down logs, etc...). Use of upland areas by California red-legged frogs is most likely to occur during the winter months when there is increased ground moisture. Year-round use of upland areas may occur if frogs are able to locate sites that are perennially wet (springs, troughs, large down wood, etc...). Based on this, where there are known occurrences, adjacent upland areas with potential to provide habitat for California red-legged frogs will require surveys prior to treatment. If red-legged frogs are located, a Forest or Forest approved biologist will make a recommendation regarding what protection measures will be required to avoid or minimize impacts to individuals present in the area (e.g., treatment buffers, biological monitors) (design feature WILD-5). Project generated activities, noise and vibrations may disturb California red-legged frogs if they are occupying the stream adjacent to areas where treatments are occurring. This may cause basking frogs to jump into the water where they will likely remain until the disturbance has ceased. Frogs are not expected to abandon any sites as a result of activities, noise and vibrations occurring in the area.

Project design features prohibit vegetation treatment within 100 ft of the bank full edge of the stream in occupied, designated critical or unsurveyed suitable habitat for the red-legged frog (design feature AQUA-1). This will avoid adverse effects to habitat closest to the stream corridor where use is concentrated.

Outside the 100 foot riparian buffer, fuel reduction treatments will reduce the amount of vegetation and result in modifications to vertical structure, overstory canopy and the amount of ground cover. This will lead to an overall reduction in soil moisture and moist microsite conditions associated with features such as leaf litter and downed wood. Since cover and moist site conditions are needed by frogs during their terrestrial movements, their use of treated sites may be limited in the future.

Prior to issuing a agreement and commencing treatment, a Forest or Forest approved botanist will perform surveys to determine locations of weed species within the treatment area. All treated target weeds will be bagged and disposed of properly (design feature WEED-6). The wildlife biologist will also assess the site to determine if additional protective measures are needed to avoid adverse habitat modifications (design feature WILD-2).

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands.

Implementation of Design Features AQUA 1, AQUA 2, AQUA 3, WILD 1, WILD 2, WILD 5, WILD 6, WILD 7, WILD 13 and WILD 14 will reduce or avoid the potential for impacts to California red-legged frogs. As a result, project activities are not expected to result in injury, mortality or site abandonment. Any disturbance is expected to be temporary and there are no anticipated measurable or permanent direct effects.

Effects to Critical Habitat and Primary Constituent Elements: Treatment activities will not affect the overall hydrology of streams nor will treatment activities affect stream characteristics such as bank or substrate structure, presence of pools, or aquatic refugia. Design features AQUA-1 through AQUA-3 restrict activities within 100 feet from the bank full edge of perennial or intermittent streams. Habitat features such as large down wood will be retained in occupied California red-legged frog habitat (design feature WILD-6). This material could provide suitable microsite conditions for dispersal, foraging and cover.

Approximately 8 acres of designated critical habitat for California red-legged frogs exists in the project area. Habitat located beyond 100' of the bank full edge of perennial/intermittent streams can be treated and may reduce suitability of habitat for dispersal, foraging, cover or predator avoidance.

Effects Determination: It is my determination that the proposed action may affect, but is not likely to adversely affect the California red-legged frog or its designated critical habitat.

Rationale for Determination: The short duration needed for project implementation and the small area to be treated will reduce the intensity of potential impacts. Stream areas essential to reproductive activity and tadpole development will not be affected by project activities. Modifications to Designated Critical Habitat will be limited to upland areas. These modifications may reduce habitat suitability, but will be limited to small areas. Adjacent untreated areas will provide suitable habitat sufficient to provide for foraging, dispersal, cover and predator avoidance.

Additionally, the following Project Design Features will help avoid or minimize potential direct and indirect effects:

- A biologist must review the agreement application and treatment area prior to fuel reduction activities in occupied, suitable or designated critical habitat (design feature WILD-1). For treatments planned within the toad critical, occupied or unsurveyed suitable habitat, a biologist will determine if site-specific avoidance and minimization measures are needed, such as presence of a monitor, flagging, season of treatment (design feature WILD-2).
- Vegetation will not be uprooted.
- Depending on proximity to occupied stream habitat, a biological monitor might be required for project treatments (design feature WILD-2).
- Where there are known occurrences, adjacent upland areas with potential to provide habitat for California red-legged frogs will require surveys prior to treatment. These surveys will focus on detection of features that might provide the moist microsite conditions preferred by red-legged frogs. If located, these features will be surveyed to determine if California red-legged frogs are present. If red-legged frogs are located, a Forest or Forest approved biologist will make a recommendation regarding what protection measures will be required to avoid or minimize impacts to individuals present in the area (e.g., treatment buffers, biological monitors) (design feature WILD-5).

- In occupied California red-legged frog habitat, retain large down wood (design feature WILD-6).
- In occupied California red-legged frog habitat, avoid treatments during the rainy season when frogs are most likely to be utilizing areas away from the stream corridor (design feature WILD-7).
- No fueling or storage of fuel or maintenance of handheld equipment will occur on NFS lands. Fueling of stationary equipment, such as a chipper, can occur on NFS lands as long as it is within an existing road or turnout and is not within 100 feet of an intermittent or perennial stream (AQUA-3).

Potential impacts will be associated with short term disturbance and temporary habitat modification. Project Design Features are expected to eliminate potential for injury or mortality.

Santa Ana Sucker

The project area overlaps occupied and designated critical habitat for the Santa Ana sucker. Approximately 9.5 acres of designated critical habitat for the Santa Ana sucker exists in the project area.

Treatments will not occur in waterways or within 100 feet of the bank full edge of the stream in occupied, designated critical, or unsurveyed suitable habitat (AQUA-1). Project treatments will not modify the stream channel and stream shade levels are to remain unchanged. Maintaining stream shade will prevent changes in stream temperatures as a result of treatment activities. Avoiding vegetation treatments within 100 ft of the bank full edge of the stream within occupied, designated critical, or unsurveyed suitable habitat will reduce potential for project generated sediment to enter the stream.

Prior to issuing an agreement and commencing treatment, a Forest or Forest approved botanist will perform surveys to determine locations of weed species within the treatment area. All treated target weeds will be bagged and disposed of properly (design feature WEED-6). The wildlife biologist will also assess the site to determine if additional specific modifications to the vegetation treatment are needed to avoid adverse habitat modifications (design feature WILD-2).

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest System lands due to the decrease in surface and ladder fuels.

Implementation of Design Features AQUA 1, AQUA 2, AQUA 3, WILD 1, WILD 2 and WILD 13 will eliminate the potential for impacts to Santa Ana suckers if present in the treatment area.

Effects to Critical Habitat and Primary Constituent Elements: The proposed action will not affect the primary constituent elements of critical habitat for the Santa Ana sucker. The hydrological system including seasonal changes in water volume, flow velocity, presence of pools, stream substrate and stream temperatures will not be affected as a result of treatment activities. Design features AQUA-1 through AQUA-3 restrict activities within 100 feet from the bank full edge of perennial or intermittent streams, including retaining trees and shrubs that contribute to stream channel stability or provide shade to the stream.

Approximately 9.5 acres of designated critical habitat for the Santa Ana sucker exists in the project area. Habitat located beyond 100' of the bank full edge of perennial/intermittent streams

can be treated. Vegetation in these areas may be altered, however, the primary constituent elements that critical habitat is based on for this species will not be affected. Design features and site specific treatments will prevent any loss of critical habitat as a result of project activities.

Effects Determination: It is my determination that the proposed project will not affect the Santa Ana sucker and its designated critical habitat.

Rationale for Determination: The short duration needed for project implementation and the small area to be treated will reduce the intensity of potential impacts. Additionally, the following Project Design Features will help avoid potential direct and indirect effects:

- A biologist must review the agreement application and treatment area prior to fuel reduction activities in occupied, unsurveyed suitable or designated critical habitat (WILD-1).
- The biologist will assess the site to determine if additional specific modifications to the vegetation treatment are needed to avoid adverse habitat modifications (WILD-2).
- No treatment of vegetation within 100' of the bank full edge of perennial and intermittent streams within occupied, designated critical, and unsurveyed suitable habitat (AQUA-1).
- No removal of live native riparian tree species (e.g., willows, maples, etc.) (AQUA-2)
- Stream shade levels will be maintained and trees and shrubs contributing to stream channel stability will be retained (AQUA-2).
- No fueling or storage of fuel or maintenance of handheld equipment will occur on NFS lands. Fueling of stationary equipment, such as a chipper, can occur on NFS lands as long as it is within an existing road or turnout and is not within 100 feet of an intermittent or perennial stream (AQUA-3).

Western yellow-billed cuckoo

Although stands of willow and cottonwood may occur within or adjacent to the proposed treatment areas, this species is not expected to occur within the project area. The western yellow-billed cuckoo is not known to occur on the Angeles National Forest and its known distribution is very limited.

The potential for project activities to affect the western yellow-billed cuckoo is reduced by the fact that the low elevation willow/cottonwood type habitat most likely to be utilized by this species is excluded from treatment. To avoid impacts to the unarmored threespine stickleback and arroyo toad, there is a 100 foot streamside buffer in Soledad Canyon where treatments will not be allowed to occur. As a result, suitable habitat for the western yellow-billed cuckoo in Soledad Canyon will be excluded from modification. Other low elevation areas with willow/cottonwood habitat within the treatment area (Big Tujunga Canyon, San Francisquito Canyon, San Gabriel Canyon, Aliso Canyon) will also receive 100 foot streamside buffers for protection of T&E species.

If the western yellow-billed cuckoo was present in the project area, it could be affected by project activities. Noise generated by project activities will consist mainly of people working in the area and the use of chainsaws. If these activities occur in proximity of foraging or nesting western yellow-billed cuckoos, they may result in disturbance or displacement of individuals. Disturbance to foraging birds would have short term effects on individuals. If activities occur in proximity of an active nest, they could lead to nest failure or abandonment.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed action may affect individual western yellow-billed cuckoos, but will not result in a trend toward federal listing or viability.

Cumulative Effects

In addition to the cumulative effects addressed under alternative 1 for threatened and endangered wildlife species, the proposed action could add cumulative effects to habitat (and to a lesser extent, individual species) for two threatened and endangered wildlife species. The majority of threatened and endangered wildlife species analyzed use riparian habitat. The project minimizes project activities within a 100-foot buffer around intermittent and perennial streams eliminating or reducing cumulative effects to these species. The two species that have the potential for cumulative effects are the arroyo toad and red-legged frog. Even though treatments are proposed in their habitat, treatment prescriptions and design features (e.g., WILD-1 through WILD-7, no vegetation would be uprooted) would reduce the cumulative effects added from this project to negligible.

Forest Service Sensitive Wildlife Species

Affected Environment

The following nineteen Forest Service sensitive species are either known to occur or have potentially suitable habitat in the project area:

- California spotted owl (*Strix occidentalis occidentalis*)
- Gray vireo (*Vireo vicinior*)
- Arroyo chub (*Gila orcutti*)
- Santa Ana speckled dace (*Rhinichthys osculus*)
- San Gabriel Mtn. slender salamander (*Batrachoseps gabrieli*)
- California legless lizard (*Anniella pulchra*)
- Western pond turtle (*Clemmys marmorata*)
- Coastal rosy boa (*Lichanura trivirgata*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- San Bernardino Mountain kingsnake (*Lampropeltis zonata parvirubra*)
- Two-Striped garter snake (*Thamnophis hammondi*)
- Pallid bat (*Antrozous pallidus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Fringed myotis (*Myotis thysanodes*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Nelson's bighorn sheep (*Ovis canadensis nelsoni*)
- San Emigdio blue butterfly (*Plebulina emigdionis*)
- San Gabriel Mountains blue butterfly (*Plebejus saepiolus aureolus*)

Table 12. Forest Service sensitive (FSS) wildlife species considered in this analysis.

Common Name (<i>Scientific Name</i>)	General Habitat Description for Forest area	Presence of Suitable Habitat Within the Project Area	Presence of Species Within the Project Area	Potentially Affected by Proposed Action?	Viability Threat from Proposed Action?	Comments Regarding the Project Area
California Spotted Owl (<i>Strix occidentalis occidentalis</i>)	Mature forest stands, riparian corridors.	Yes	Potential	Yes	No	Suitable habitat present.
Arroyo Chub (<i>Gila orcutti</i>)	Slow-moving area or backwater of warm to cool streams with mud or sand substrates.	Yes	Yes	No	No	Suitable habitat present.
Santa Ana Speckled Dace (<i>Rhinichthys osculus</i>)	Cool, perennial streams in shallow cobble/gravel riffles. Historically: Santa Ana, LA, and San Gabriel River systems. Mtns. and foothills of Santa Ana and San Gabriel Rivers.	Yes	Yes	No	No	Suitable habitat present.
San Gabriel Mtn. Slender Salamander (<i>Batrachoseps gabrieli</i>)	Downed woody debris, ferns. Discovered in the San Gabriel Mtns. in 1996. Known from only 11 locations in San Gabriel: Soldier Ck and Rockbound Cyn. 3,400-5,000 feet elevation.	Yes	Potential	No	No	Suitable habitat present.
California Legless Lizard (<i>Anniella pulchra</i>)	Chaparral, pine-oak woodland, riparian. Sandy loose loamy soils under debris, prefers soils with high moisture content. <3,500 feet elevation	Yes	Potential	Yes	No	Suitable habitat present.
Southwestern Pond Turtle (<i>Clemmys marmorata pallida</i>)	River/ streams with deep pools. Slow-moving waters, permanent aquatics. <4,000 feet elevation.	Yes	Potential	Yes	No	Suitable habitat present.
San Bernardino Ringneck Snake (<i>Diadophis punctatus modestus</i>)	Moist habitats in forest, chaparral, woodland, grassland, farms, and gardens. Under debris with moist	Yes	Potential	Yes	No	Suitable habitat present.

Common Name (Scientific Name)	General Habitat Description for Forest area	Presence of Suitable Habitat Within the Project Area	Presence of Species Within the Project Area	Potentially Affected by Proposed Action?	Viability Threat from Proposed Action?	Comments Regarding the Project Area
	microsites.					
San Bernardino Mtn. Kingsnake (<i>Lampropeltis zonata parvirubra</i>)	Illuminated canyons with rocky outcrops or talus. Associated with bigcone Douglas fir and canyon chaparral at low elevations and black oak/pine at high elevations. 1,200-8,000 feet elevation.	Yes	Potential	Yes	No	Suitable habitat is present.
Coastal Rosy Boa (<i>Lichanura trivirgata roseofusca</i>)	Desert, arid scrub, rocky chaparral covered hillsides and canyons where moisture is available as around springs, streams and canyon floors. <4,000 feet elevation.	Yes	Potential	Yes	No	Suitable habitat is present.
San Diego Horned Lizard (<i>Phrynosoma coronatum blainvillii</i>)	Coastal sage, chaparral, grassland, coniferous/oak forest, riparian. <7,000 feet elevation.	Yes	Potential	Yes	No	Suitable habitat present.
Two-Striped Garter Snake (<i>Thamnophis hammondi</i>)	Perennial streams bordered by willow thickets or dense vegetation. Also utilizes stock ponds and other aquatic habitats if densely vegetated.	Yes	No	No	No	Suitable habitat present.
Nelson's Bighorn Sheep (<i>Ovis canadensis nelsoni</i>)	Steep slopes (>80%) with abundant rock outcrops and sparse shrubs for escape terrain. Escarpment chaparral w/ ceanothus mtn mahogany associations for foraging. Range from 3,000-10,000 feet elevation.	Yes	No	No	No	Suitable habitat present
Pallid Bat (<i>Antrozous pallidus</i>)	Rock crevices, tree hollows, mines, caves, and	Yes	Potential	Yes	No	Suitable habitat present.

Common Name (Scientific Name)	General Habitat Description for Forest area	Presence of Suitable Habitat Within the Project Area	Presence of Species Within the Project Area	Potentially Affected by Proposed Action?	Viability Threat from Proposed Action?	Comments Regarding the Project Area
	structures. Open, lowland areas, < 6,600 feet elevation.					
Townsend's Big-Eared Bat (<i>Corynorhinus townsendii</i>)	Humid coastal regions, limestone caves, lava tubes. Will only roost in open, hanging from walls and ceilings.	Yes	Potential	Yes	No	Suitable habitat present.
Western Red Bat (<i>Lasiurus blossevillii</i>)	Riparian trees, shrubs.	Yes	Potential	Yes	No	Suitable habitat present.
Tehachapi Pocket Mouse (<i>Perognathus alticolus inexpectatus</i>)	Arid grass/scrub, pine woodland. Tehachapi Pass to Elizabeth Lake in San Gabriel Mtns. 3,500-6,000 feet elevation.	Yes	Potential	Yes	No	Suitable habitat present.

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Alternative 1 would not result in any direct effects to sensitive wildlife species or their habitat because there are no actions associated with this alternative. Alternative 1 would not reduce the risk of fires increasing in size in and around the project area and there would be a smaller zone to provide a tactical advantage for fire suppression activities. Indirect effects as a result of the no action alternative would be the potential increase (compared to alternative 2) for a fire to affect individuals or modify habitat in and around the project area.

Cumulative Effects

The cumulative effects to sensitive wildlife species and their habitat would be similar to those noted in the threatened and endangered wildlife section. The cumulative effects, including the no action, could affect habitat and individual sensitive wildlife species, but these combined impacts are not anticipated to result in a trend toward federal listing or a risk in viability.

Alternative 2, Proposed Action

Direct and Indirect Effects

The maximum amount of NFS lands potentially treated by the proposed action is approximately 767 acres. Vegetation in these areas varies and due to proximity to developed areas, may have experienced some level of modification as a result of previous fires, developments and activities. Project design features, including AQUA-1 through AQUA-3 and WILD-11 through WILD-16, would reduce or avoid impacts to individuals and their habitat in many cases. Additionally, areas that require biological review of threatened and endangered species habitat (WILD-1) prior to

implementation of treatments would likely receive review for sensitive wildlife species. This would help assess sites to determine their potential as occupied or suitable habitat.

The proposed action may provide a beneficial effect to sensitive wildlife species habitat by decreasing the risk of fire spreading from private lands onto adjacent NFS lands. If the alternative is fully implemented, it would likely reduce potential flame lengths, reduce fuel continuity in the project area, and provide a wider defensible space.

California Spotted Owl

All treatment activities will occur during the day when spotted owls are roosting. Noise generated by project activities will consist mainly of people working in the area and the use of chainsaws. If these activities occur in proximity of roosting owls, they may result in some disturbance but are not expected to result in permanent displacement. The proposed action includes a design feature that requires a record search for any TES species that may occur in the area prior to issuance of an agreement. Surveys may be required prior to treatment activities based on the record search and as determined by a Forest Service biologist. If surveys are required, they will need to be conducted using the appropriate protocol. Unless protocol surveys have been conducted and confirm that there is no nesting activity, a limited operating period from February 1 to August 15 will apply to those areas where an activity center is located within 0.25 mile of treatment activities to minimize impacts during the breeding season. As a result, project activities will have no effect on reproductive success.

Treatment activities will alter vegetation structure and result in modifications to California spotted owl habitat. Implementing fuel reduction treatments in compliance with the Conservation Strategy for the California Spotted Owl (*Strix occidentalis occidentalis*) on the National Forests of Southern California will minimize impacts to spotted owl habitat. If there are any nest trees in the proposed treatment area, the Conservation Strategy describes how they will be protected. Therefore, nesting habitat will not be removed as a result of the planned treatments. However, treatments will result in modifications to roosting and foraging habitat and may contribute to shifts in the current prey base. Additionally, if fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality. Considering the small area to be treated and the availability of foraging habitat in the project area, the proposed fuel reduction treatments are not expected to result in permanent displacement of California spotted owls from their territories.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed action may affect individual California spotted owls, but will not result in a trend toward federal listing or viability.

Gray Vireo

Noise generated by project activities will consist mainly of people working in the area and the use of chainsaws. If these activities occur in proximity of foraging or nesting gray vireos, they may result in disturbance or displacement of individuals. Disturbance to foraging birds would have short term effects on individuals. If activities occur in proximity of an active nest, they could lead to nest failure or abandonment.

If treatments occur in suitable habitat, they will alter vegetation structure and result in modifications to gray vireo habitat. Treatments will reduce canopy closure and suitability of nesting habitat. Additionally, treatments will result in modifications to foraging habitat and may contribute to shifts in the current prey base. If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed action may affect individual gray vireos, but will not result in a trend toward federal listing or viability.

Arroyo Chub and Santa Ana Speckled Dace

Within the potential treatment areas, all Santa Ana speckled dace and arroyo chub occurrences are associated with Santa Ana sucker occurrences. As a result, design features implemented to avoid impacts to the federally threatened Santa Ana sucker will provide a secondary benefit in providing protection to these two FS sensitive fish species.

In occupied Santa Ana speckled dace and arroyo chub habitat, treatments will not occur in waterways or within 100 feet of the bank full edge of the stream. Project treatments will not modify the stream channel and stream shade levels are to remain unchanged. Maintaining stream shade will prevent changes in stream temperatures as a result of treatment activities. Avoiding vegetation treatments within 100 feet of the bank full edge of the stream will reduce potential for project generated sediment to enter the stream. As a result, project activities will not result in adverse direct or indirect effects to either of these species.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent NFS lands.

Effects Determination: It is my determination that the proposed project will not affect arroyo chub and Santa Ana speckled dace.

California Legless Lizard, Western Pond Turtle, Coastal Rosy Boa, San Bernardino Ringneck Snake, San Bernardino Mountain Kingsnake, Two-striped Garter Snake

Direct effects would be associated with the presence of people in the area conducting vegetation removal treatments. Injury or mortality may occur if individuals are crushed by pedestrians during project implementation. For species such as the western pond turtle, winter burrows, nests and eggs can be crushed or exposed as a result of project activities. Noise and disturbance associated with project implementation could result in temporary displacement of individuals. If displaced individuals are unable to find suitable cover, they may experience an increased risk of depredation. The short duration needed for project implementation will reduce the intensity of these potential impacts.

Indirect effects include changes to the vegetative structure and potential soil compaction. Suitable habitat may be trampled by crews during the course of fuel reduction. Soil compaction, erosion, and sedimentation resulting from Project activities, can indirectly impact understory and overstory plant species. For wildlife species that require friable soils, soil compaction can lead to

a reduction in habitat suitability. Additionally, fuel reduction will reduce ground cover and vertical structure. This will result in less cover and will lead to changes in the microsite conditions such as temperature and humidity. Fuel reduction that reduces the amount of leaf litter and down woody material may affect both cover and foraging habitat.

Following treatment, the non-native grass and forb component will most likely increase in dominance relative to its pre-treatment presence. Encroaching cheat grass can change the character of the forest floor, covering it with a relatively dense growth of grass where none would have otherwise been present. If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality.

Prior to implementation, fuel reduction treatments within 100' from the bank full edge of any perennial or intermittent streams require the approval of Forest Service staff. Within this buffer, native trees and shrubs contributing to stream channel stability, or providing shade to the stream will be retained. Retention of this vegetation will reduce the adverse effect of treatments in these areas.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed project may affect individual California legless lizards, western pond turtles, coastal rosy boas, San Bernardino ringneck snakes, San Bernardino mountain kingsnakes, and two striped garter snakes but will not result in a trend toward federal listing or viability.

Nelson's Bighorn Sheep

Direct impacts may include short term displacement and/or disturbance of feeding activities due to noise associated with project activities. If sheep are present during treatment activities, they may avoid the area for the duration of the project activities. If noise and disturbance results in separation of ewes from their lambs, this could increase the risk of depredation.

Indirect effects include changes to the vegetative structure and potential soil compaction. Suitable habitat may be trampled by crews during the course of fuel reduction. Additionally, fuel reduction will reduce ground cover and vertical structure. This will result in less cover and will lead to changes in the microsite conditions such as temperature and humidity.

If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality. Following treatment, the non-native grass and forb component will most likely increase in dominance relative to its pre-treatment presence. Encroaching cheat grass can change the character of the forest floor, covering it with a relatively dense growth of grass where none would have otherwise been present. If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality.

Prior to implementation, fuel reduction treatments within 100' from the bank full edge of any perennial or intermittent streams require the approval of Forest Service staff. Within this buffer, native trees and shrubs contributing to stream channel stability, or providing shade to the stream will be retained. This Design Feature will minimize effects to stream corridor habitat.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed project may affect individual Nelson's bighorn sheep, but will not result in a trend toward federal listing or viability.

Pallid Bat, Townsend's Big Eared Bat and Fringed Myotis

Direct effects to bat species will be associated with disturbance generated by treatment activities. Bats roosting in or near treatment areas may be disturbed by project generated noise and activity. This may result in displacement of individuals from roost sites. If individuals are unable to locate a suitable alternate roost site, they may experience an increased rate of depredation. Impacts resulting from displacement would be greatest during the maternity and the winter roosting seasons.

Treatment activities will alter vegetation structure and modify foraging habitat. Shifts in the type of vegetative cover will impact insect populations and foraging opportunities for the pallid bat, Townsend's big-eared bat and fringed myotis.

Prior to implementation, fuel reduction treatments within 100' from the bank full edge of any perennial or intermittent streams require the approval of Forest Service staff. Within this buffer, native trees and shrubs contributing to stream channel stability, or providing shade to the stream will be retained. This Design Feature will minimize effects to stream corridor habitat.

Effects Determination: It is my determination that the proposed project may affect individual fringed myotis, pallid bats and Townsend's big eared bats, but will not result in a trend toward federal listing or viability.

Tehachapi Pocket Mouse

Direct effects to the Tehachapi pocket mouse would be associated with project generated noise and activities. Injury or mortality may occur if individuals are crushed by pedestrians during project implementation. Additionally, injury or mortality may occur if crews trample burrows used by mice for cover during the day. Noise and disturbance associated with project implementation could result in temporary displacement of individuals. If displaced individuals are unable to find suitable cover, they may experience an increased risk of depredation. The short duration needed for project implementation will reduce the intensity of these potential impacts.

Indirect effects include changes to the vegetative structure and potential soil compaction. Suitable habitat may be trampled by crews during the course of fuel reduction. Additionally, fuel reduction will reduce ground cover and vertical structure which may lead to changes in the microsite conditions such as temperature and humidity.

If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality. Following treatment, the non-native grass and forb component will most likely increase in dominance relative to its pre-treatment presence. Encroaching cheat grass can change the character of the forest floor, covering it with a relatively dense growth of grass where none would have otherwise been present. If fuel reduction treatments result in a decrease of native vegetation and an increase in invasive plant species, this will negatively impact habitat quality.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed project may affect individual Tehachapi pocket mice but will not result in a trend toward federal listing or viability.

San Emigdio blue butterfly

There is limited information about this species and its distribution. Insufficient surveys are available to confirm its occurrence or distribution on the Angeles National Forest. In addition to requiring the host plant *Atriplex canescens*, there are other poorly understood factors that determine habitat suitability. If treatments are implemented in occupied habitat, individuals could be affected by project activities. Activities could displace adult individuals and larvae could be crushed. The T&E species 100 foot buffer along streamside areas in Soledad Canyon, Big Tujunga Canyon, San Francisquito Canyon, San Gabriel Canyon and Aliso Canyon would provide protection to any individuals present within those areas.

The potential for project activities to affect San Emigdio blue butterfly habitat is reduced by the fact that some of the streamside areas potentially utilized by this species are within the 100 foot buffer for T&E species in Soledad Canyon, Big Tujunga Canyon, San Francisquito Canyon, San Gabriel Canyon and Aliso Canyon. Outside of these buffered areas, suitable habitat included in treatment areas would be adversely modified as a result of type conversion and invasive plant establishment.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed action may affect individual San Emigdio blue butterflies, but will not result in a trend toward federal listing or viability.

San Gabriel Mountains blue butterfly

There is limited information about this species and its distribution. Insufficient surveys are available to confirm its occurrence or distribution on the Angeles National Forest. This species is strongly associated with wet meadows and the requirement for the host plant *Trifolium wormskioldii*. To avoid impacts to this species or its habitat, treatments will not be allowed in wet meadows. As a result, no direct effects to this species would occur.

Under the proposed action, wet meadows will not be included in defensible space treatments. This will eliminate the potential for project activities to affect habitat for the San Gabriel Mountains blue butterfly habitat.

The proposed project may provide a beneficial effect by decreasing the risk of fire spreading from private lands onto adjacent National Forest system lands. If treatments are conducted according to guidelines outlined in the proposed action, it will at least, slow down the spread of fire by reducing surface and ladder fuels on private lands.

Effects Determination: It is my determination that the proposed project will not affect the San Gabriel Mountains blue butterfly.

Cumulative Effects

The same projects, activities, and factors addressed in the threatened and endangered wildlife cumulative effects section are true for sensitive wildlife species. The proposed action, when added to the cumulative effects already addressed in the sensitive wildlife species cumulative effects section for alternative 1, would add changes to the vegetation in treated areas and have associated disturbance resulting from treatments (e.g., temporary displacement of individuals). The short duration of project activities and the small areas to be treated across the Forest would minimize the scope of this alternative's generated cumulative impacts. Cumulative impacts of projects, activities and factors noted in appendix B and this alternative are not anticipated to result in a trend toward federal listing or a risk in viability for these 16 sensitive wildlife species.

Effects Analysis for Sporax®

A Human Health and Ecological Risk Assessment for Borax (Sporax®) was prepared by the Forest Service in 2006 (USDA FS 2006). The effects analysis for this Proposed Action is based on the information included in the 2006 Risk Assessment..

The agent of toxicologic concern in Sporax® – i.e., boron – occurs naturally and exposures to boron are unavoidable. The use of Sporax® under the Proposed Action will not typically or substantially contribute to concentrations of boron in water or soil.

According to the 2006 Risk Assessment, there does not appear to be a risk to terrestrial plants exposed to boron through runoff of Sporax® applied to tree stumps. Boron is an essential trace element for terrestrial plants. The amount of boron required to produce optimal growth and development varies tremendously between species and even between strains of the same species. However, excess boron can lead to the development of phytotoxicity. In most species, there is a narrow range between the amount of boron required for optimal growth and the amount that is phytotoxic.

Although risk to insects and soil microorganisms was not characterized, since borax is used effectively in the control of fungi and insects, adverse effects of environmental exposures to insects and nontarget microorganisms are possible. However, given the typical localized application method for Sporax®, widespread exposures are not likely.

The use of Sporax® in the control of annosum root disease does not present a significant risk to wildlife species under most conditions of normal use, even under the highest application rate. Given the highly focused application method for Sporax® which includes application of granular product to cut tree stump surfaces, the most significant risk of toxicity in wildlife species results from the direct consumption of Sporax® applied to tree stumps or an accidental spill. The 2006 Risk Assessment considered exposure of wildlife species to include the following scenarios: direct consumption of applied Sporax® and ingestion of contaminated water by terrestrial vertebrates, exposure of aquatic species by water contaminated by an accidental spill or by runoff, and exposure of terrestrial plants to soil contaminated by runoff.

The exposure scenarios considered for aquatic species are for water contaminated by accidental spill or by runoff of applied Sporax®. Most aquatic animals do not appear to be at risk for any of the exposure scenarios considered. For amphibians, the level of concern is marginally exceeded

for the accidental spill of 25 pounds of Sporax® into a small pond (HQ, 1.3). None of the acute or chronic HQs for exposure *via* water contaminated by runoff exceed the level of concern for any aquatic animal. These results indicate that aquatic animals are not at high risk for the exposure scenarios considered; however, accidental spill of large quantities of Sporax® into a small pond may result in toxicity in amphibians.

For the Defensible Space fuel reduction treatments, Sporax® is not expected to result in measurable adverse effects to any plant or wildlife species. This conclusion is based on the following:

1. Application will occur according to label directions and all applicable federal, state and county regulations.
2. Levels of exposure required for toxicity to wildlife would generally require ingestion or accidental spill of large quantities into a closed water system. Neither of these scenarios is expected to occur under the proposed action.
3. The number of conifers that would be affected by defensible space treatments is unknown, but conifers are expected to represent a minor component of the treated vegetation.
4. Trees over 8 inches dbh will not be cut. This reduces stump size and the amount of Sporax® that must be applied for treatment.
5. Within Defensible Space treatment areas, the small number of conifers and small stump size will ensure that the amount of applied Sporax® will be minimal.
6. Pesticide applicators will implement measures that will reduce the risk for accidental spills and will take appropriate action for immediate clean-up if a spill occurs.
7. Entry of measurable amounts of Sporax® into streams is not expected. This is based on the low transport potential for this chemical, the typically low number of conifers occurring in immediate proximity of a stream and implementation of measures designed to prevent or respond to accidental spills.
8. In occupied or proposed/designated critical habitat for federally threatened or endangered species, there will be no removal of vegetation within 100 feet of bank full stream width. This eliminates the potential for entry of Sporax® into streams within these areas.

Conclusions

The focus of the wildlife analysis in this document is to address one of the key issues noted in chapter 1: how would this project affect special status species? Alternative 1, No Action would have no direct effect to special status wildlife species but could have a greater indirect effect (when compared to the proposed action alternative) should a wildfire spread from private lands into the Forest caused by fuel continuity within the project area and associated higher predicted flame lengths. Alternative 2, Proposed Action would have no effect on threatened and endangered wildlife species except for red-legged frogs and arroyo toads. According to the analysis, the impacts may affect these two species and their critical habitat, mainly due to the potential treatments in the uplands habitat. Design features (AQUA 1 through AQUA 3 and WILD-3 through WILD-7) would reduce these potential effects to insignificance.

Individual Forest Service sensitive wildlife species and their habitat have the potential for being affected by this project. The affects are mainly due to changes to the vegetation in treated areas and associated disturbance resulting from treatments. These effects are not expected to result in a trend toward federal listing or a risk in viability.

Water Quality

The focus of the soils and hydrology analysis in this document is to address one of the key issues noted in chapter 1: What are the indirect effects to water due to the loss of native vegetation? A complete analysis can be found in the Water Quality Specialist Report within the project planning record located at the Forest Headquarters.

Affected Environment

The affected environment includes 47 6th field watersheds (also known as hydrological unit code [HUC] 12)¹³ that cover the majority of the Forest. Fifteen of the 47 6th field watersheds have had an average of 50 percent of their drainage areas substantially affected by large wildfires over the last half-decade. Wildfires exceeding 10,000 acres include the Buckweed, Day, Ranch and Station fires. Active post-fire restoration (tree planting, hillslope mulching, road repairs, etc.) is ongoing, particularly in the Station fire area, to help stabilize soil resources and reduce impacts to water quality.

Besides wildfires, other watersheds are impacted by urbanization and roads, particularly Lower Pacoima Wash, Verdugo Wash, Eaton Wash, Santa Anita Wash – Rio Hondo, and Arroyo Seco. Eleven watersheds contain 303d listed (impaired)¹⁴ stream reaches, but no treatments are proposed within the riparian conservation area (RCA)¹⁵ of these streams. Four watersheds contain 303d lakes, with Hughes Lake in the Elizabeth Lake watershed being the only location where treatments in RCAs are proposed. Hughes Lake was 303d listed in 2006 for non-point source impairments including algae, eutrophic condition, fish kills, odor and trash.

Cumulative Effects Boundary

The water quality cumulative effects spatial boundary is the 47 6th field watersheds that cover the majority of the Forest and the temporal boundary is ten years.

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

The 47 6th field watersheds would continue to have adverse effects on water quality due to roads and recent wildfires. Current effects on water quality include accelerated sedimentation (from roads and wildfire) and increased water temperature from fire-killed riparian tree species. The effects due to wildfire would continue to recover due to both active and passive restoration.

¹³ These watersheds vary in size from approximately 10,000 to 52,000 acres in size.

¹⁴ 303d waters are defined as impaired under the 1972 Clean Water Act. These impaired waters do not meet water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology.

¹⁵ Riparian conservation areas (RCA) are defined in the Forest Plan, Part 3, Appendix E. Perennial streams RCAs are 328 feet on each side of the stream measured from the bank full edge of the stream. Seasonal flowing streams RCAs are 98 feet.

Cumulative Effects

The Forest Service in Region 5 has adopted the Equivalent Roaded Acres (ERA) model as a method of addressing cumulative watershed effects. This model is designed as a preliminary indicator for managers to determine whether or not past and present land management disturbances in a given watershed approach or exceed a threshold of concern. The ERA analysis revealed that 8 of the 47 6th-field watersheds currently exceed the Region 5 standard threshold of concern equal to 12 percent ERAs, mostly due to recent wildfires and roads. When combined with the current water quality impacts, additive water quality effects (continued increases in sedimentation, peakflow and stream temperature) may occur due to a future wildfire and associated suppression tactics in the areas that would not be treated under the no-action alternative.

Alternative 2, Proposed Action

Direct and Indirect Effects

There would be no short or long-term direct effects to water quality since project design features, specifically those retaining trees and shrubs contributing to stream channel stability or shade (AQUA-2), create a narrow buffer between activities and surface waters.

There would be no short or long-term indirect effects to stream temperature due to project design features protecting stream shade and channel stability (AQUA-2).

There is a very low risk that short-term negative effects to sedimentation would occur due to treatments in riparian conservation areas, but any effects would be mostly at the site and possibly the reach scale. Negative effects on sedimentation would mostly occur within riparian conservation areas with highly erosive soils and low ground cover. Activities in riparian conservation areas would reduce tree and shrub interception; therefore, increasing rainfall impact causing soil dislocation, which could then be transported to nearby stream channels. Project designs features (AQUA-1 and AQUA-2) reduce the risk of negative effects described above.

The activities may also have beneficial effects of increasing existing ground cover from organic debris (e.g., leaves, twigs, bark) left on site, which could reduce the effects on sedimentation. Effects on sedimentation at the watershed scale would be neutral due to the relatively small proportion of riparian conservation areas in affected HUC-12 watersheds (average of 0.23 percent) proposed for treatment combined with the very low impact of the proposed treatments (Rochibaud et al. 2010).

Effects on channel geomorphology would be neutral due to the effects on sedimentation and peakflow being very low risk (Reid 2010).

In the majority of the project area (sites with annual precipitation less than 18 inches), there would be no to very little change in net evapo-transpiration since the total transpirative losses would be mostly offset by the total evaporative increases (Troendle et al. 2010).

Treatments located outside of riparian conservation areas (81 percent of the project area) would result in neutral effects to water quality.

Cumulative Effects

Results of the Equivalent Roaded Acres analysis indicate that the proposed activities would add an average of 1.69 ERAs with a range of 0.01 to 7.6 ERAs, per 6th field watershed. These

additional ERAs did not increase cumulative percent ERAs enough to change any watershed Risk Ratios at the hundredth place. Therefore cumulative watershed effects due to the implementation of alternative 2 would be neutral. Research has shown that projects, such as this with very low risk, result in neutral effects to water quality at the watershed scale (Elliot et al. 2010).

Conclusions

The focus of the water quality analysis in this document is to address one of the key issues noted in chapter 1: What are the indirect effects to water due to the loss of native vegetation? Based on the modeling, implementation of either alternative (no action or proposed action) would have neutral effects to water quality at the 6th field watershed scale. The main adverse impacts to water quality within the 6th field watersheds continue to be due to past large wildfires and existing roads.

Consequences Relative to Significance _____

Council on Environmental Quality regulations (40 CFR part 1500-1508) for implementing the National Environmental Policy Act (NEPA) includes a definition of “significantly.” The context and intensity of this definition are important for a finding of no significant impact, when an action would not have a significant effect on the human environment. The context and intensity of significance are discussed below in relation to the action alternative (alternative 2). The intent of this section is to show the action alternative does not have a significant effect to the human environment; therefore, an environmental impact statement is not needed. Specialist reports and required documents needed for the environmental assessment analysis and to document compliance with law, regulation, or policy are located in the project planning record located at the Forest Headquarters. Conclusions from these reports are summarized and referenced below.

Context

Context means that the significance of an action must be analyzed in several contexts (i.e., local, regional, worldwide) and over short and long timeframes. For site-specific actions, significance usually depends upon the effects in the locale rather than in the world as a whole (40 CFR 1508.27(a)). Both short-term and long-term effects are relevant.

Due to the project size (approximately 767 acres affecting 1,212 structures) and project design, the project is not likely to significantly affect society as a whole in the region, state or nationally. Beneficial effects of reducing the risk of loss from wildfire of private residences and critical infrastructure and enhance firefighter and public safety would not likely have significant effects to the region (e.g., southern California) or worldwide.

This project is local in context, located mostly around the periphery of the Angeles National Forest, on adjacent private property, and to a lesser extent on private inholdings. The analyzed project area covers about 767 acres of NFS lands. The project area is very non-contiguous, with treatment areas widely scattered around the forest. The Forest is highly influenced by the surrounding urban area, which is contains the most populated county in the nation. Though this project may potentially occur on approximately 767 acres, it is unlikely the entire project area will be treated. County codes require less than the 300 feet assumed to be the maximum project area. Because participation in the project is entirely voluntary, it is unlikely that all property owners will seek authorizations, and it is even more unlikely that all

potential project areas would be treated at the same time. The proposed action will provide long term benefits and will not have a significant adverse effect to society locally or regionally, short-term or long-term.

Intensity

Intensity refers to the severity of expected project impacts. The following ten factors and their expected impacts are considered below.

1. Beneficial and Adverse Impacts

Both beneficial and adverse effects have been taken into consideration and documented in this chapter of the document, and some are summarized in chapter 2, table 3. Beneficial effects have not been used to offset or compensate for potential adverse effects. Singularly and collectively, the resources affected by the action alternatives are not likely to be exposed to significant impacts.

Beneficial impacts include:

- Provides a mechanism to authorize landowners to create defensible space based on state and county fire codes, involving NFS lands
- Reduces the risk of loss to residences and critical infrastructure adjacent to the project area.
- Enhance firefighter and public safety by creating additional defensible space.

The adverse impacts associated with the action alternatives include:

- May adversely affect Forest Service sensitive plant and wildlife species but would not lead to a trend toward federal listing.
- May affect federally endangered arroyo toads and federally threatened red-legged frogs in upland habitat but would be an insignificant effect.
- A high risk of expansion or new establishment by non-native grass species into native plant communities.

2. The Degree of Effect to Public Health and Safety

None of the actions from the proposed action (alternative 2) would have significant adverse impacts to human health and safety. Implementation of this alternative would reduce risks to human health and safety compared to the existing condition (no action) by providing a mechanism to authorize additional defensible space around private residences and critical infrastructure that goes beyond their property boundary. A purpose for the project involves enhancing firefighter and public safety by creating additional wildfire defensible space in the wildland urban interface (WUI) areas adjacent to the private residences and critical infrastructure.

3. Unique Characteristics of the Geographic Area, Including Historic and Cultural Sites

Unique characteristics for this project are defined as proximity to historical or cultural sites. The proposed action (alternative 2) only allows vegetation to be cut using hand tools and chippers (if used on existing roads and turnouts) and does not allow the use of heavy equipment, prescribed

fire, road construction, or digging or scraping of the topsoil. Based on the Cultural Resource Reports for this project, the proposed action is not considered to have direct or indirect effects to cultural resources.

Due to the built in design features to minimize ground disturbance, this project is considered to have little to no direct or indirect effects to cultural resources. The project has been reviewed by ANF Heritage Staff and determined to qualify as a Screened Undertaking under the 2013 Region 5 Programmatic Agreement. Screened undertakings have little or no potential to cause effects to historic properties if they are present within an APE. Specifically, the project falls under the category of: Activities that do not involve ground or surface disturbance (e.g., timber stand improvement, pre-commercial thinning, non-disturbing wildlife structures, and fuels treatment), and that do not have the potential to affect access to or use of resources by Indians based on the nature of the undertaking or prior or current consultation with Indian tribes (R5 PA, Appendix D, section 2.2(d)). Due to the low impact methodology and the qualification of a screened undertaking, no additional identification or site evaluation efforts are required.

4. The Degree to which the Effects on the Human Environment are Likely to be Highly Controversial

Based on the analysis, there is no indication that the effects of the proposed action (alternative 2) on the quality of the human environment are likely to be highly controversial. The proposed treatments are routine activities that are commonly carried out on the Forest. These activities were designed to minimize or eliminate potential effects from more destructive wildfires on the human environment.

5. The Degree to which the Possible Effects on the Human Environment are Highly Uncertain or Involve Unknown Risks

Proposed fuels treatments are routine activities that have been conducted in the Forest over many years. All of the proposed fuel treatments under the proposed action (alternative 2) have been conducted both separately and in various combinations within similar landscapes and vegetation types. The nature and magnitude of the effects to the human environment from implementing the proposed action are generally understood, do not have highly uncertain effects on the human environment or involve unique or unknown risks.

6. The Degree to which the Action May Establish a Precedent for Future Actions with Significant Effects or Represents a Decision in Principle About a Future Consideration

The proposed action (alternative 2) is project-specific and does not establish a precedent for future actions with significant effects. Any future projects would need to consider all relevant scientific, site-specific information available at that time, and complete an independent analysis of environmental consequences.

7. Whether the Action is Related to Other Actions with Individually Insignificant but Cumulatively Significant Impacts

Based on the cumulative effects analysis noted in this chapter (i.e., fuels, vegetation, wildlife, water quality), there would be no significant cumulative effects. The proposed action, along with similar past, present, and foreseeable actions, activities and factors would: reduce the risk of loss

from wildfire to residences and critical infrastructure within the wildland urban interface and enhance public and firefighter safety during wildfire events. There would be insignificant cumulative adverse effects to: wildlife and plant species habitat. The greatest cumulative adverse impact would be due to the non-native invasive grasses that presently exist and could expand. The cumulative effects from these non-native invasive grasses are already high and this project would not significantly add to these effects.

8. The Degree to which the Action May Adversely Affect Districts, Sites, Highways, Structures, or Objects Listed in or Eligible for Listing in the National Register of Historic Places, or May Cause Loss or Destruction of Significant Scientific, Cultural, or Historic Resources

As noted in intensity factor 3 above, the action alternatives would comply with the *Programmatic Agreement Among the USDA Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region (2013)*. The proposed action is designed to have no adverse effects to objects listed in or eligible for listing in the National Register of Historic Places, or cause loss or destruction of significant scientific, cultural and historic resources.

9. The Degree to Which the Action may Adversely Affect an Endangered or Threatened Species or its Habitat That has Been Determined to Be Critical Under the Endangered Species Act of 1973

As noted in the effects analysis in this chapter, there would be no adverse effects to threatened and endangered plant and wildlife species except for the arroyo toad and red-legged frog. Potential adverse effects could occur to individuals and critical habitat that exists in the upland habitat. Design features reduce impacts to a level that may affect, but would have an insignificant adverse effect to these two species and their critical habitats.

10. Whether the Action Threatens a Violation of Federal, State, or Local Law or Other Requirements Imposed for the Protection of the Environment

The proposed action is in compliance with federal, state, and local laws and other requirements imposed for the protection of the environment. Based on the project design (chapter 2) and effects analysis (summarized in this chapter and detailed in the various specialist reports), the proposed action is in compliance with environmental laws including the National Environmental Policy Act, Clean Water Act, Endangered Species Act, National Forest Management Act, and Clean Air Act.

The Air Quality Report¹⁶ analyzed potential effects from the proposed action on air quality and concluded this alternative is in compliance with the Clean Air Act and meet air quality standards in the South Coast Air Quality Management District (SCAQMD), Antelope Valley Air Quality Management District (AVAQMD) and the Mojave Desert Air Quality Management District. Predicted emissions are less than the conformity thresholds and accounted for within the State

¹⁶ The Air Quality Report is on file in the project planning record located in the Angeles National Forest Headquarters.

Implementation Plan emission inventories. Therefore, this alternative meets the conformity requirements as specified in 40 CFR part 51 and part 93.

The botany section of this document analyzed potential effects from invasive plants and found there is a high risk of invasive grasses entering and expanding in the proposed treatment areas. Implementing the design features would reduce a portion of the risk of invasive weeds expanding into the project area from implementing this project; but due to the nature of the project the expansion of non-native plants cannot be prevented. The project covers a maximum of 767 acres across the Forest and is intended to reduce the risk of loss of life and property from wildfire. The proposed action is in compliance with Executive Order 13112 of February 3, 1999.

As noted in intensity factors 3 and 8, there would be minimal to no potential adverse effects to heritage resource sites. By complying with the 2013 Regional Programmatic Agreement (USFS-SHPO 2013), the proposed action is in compliance with the National Historic Preservation Act.

The proposed action (alternative 2) is located entirely on National Forest System lands. The proposed action is not in conflict with planning objectives for local counties or tribes. This project was designed to provide a mechanism to authorize landowners to conform to State, Los Angeles and San Bernardino County fire codes. As noted in chapter 1 of this document, the proposed action meets the criteria for Standard 8 in the LMP and the project was designed with this Standard in mind. The proposed action should move the Forest toward achieving Goal 1.1 in the LMP, which is to improve the ability of southern California communities to limit loss of life and property. The proposed action also addresses Appendix K in the LMP, which states we would consider the use of NFS lands to meet the various fire ordinances regarding defensible space.

Chapter 4 - Consultation and Coordination

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

ID Team Members:

Angles National Forest Team Members

Diane Travis- Forest Fire Management Specialist
Leslie Welch- Forest Wildlife Biologist
David Collins- Forest Fire & Fuels/GIS Specialist
Justin Seastrand- Forest NEPA Specialist
Lisa Northrop - Resource and Planning Staff Officer
Katie Vinzant, Erin Ruckman- Botanists
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Arturo Delgado- Forest Biologist
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AMSET Forest Service Team Members

David Kerr- Fire Management Specialist
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Chris Clervi- GIS Specialist
Tim Metzger- Fuels Specialist
Nikos Hunner- Soil Scientist
Gregg Bousfield- Hydrologist
Kirsten Kaiser- Environmental Coordinator
Carol Ewell- Fire Ecologist
Teresa Sue- Wildlife Biologist

Federal, State and Local Officials/ Agencies and Tribes

We worked with Federal, state, local agencies, Tribes, and many individual landowners and interested groups during the development of this EA, some of these interested parties are identified below.

California Natural Resources Agency, Department of Fish & Wildlife
California Native Plant Society
Los Angeles and San Gabriel Watershed Council
Wrightwood Fire Safe Council
San Bernardino County Fire Hazard Abatement
Santa Ynez, San Manuel and Tejon Tribes
Los Angeles County Fire Department

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Appendix A – Response to Scoping Comments Received

Non-issues were identified as: (1) does not meet the purpose of and need for action and/or is outside the scope of the analysis; (2) already decided by law, regulations, LMP or other higher level decision; (3) irrelevant to the decision to be made; (4) conjecture and not supported by scientific or factual evidence; (5) already addressed in the proposed action description; (6) has been addressed with other prior environmental review; or (7) comment of support. The table identifies which of these criteria led to a conclusion that the comment did not identify an issue to be analyzed.

Table A.1 Response to scoping comments

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
1	Jeannie Johnson, comment received 3/7/2011	N (7)	This property borders National Forest. She fully supports this program as outlined in the Scoping Letter. Even those houses that were built after 1996 should be able to do hazard reduction on NFS lands.	The response to this comment has been revised from the EA circulated for comment. The proposed action has been modified so that there is no restriction in applying for this use for those homes built after 2006. This change was made in response to comments from landowners and from the LA County Fire Department.
2	Abbye and Barry Brenner, comment received 3/7/2011	N (1)	It's a lot of money to clear extra hazard. Forest Service should do it, it's not our land.	The need for this project is to provide a landowner the option to meet state and county fire code requirements for defensible space on National Forest System lands. The county codes are applicable to the homeowner, not to the Forest Service. This project is optional to the homeowner with the purpose of reducing risk to life and property from wildland fire. This option proposed is outside the scope of the project.
3	Abbye and Barry Brenner, comment received 3/7/2011	N (5)	Would this be a volunteer program? Worried about people lugging gasoline cans out to project site to fuel their gas powered weed eaters and chainsaws. Thinks there should be training for people to go to so they don't start a fire.	Yes, this would be a voluntary program to participate in. The proposed action includes safety issues to reduce risk of treatments causing fires (e.g., no prescribe burning, fueling of handheld equipment, such as chainsaws, would occur off NFS lands).
4	Abbye and Barry Brenner, comment received 3/7/2011	N (3)	Spent a couple of thousand of dollars to get people to sandbag behind their home in anticipation of rains. Home is adjacent to NFS lands. Graveyard Trail is completely impassable is anyone going to grade it even for emergency purposes?	Comments do not pertain to this particular project.

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
5	Nancy Gjerset, comment received 3/14/2011	N (7)	House burned in the Station Fire. Supportive of the project. Thinks that the 1996 Fuel Mod regulation should not interfere with anybody's ability to obtain an agreement. Intends to submit a letter (never received).	The response to this comment has been revised from the EA circulated for comment. Comment is referring to a County code that made changed to requirements for building permits, which is outside the scope of the project. Acknowledges support for the project.
6	Shirley Vickory, comment received 3/15/2011	N (3)	After discussion with her she would not be eligible for a permit on NFS lands.	N/A
7	John Aziz, Wrightwood Fire Safe Council, comment received 3/16/2011	N	Received letter to the firesafe council, discussed it at the fire safe council meeting last night. Would like someone from the Forest to attend Fire Safe Council Meeting on April 11, 2011 to field questions and so forth. Would like to see someone at Wildland Fire Disaster Day, May 7, 2011. Could put articles in the Mountain Air-Al Morrisette Could put article in Wrightwood Properties Assoc.	Provided additional public involvement opportunities.
8	Julie Hernandez, Code Enforcement, San Bernardino County	N	Interested in having someone from the forest service at Demonstration Day in Wrightwood to possibly go through the process of how to obtain a permit.	The ANF routinely supports local fire department events. Commenter was provided contact information for Forest Service District Offices to coordinate.
9	Lorna Apper, received comment on 3/16/2011	N (1)	Property in Lakeview Terrace (Wheatland Exit) butts up against forest. Wants to plant a nursery for native plants and would that be OK in terms of Hazard Reduction? May be able to provide pictures of a house that has native plants around it up against the Forest Service. Before and After. Wants to send proposal of project to Forest Service to do a native vegetation program along the Angeles Front Country.	Assuming this nursery is off NFS lands and would not be applicable to this project. Assuming the native vegetation program along the Angeles Front Country is proposed off NFS lands and is outside the scope of this project.
10	Scott Harris, CA Department of Fish and Game (3/16/2011) and Nancy Steele, LA and San Gabriel Watershed Council (3/17/2011)	N	Requests an extension of the scoping period.	Extended scoping comment period.
11	Nancy Steele, LA and San Gabriel	N (5)	Was curious: how many acres are estimated to be impacted?	A maximum of 767 acres of National Forest System lands, assuming a 300-foot treatment area beyond the

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
	Watershed Council, received comment on 3/17/2011			private lands/NFS lands boundary and every landowner would participate. The actual implementation acres would likely be far less.
12	Bonnie Welch, received comment on 4/14/2011	N (7)	Near White Rock Park. Very close to NFS lands. Wants to do what is needed to protect her house.	Comment of support.
13	Sandy Kerker (4/15/2011); Judith Leslie-Thomas. L A County Fire Department (4/20/2011); Janna Duncan (4/22/2011)	N	Received the extension card for the project but didn't see the original scoping letter. Wanted information on the project.	Additional information was sent to the parties that requested it.
14	Don & Sue Ellen Hussung, received comment on 4/15/2011 via email	N (7)	In summary, we're delighted that there may finally be a consistent set of instructions for us to follow in our attempts to do our part in helping protect us from wildfires. We would sleep a lot more peacefully during the Santa Ana winds if we are allowed to trim back the brush to the 200' mark with 18' between large bushes. We have burned out heavy duty trimmers attempting to reduce volume. Any help Forest Service personnel can do to assist in this effort would be most welcome.	Comment of support.
15	Bruce Brown, received comment on 4/27/2011	N (5,7)	Called and was interested in the project. He tries to keep it clear anyway, supports project. More specifically he doesn't mind having the opportunity to do the hazard reduction if he felt he needed it but he does not want to be responsible for it. For example he does not want to be fined for not clearing on NFS lands by the Forest Service or by LA County Fire if he didn't do it.	The purpose of this project is to allow landowners adjacent to NFS lands the option to complete vegetation treatment to meet county and state defensible space distances. It is not intended to become a requirement. Support of the project.
16	Robert Chaney, received comment on 4/27/2011	N	Received card but not letter.	Called him back and explained the project. He is about 500 feet from the NFS lands boundary so we decided he really wasn't going to be affected. He did not have any comments.
17	Mabel Dickens, received comment on 4/25/2011	N	Received card but not letter, was concerned about what was required from her.	There are houses between her and the boundary, probably would not qualify. She would do whatever was needed to make her property safe from wildfire.
18	Jim Robinson, LA County Fire BC, received comment on 4/28/2011	N	What is the cost of the permit to the homeowner?	Based on the Proposed Action, there may be a nominal administrative fee attached to issuing the authorization.
19	Jeff Brandt, CDFW (since	Y	Project may result in significant impacts to sensitive	Species that are CA ESA listed that may occur in the

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
	renamed CA Dept. of Fish and Wildlife, CDFW), letter dated 4/29/2011		biological resources, including state-listed threatened or endangered species under CA ESA and jurisdictional drainages under the regulatory authority of the Department.	project area are also listed under the federal ESA. Those species were included in the Biological Assessment and impacts to those species were analyzed and summarized in chapter 3 of the EA. The analysis did not find that the impacts were significant.
20	Jeff Brandt, CDFW, letter dated 4/29/2011	N	Believes this project is subject to CEQA and suggests a joint NEPA/CEQA EIS/EIR.	This project does not involve any non-federal lands, is not being funded by state and local agencies, and the actions would not require any RWQCB permits; therefore, we believe this project is not subject to CEQA.
21	Jeff Brandt, CDFW, letter dated 4/29/2011	N	The EA should include an estimate of how much NFS lands will be impacted.	The maximum amount of National Forest System lands proposed for treatment is 767 acres. This is included in the description of the proposed action.
22	Jeff Brandt, CDFW, letter dated 4/29/2011	N	Provide a map showing the location of homes that will impact NFS lands.	A map (figure 1) is included in the EA . A more detailed mapbook is also available with the final project documents.
23	Jeff Brandt, CDFW, letter dated 4/29/2011		The EA should estimate acreages of designated critical habitat that would be impacted for both state and federally listed species.	The estimated acreages of federally designated critical habitat potentially affected by this project are: Arroyo toad: 25 acres CA fed-legged frog: 8 acres Santa Ana sucker: 9.5 acres The project deals only with National Forest System lands,
24	Jeff Brandt, CDFW, letter dated 4/29/2011	No (5)	The EA should specify whether mature trees will be removed and whether there will be adverse impacts to the southern rubber boa, spotted owl, and San Bernardino flying squirrel.	The proposed action description (alternative 2 in chapter 2 of the EA) states no mature trees are proposed for removal. Only trees less than 8" DBH are proposed for removal.
25	Jeff Brandt, CDFW, letter dated 4/29/2011	No (5)	The EA should discuss what happens to retained trees w/in the project area in subsequent years.	The proposed action description (alternative 2 in chapter 2 of the EA) states trees retained must be limbed to a height of six feet for mature trees or up to one third of the height of young trees to remove ladder fuels.
26	Jeff Brandt, CDFW, letter dated 4/29/2011	No (1)	The EA and County Code should state that new development adjacent to the NFS lands should be set back or sized appropriately so that no clearance of vegetation on these lands is required.	The response to this comment has been revised from the EA circulated for comment. The project initially excluded homes built after April 2006, based on the following guideline from Appendix K of the LMP: "For new developments, the Forest Service will not allow the use of National Forest System

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				lands for developers/homeowners to meet the ordinance. Developers must implement appropriate setbacks". The LA County Fire Department commented that this restriction was inconsistent with Forest Service and County policies. Because the LMP Guideline allows flexibility in implementation, the restriction on homes built after April 2006 has been dropped as a criteria. While the Forest Service has made a change in how it applies its LMP Guidelines to the project, changes to the county code or restrictions on private property are outside the scope of the project. The Forest Service does not have jurisdiction or authority over private property, or any legal ability to change county codes.
27	Jeff Brandt, CDFW, letter dated 4/29/2011	No (1)	The EA should include provisions for the FS and County to work together to ensure that new development is either reduced in scope or re-sited to avoid potential clearing of NFS lands.	This is outside the scope of the project. See response to comment #26.
28	Jeff Brandt, CDFW, letter dated 4/29/2011	No (2)	The project should be closely monitored to ensure compliance with the conditions for treatment and provide for penalties if in non compliance.	The authorization would include conditions for treatment based on the proposed action. The authorization would be administered to standard, which includes implementation of all design features adopted in the Decision. Resources would be reviewed prior to any reissuance of the authorization, in accordance with all design features listed in the EA. Federal laws and regulations would be enforced, and penalties may be assessed for non-compliance.
29	Jeff Brandt, CDFW, letter dated 4/29/2011	No	Annual reports should be provided to the Department (monitoring and penalties).	If after reading the potential effects to the environment noted in chapter 3 of the EA, the Department would still like to see the annual monitoring and penalties that are implemented with this project, please contact the District Rangers directly.
30	Jeff Brandt, CDFW, letter dated 4/29/2011	N	The EA should include an accounting mechanism to memorialize how much NFS land is impacted and what spp are impacted.	The Forest is required to enter all hazardous fuels treatments in corporate databases. Data from Forest Service systems is available to the state at any time. Tracking of species that are impacted is not necessary given the LMP standards for WUI Defense Zones

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				(priority on hazard reduction), and the limited impacts as discussed in the EA.
31	Jeff Brandt, CDFW, letter dated 4/29/2011	N (1)	This program should include a provision requiring homeowners to remove potential fire ladders from around the home and to require non-inflammatory roofs.	This is outside the scope of the project. The need for the project is to provide a mechanism for landowners to meet state and county defensible place distances on NFS lands. The Forest Service actively participates in County programs to educate homeowners on the importance of fire safe home materials, but the agency does not have authority to require certain building materials on private lands.
32	Jeff Brandt, CDFW, letter dated 4/29/2011	N (5)	Cleared and thinned vegetation must be taken to an approved facility and evidence of this should be provided to the Forest Service.	The proposed action states the cut and dead material must be removed from National Forest System (NFS) lands but does not specify where except for design feature WEED-6, which states, "All treated target weeds would be bagged in heavy duty (3 millimeters or thicker), black contractor-quality clean-up bags and disposed of at a permitted facility located off NFS lands". Since the project involves only NFS lands, routine project monitoring is considered sufficient to verify that the vegetation has been taken off NFS lands, and homeowners will not be required to provide evidence of where or how vegetation was disposed of.
33	Jeff Brandt, CDFW, letter dated 4/29/2011	N (5)	The DEIR should contain sufficient, specific and current biological information on the existing habitat and spp at the project site, measures to minimize and avoid sensitive biological resources, and mitigation measures to offset the loss of native flora and fauna and state waters.	The document is an EA. See response to comment # 20. The proposed action does not propose any offset measures but does include design features to reduce impacts to biological resources (see chapter 2, alternative 2 in EA) and addresses affected biological environment (chapter 3 in EA).
34	Jeff Brandt, CDFW, letter dated 4/29/2011	N (5)	If the project site contains federal or state listed species, the DEIR should include measures to avoid or minimize impacts to these species as well as mitigation measures to compensate for the loss of biological resources.	The document is an EA. See response to comment # 20. The project Biological Assessment address potentially affected federally threatened/endangered and Forest Service sensitive species including measures to avoid or minimize impacts. A summary is provided in the EA (chapters 2 and 3). No offset mitigation measures were proposed based on the small area potentially impacted, and the effectiveness of design features in limiting the impacts.
35	Jeff Brandt, CDFW, letter dated 4/29/2011	N (4,5)	The DEIR should not defer impact analysis and mitigation measures to future regulatory discretionary actions, such as	The document is an EA. See response to comment # 20. The project proposes a number of design features to

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
			a lake or streambed alteration agreement, CESA permit or federal ESA Permit.	reduce or avoid potential impacts, and environmental impacts are analyzed. The project is not anticipated to require any streambed alteration agreement, CESA permit or federal ESA take permit. If CDFW identifies the need for such permits, the Forest Service will fully cooperate with CDFW to ensure applicable permits are obtained before work is authorized.
36	Jeff Brandt, CDFW, letter dated 4/29/2011	N	Consultation with the Dept should be in accordance with joint MOUs and policies regarding the Lake and Streambed Alteration Agreement Program and the Forest Service.	See response to comment 35: no lake and streambed alteration agreement is anticipated for this project (see proposed action description in chapter 2 and environmental effects in chapter 3 of the EA). Design features have excluded project treatment from stream courses. The Forest Service will fully cooperate with CDFW according to existing MOU's.
37	Jeff Brandt, CDFW, letter dated 4/29/2011	N (4)	The South Big Bear Fuels and Forest Health Project EA (2005) should serve as a template for this project.	The recommendation is noted. The Washington Office template for EAs was used as a basis of the format for this project. The ID Team consulted and considered the recommended document in preparing this EA.
38	Jeff Brandt, CDFW, letter dated 4/29/2011	N (2)	The DEIR should include an alternatives analysis (no project) which focuses on environmental resources and ways to avoid or minimize impacts to those resources.	The document is an EA. See response to comment # 20. The EA has a no action (no project) alternative addressed in the analysis (see chapters 2 and 3, alternative 1). Though the no action alternative does not include ways to avoid or minimize impacts from taking no action.
39	Jeff Brandt, CDFW, letter dated 4/29/2011	N (2)	A focused biological report or supplemental environmental report should include: a complete assessment of the flora and fauna within and adjacent to the project area with emphasis to TES spp and habitats (as defined by CEQA).	The document is an EA. See response to comment # 20. Based on federal laws, policy, and direction, focused biological reports have been completed for this project and are available for review upon request.
40	Jeff Brandt, CDFW, letter dated 4/29/2011	N (2)	A thorough discussion of direct, indirect and cumulative impacts needs to be addressed with specific measures to offset such impacts.	No offset mitigation measures are proposed with this project. Chapter 3 in the EA focuses on direct, indirect and cumulative effects of the proposed action (alternative 2) and no action (alternative 1).
41	Jeff Brandt, CDFW, letter dated 4/29/2011	N	A CESA permit must be obtained if the project has the potential to result in "take" of species of plants or animals listed under CESA.	The Forest Service is responsible for consulting with US Fish and Wildlife Service regarding T&E species potentially impacted on NFS lands. Though we appreciate and would address concerns from CADFW as

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				stated earlier, the Forest Service is not required to apply for a CESA permit (see response to comment #20).
42	Jeff Brandt, CDFW, letter dated 4/29/2011	N (5)	The Dept opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses whether intermittent or perennial must be retained and provided with substantial setbacks to preserve the riparian and aquatic values for both on-site and off-site wildlife.	This project is not proposing watercourse channelization or conversion to subsurface drains. Several design features are incorporated into the proposed action to minimize impacts to waterways and riparian habitat (see chapter 2, alternative 2, design features).
43	CA Native Plant Society	N (4)	Public ordinances and bureaucratic regulations often require fuel-removal practices in excess of 2006 CA Public Resource Code 4291, causing severe damage to native plant ecosystems without reducing wildfire risk.	It is not clear how this conclusion was reached, no specific examples are provided.. Chapter 3 in the EA under Fire/Fuels addresses risks to life and property for the no action and proposed action alternatives.
44	CA Native Plant Society	N (1)	Instead should use proven fuel-management practices that minimize the wildfire threat and do not devastate native plant ecosystems (e.g. building codes and ordinances that require structures and landscaping in high fire risk areas to be situated, constructed, retrofitted and maintained using materials and practices that minimize the ignition and spread of wildfires; discouraging new development in high fire danger areas).	This is outside the scope of the project, which is to provide an option to landowners to comply with state/county fire codes related to defensible space. The Forest Service actively participates in County programs to educate homeowners about the importance of proper building materials and landscaping, but lacks authority to require these measures on private lands.
45	CA Native Plant Society	Y	Vegetation treatments in shrublands shorten fire return cycles converting native plant communities into non-native grasslands causing early season wildfires, preventing regrowth of native vegetation and diminishing resource value.	This issue is addressed in chapter 3 of the EA under "Invasive Plant Species".
46	CA Native Plant Society	Y	Concern for steep landslide-prone slopes of these very geologically active mountains through preservation of healthy native floral and fauna ecosystems.	The issue of erosion through landslides or project activities is addressed in chapter 3 of the EA under "Water Quality".
47	CA Native Plant Society	N (3)	Concern for valuable and scarce local water resources through water retention and absorption of native plant ecosystems; water that would otherwise be lost as runoff or floods	This project involves a maximum of 767 acres across the Forest (figure 1 in the EA). The amount of treatment proposed would have little to no affect on water retention and absorption of native plant ecosystems; water that would be lost as runoff or floods.
48	CA Native Plant Society	N (3)	Concern need to buffer densely urbanized industrial area with chaparral and tree vegetation to sequester carbon due to their large complex long lived root systems	This project involves a maximum of 767 acres within the Forest boundary. This project would not have any measureable effect on carbon sequestration.
49	CA Native Plant Society	N (4)	Concerned LAC is seeking to "take" 100s if not 1000s of acres of valuable NFS lands	This comment is conjecture and not supported by scientific or factual evidence. Forest Service, Region 5

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				(California) has a manual supplement (FSM 5100) which states, where consistent with existing Forest Plan direction, Forest Supervisors would provide for a minimum 100' defensible space for developments adjacent to NFS lands. The project has expanded potential treatment boundaries further to comply with the Forest's Land Management Plan. See pg. 6 of the EA.
50	CA Native Plant Society	N (3)	Why should the FS give up their resources to accommodate local jurisdictions when they fail to stem development adjacent to national forest land boundaries and allow structures to be built less than 100' from those boundaries?	See response to comment #49.
51	CA Native Plant Society	No (5,2)	Concerned putting more roads into NFS lands or permitting uncontrolled access during dry weather is a fire danger	The proposed action specifically states no new road construction is proposed. There are existing restrictions on treatment on NFS lands related to fire weather.
52	CA Native Plant Society	No (1)	Why should the FS allow treatments on NFS lands when the local fire department does not enforce the regulations for the 30' clearance around structures on non NFS lands?	This comment is outside the scope of this project. The need for this project is to provide people an option to comply with state and county fire code for defensible space on NFS lands to reduce risk to life and property. It does not relate to local fire department enforcement.
53	CA Native Plant Society	No (1)	Why should the FS allow treatments on NFS lands when the local fire department allows highly flammable ornamental vegetation to be planted under eaves, over roofs, in dense clusters in high or very high fire areas?	See response to comment #52.
54	CA Native Plant Society	N (3)	Clearing 100' feet from a structure is useless in a wind-generated wildfire. Embers and burning material can blow ½-1 mile from the fire front	As proposed, treatments could occur a maximum of 300' from residences and critical infrastructure. The purposes of the project are to reduce, not eliminate, risks to life and property for fires that occur at 90th percentile fire weather conditions. It would be unreasonable and not environmentally effective to plan treatments under Santa Ana wind conditions. There have been wildfires, including the Station Fire, that were not influenced by Santa Ana winds, but still damaged and destroyed property.
55	CA Native Plant Society	N (4)	Treatment the first 30' is far more important than the next 70, 100, 200' on public land.	Research shows that a home's ignition potential during wildfires is determined by the characteristics of its exterior materials and design and their response to

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				<p>burning objects. During WUI fires, the requirements for combustion can be met in two principal ways: from flames—radiation and convection heating—and from firebrand ignitions directly on a house (burning ember spot ignitions). Actual case examinations find that extreme wildfire behavior does not occur within most residential areas; rather, most destroyed homes ignite from smaller flames and directly from firebrands meaning that residual burning and spot fires ignite pockets of fuel associated with yard debris, ornamental bushes, wood piles etc., which occur after the main fire passes. Computational modeling and laboratory and field experiments that describe the heat transfer required for ignition have shown that the large flames of burning shrubs and tree canopies (crown fires) must be within one hundred feet to ignite a home’s exterior (Cohen 2008). The author further goes on to state that embers from large wildfires can travel a mile or more and ignite dead leaves on roofs and enter gutters.</p> <p>Treatments associated with the proposed action are designed to reduce flame lengths to 4 feet or less within the first 100 feet, and 8 feet or less within the next 100-300 feet. The design of these treatments is based on firefighter and public safety and defensible space requirements by the state and county codes. It is recognized that adequate clearance does not solely protect structures. These zones of reduced fire behavior potential would provide a greater margin of safety that would allow for safer fire suppression activities within the two zones as mentioned above. Modeled fire behavior indicated that without fuel reduction activities in dense chaparral stands can produce flame lengths in excess of 15 feet under weather 90% weather conditions (10% of the hottest driest days).</p>
56	CA Native Plant Society	N (4)	Chaparral as an ecosystem is not highly flammable. Many species of ceanothus oaks, stonecrops and toyon are fire resistant.	The flammability of Chaparral depends on a number of different factors such as the age, moisture content, and the live to dead ratio. The natural fire return intervals for chaparral are in the general range of 30-50 years. Chaparral fire intensity depends on the mixture of plants

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				in the chaparral and age of the individual plants. The ratio of dead to live fuel is much greater in old than in young chaparral and varies from species to species which is indicated by the natural fire return interval. Chaparral shrubs are very flammable due to the resinous foliage, woody stems, accumulated litter, and standing dead branches. Flammability of chaparral species increases over time through deposition of flammable leaf litter impregnated with volatile oil (oils in the leaves help make the plant drought resistant).
57	CA Native Plant Society	N (5)	Worried too much canopy trimmed could damage chaparral tree spp. It will deplete the root systems' stored food supplies and the plants will die. Too frequent fires have the same effect.	See response to comment #25.
58	CA Native Plant Society	Y	Replacing native veg with shallow-rooted grasses ensures more frequent and earlier fires which destroy native plants before they can bloom or set seed.	See analysis in chapter 3, Invasive Plant Species.
59	CA Native Plant Society	N (7)	Fire intervals in chaparral were historically 40 to 100 years. Chaparral is not adapted to current frequent fire intervals of 3-5 years.	Agree.
60	CA Native Plant Society	Y	Worried the 100' defensible space will expand to 200' of weedy, flashy-fueled space	See analysis in chapter 3, Invasive Plant Species.
61	CA Native Plant Society	N (3)	The FS should contact the fire safe councils and help them get grant funding for workshops to manage local chaparral and ornamentals	This is outside the scope of the project, but the Forest does work closely with the local Fire Safe Councils.
62	CA Native Plant Society	N (1)	Fire safe councils should introduce property owners to fire safe management practices in the first 30' from their homes.	This is outside the scope of this project which is to provide adjacent landowners the option to meet state/county fire codes regarding defensible space. Fire Safe Councils are not proposing any actions associated with this project, only the Forest Service is.
63	CA Native Plant Society	N (1)	LAC Fire should provide alternatives to clearing when a structure is too near the NFS boundary (e.g., built as fire safe as possible)	This is outside the scope of this project which is to provide adjacent landowners the option to meet state/county fire codes regarding defensible space. LA County is not proposing actions associated with this project, only the Forest Service is.
64	CA Native Plant Society	N (1)	LAC Fire, Fire Safe Councils, Homeowners Assns should assemble a booklet describing fire safe roof and wall vent covers, fire safe double paned windows, how to protect the	This is outside the scope of this project, to provide adjacent landowners the option to meet state/county fire codes regarding defensible space. Educational and

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
			overhands where gabled rooms come together, etc. “click to the link” doesn’t work	informational materials are readily available. The Forest Service actively supports LA County Fire programs to distribute this information to homeowners, including posting information to websites and keeping brochures and pamphlets stocked at front desks.

Appendix A-1: Response to Comments Received During 30-Day Comment Period on Preliminary Environmental Assessment

Non-issues were identified as: (1) does not meet the purpose of and need for action and/or is outside the scope of the analysis; (2) already decided by law, regulations, LMP or other higher level decision; (3) irrelevant to the decision to be made; (4) conjecture and not supported by scientific or factual evidence; (5) already addressed in the proposed action description; (6) has been addressed with other prior environmental review; or (7) comment of support. The table identifies which of these criteria led to a conclusion that the comment did not identify an issue to be analyzed.

Table A.1 Response to scoping comments

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
1	Abbye and Barry Brenner, comment received 5/11/2014	N (4)	Have questions about what they are required to do based on the letter they received informing them of the opportunity to comment on the Draft EA.	Participation in the defensible space project is voluntary. The need for this project is to provide a landowner the option to meet state and county fire code requirements for defensible space on National Forest System lands. The county codes are applicable to the homeowner, not to the Forest Service. This project is optional to the homeowner with the purpose of reducing risk to life and property from wildland fire. There is no requirement for homeowners to do any work on NFS land; this project simply provides property owners in the project area authorization to remove certain fuels from NFS lands adjacent to private property. Homeowners are responsible for doing the work, the FS will provide staff

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
				to coordinate the treatment specifications with the homeowner, including mitigation measures.
2	Alexander Waintrub and Kristina Newhouse, comment received 5/11/2014	N (4)	Thought the USFS was requiring property owners to treat NFS lands. If treatment of fuels on NFS lands is going to be required, then property owners should have easement to the NFS land adjacent to their property. Requested authority to limit use and associated fire risk on NFS land, and to have treatment boundaries delineated.	See response to Comment #1. Participation in removing fuels from NFS lands is voluntary. An easement is a long term land use authorization used for major infrastructure such as highways, and is not an appropriate instrument to authorize this project. An agreement or other type of permit would be used instead. National Forests are public lands, and closing them to entry is not part of this project. The USFS will provide technical assistance to locate landlines and mark treatment areas.
3	City of Duarte, CA, comment received 5/12/2014	N (3)	Asked USFS to update contact information for correspondence with the City of Duarte.	Thank you for supplying the updated information.
4	Susan Cadmus, comment received 5/13/2014	N (3)	Thought the USFS was asking for property owner's authorization to treat fuels on NFS lands next to private property.	See response to Comment #1. Homeowners would request authorization to treat fuels and would be individually responsible for treating fuels on those areas of NFS lands they receive authorization to treat.
5	Brain Keely, comment received on 5/18/2014	Y (5)	Had question whether his property is covered in the project area, as his parcel does not appear on the project vicinity map.	The project maps have been updated to identify in better detail those properties that can receive authorization to remove certain fuels from adjacent NFS lands. See Appendix D, Vicinity Maps.
6	Doug Nickles, City of Glendale Fire Prevention, comment received May 19, 2014	N	Reiterated the City of Glendale's position that some of the properties shown on the project vicinity map are in Glendale City, and are subject to city ordinances regarding defensible space. Provided copies of city ordinances.	The project is focused on meeting county code requirements. For any treatment areas that may be subject to additional city code requirements, the Forest Service will notify city fire officials of any requests for authorization. It is the intent of the Forest Service to fully cooperate with Glendale or any other city to ensure applicable code requirements are met to the greatest extent possible, while following all treatment specification in the proposed action.
7	Vi O'Connor, comment received 5/21/2014	N	Had questions about the project.	Project was discussed with Ms. O'Connor over the telephone on 5/23/14.
8	David Frink, comment received 5/23/14	N	Had a question about whether his property could participate in fuels treatment even though he is not adjacent to NFS land, and likely not within 300 feet of NFS boundary. Also suggests that the USFS consider allowing treatment NFS land further than 300 feet away	Property owner could request authorization to treat fuels within 300 feet of their structure, and the USFS would consider approval on a case-by-case basis. As for the suggestion that the analysis consider distances

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
			from structures, as burning debris from wildfires can be carried further than that.	greater than 300 feet from structures, it is the agency's intent to reduce, not eliminate, the risk of fire. Allowing property owners to treat NFS lands up to 300 feet away from a structure meets the intent of the USFS.
9	Joseph Ontiveros, Soboba Band of Luiseno Indians, comment received 5/28/2014	N	Confirmed that at this point the Soboba Band does not have any concerns with the project, but appreciates the invitation to participate in the Tribal consultation process.	N/A
10	Mike Troeger, comment received 5/29/2014	N	Requested paper copy of the EA	Paper copy of the EA sent.
11	Corbet and Laura Wilcox, comment received 6/5/2014	N	Requested clarification of the notice of opportunity to comment on the draft EA.	The purpose of this project is to allow landowners adjacent to NFS lands the option to complete vegetation treatment (removal of certain sizes of vegetation) to meet county and state defensible space distances. It is not intended to become a requirement. Prior to this proposal, private property owners were not authorized to remove vegetation from NFS lands to comply with local defensible space distances.
12	Scott Harris, California Department of Fish and Wildlife (CDFW), comment received 6/5/2014	Y	The USFS did not respond to concerns from CDFW regarding how the project addresses compliance with California Fish and Game Code and California Code of Regulations pertaining to impacts to Department jurisdictional streams and species under the California Endangered Species Act.	The letter was received during the scoping period for this project. Responses to concerns raised in that letter are contained in Table A above, in comments 19-42. Several of the responses have been revised to strengthen Forest Service commitment to cooperation with CDFW.
13	Martin Kelly, comment received 6/6/2014	N (2)	Comments object to the US Forest Service changing the fire code by requiring defensible space to extend 300 feet from structures on private property, extending into the boundaries of the Angeles National Forest.	See response to Comment #1. The USFS is not changing the requirements for defensible space; those requirements are set by Los Angeles and San Bernardino Counties. This project simply authorizes private property owners to remove fuels from NFS lands if they meet the criteria for participating, and choose to do so.
14	William Michaelis, comments received 6/9/14	N (2,4)	Comments object to the USFS requiring private property owners to remove fuels from NFS lands adjacent to privately owned property. Also requests the USFS remove the fuels once initially, and then ask private property owners to maintain the defensible space thereafter.	See response to comment #1. Implementation of the treatments is the responsibility of the private property owner. The USFS will provide technical assistance and guidance.
15	County of Los Angeles Fire Department, Forestry	Y	Comments state that the project's authorization is only available to property owners who built their homes before	The project had previously incorporated an LMP guideline that only structures built prior to adoption of

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
	Division, comments received 6/20/2014		April 2006, allowing creation of defensible space at some, but not all structures at risk.	<p>the LMP (April 2006) are eligible to participate in this program. The LMP states “Where existing developments cannot meet modern day ordinances, the Forest Service will consider the use of NFS lands to meet the ordinance. <i>For new developments, we will not allow the use of National Forest System lands for the ordinance to be met. Developers must implement appropriate setbacks.</i>” (Italics added).</p> <p>Based on the comment, the criteria of including only structures built before April 2006 has been removed from the proposed action.</p> <p>The project remains consistent with the LMP, since the LMP language above is considered a guideline. Managers have the flexibility to adjust LMP guidelines without amending the plan, to fit local, site specific conditions (LMP, Part 3, pg. 2).</p>
16	County of Los Angeles Fire Department, Forestry Division, comments received 6/20/2014		Comments state that the project authorizes treatment of fuels on NFS lands to created defensible space for residences and critical infrastructure, and not commercial buildings or outbuildings, contrary to state and local codes the require defensible space for “any building, structure or apiary”;	<p>The intent of the terms “residences and critical infrastrucrue” is not meant to exclude any structures that may need to clear vegetation to meet county codes. The EA analyzed for 300 feet of potential defensible space to ensure that the footprint of the environmental analysis does not preclude any adjacent structures that may need to treat NFS lands to meet county codes. The statement “Outbuildings (e.g., storage sheds, animal enclosures) are not considered residences or critical infrastructures” has been deleted from the description of the proposed action.</p> <p>The County Fire Chief, or any of his designees can identify other structures on private lands as critical infrastructure. If the County Fire Chief designates some structures that are not residences as critical infrastructure, then the USFS could authorize treatments on NFS lands around those structures as well.</p>
17	County of Los Angeles		Comments state that exempting fuel reduction on all	The project provides for the most reduction of fuels in

Comment #	Name of commenter (date of correspondence)	Issue to be included in analysis	Comment	Response
	Fire Department, Forestry Division, comments received 6/20/2014		vegetation less than 18" in height would defeat the goal of creating defensible space. The department strongly urges the USFS to allow reduction of fine fuels such as grasses to length less than 3 inches, and reduce the groupings of small hazardous shrubs to smaller individual groupings with a separation distance of 3 times their height, in all areas within 200 feet of any structure.	<p>the first 100' from the structure. In treatment areas >100' from the structure, greater retention of vegetation was included in order to provide for soil stability and prevent erosion, consistent with County Code (Section 325.2.1). Individual trees or shrubs would only be retained if there is a cleared area around them equivalent to the height of the vegetation.</p> <p>Based on fuel and fire behavior models, these guidelines would still reduce flame length to less than 4 feet, accomplishing the project purpose and need of enhancing firefighter and public safety. Removing more vegetation than allowed under current specifications would increase potential impacts from soil erosion and invasive species.</p>

Appendix B – Projects, Activities, and Factors Considered in Cumulative Effects

Table B.1 provides a list of present and reasonably foreseeable actions, activities and factors considered in determining cumulative effects. Below the table is a description for each of these actions, activities and factors along with recent past fire history.

Table B.1. Present and Reasonably Foreseeable Actions, Activities, and Factors Contributing to Cumulative Effects

Agency	Present or On-going Project/ Activity	Foreseeable Future Project	Fire and Fuels	Special Status Plants	Invasive weeds	Special Status Wildlife	Hydrology
US Forest Service	Fuelbreak Maintenance Projects			X	X	X	X
US Forest Service	WUI Fuel Treatment Projects		X	X	X	X	X
US Forest Service	San Gabriel River Ranger District Invasive Plant Treatment Project		X	X	X	X	X
US Forest Service	Forest Health Projects (e.g. plantations)		X	X	X	X	X
US Forest Service	Recreation Use and Facilities			X	X	X	
US Forest Service	Non-Recreation Use and Facilities			X	X	X	
US Forest Service	Travel Management						X
US Forest Service		Invasive Plant Treatment Projects	X	X	X	X	
US Forest Service		Fuelbreak Maintenance Projects		X	X	X	X
US Forest Service		WUI Fuel Treatment Projects	X	X	X	X	X
LA County	Firewise landscaping and structures programs		X	X			X
Private	Fire Safe Council Projects		X				
Private	Defensible Space on non-NFS lands		X	X	X	X	
Private	Development adjacent to NFS lands		X	X	X	X	
Private		Development adjacent to NFS lands	X	X	X	X	

Descriptions of Past, Present and Reasonably Foreseeable Actions, Activities, and Factors Contributing to Cumulative Effects

Fuelbreak maintenance

The Forest has a network of fuelbreaks to aid in fire suppression efforts. Many of these fuelbreaks are being maintained or are going through the environmental planning process to allow for maintenance in the reasonably foreseeable future. A complete list of these projects can be found in the project planning record located at the Forest Headquarters.

WUI Fuel Treatment Projects

There are WUI fuel treatment projects around communities and/or facilities that have received approval and are being implemented or are in the environmental planning process to allow for maintenance in the reasonably foreseeable future. A complete list of these projects can be found in the project planning record located at the Forest Headquarters.

Invasive Plant Treatment Projects

The San Gabriel River Ranger District has an invasive plant treatment project they are actively working on. The Angeles River and Santa Clara/Mojave Rivers Ranger Districts have similar projects proposed and are presently going through the environmental planning process.

Forest Health Projects

Several restoration projects are being implemented or planned that include tree plantation planting and maintenance. A complete list of these projects can be found in the project planning record located at the Forest Headquarters.

Recreation Use and Facilities

The Forest experiences high levels of developed and dispersed recreation. Recreation use includes hiking, fishing, camping, OHV use as well as other forms of outdoor recreation. Recreation is expected to continue to occur across the Forest and will likely increase as population in the Los Angeles area continues to grow.

Non- Recreation Use and Facilities

There are a multitude of special use activities occurring across the Forest. Examples of special use permits include, but are not limited to: powerlines, apiary sites, communication sites, recreation residence cabins, county roads, filming permits and forest product collection. Special use permits that include facilities are required to reduce fuels around their structures for protection from wildfire.

Travel Management

Travel management includes roads and trails on NFS lands.

Firewise Landscaping and Structures

Communities in the urban interface are being encouraged by the state, counties, and fire safe councils to construct firewise landscaping and structures where they are vulnerable to wildfires. The Forest Service actively participates in these programs by making information available at front desks and on agency websites.

Fire Safe Council Projects

Individual fire safe councils have been applying for grants to complete work that will minimize risk to communities. This includes things, such as building fuelbreaks, road clearances, and water developments on non-National Forest System (NFS) lands.

Defensible Space on non-National Forest System lands

The state and counties have fire codes that require defensible space around structures in the urban interface that involve individually owned properties.

Development Adjacent to National Forest System lands

The project area is within the urban interface where homes and infrastructure exist along with daily human activities. Occupancy and maintenance of the residences around the project area have created baseline levels of disturbance affecting both private and adjacent NFS lands.

Appendix C – Angeles National Forest Defensible Space Project Invasive Species List

Priority Tier 1	
<i>Acroptilon repens</i>	Russian knapweed
<i>Dipsacus sativus</i>	Teasel
<i>Erharta</i> sp.	Veldtgrass
<i>Euphorbia dendroides</i>	tree spurge
<i>Euphorbia terracina</i>	Geraltion carnation spurge
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax
<i>Retama monosperma</i>	Bridal broom
Priority Tier 2	
<i>Centaurea solstitialis</i>	Yellow star thistle
<i>Carduus pycnocephalus</i>	Italian thistle
<i>Centaurea maculosa</i>	Spotted Knapweed
<i>Cnicus benedictus</i>	blessed thistle
<i>Colutea arborescens</i>	bladderpod senna
<i>Cortaderia jubata/selloana</i>	Pampas grass
<i>Delairea odorata</i>	German Ivy
<i>Foeniculum vulgare</i>	Fennel
<i>Genista monospeulana</i>	French broom
<i>Lathyrus latifolius</i>	Perrennial sweetpea
<i>Lepidium latifolium</i>	perennial pepperweed
<i>Pennisetum setaceum</i>	Fountain grass
Priority Tier 3	
<i>Ailanthus altissima</i>	Tree of heaven
<i>Arundo donax</i>	Giant reed grass
<i>Centaurea melitensis</i>	Tocalote
<i>Hirschfeldia incana</i>	shortpod mustard
<i>Melilotus officinalis/alba</i>	sweetclover
<i>Piptatherum miliaceum</i>	Smilo grass
<i>Ricinus communis</i>	Castorbean
<i>Rubus discolor</i>	Himalayan blackberry
<i>Salsola tragus</i>	Russian thistle
<i>Sisymbrium altissimum</i> /sp.	mustard
<i>Spartium junceum</i>	Spanish broom
<i>Tamarix</i> spp.	Saltcedar

Priority Tier Category Definition -Invasive non-native plants that threaten wildlands

Priority Tier 1 - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. These species are not currently known to occur on the ANF, but shall be treated according to project design feature WEED-5 and WEED-6 as soon as possible if found. *Inform the ANF Resource Officer if discovered.* (626)574-5256.

Priority Tier 2 – Same definition as Priority Tier 1, but have less than five known infestations on NFS lands within the ANF. These species shall also be treated according to design feature WEED-5 and WEED-6 as soon as possible once detected.

Priority Tier 3 – Same definition as Priority Tier 1, but with more than five known infestations on NFS lands within the ANF. Only new infestations occurring post- project implementation and small (20sq.ft.or less) infestations existing pre-project implementation shall treated according to design feature WEED-5.

Table constructed from California Invasive Plant Inventory, February 2006, with adjustments made based on local knowledge of ANF staff. www.cal-ipc.org

Appendix D—Project Area Detail Maps

Maps attached to show project area in greater detail. Please see map books associated with this document.